Anticipation 2026 Conference

6th International Conference

Book of Abstracts

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Introduction

Welcome to the 6th International Conference on Anticipation.

Since its founding in 2015 by Roberto Poli, UNESCO Chair in Anticipatory Systems at the University of Trento, the Anticipation Conference series has established itself as a leading international and interdisciplinary forum dedicated to exploring how ideas of the future shape action in the present. Across previous editions in Trento (2015), London (2017), Oslo (2019), Tempe (2022), and Lancaster (2024), the conference has brought together scholars, designers, artists, policymakers, educators, activists, and practitioners from around the world to investigate anticipation as both an object of inquiry and a mode of engagement with contemporary challenges.

Over the past decade, the Anticipation Conference has evolved into an international intellectual community committed to examining how futures are imagined, sensed, contested, and enacted across different contexts, cultures, institutions, and scales. Its enduring strength lies in its ability to convene diverse disciplines and forms of expertise around shared questions concerning uncertainty, possibility, responsibility, and collective action.

Anticipation 2026 brings together more than 300 participants from 35 countries, presenting 161 paper contributions, 8 curated sessions, 18 workshops and experiential formats, and 30 PhD Summer School projects.

Hosted by the Design Department of Politecnico di Milano, Anticipation 2026 continues this tradition while opening new directions for dialogue and experimentation. Situated in Milan, a city recognized for design, creativity, and innovation, this edition places design at the centre of anticipatory inquiry. Design is approached as a mode of inquiry capable of investigating uncertainty, materializing alternatives, and opening spaces for collective reflection on possible worlds.

The theme of this sixth edition, Staying with the Unknown: Paradox, Uncertainty, and the Praxis of Hope, emerges from a growing recognition that contemporary societies are increasingly called to act without the comfort of certainty. Ecological disruption, technological acceleration, geopolitical instability, democratic fragility, widening inequalities, and rapidly shifting cultural imaginaries challenge many of the assumptions that have traditionally guided planning, forecasting, and decision-making.

Underlying these conditions is a deeper concern: a crisis of imagination. Across futures studies, design, philosophy, and social theory, scholars have questioned the capacity of contemporary societies to envision alternatives to dominant trajectories. Fred Polak argued that societies flourish through compelling images of the future capable of orienting collective action. More recently, Ziauddin Sardar has described the present as a condition of postnormal times: an extended present marked by complexity, contradiction, and deep uncertainty, where inherited assumptions no longer provide adequate guidance and where imagination becomes an essential resource for navigating change. Within design, Tony Fry has shown how many contemporary practices continue to reproduce unsustainable conditions through processes of defuturing, extending trajectories that compromise long-term viability while obscuring alternative possibilities. Donna Haraway, in turn, has invited

us to remain with complexity rather than seeking premature resolution, learning to inhabit uncertainty while composing more livable worlds.

Taken together, these perspectives challenge deterministic understandings of the future and call for a renewed role of anticipation and design. They suggest that uncertainty is a space in which imagination, responsibility, and intervention become possible. The challenge is no longer how to eliminate uncertainty, but how to work with it. Recent contributions within design research have similarly argued for engaging the unknown as an ethical and epistemic practice, one that resists inevitability, embraces non-linearity, and remains open to emergence, ambiguity, and the not-yet-known. From this perspective, a fundamental question resonates throughout this volume: How might societies cultivate meaningful responses to profound challenges when the capacity to imagine alternatives appears increasingly fragile?

Anticipation, in this context, is not understood primarily as forecasting or preparedness. It becomes a practice of inquiry through which futures are rendered imaginable, discussable, and actionable. Engaging the unknown means recognizing uncertainty as a constitutive condition of complex social, technological, and ecological systems. The unknown marks the limits of prediction while opening possibilities for exploration, experimentation, and the emergence of new forms of understanding.

Such engagement inevitably confronts paradox. Many of the defining challenges of our time are structured through tensions that resist resolution: between urgency and long-term thinking, innovation and responsibility, local realities and planetary concerns, stability and transformation. Anticipation invites sustained engagement with contradiction, ambiguity, and incompleteness as conditions for critical reflection and meaningful action.

Within this horizon, hope is approached neither as optimism nor as confidence in predetermined outcomes. Hope is understood as a situated and collective practice grounded in imagination, agency, and care. It sustains the capacity to act without guarantees, to remain committed to the future while acknowledging uncertainty, complexity, and responsibility. Hope does not deny paradox; it inhabits it. It does not seek certainty; it creates the conditions for action despite its absence. As such, hope becomes an anticipatory practice through which alternative futures may be envisioned, negotiated, and cultivated.

Together, the unknown, paradox, and hope provide the conceptual orientation for Anticipation 2026 and frame the diverse conversations gathered throughout this volume. The seven thematic areas reveal how these concerns resonate across disciplines, methods, and contexts, offering multiple perspectives on how anticipation can contribute to more plural, responsible, and imaginative futures.

The Call for Participation invited thoughtful, radical, and experimental contributions exploring how anticipation and design might engage uncertainty, inhabit paradox, challenge dominant foresight logics, and cultivate alternative ways of imagining and inhabiting futures. Inspired by post-normal conditions, contributors were encouraged to resist closure, question inevitability, and develop forms of anticipation grounded in complexity, care, plurality, and relationality.

The result is a rich collection of contributions spanning theoretical inquiry, empirical research, speculative practice, design experimentation, artistic investigation, and situated

action. Together, they demonstrate the diversity, maturity, and continuing vitality of contemporary anticipation studies and futures-oriented practice

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Keynote Speakers

Betti Marenko

Reader in Design and Techno-Digital Futures at Central Saint Martins, University of the Arts London. Her work explores uncertainty, technological transformation, design philosophy, and speculative approaches to future-making.

Thinking Backwards. Stitching the Breach of Time, Reclaiming Uncertainty

In an age governed by predictive systems, uncertainty is treated as a problem to be managed, calculated, and reduced. From algorithmic recommendation and behavioural analytics to predictive policing and AI forecasting, contemporary forms of governance operate by transforming open-ended futures into probabilistic trajectories. But what if uncertainty is not a deficit to overcome, but a condition to defend?

This talk revisits the philosophy of Henri Bergson to argue that uncertainty is not merely a temporary lack of knowledge but a constitutive feature of reality itself. Drawing on Bergson's concepts of duration, novelty, and attention, I explore how modern regimes of prediction rely on a deep habit of thought: the assumption that the future already exists as a field of latent possibilities waiting to be extracted, modelled, and optimized. Against this logic, Bergson proposes a radically different understanding of time as the continuous creation of the unforeseen.

Thinking backwards, in Bergson's sense, becomes a way of reversing the habits through which we spatialize time, reduce becoming to calculation, and mistake prediction for knowledge. At stake is not simply a philosophical account of time, but the possibility of reclaiming uncertainty as a political resource and preserving the conditions through which genuinely different futures may emerge.

Fabio Scarano

Curator of the Museum of Tomorrow in Rio de Janeiro, Professor of Ecology, Federal University of Rio de Janeiro, UNESCO Chair on Futures Literacy, ecologist, and sustainability scholar. His work bridges ecology, futures literacy, regenerative thinking, and public engagement with long-term planetary futures.

Anticipation, Presence and Time: Learning from Non-Humans and Non-Moderns

Despite unprecedented capacities to predict and forecast, contemporary societies often fail to act on available knowledge. This talk argues that the gap between understanding and action is linked to an atrophy of sensorial capacities resulting from modernity’s separation from nature, and to a diminished capacity for anticipation. Drawing on philosophy, ecology, and Indigenous perspectives, the talk explores how modern societies have reinforced a division between the self and the world, privileging human exceptionalism while overlooking forms of intelligence present across living systems. Intelligence is approached as the capacity to make choices, grounded in the interplay between memory, attention, and anticipation.

Examples from Brazilian plant species and Indigenous peoples from the Amazon illustrate how anticipation emerges through presence. By activating ancestral memories, plants trigger anticipatory processes that support adaptation across ecological and geological times. Some Indigenous communities use dreams as tools for making choices and defining strategies. These examples suggest that anticipation depends on cultivating memory, attention, and presence. They also point to the value of ancestral knowledge, regenerative practices, and ways of life that sustain the conditions for adaptive action. The talk concludes by examining how these lessons inform exhibitions and public engagement strategies at the Museum of Tomorrow in Rio de Janeiro.

Ivana Milojević

Researcher, educator, futurist, and Director of Metafuture. Her work spans futures studies, education, gender studies, peace studies, and transformative foresight, contributing significantly to the development of futures literacy and participatory futures methodologies.

Alternative Temporalities and Choices for Our Futures

The futures we anticipate are shaped by temporal frameworks that often remain unquestioned. Dominant approaches to anticipation and strategic foresight tend to rely on linear and measurable conceptions of time that present the future as predictable, manageable, and controllable. Such assumptions limit our capacity to engage with uncertainty, indeterminacy, and plurality.

Drawing on the concept of time literacy, this talk explores how contemporary anticipatory practices remain constrained by hegemonic time, a temporal regime rooted in modern science, industrial capitalism, and bureaucratic rationality. It examines alternative temporal frameworks, including co-present, cyclical, linear, and spiral understandings of time, and considers how these shape different ways of imagining futures and organising collective life. The discussion also explores the relationship between temporal assumptions, gender, power, and social organisation, contrasting forms of anticipation oriented toward control and strategic advantage with those grounded in education, creativity, care, and social transformation.

Developing time literacy creates space for recognising the assumptions embedded within dominant narratives of progress, security, and development. In a context of ecological disruption, geopolitical instability, and social fragmentation, expanding our understanding of time becomes essential for imagining more equitable, sustainable, and peaceful futures.

Thematic areas

The conference is organized around seven thematic areas that reflect some of the most pressing questions facing anticipation today. Through these themes, Anticipation Conference creates opportunities for dialogue across disciplines, sectors, cultures, and ways of knowing. Across these themes, recurring concerns emerge. Contributors engage with uncertainty as a condition of contemporary life; paradox as a productive tension; hope as a material, ethical, and relational practice; and anticipation as a collective endeavor.

Temporalities in Tension
Anticipation as a relational field of temporalities

Anticipation has always been concerned with the future. Yet one of the central insights emerging across contemporary futures studies is that the future itself is not the primary challenge. Rather, the challenge lies in how different temporalities coexist, collide, and compete in the present. We inhabit a moment characterized by overlapping crises, accelerating technological transformations, ecological instability, political volatility, and profound uncertainty. Under these conditions, anticipation cannot rely on singular, linear, or universal conceptions of time. Instead, it must grapple with temporal multiplicity, exploring how different understandings of time shape anticipatory practices and futures-making.

The contributions gathered in this theme approach temporality from remarkably diverse vantage points. Some revisit foundational questions concerning the nature of anticipation itself, exploring agency, emergence, paradox, uncertainty, and the philosophical assumptions that underpin futures thinking. Others propose new conceptual and methodological frameworks, drawing on quantum theory, posthumanist perspectives, alternative cosmologies, and pluriversal approaches to challenge inherited understandings of causality, prediction, and change.

Several abstracts explore how temporalities are embedded within specific cultural, social, and institutional contexts. Contributions examine vernacular concepts of time in the Philippines, tensions between security and welfare imaginaries in Nordic cultural institutions, and the temporal dynamics of alternative food systems. Others research how scientific education, governance processes, and organizational decision-making are shaped by competing rhythms, horizons, and expectations, revealing the difficulties of navigating between immediate pressures and long-term transformation. Questions of uncertainty and emergence run throughout the track. Contributors engage with weak signals, liminal states, stalled futures, transitions, and moments of rupture, asking how individuals and institutions can act when futures remain fundamentally open.

The theme also foregrounds the role of narrative, imagination, and representation in shaping temporal experience. From literary explorations of anticipation in the Anthropocene to methodologies based on collage, worldbuilding, and futurescaping, contributors research how futures are constructed, communicated, and made sense of through stories, images, and speculative frameworks. These approaches reveal anticipation as both a cognitive and cultural practice through which societies negotiate their relationship with the unknown. Across scales ranging from everyday experience to planetary transformation, from organizational routines to transcendental futures of humanity, the abstracts collected here invite a reconsideration of time itself as a field of relations.

Critical Capacities and Futures Literacy
Futures literacy as a collective and transformative capability

Futures literacy has often been described as the capability to understand and use the future. Yet the contributions gathered in this theme suggest that what this means in practice remains far from settled. Across diverse contexts, disciplines, and pedagogical traditions, the abstracts explore different ways of engaging uncertainty, questioning assumptions, expanding imaginaries, and developing the conditions for collective reflection and action.

The abstracts span a wide variety of educational and organizational settings, revealing the growing diversity of contexts in which futures literacy is being developed and applied. Contributors examine anticipatory practices in higher education, secondary schools, design studios, engineering environments, economic education, teacher training, and community-based initiatives. Several contributions focus explicitly on Futures Literacy Laboratories and related pedagogical approaches. Others research how futures literacy can support collective foresight, organizational transformation, or social capability building beyond individual learning outcomes.

Education constitutes a particularly strong thread throughout the theme, authors examine educational futures in the age of artificial intelligence, the role of anticipation in science and mathematics education, futures-oriented design pedagogy, and approaches that encourage learners to question dominant assumptions about progress, technology, and social change. Contributions from contexts as Iran, Brazil, and Europe illustrate how futures literacy is being adapted across cultural, institutional, and disciplinary settings. Several abstracts investigate the cognitive and epistemological dimensions of anticipation. Contributors explore the role of heuristics, biases, assumptions, narratives, and knowledge systems in shaping how futures are imagined and acted upon. Others question the relationship between futures literacy and action itself, examining tensions between aspiration and implementation, reflection and intervention, or imagination and responsibility.

Questions of inclusion and plurality also feature prominently throughout the track. Contributions address multilingualism and language education, collective forms of anticipation, collaborative futures practices, and efforts to broaden participation in future-making processes. Emerging technologies, particularly artificial intelligence, constitute another important area of exploration. Contributors examine how AI is reshaping educational environments, altering relationships between knowledge and authority and generating new forms of uncertainty. At the same time, these discussions raise broader questions concerning trust, agency, and misinformation. Taken together, the contributions suggest that developing anticipatory capacity is about cultivating the emotional, social, and ethical resources necessary to navigate uncertainty.

Governance, Justice, and the Public
Anticipatory governance as a public and collective practice

Questions of governance have always been intertwined with questions of anticipation. Public institutions, organizations, and communities routinely make decisions whose consequences extend far beyond the present, whether planning infrastructure, shaping urban development, designing policy, or allocating resources across generations. The contributions gathered in this theme explore how futures are negotiated within these

processes, drawing attention to the political dimensions of anticipation and its role in shaping public life.

The abstracts engage with a wide range of governance settings, from municipalities and international institutions to community initiatives and urban environments. Contributors examine anticipatory practices within the European Commission, local governments, public-sector AI systems, strategic foresight programmes, and participatory policy processes. Others investigate how futures are mobilized through global events such as World Expos, through urban data infrastructures, or through community-led approaches to public space and city-making.

Questions of justice and participation appear throughout the theme. Several contributions focus on intergenerational fairness and public engagement. Others examine how anticipatory processes shape decisions concerning technological infrastructures, ecological transitions, economic transformation, and urban development. Cities provide a particularly significant site of inquiry. Contributions explore public spaces in rapidly urbanising contexts, youth policies in Milan, community-led urban futures in Tanzania, and emerging approaches to data-driven urban governance.

Abstracts also examine the tools and frameworks through which futures enter governance processes. Strategic foresight, scenarios, rankings, indicators, and speculative design interventions are researched as mechanisms that influence how problems are framed, which futures become visible, and what forms of action appear possible. Other contributions address broader systemic questions, including beyond-growth economic futures, resilient infrastructure planning, and localized circular economies within the fashion sector. Taken together, the contributions in this theme investigate anticipation as a political practice, questioning inclusion, participation, and power.

Embodying and Sensing Futures
Anticipation as a sensory, affective and experiential practice

The contributions gathered in this theme explore how futures are felt, sensed, imagined, performed, and embodied across artistic practices, immersive experiences, participatory methods, and design interventions. Many contributions focus on the role of sensory experience in engaging with uncertainty and possibility. Participants encounter futures through smell, movement, touch, sound, visual media, virtual reality, and multisensory environments. From explorations of olfactory anticipation and embodied encounters with time to immersive artistic experiences and experimental design methods, contributors examine how sensory engagement can open perspectives that remain inaccessible through analytical reasoning alone. The theme also highlights the importance of artistic and creative practices as sites of anticipation.

Abstracts explore speculative ethnography, social dreaming, design theatre, design fiction, contemporary art, games, narrative experimentation, and participatory worldbuilding. Several authors research how artistic interventions create spaces for reflection on ecological transitions, technological change, work, ageing, and social transformation. Contributors engage with hope, awe, anxiety, desire, grief, care, uncertainty, and discomfort as dimensions of anticipatory experience. The future appears as something that provokes emotional responses, influencing how people orient themselves toward change.

Whether examining ecological emotions, work-related futures among young people, feminist ageing futures, or practices of collective imagination, the abstracts reveal

anticipation as a deeply affective engagement with the not-yet. Several contributions explore how technologies mediate these experiences. Virtual reality, biohacking practices, digital fabrication, imaginative infrastructures, and emerging forms of human–technology interaction are explored as ways of making futures tangible and experientially accessible.

Futuring by Design
Design as a practice of inquiry, speculation, and world-making

Design occupies a distinctive position within anticipatory practice, it intervenes in the present through experiments, propositions, prototypes, scenarios, and material explorations that make possible futures tangible. The contributions gathered in this theme examine how design operates as a mode of inquiry and action, investigating the methods, infrastructures, and practices through which futures are imagined.

A prominent thread throughout the abstracts concerns the growing role of AI in shaping anticipatory practice. Contributors explore AI-enabled foresight platforms, generative tools for scenario creation, anticipatory AI systems, and emerging forms of human–machine collaboration. At the same time, they raise critical questions about automation, participation, representation, and agency. Discussions range from democratic AI futures and the assumptions embedded in prompting large language models to concerns about the use of generative AI in sustainability scenarios and foresight processes.

Several abstracts revisit the conceptual and methodological foundations of design futures practice itself. Contributors propose new frameworks for participatory speculation, investigate stakeholder agency within scenario processes, explore hybrid models that connect critique, envisioning, and implementation, and reflect on the evolving relationship between design, foresight, and futures research. Questions of legitimacy, standards, and professionalization also appear through discussions concerning the development and accreditation of futures research as a field of practice.

Participation constitutes another significant area of exploration across policy-oriented interventions, collaborative design processes, and participatory speculation activities. These approaches engage citizens, stakeholders, organizations, and communities in the construction of shared imaginaries, while examining the social and political conditions that shape participation itself. Other contributions explore temporary environments, action research projects, and longitudinal interventions that trace how future imaginaries evolve through time. Taken together, the contributions in this theme explore design as a practice of world-making that operates across scales, sectors, and technologies. They reveal a field actively rethinking its methods, tools, and responsibilities.

Caring Futures
Care as a practice of maintaining, repairing, and imagining futures

Care has emerged as a significant concept within contemporary discussions of anticipation, offering ways of engaging futures through relationships, responsibilities, and forms of collective support. The contributions gathered in this theme explore how futures are cultivated, sustained, and negotiated through practices of care, drawing attention to the people, communities, memories, and environments that future-making seeks to support and protect. Contributors examine contexts shaped by conflict, peacebuilding, ageing, displacement, ecological transition, technological change, and social disruption. From reflections on wartime memories and post-conflict futures to explorations of

sustainability transitions and community resilience, care emerges as a means of remaining engaged with difficult and uncertain conditions.

Abstracts investigate ageing futures, care practices, sacred spaces, personal futures education, and participatory approaches to wellbeing. Through storytelling, speculative artefacts, design fiction, doll-making, collective autoethnography, and experiential methods, contributors create spaces where futures can be explored through dialogue, reflection, and shared experience. Technology appears throughout the track as both an opportunity and a challenge. Contributions examine communicative AI, creative applications of AI, and emerging digital systems, while raising questions about autonomy, trust, creativity, and human relationships. Abstracts consider how technological futures intersect with care practices and what forms of responsibility accompany their development and adoption.

Several contributions extend discussions of care beyond interpersonal relations. Peacebuilding initiatives in the San Diego–Tijuana region, reflections on futures under conditions of crisis in Sudan, explorations of sustainability transitions, and investigations into visual politics all reveal care as a practice that operates across social, cultural, institutional, and ecological scales. Together, contributions reveal how relationships, values, memories, and shared responsibilities shape anticipatory action.

Planetary Ecologies of Anticipation
Future-making across species, systems, and planetary scales

The accelerating ecological crises of the twenty-first century have profoundly challenged many of the assumptions that have historically shaped anticipatory thought. Climate change, biodiversity loss, environmental degradation, and planetary instability increasingly reveal the limitations of futures imagined exclusively through human needs, interests, and timescales. The contributions gathered in this theme respond to these challenges by exploring how anticipation changes when ecological interdependence becomes a central concern.

Across the abstracts, futures are approached through relationships between humans and a wide range of more-than-human actors. Contributors investigate futures shaped by plants, fungi, oceans, food systems, materials, species, and ecosystems, exploring how these entities participate in processes of adaptation, care, learning, and transformation. From mycelium–robot–human assemblages and multispecies coexistence experiments to speculative encounters with plants, oceans, and sentinel species, the contributions invite readers to consider ecological systems as active participants in future-making.

Many abstracts engage directly with contemporary environmental challenges. Contributors explore decarbonisation pathways, climate resilience, biodiversity transitions, circular economies, regenerative technologies, geoengineering, and sustainability education. Others focus on material practices, investigating how coffee grounds, plant fibres, bio-circular materials, and bio-digital matter can support alternative relationships between production, consumption, and ecological regeneration. Several abstracts draw on posthumanist, pluriversal, decolonial, and regenerative frameworks to challenge dominant assumptions about who can participate in anticipation and what forms of knowledge should inform ecological futures. Contributions examine museums, libraries, educational settings, and participatory design processes as sites where new ecological imaginaries can be cultivated. Others investigate how climate conversations unfold across geographical distances, cultural contexts, and disciplinary boundaries.

A recurring concern is the expansion of temporal and spatial horizons. Contributors engage with ecological rhythms, interspecies relationships, planetary processes, and long-term environmental change, asking how anticipation might operate within systems whose complexity exceeds human perception and control. Oceans, coastlines, landscapes, and evolving ecosystems appear throughout the track as reminders that many of the processes shaping future conditions unfold across scales that challenge conventional approaches to planning and governance. The contributions in this theme explore anticipation as an ecological practice grounded in interdependence and coexistence.

Formats

Anticipation 2026 brings together a diverse range of formats designed to support different modes of engagement with futures. Alongside paper presentations, the programme includes workshops, panels, special sessions, roundtables, exhibitions, and a Summer School. Each format creates distinct conditions for exploring anticipation. Workshops provide spaces for participants to engage directly with methods, tools, and practices, testing ideas through participation and interaction. Curated sessions and roundtables create opportunities for dialogue across disciplines and perspectives, enabling conversations that extend beyond individual contributions. Exhibitions foreground the sensory, material, and experiential dimensions of anticipation, making futures tangible through artistic and design-based practices. The PhD Summer School offers an intensive environment for learning, experimentation, and exchange among emerging scholars and practitioners working across the field.

Together, these formats reflect the inherently interdisciplinary and plural nature of anticipation. They recognise that futures can be thought of through many forms of knowing and many modes of participation, and that understanding uncertainty often requires moving between analysis and action, reflection and experience, critique and imagination. The diversity of formats represented in this conference mirrors the diversity of the field itself. Anticipation continues to evolve as a meeting place for researchers, designers, futurists, artists, policymakers, educators, activists, and practitioners who approach the future from different traditions while sharing a common commitment to exploring how futures are imagined, contested, and enacted in the present.

About Politecnico di Milano and the Design Department

Founded in 1863, Politecnico di Milano is Italy's largest scientific-technological university and one of Europe's leading institutions for architecture, engineering, and design. Internationally recognized for excellence in education, research, and innovation, the university brings together a global community of students, researchers, and practitioners committed to addressing the complex challenges shaping contemporary societies.

Anticipation 2026 is hosted by the Design Department at the Bovisa Durando Campus. Research within the department spans a wide range of domains, including service design, interaction design, design futures, systemic design, social innovation, design for sustainability, transition design, speculative and critical design, participatory practices, and emerging technologies. Across these areas, the department promotes transdisciplinary collaboration and experimental approaches that connect design with the humanities, social sciences, engineering, the arts and public policy.

The hosting of Anticipation 2026 reflects a shared commitment between the Design Department and the Anticipation Conference community: to explore how futures are imagined, negotiated, and shaped through practices that embrace uncertainty, plurality, responsibility, and care. In this context, design becomes not simply a professional discipline but a means of engaging with the unknown and expanding collective capacities for anticipating and creating alternative futures.

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1. Temporalities in tension

A Futurescaping Principle and Methodology to Explore Futures in a World in Transitions

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Keywords: Futurescaping; Futures Studies; Futures Design; World-building; Philosophical Posthumanism

Although the neologism 'futurescape' can be traced back as early as 1971 in the UNESCO Courier, the institution's global and multi-lingual journal, the term entered more clearly the field of Design with Anab Jain practice and discussion with Bruce Sterling in 2009. In her foundational article 'Design Futurescaping' (2011) she shows how futurescaping can be a constructivist and multilayered format, a future visioning or mapping technique, a concertation or co-creation tool. Whether referring to her work or not, other designers, future researchers and practitioners of various fields have appropriated the futurescaping concept, expanding its scope of expressions, to become at time an urban vision, an exhibition, a performative research experience, a trend mapping platform, a digital foresight tool, and so on.

As psychologist Vygotsky (1930, 1978) – or later Bal (2002) in a transdisciplinary perspective - suggests, the introduction of a new concept, whether in a learning trajectory or in a discipline, should not be understood solely as a new word and a question of definition, but rather as a question of what problem(s) does the concept solve? What does it bring and how does it operate in the rationale and knowledge production? How can it be used by the mind as a new tool to grasp mentally an object, whether material or immaterial?

The presentation will thus start by reviewing its diversity of use prior to clarifying how futurescaping cannot necessarily be defined, be rather understood as a design principle that allow to re-envision the future horizon from a plurality of view-points, scales and perspectives (-scaping). The enunciation of this design principle echoes other attempts to reconfigure future studies' historical frames (from Miller, 2018, to Pink, 2025), and opens a promising path to better address the current context of unprecedented change and radical uncertainty – the very objective of the Conference Anticipation 2026. It also responds more explicitly to the necessity to situate or anchor viewpoints in (future) research (from Haraway, 1988, to Milovic, 2020-23), and to design efficient polylogues to tackle Post-Normal Times (Sardar, Sweeney, 2016).

From that base, we will share and discuss how we are currently prototyping - as part of the research design of a PhD project – an open futurescaping collaborative research methodology adapted to the current state of the world. Whether called PNT, Deep Transition (Schot & Kanger, 2018), Anthropocene paradigm, post-humanist or post-colonial era, more-than-human world, or here 'world in transitions', the current scope of change is not only a question of technologies, social uses, systems, governance, values or even imaginaries. Exploring the future today requires to interrogate and revisit ontologies, epistemologies, world-views and cosmologies (Bidault-Waddington, 2025). This is literally a mind-blowing experience, producing radical disorientation – a reason of the current collective despair -, leaving space for too easy simplified (populist) discourse on the future. It requires to design both disruptive and inclusive cognitive tools and collaborative methods, also able to deal with informational chaos and limited attention spans, as other methodological design challenges.

Building on a future world-building canvas tested and shared in previous research (Bidault-Waddington, 2023, 2024), the prototyped methodology circulates around a synthetic futurescaping conceptual diagram. This canvas tends to negotiate and overcome the limits of existing future research tools or matrix such as - the future cone (Varos, 2003), the experiential future ladder (Candy, 2016), the transition model (Geels, 2002), the CLA conceptual architecture (Inayatullah, 1990), the 7 Foundations of World-Building (Zaidi, 2017), or the World-Building Mandala (McDowell, 2018), to quote established ones.

As a necessity to address the world in transitions, the methodology and canvas also integrate a specific pluriversal epistemology-by-design, continuing from post-colonial studies' critical discussion on epistemology (Dussel, 2009; Escobar, 2018), and post-humanist philosophy (Ferrando, 2019). This previous epistemological research phase was introduced and discussed at the WFSF 26th Global conference in Cape Town in 2025.

References

Bal, M. (2002). Travelling Concepts in the Humanities: A Rough Guide. Toronto University Press.

Bidault-Waddington, R. (2025). Vers des Cosmologies Alien, Prospective d'une refondation épistémologique. Plurivers et Contingence, Biennale NOVA XXL 2024 catalog. Wallonia-Brussels Cultural Center, Paris.

Candy, S., & Dunagan, J. (2016). The Experiential Turn. Human Futures, 26.

Dussel, E. (2009). Pour un Dialogue Mondial entre Traditions Philosophiques. Cahiers des Amériques Latines #62.

Escobar, A. (2018). Designs for the Pluriverse, Radical Interdependence, Autonomy, and the Making of Worlds. Duke University Press.

Ferrando, F. (2019). Philosophical Posthumanism. Bloomsbury.

Haraway, D. (1988). Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective. Feminist Studies, 14-3, 575-599

Inayatullah, S. (1998). Causal layered analysis: Poststructuralism as method. Futures. 30 (8): 815–829.

Jain, A., Ardern, J. & Pickard J. (2009). Design Futurescaping. BlowUp Reader #3, V2 publishing.

UNESCO (1971). The UNESCO Courier: a window open on the world, XXIV, 4 [537]

Miller, R. (2018). Introduction: Futures Literacy: transforming the future, in Transforming the Future, Routledge.

Milojevic, I. (2020-23). Mirror, mirror on the wall, who should I trust after all? Future in the age of conspiracy thinking. unesco.eu.

Sardar, Z., & Sweeney, J.A. (2016). The Three Tomorrows of Post-Normal Times. Futures, 75, 1-13.

Vygtosky, LS. & Cole, M. (1978). Mind in Society, The Development of Higher Psychological Processes, Harvard University Press.

Agency in Anticipation: Toward a Formal Theory of Agentic Futures

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Keywords: agency; anticipatory systems; causality, autonomous choice; post-posthumanism

A fundamental paradox lies at the heart of anticipatory practice: all action is oriented toward futures that do not exist and cannot be known. Planning and foresight work requires trust in the capacity of agents to choose among alternative realities and transform the world accordingly. This is what Miller (2018) calls anticipation-for-the-future. At the same time, his anticipatory framework highlights the complementary importance of anticipation-for-emergence, arguing that we need both legs for walking. Implicit in this framework is the assumption that there is someone, with agency, who chooses the direction and does the walking. This concept of agency, however, faces sustained pressure from two directions. Determinist accounts, from Leibniz's principle of sufficient reason to contemporary neuroscience, argue that all behavior is fully determined by antecedent causes, leaving no room for free choice. Posthumanist accounts, based on actor-network theory, agential realism, and cognitive assemblages, dissolve the liberal subject into networks of human and nonhuman actants, depriving the concept of agency of an individual human bearer.

This paper argues that both accounts of agency, despite their differences, share a common flaw: they assume a model of causality that is formally inappropriate for living systems. The philosophical prehistory of this critique is traced through Bergson's distinction between sedimented instinct and mobile intellect, and Dewey's account of habit and intelligence, which together anticipate Rosen's formal results. Drawing on Rosen's theory of anticipatory and living systems (Rosen, 1958; 1985; 1991), and on Rashevsky's (1973) principle of adequate design, the paper shows that the causal structure of living, cognizing beings is irreducibly self-referential and anticipatory in ways that make traditional concepts of causality and determinism obsolete. Predictive processing and active inference models of cognition reflect similar views at the neural level, though the assumed homeostatic tendency requires revision in light of Rosen's stronger account of living systems as generators of genuinely new models rather than optimizers of fixed ones based on Bayesian probability. Agency reconstituted in these terms does not disappear in the networks of actors and actants, but neither does it reincarnate as the liberal humanist ghost in human consciousness. In contrast, it becomes a capacity that is distributed, developmental, and formally irreducible to prior efficient causes. Reviewing the distinction between anticipation-for-the-future and anticipation-for-emergence, I show that both modes of anticipatory practice presuppose agentic capacity at individual and social levels, and that anticipation-for-emergence, understood as capability development in Sen's sense of the expansion of substantive freedom, provides the normative grounding that anticipation-for-the-future alone cannot supply. The implications are developed for design-oriented anticipation, in particular in educational, developmental, and policy contexts, where AI increasingly interacts with human knowing. The development of anticipatory capacity is shown to be an inherently political project as it transforms both individual agents, their material realities, and their imaginations.

References

Bandura, A. (2001). Social cognitive theory: An agentic perspective. Annual Review of Psychology, 52(1), 1–26.

Barad, K. (2007). Meeting the universe halfway: Quantum physics and the entanglement of matter and meaning. Duke University Press.

Bergson, H. (1911). Creative evolution (A. Mitchell, Trans.). Henry Holt. (Original work published 1907)

Clark, A. (2016). Surfing uncertainty: Prediction, action, and the embodied mind. Oxford University Press.

Dewey, J. (1910). How we think. D. C. Heath.

Friston, K. (2010). The free-energy principle: A unified brain theory? Nature Reviews Neuroscience, 11(2), 127–138.

Hayles, N. K. (2017). Unthought: The power of the cognitive nonconscious. University of Chicago Press.

Hohwy, J. (2013). The predictive mind. Oxford University Press.

Hutchins, E. (1995). Cognition in the wild. MIT Press.

Ilyenkov, E. V. (1977). Dialectical logic: Essays on its history and theory. Progress Publishers.

Latour, B. (2005). Reassembling the social: An introduction to actor-network-theory. Oxford University Press.

Louie, A. H. (2009). More than life itself: A synthetic continuation in relational biology. Ontos Verlag.

Miller, R. (Ed.). (2018). Transforming the future: Anticipation in the 21st century. Routledge / UNESCO.

Miller, R., & Tuomi, I. (2022). Making the futures of AI in education: Why and how imagining the future matters. European Journal of Education. https://doi.org/10.1111/ejed.12529

Anticipating Culture Otherwise: How Nordic Institutions Navigate Between Security and Welfare Futures

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Keywords: cultural securitisation, anticipatory governance, democratic cultural commons, nordic civil defence, future-making

Nordic cultural institutions face an unprecedented tension: they are increasingly embedded within defence and security frameworks while simultaneously maintaining commitments to democratic cultural commons: the preservation of artistic and intellectual heritage, the cultivation of aesthetic literacy, and the creation of conditions for people to encounter the complexity and plurality of human expression. As funding regimes shift, with culture now pursued through security logic alongside (and sometimes competing with) these longer-term stewardship missions, institutions must navigate fundamentally different anticipatory horizons. This paper investigates this terrain of competing futures by examining how cultural actors imagine, navigate, and attempt to reconcile two radically different visions of what culture is for.

Drawing on Sheila Jasanoff's concept of "imagined worlds," the analysis traces how these two regimes generate distinct anticipatory logics. Democratic cultural commons frameworks imagine culture addressing aesthetic experience, intellectual plurality, long-term preservation, and human flourishing. Security frameworks imagine culture as resilience infrastructure, collective identity stabilisation, psychological defence against destabilisation and information warfare. These are not complementary; they embed different assumptions about cultural value, temporality, and social purpose. Following Langdon Winner's insight that policy artifacts embed political choices, I examine how these competing logics become fixed in institutional arrangements, funding mechanisms, and strategic planning. Once embedded, they constrain which cultural futures become administratively possible and which become unthinkable.

Yet the shift from one regime to another is neither total nor uncontested. Drawing on Bruno Latour's distinction between "le futur" (programmable, anticipated futures) and "l'avenir" (the future-to-come), I argue that the gap between these competing anticipatory regimes opens unpredictable terrain. Cultural institutions do not simply conform to security imperatives; they navigate, translate, and sometimes resist reorientation. The distance at which governance operates, the friction between competing policy logics and lived institutional practice, generates space where unexpected futures emerge. The question becomes: How do institutions work between these horizons? What hybrid forms, compromises, and creative tensions emerge? What cultural futures become possible through this navigation that were impossible under either regime alone?

Rather than assuming either seamless integration or total conflict, this research investigates the actual work of institutional navigation where ground is shifting from one anticipatory regime to another. Through analysis of Nordic defence and welfare policy

frameworks and institutional case studies, the paper traces how cultural actors are attempting to imagine and enact cultural futures that honour both logics while remaining attentive to where genuine incompatibilities and resistances emerge

This proposal directly interrogates the conference's core concerns: "How can communities be empowered to create and act on their own futures? Who is included or excluded in public futuring?" By examining competing anticipatory regimes, the paper illuminates how different governance logics imagine radically different cultural possibilities and asks: whose anticipations count? What voices are centred or marginalised when funding regimes shift? How do cultural practitioners resist or reimagine imposed futures? By attending to how institutions navigate between competing anticipatory horizons, the paper contributes to understanding how power operates through future-making, and how alternative cultural futures remain possible even within constrained terrain.

References:

Jasanoff, Sheila. (2020). "Imagined Worlds: The Politics of Future-Making in the 21st Century." In The Politics of Future-Making. Oxford University Press.

Latour, Bruno. (2021). After Lockdown: An Essay on the Lessons of the Pandemic. Polity Press.

Winner, Langdon. (1980). "Do Artifacts Have Politics?" Daedalus, 109(1), 121-136.

Anticipation as Vernacular Knowledge: Filipino Temporal Concepts and the Epistemologies of Futurity

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Keywords: filipino futurity; vernacular temporalities; linguistic hermeneutics; decolonial futures; Philippine futures

Anticipatory practice in global futures work is shaped by Western epistemological assumptions that treat the future as a linear extension of the present and rely on prediction, control, and teleological progress. Such models restrict how communities engage uncertainty and imagine alternatives. This proposal introduces a Filipino epistemology of anticipation grounded in vernacular temporal concepts and cultural expressions, offering a relational and non-Western account of how futures are sensed and enacted.

Drawing from a dissertation-in-progress on Filipino futurity, the study uses linguistic hermeneutics to analyze key Tagalog temporal concepts and futuring expressions. The approach follows the layered framework proposed by Shoeb et al. (2025), attending to semantic, cultural, and paracontextual dimensions of meaning. It builds on scholarship that treats vernacular language as a resource for theorizing time. Martin (2020) observes that Filipino temporal signifiers reveal cyclical, relational, and anticipatory orientations that diverge from Western linearity, aligning with Almario's call to ground theory in the vernacular to recover Indigenous worldviews.

The analysis examines concepts such as panahon (time, season, circumstance), pag-asa (hope), pagtanaw (anticipatory seeing and remembering forward), tadhana (aligned circumstances or destiny), bukas (tomorrow), kinabukasan (the unfolding future), and hinaharap (the facing-before). For instance, the distinction between bukas and kinabukasan signals that futurity is understood as a lived continuity shaped by present actions rather than a distant abstraction.

Likwise, a key epistemic insight emerges from the semantic field of tanaw. The root term appears in pagtatanaw (envisioning forward), pagtanaw ng utang na loob (remembering a past debt of gratitude), and tanawin (the landscape or scene that one beholds). These forms show how perception, memory, moral regard, and anticipation emerge from the same conceptual domain. Tanaw frames futurity as a relational gaze that looks ahead while remaining accountable to origins and embedded in one's environment. It holds past and future together as mutually informing temporal orientations.

In addition, cultural expressions further illuminate Filipino anticipatory reasoning. The saying "ang hindi marunong lumingon sa pinanggalingan, hindi makakarating sa paroroonan" (Translation: One who does not know how to look back to where they came from will never reach their destination) asserts that the path toward the future requires sustained regard for one's origins. Expressions such as "hiraya manawari" (may your dreams come true) and "hari nawa" (may it be so) articulate hopeful invocation, integrating imagination, humility, desire, and uncertainty into everyday futurity. These forms show that knowing the future is not a matter of control but an orientation of hopeful openness and communal aspiration.

Three epistemological insights the appear to follow from this constellation of concepts and expressions. First, Filipino temporality is relational and atmospheric rather than sequential. Panahon conceptualizes the future as unfolding conditions shaped by ecological, social, and affective forces. Second, hope expressed in pag-asa and embedded in hiraya manawari and hari nawa functions as a communal and affective posture toward possibility, grounding anticipation in shared emotional and ethical relations. Third, the expansive field of tanaw operates as an epistemic bridge across temporal scales, integrating memory, foresight, accountability, and ethical regard.

These insights expand conversations on futures literacy by showing that anticipatory capacities are embedded in culture, affect, and relationality rather than in individual cognitive skills alone. The Filipino case demonstrates how communities cultivate futures-oriented capacities through shared language, emotional dispositions, cultural narratives, and relational ethics. This aligns with calls in futures studies to unlearn dominant imaginaries of progress, attend to emotional and embodied dimensions of futuring, and cultivate anticipatory practices that are situated and collective.

The study also contributes to decolonial critiques of futurity. Dominant foresight frameworks often erase Indigenous and relational temporalities, reinforcing narrow visions of development and modernity. Filipino vernacular expressions and temporal concepts reveal a futurity rooted in care, imagination, accountability, and ethical relation. These orientations resist technocratic future-making and open space for anticipatory practices that welcome uncertainty and cultivate grounded hope.

References

Brown, M. L. (2022, August). Indigenous futures: Reimagining development in Asia and the Pacific foresight brief. United Nations Development Programme.

Cheok, J., van Velden, J., Fulton, E. A., Gordon, I. J., Lyons, I., Peterson, G. D., Wren, L., & Hill, R. (2025). Framings in Indigenous futures thinking: Barriers, opportunities, and innovations. Sustainability Science, 20, 613–633. https://doi.org/10.1007/s11625-024-01615-1

Lafont, C. (2002). The linguistic turn in hermeneutic philosophy (J. Medina, Trans.). MIT Press.

Laverty, S. M. (2003). Hermeneutic phenomenology and phenomenology: A comparison of historical and methodological considerations. International Journal of Qualitative Methods, 2(3), 21–35. https://doi.org/10.1177/160940690300200303

Martin, J. S. (2020). The vernacular as method for memory and time: A philological and cultural exploration of Filipino concepts for Memory Studies. Memory Studies, 13(5), 833–847.

Minkkinen, M. (2019). Theories in futures studies. World Futures Review, 12(3), 1–14. https://doi.org/10.1177/1946756719887717

Núñez, R. E., & Sweetser, E. (2006). With the future behind them: Convergent evidence from Aymara language and gesture in the crosslinguistic comparison of spatial construals of time. Cognitive Science, 30(3), 401–450. https://doi.org/10.1207/s15516709cog0000_62

Pickren, G. W., & Pickren, W. E. (2021). Signposts to decolonial futures in understanding and addressing our present crises. Journal of the History of the Behavioral Sciences, 57, 315–318. https://doi.org/10.1002/jhbs.22147

Rodriguez-Fransen, B. (2025). Education and decolonial futures in the Philippines: Perspectives for educators and practitioners. In The cultural and social foundations of education (pp. 45–64). Palgrave Macmillan.

Saleh, S. G., Khasawneh, M. A. S., Hassan, E. A. A. E., & Ismail, S. M. (2025). A critical review of hermeneutic approaches to language and translation: Theoretical foundations, interpretative challenges, and implications for cross-cultural communication. Forum for Linguistic Studies, 7(4), 511–526. https://doi.org/10.30564/fls.v7i4.8802

Sinha, N. (2023). Speculative fictions for decolonial futures. Studies in Social Justice, 17(3), 340–349.

Stein, S., Andreotti, V., Ahenakew, C., Suša, R., Valley, W., Amsler, S., Cardoso, C., Siwek, D., Čajková, T., D'Emilia, D., Huni Kui, N., Tremembe, M., Pitaguary, R., Pitaguary, B., Pitaguary, N., Pataxo, U., de Souza, L. M., & Calhoun, B. (2022). Methodologies for

gesturing towards decolonial futures. In A. Tachine & Z. Nicolazzo (Eds.), Weaving an otherwise: Reframing qualitative research through relational lenses. Stylus Publishing.
Terry, N., Castro, A., Chibwe, B., Karuri-Sebina, G., Savu, C., & Pereira, L. (2024). Inviting a decolonial praxis for future imaginaries of nature: Introducing the Entangled Time Tree. Environmental Science & Policy, 151, Article 103615. https://doi.org/10.1016/j.envsci.2023.103615

Anticipatory design and the situated multi-scalar politics of alternative food systems

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Keywords: Anticipatory design; sustainable food futures; critical niche innovation

The aim of this paper is to develop a more adequate understanding of how anticipatory design, as practiced in alternative food systems by communities, offer transitions pathways beyond structural challenges in local contexts. Taking point of departure in the Multi-level Perspective Framework (MLP), transition scholars have suggested that alternative food systems can ideally be understood as destabilizations of the given food consumption-production system (Lamine & Marsden, 2023). More specifically, alternative food systems are assumed to re-localize sustainable food provisioning into niches that contest and go beyond the capitalist food economy and agribusiness being conceived as the dominant food regime (Fuad-Luke, 2022; Goodman et al., 2012). In addition, landscape pressures on the dominant food regime may create opportunities for alternative food niches to diffuse and out-scale to other contexts and areas. For example, landscape pressures may include exogenous events and developments such as demographic changes, macro changes in the global economy, or crises which can generate the need for establishing alternative food systems and closer producer-consumer relationships (El Bilali, 2019; Gaitán-Cremaschi et al., 2018).

Yet, some transition researchers have demonstrated that the promises of niche-derived sustainable futures of alternative food systems are often hindered or even counteracted by 'regime resistance' (Geels, 2014) due to lock-ins and alliances between capitalist forces and incumbent actors in public policy and private sectors (Gugerell & Penker, 2020). Still hope prevails, as other researchers have argued, that studying the pre-figurative politics of alternative food networks holds the key for understanding how to unsettle and ultimately resolve hegemonic regime resistance (Goodman et al., 2012, p. 3).

In this paper, we shall focus on anticipatory design practices as manifests within some micro bakeries that exemplifies what Smith and Fressoli (2024) refer to as 'critical niches'. As critical niches, these bakeries rely on experiments, prototyping and commons-based peer production that anticipate alternative political economies and transformative models of sustainable food futures which calls for a fundamental reconfiguration of the dominant food regime. However, we argue that the Multi-level Perspective framework is not particularly apt for studying the anticipatory design practices and prefigurative food politics of these micro-bakeries. First of all, as pointed out in the criticism levelled against it, the framework does not pay adequate attention to how alternative food systems are spatially embedded in local contexts (Geels, 2014, p. 23). Typically, transition studies focus on rather broad types of niche-regime interactions between 'levels' (Smith & Fressoli, 2024), while lacking a deep focus on geographical scales and proximities (Coenen et al., 2012; Dubois, 2018; Lamine & Marsden, 2023). This is unfortunate, because the transformative promise of alternative food systems is closely associated with how they re-embed food practices in the social, economic and ecological fabric of particular places.

Secondly, the MLP framework tend to treat landscape pressures as macro developments at a ‘global’ or ‘national’ scale which are external and unchallengeable. But global and national scale developments such as the post-industrial outsourcing of production, macro-economic trends and depopulation have a particular territoriality, and critical niche actors have opportunities to challenge this situation (Coenen et al., 2012). To understand this power of resistance, it is necessary to conceived of anticipatory design as enacting what we call ‘multi-scalar politics’. This will become evident in our in-depth case study of micro-bakeries and how anticipatory design is practiced across scales, not by individuals, but as a collective endeavour by diverse actors and communities.

Thirdly, the MLP framework does not translate easily into empirical research on the political economies of critical food niches and how they contest the capitalist system. Often, their economies are said to combine non-capitalist with capitalist elements. But defining these economies negatively in terms of what they are not, does not grasp the essence of their alterity. Drawing upon Arvidsson’s (2019) work on the ‘industrious economy’ we argue that some micro bakeries rely on new forms of producer-consumer relations where anticipatory design, continuous adaptation, tinkering and prototyping are used to radically re-define work practice as an existential value-based practice.

The paper touches upon several of the conference themes and will be organized into three sections. We start out, in the first section, by introducing the notion of critical niche and the trajectories towards sustainable futures it is conceived to represent within the MLP framework (Smith et al., 2005; Smith & Fressoli, 2024). But we also explain the most relevant limitations of this framework that have been identified (El Bilali, 2019; Gaitán-Cremaschi et al., 2018). In the second section, we apply the critical niche concept in our in-depth empirical case study of a micro sourdough bakery showing how anticipatory design is practiced through neo-artisanal experiments and commons-based peer production. In so doing, we demonstrate how an analysis oriented towards multi-scalar politics is capable of revealing interesting insights into barriers and opportunities for critical niche trajectories towards sustainable food futures. Discussing our findings and how they relate to extant work, we finally wrap up our conclusions in the third section.

References

Arvidsson, A. (2019). Changemakers. Polity Press.

Coenen, L., Benneworth, P., & Truffer, B. (2012). Toward a spatial perspective on sustainability transitions. Research Policy, 41(6), 968–979.

Dubois, A. (2018). Nurturing proximities in an emerging food landscape. Journal of Rural Studies, 57, 1–12.

El Bilali, H. (2019). The multi-level perspective in research on sustainability transitions in agriculture and food systems: A systematic review. Agriculture, 9(4), 74.

Fuad-Luke, A. (Ed.). (2022). Field explorations: Design- and art-based practices towards viable agri-cultures. Agents of alternatives.

Gaitán-Cremaschi, D., Klerkx, L., Duncan, J., Trienekens, J. H., Huenchuleo, C., Dogliotti, S., Contesse, M. E., & Rossing, W. A. (2018). Characterizing diversity of food systems in view of sustainability transitions. A review. Agronomy for Sustainable Development, 39(1), 1.

Geels, F. W. (2014). Regime resistance against low-carbon transitions: Introducing politics and power into the multi-level perspective. Theory, Culture & Society, 31(5), 21–40.

Goodman, D., DuPuis, E. M., & Goodman, M. K. (2012). Alternative food networks: Knowledge, practice, and politics. Routledge.

Gugerell, C., & Penker, M. (2020). Change agents’ perspectives on spatial–relational proximities and urban food niches. Sustainability, 12(6), 2333.

Lamine, C., & Marsden, T. (2023). Unfolding sustainability transitions in food systems: Insights from UK and French trajectories. Proceedings of the National Academy of Sciences, 120(47), e2206231120.

Smith, A., & Fressoli, M. (2024). Niche-regime interactions: Post-automation in the Fourth Industrial Revolution. In J. Wesche & A. Hendriks (Eds), Introduction to Sustainability Transitions.
Smith, A., Stirling, A., & Berkhout, F. (2005). The governance of sustainable socio-technical transitions. Research Policy, 34(10), 1491–1510.

Anticipatory Innovation Governance in Organizations: a Framework Proposal and its Connection to Transformative Innovation Generation

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Keywords: anticipatory innovation governance; transformative innovation; sustainable futures

There is broad consensus that the world is currently facing a series of deeply interrelated challenges that have given rise to a condition of permanent crisis (Papadakis and Tzagkarakis, 2025). These include climate change and the weakening of democratic institutions, exacerbated by the VUCA and BANI nature of the dynamics at play (Cascio et al., 2025). Addressing these issues demands solutions capable of simultaneously contributing to the collective good and navigating profound uncertainty and complexity (Tonurist and Orlik, 2025), yet innovation continues to lack a genuinely forward-looking orientation (Tonurist and Hanson, 2020). In fact, at best, it relies on prediction and forecasting, while falling short of envisioning alternative futures, remaining trapped in deterministic logic, and neglecting the negative effects of unforeseen consequences (Uruena, 2022).

Earlier efforts to embed future-awareness into innovation management include responsible innovation (Stilgoe et al., 2013) and technology foresight (Georghiou, 2008), both of which proved too reactive or lacked a normative stance. By contrast, anticipatory innovation governance mechanisms are now recognized as holding considerable promise for proactively steering innovation toward effective responses to major societal challenges (Tonurist, 2025). However, despite increasing interest and investments in anticipatory activities, they do not always result in effective outcomes, as its impact depends on how it is embedded, enacted, and constrained within organizational structures.

Literature Review

The concepts of anticipation, anticipatory governance, and anticipatory innovation governance have circulated in scholarly discourse for several decades, with ties to fields beyond innovation and management, including philosophy (Poli, 2010) and ethics (Nordmann, 2014). In broad terms, anticipation may be understood as 'any action or capacity enacted or informed in the present through engagements with representations or models that appeal to futures' (Uruena, 2024). In practice, it is typically treated as the third step in the forecast-foresight-anticipation sequence (Skopia.it; Fasoli and Poli, 2024). Anticipation involves engaging, in the present, with possible, probable, and desirable futures (Voros, 2002) with the twin aims of being better prepared for them and actively contributing to shaping them. How anticipation can be operationalized, however, remains a matter of ongoing debate (Poli, 2024).

Most applications of Anticipatory Governance have centered on the responsible development of technologies in sensitive areas such as nanotechnology (Guston, 2014) or geoengineering (Gupta et al., 2020). More recently, a more proactive and normatively oriented strand has emerged under the label of Anticipatory Innovation Governance (OECD, 2019), although the focus has remained largely governmental and policy-centered. According to the foundational OECD paper, anticipatory innovation governance (AIG) refers to the structures and mechanisms that support the generation of 'anticipatory innovation', innovation grounded in future knowledge and

aimed at enhancing public value through transformative solutions (Tonurist and Hanson, 2020).

In fact, we align with extended research advocating for deep and integrate efforts aiming at shifting current systems through transformative innovation (Schot and Steinmueller, 2018). Transformative Innovation (TI) can be described as 'new ways of thinking, doing and organizing that challenge, alter or replace existing regime cultures, structures and practices to achieve sustainable transformations that are desirable and feasible within a specific conjuncture' (adapted from Loorbach et al., 2022; Novy et al., 2022). This deliberately broad formulation acknowledges that innovation encompasses far more than new products and services, or purely technological progress, and may take a wide variety of forms. The normative dimension of the definition (Gumusay and Reinecke, 2022) entails directing prevailing regimes toward more sustainable outcomes, while accounting for temporal and spatial context (conjuncture) (Comi et al., 2025).

At the policy level, Transformative Innovation Policies (TIPs) seek to establish enabling conditions for generating transformative innovation capable of reshaping systems and driving sustainable transitions (Schot and Steinmueller, 2018). However, the discourse on anticipatory innovation governance and transformative innovation remains predominantly situated within policy and public-sector settings.

Research Questions

Hence, we acknowledge the lack of understanding of anticipatory innovation governance in organizations, and we aim at answering the call by Vedel and colleagues (2025) to investigate temporalities of transformative innovation in organizational settings, formulating the following research question: 'How are anticipatory governance practices enacted within innovation processes in organizational contexts, and what are the mechanisms and conditions through which they enable or hinder transformative orientations?'

Research Design

This paper explores the relationship between anticipation and transformative innovation through two interconnected objectives: (1) constructing a framework for analyzing and assessing anticipatory and transformative innovation within organizations, and (2) identifying mechanisms and conditions through which anticipation influences transformative innovation outcomes. To this end, we synthesize a framework by drawing on the literatures of anticipatory governance and transformative innovation. We then conduct a single, in-depth case study within a large Italian multinational energy company, using a combination of research methods, including semi-structured interviews and ethnographic observation, to deepen our understanding of how anticipatory practices shape the generation of transformative innovation.

Framework Design

We conducted an exploratory literature review of the most prominent existing frameworks for defining, analyzing, and assessing anticipatory characteristics in organizations, translating and adapting their core concepts and dimensions. The main findings are synthesized in a framework identifying the most relevant anticipatory characteristics to consider when examining an organization's anticipatory innovation governance. Table 1 provides an overview of the reviewed literature.

Table 1: Anticipation dimensions and sources

Paper/ dimension	Fasoli and Poli, 2024	Flyverbom and Garsten, 2021	Tonurist, 2025	Muiderman et al., 2020

Focus Evaluating future orienteering capabilities Defining AG templates Evaluating FIELD/SCOPES Defining AG

Object Processes Governance practices Capabilities and enablers Approaches

Areas Structure (embeddedness), time horizon, focus (resources), methods Resources for knowledge production, temporal orientation, forms of governance Dimensions and enabling factors Conceptions and engagement with future, actions to be taken in the present, ultimate end

Organizational level From units to whole organizations Whole organization Whole organization Organizations and networks

In parallel, we drew on a variety of sources bridging TIP literature with scholarship on sustainable transformations, constructing a comprehensive framework organized around four dimensions. Table 2 summarizes this process.

Table 2: Transformation dimensions and sources

Paper/

dimension Arino et al., 2022 Juri et al.,2025 Macphearson et al.,2016 Parks et al., 2022; Schot and Steinmueller, 2018 Dabard et al., 2025 Margolis, 2024 Kanger et al., 2025 Ghosh et al., 2021; Haddad et al, 2022

Focus TI labs characteristics Transformativity of visions Quality of sustainable visions Directionality Transformations decision context Process of TI generation Tipping points and Transformative Outcomes Elements of the TI process

Object Ti labs transformativity Visions of transformations Sustainable visions Discussing the directionality of transformations Values, rules, knowledge Analyzing the phases of TI processes Defining TP and TOs in TIP Aspects to be emphasized

Framework Enabling characteristics Spectrum of transformativity 10 characteristics Solving grand challenges as essential direction What are the values underlying sustainability innovations 6 phases of the TI process 16 Transformative Outcomes and 7 tipping points Reflexivity, experimentation, learning

Expected Results and Contributions

Beyond the construction of the proposed frameworks, this research aims to illuminate the influence of anticipatory governance on the transformative character of innovation, thereby advancing our understanding of how specific practices interact with one another, and under which conditions they enhance or constrain the innovation process.

Building responsible futures by cultivating anticipatory capacities from buddy system and third place perspectives

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Keywords: responsible futures; anticipation capacities; buddy system; third place; collaboration

In this research we suggest that anticipation, even it is associated to sophisticated practices, could be first identified and recognized as a basic need for individuals and could be better linked to motivation theory.

Although they are numerous and varied, the interest individuals have in anticipation practices is not equal. The discovery of this interest is often the result of a long social process.

These individual aspects can be structured from the human relations school (considering individuals as people) and motivation theory. They can also be structured regarding organizational sociology. There are fundamental to frame management sciences and related discipline like strategic management.

Buddy system could be an interesting perspective to support the development of anticipation capacities at an individual level.

In buddy system, negotiation seems to be a central point and learning, a continuous process.

This system of cooperation needs relays because their role becomes decisive in relaying a common interest and avoiding conflictual relationships: "it is in the interactions attempted, and sometimes successful, that the actors, confronted with others, learn to know what they want and can, that shared objectives are developed through successive approximations and that visible and unambiguous demands are built and stabilized" (Callon et al., 1999).

Even these relays often correspond to roles assigned to individuals within organizations, they can be embodied through places, third places designed to increase the power to act. Buddy system also needs place and literature on third place is relevant to understand how they work (Oldenburg and Brissett, 1982).

Based on this literature review, our research question is the following : Does buddy system and third places cultivate anticipatory capacities to build responsible futures?

To answer our research question, we conduct a qualitative study that began in 2023 based on observations, interviews and secondary data collection in a third-place ecosystem in Geneva canton (Switzerland) based on an opensource and sharing economy culture.

It is funded by a Swiss Foundation that bring together citizens, experts, entrepreneurs and innovators, from all generations, institutions, cultures and social classes. They are creating a contributory ecosystem where collective ideas and intentions are transformed into concrete actions. They reinventing the way to learn, connect, and participate together in the evolution of society and the environment.

The principles of the third-place ecosystem in Geneva canton are based on a close cooperation between public institutions and private stakeholders in the canton of Geneva, driven by the desire to transform practices, break down silos, and offer modern solutions that meet current needs. Its aims to be a living laboratory where experimentation and exploration pave the way for innovative collective approaches (Interview 1 and 2).

The data collection allow us to conduct a thematic analysis in order to identify themes that can then be addressed quantitatively using questionnaires and new research hypotheses.

References

Callon M., Cohendet P., Curien N., Dalle J.-M., Eymard-Duvernay F, Foray D., Schenk E. (1999), Réseau et coordination, Economica : Paris Follett MP (1924) Creative Experience, New York, NY: Longmans, Green and Co.

Fuller, T., Roubelat, F., Ward, A. K., Heraclide, N., & Marchais-Roubelat, A. (2024). Responsible futures. In Handbook of Futures Studies (pp. 259-279). Edward Elgar Publishing.

Julhe, S. (2016). L'approche par les capabilités au travail Usages et limites d'une économie politique en terre sociologique. Revue française de sociologie, . 57(2), 321-352. https://doi.org/10.3917/rfs.572.0321.

Martinet, A.-C. (2020). III. H. Igor Ansoff – Le fondateur du management stratégique. Dans Dirigé par T. Loilier et A. Tellier Les grands auteurs en stratégie (2e éd., p. 60-75). EMS Éditions. https://doi.org/10.3917/ems.loili.2020.01.0060.

Maslow, A. H. (1943). A theory of human motivation. Psychological review, 50(4), 370.

Mercuri-Chapuis S. (2014), Instrumentalisation de la responsabilité sociale de l'entreprises par les middle managers : le cas de Mediapost, Thèse, Lyon.Oldenburg, R., & Brissett, D. (1982). The third place. Qualitative sociology, 5(4), 265-284.

Osty F., & Uhalde M. (2007), Les mondes sociaux de l'entreprise, penser le développement des organisations, La Découverte, Paris.

Salovaara, P., & Bathurst, R. (2018). Power-with leadership practices: An unfinished business. Leadership, 14(2), 179-202.

Ulrich P. (2008), Integrative Economic Ethics : Foundations of a Civilized Market Economy, Cambridge University Press, Cambridge, 500 pages.

Wood, E. X., Rivers, A., & Frazier, T. (2022). Emergency management and education: Whole community resiliency through the buddy system. Journal of Emergency Management, 20(1), 17-22.

Collaging the Unknown: A Methodology for Cosmic Assemblages

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Keywords: collage; assemblage;, participatory desig;, affective methodologies

The Einstein Telescope (ET) is a gravitational wave observatory that might be built in the Euregio Meuse-Rhine. It would form a triangular structure consisting of 10 km long tunnels, 300 meters underground. This large infrastructure project would impact the region in numerous ways, both on the short and longer term. For astrophysicists, it is clear why such a project matters, as it will open up an exciting future of scientific breakthroughs and cosmological knowledge. However, the inhabitants of the region face many unknowns: how this project will affect their day-to-day life or that of future generations is not yet clear.

We are part of a team conducting Participatory Design (PD) research to map out the hopes, opportunities and challenges that the telescope could bring to the area and what local dynamics it may intervene in. We rely on the concept of assemblage to grapple with this complex project, spanning from small villages to black holes. An assemblage is not simply a collection of things, but rather a constant process of rearrangement (‘agencement’) of relations fuelled by multiplicities of desire (Deleuze & Guattari, 1987). As the project evolves and new information becomes available to us, we constantly experience this reorganization of realities.

The assemblage functions both as a way of questioning and an approach for orientation towards shifts of uncertainty (McFarlane & Anderson, 2011). This is also how we apply it as a wayfinding tool into the ET project: the assemblage makes us question what matters, both broadening and narrowing our scope simultaneously. In PD, working with the assemblage helps to connect the self to a larger whole, allowing space for “the not-yet-known, which is only affectively or preconsciously felt” and opening up for “what else might be” (Pihkala & Karasti, 2022, p. 100). Here, we therefore ask how to engage in fruitful assemblaging in anticipation of such an abstract project. Can we take into account tangible opportunities and concerns while also opening for a feeling of wonder and curiosity? The assemblage then “appears as a specific form of relational thinking that attends to the agency of wholes and parts, not one or the other” (2011, p. 162), where local voices become integrated into the ET’s cosmological inquiry.

The ET thus confronts us with our own unknowing on a daily basis. Questions we face that remain unanswered, even on policy levels, range from ‘how many scientists will come to live here?’ to ‘how will the observatory change the landscape?’. Meanwhile, the visual renders of the telescope offered by the project management propose a very specific vision: focused on the underground structure of the telescope, omitting any buildings on the surface and gravitational wave ripples arriving into an idyllic landscape. These visuals attempt to resolve uncertainty prematurely, but end up focusing only on technology, leaving little space for other narratives to emerge.

In our research, we therefore ask inhabitants to engage with the uncertainty of the unknown. Rather than seeing it as something frustrating, we encourage them to use it

as an opportunity: to let their desires for the future of the region fill in the blanks. Here, we draw from two participatory collage sessions held with inhabitants of two Belgian municipalities located within the search area for the telescope's location.

Affective collage across the ET assemblage

In our workshops, collaging functions as an affective-material practice that engages participants beyond technical unclarities. Selecting images symbolizing their life in the region and the ET, then cutting and glueing these into a collage, is a low-stakes reworking of assemblage relations. Making this personal vision of a life with the telescope “actively engages with uncertainty and messiness” (Särmä, 2019) and allows to affectively bridge the large scalar differences at stake, becoming the “materiality of change” (Hickey-Moody, 2013, p. 81).

The collages make participants navigate complex temporalities. For each workshop, we brought a selection of archival images of the area, which participants recognized and often used to represent their region in the collages. One participant connected vastly different temporalities in his collage titled ‘Our contribution for the future’: an old map “shows where we live, where our grandparents have lived for centuries”, while a large moon and spaceship symbolize the ET as a long term future possibility: “in a thousand years, it will still be there, the telescope. Not us, but the telescope will still be there”. On paper, he was able to stay with the tension between his generational identity and the faraway future that the telescope brought up for him.

The workshops enable participants to grasp and redefine the scales on which the ET operates, based on what matters to them. In one collage, a picture of the village is placed into the branches of a large tree standing in front of a modern building that represents the telescope. This composition reverses the project management’s renders, placing the telescope into the background and emphasizing the landscape. The maker explained: “I would like [the ET] to be something modern, forward-looking, and integrated into the existing green environment”, suggesting that decentralizing the telescope does not equate a negative view on it.

Finally, collaging aids in materializing relations by making present not (yet) known areas and offering a tool for situating oneself. One participant made her connection to the underground tangible by working with image strips like earth strata. She explained: “I thought in lines”, each band symbolizing a layer of reality, including a badger den, a shopping mall as the ET (both out of place in the rural environment) and a terrestrial landscape. Her fragmented approach did not only materialize an assemblage of heterogeneous, underground relations. It also became a method for asserting her own position and engagement with it, as she pointed to the landscape and stated “I'm going to stick around on Earth”.

Conclusion

We have proposed collage as a method for tangibly working with temporalities, scales and materialities in tension, an affective way of sensing futures and a participatory design approach for envisioning other worlds. Our contribution furthers assemblage thinking in PD, offering an approach to diversify narratives across scales in complex projects such as the ET. When surrounded by a multiplicity of possibilities, uncertainty does not need to be immediately resolved. Instead, it can become a tool for anticipating more situated, fragmentary and sustainable futures.

References

Deleuze, G., & Guattari, F. (1987). A thousand plateaus: Capitalism and schizophrenia. University of Minnesota Press.

Hickey-Moody, A. (2013). Affect as Method: Feelings, Aesthetics and Affective Pedagogy. In R. Coleman & J. Ringrose, Deleuze and Research Methodologies (pp. 79–95). Edinburgh University Press. https://doi.org/10.1515/9780748644124-006
McFarlane, C., & Anderson, B. (2011). Thinking with assemblage. Area, 43(2), 162–164. https://doi.org/10.1111/j.1475-4762.2011.01012.x
Pihkala, S., & Karasti, H. (2022). Towards Response-able PD: Putting Feminist New Materialisms to Work in the Practices of Participatory Design. Participatory Design Conference 2022: Volume 1, 98–108. https://doi.org/10.1145/3536169.3537784
Särmä, S. (2019). Collage as an empowering art-based feminist method for IR. In Critical Methods for the Study of World Politics. Routledge.

Embodying Uncertainty: A Relational Framework for Futures Design Education

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Keywords: design education; relational framework; embodied learning; anticipatory design

Discourses surrounding "futures" in design education have shifted rapidly. As global volatility intensifies—driven by climate instability and technological acceleration—educators face an urgent mandate. Curricula must evolve beyond merely solving defined problems to cultivating the capacity to navigate ambiguity, complexity, and systemic uncertainty. The ultimate goal is empowering designers to integrate the systemic and cultural practice of anticipation with design actions that bridge the present and the future (Morrison et al., 2021).

Responding to Theme 4, "Embodying and Sensing Futures," this contribution examines how design education can foster anticipatory abilities (Miller, 2018) to embrace ambiguity of futures and make actions in the “here-and-now” through embodied making and relational perspectives. Moving beyond the limitations of isolated workshops and courses, we propose a relational curriculum integrating critical theory, technical practice, cultural imagination and transdisciplinary cooperation.

To sense the future is to comprehend the web of relations that constitute it. A relational perspective views the future not as a fixed destination, but as a continuous negotiation between technological agents, cultural narratives, and ecological systems (Escobar, 2018). Consequently, design education must move beyond the forecasting—with its origins in strategic planning and statistical probability—toward embodiment. This shift addresses a temporal tension: while the future is speculative, the body exists strictly in the here-and-now. Drawing on embodied learning (Nathan, 2021), we posit that design scenarios act as a necessary counterpoint to abstract foresight. By enacting narratives and making, students translate futures into felt experience, using the body to sense the consequences of future scenarios and make actions in the present.

We ground this approach in Redström’s (2017) theory of Designing, where theoretical critique and physical fabrication are co-constitutive processes. By engaging with speculative design artifacts—students confront the "friction" of making. This friction is the difficulties and choices of making that challenges the "smoothness" of deterministic, techno-utopian narratives. This engagement transforms futures studies into "experiential futures" (Candy & Dunagan, 2017); rather than merely analyzing probabilities, students 'inhabit' constructed scenarios, facilitating a shift from cognitive observation to affective understanding.

References

Appadurai, A. (2013). The future as cultural fact: Essays on the global condition. Verso Books.

Candy, S., & Dunagan, J. (2017). Designing an experiential scenario: The People Who Vanished. Futures, 86, 136–153. https://doi.org/10.1016/j.futures.2016.05.006

Escobar, A. (2018). Designs for the pluriverse: Radical interdependence, autonomy, and the making of worlds. Duke University Press.

Miller, R. (Ed.). (2018). Transforming the future: Anticipation in the 21st century. Routledge; UNESCO.

Morrison, A. (Ed.). (2023). Design futures literacies (Vol. 1). FUEL4DESIGN. http://www.fuel4design.org/index.php/designfutures-manual/#dfl-Ebooks

Morrison, A., et al. (2021). Anticipatory design and futures literacies. In Proceedings of CUMULUS Rome 2020. https://cumulusroma2020.org/

Nathan, M. (2021). Foundations of embodied learning: A paradigm for education. Routledge.

Redström, J. (2017). Making design theory. The MIT Press.

Zou, Y. (2023). Speculating on design, life styles and forms: Studies in the contexts of climate change sustainability [Doctoral thesis, The Oslo School of Architecture and Design]. https://aho.brage.unit.no/ahoxmlui/handle/11250/3065057

Experiencing Futures in Tension: A Design Framework for Experiencing Contradiction in Anticipatory Practice

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Keywords: experiential futures; futures literacy; contradictory futures; anticipatory practice

This paper introduces the Contradictory Futures Framework (CFF), a design-led approach that enables participants to pre-experience two internally coherent yet incompatible futures through comparative, embodied encounters. Responding to the growing need to engage with futures shaped by conflicting values and trajectories, the framework stages deliberate oscillation between futures rather than immersive deepening into a single scenario. In doing so, the paper addresses temporalities in tension by making competing future logics experientially legible within a shared present, allowing participants to sense how different temporal commitments can shape everyday actions and consequences.

Methodologically, CFF contributes to critical capacities and futures literacy by reframing anticipation as the ability to remain with contradiction long enough to surface assumptions, articulate trade-offs, and identify hinge decisions that select futures in the present. Through mirrored situations, artifacts, and a designed “switchback” mechanism, participants are prompted to reflect on how values become operationalized as rules and infrastructures across alternative worlds.

The framework foregrounds embodying and sensing futures by translating abstract scenarios into situations in which participants act, comply, resist, and experience ethical and affective dissonance in the body. Drawing on a research-through-design pilot, the paper demonstrates how experiential comparison can deepen futures literacy and support more reflexive, ethically attuned anticipatory practice.

From Anxiety to Agency: Operationalizing "Futurization" as a Psychological Tool for Participatory Anticipation

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Keywords: futurization; future anxiety; images of the future; personal and global futures; experiential installation

In the face of climate change and poly-crisis, feelings of anxiety and powerlessness about the global future are pervasive, particularly among youth (Ipsos, 2025; Pihkala, 2020). This presents a core challenge for anticipatory practices: how can we engage with a future that feels frightening and anxiety-provoking in a way that moves beyond paralysis to foster agency and constructive action? Research in psychology and behavioural economics demonstrates that present bias and temporal discounting lead people to favour immediate rewards over long-term outcomes, even at collective cost (Green et al., 1994). Foresight methods such as traditional scenario planning often fail to address this emotional and psychological dimension, treating the future as an abstract problem to be analysed rather than a felt reality to be experienced and shaped (Butler et al., 2020; Richter et al., 2023). This gap highlights the need for methods that connect future thinking with present-moment embodiment, participatory sense-making, and care.

This work builds on our research on futurization, an "as if" mode of thinking and acting that brings future consequences into the present and guides local behaviour in relation to global futures (Sircova, 2018; Sircova et al., 2019). Futurization is not mere anticipation or future planning, but the capacity to engage with even threatening or "dark" futures without being driven by fear or reactivity — by accepting difficult emotions, maintaining groundedness in the present, and creating conditions for mindful, meaningful action to emerge under uncertainty (Sircova et al., 2019; Sircova & Ilic, 2023). The futurization approach integrates insights from time psychology — including Construal Level Theory (Trope & Liberman, 2010), future anxiety (Zaleski, 2006), future-self continuity (Hershfield, 2011), and Balanced Time Perspective (Boniwell & Zimbardo, 2004) — while accounting for individual and group differences across diverse populations (Sircova et al., 2015).

Our research documents a pronounced and statistically significant gap between personal and global future orientations. While individuals tend to perceive their personal futures with optimism and agency, the global future is frequently experienced as threatening, dark, and anxiety-inducing — aligned with what Gumbrecht (2015) terms a "dark future" chronotope. This tension between personal hope and global hopelessness constitutes a critical barrier to long-term, prosocial decision-making.

This contribution builds on a range of mixed methods developed within the futurization framework, including scenario-based work, focus groups on personal and global images of the future, semantic differential scales, and in-depth interviews. Empirically, our research investigates how temporal distance, cultural background (with data collected in Denmark, the USA, China, and India), age, and the COVID-19 pandemic

shape emotional responses, perceived agency, and time–space representations of the future.

We present The Space of Futurization — an immersive, participatory installation deployed at the Terres du Son music festival in France in 2024 and 2025. Conceived as both a field study and a live laboratory, the installation uses tactile, visual, auditory, and narrative stations to elicit and transform participants' perceptions of personal and global futures, functioning simultaneously as an embodied research instrument and a design inquiry. Visitors answer questions about the future, engage with objects and audio stories, express future-related feelings through a semantic differential scale and emotion jars, interact with imagined future landscapes depicting the world in 30 and 100 years, explore a future food menu, write a postcard to their future self, and record a message for listeners a century hence.

Using a prospective quasi-experimental field design, we collected mixed-methods data across two festival deployments from over 630 participants combined. The 2025 deployment ($N \approx 350–500$, with 176 experimental and 110 control participants) replicated and extended 2024 findings. Results confirm the personal–global gap as robust and measurable: participants described personal futures as optimistic (20%), excited (19%), and reassuring (48%), while characterising the global future as dark (82%), threatening (85%), and anxiety-provoking (32%). Even a single brief visit produced measurable shifts: stronger social future-thinking ($b = 0.228$, $p = .002$), heightened personal relevance of future change ($b = 0.252$, $p = .002$), and 75.6% of participants recognised that multiple possible futures exist. Climate anxiety shaped but did not determine experience: calm acceptance and sense of purpose remained stable across all participants regardless of baseline anxiety — suggesting the psychological foundations for resilience are already present, and that futurization's work is to help people access them. When imagination was explicitly scaffolded, hopeful narratives emerged readily: 40.8% of responses described nature and environment, 10.2% human connection and community, and only 5.6% expressed explicit worry.

Preliminary analyses confirm that the immersive, participatory context enables a subtle but significant integration: participants report reduced feelings of isolation, increased awareness of shared concerns, and a strengthened sense of collective possibility. The "reality shock" of confronting global futures is often accompanied — and partially transformed — by a "relational shock" of recognising common vulnerabilities and imaginative strategies in others. The installation cultivates a held, non-judgmental environment in which fear and uncertainty can be acknowledged while gently probing for meaningful orientations to action. In this sense, futurization operates as a care-based practice that supports situated hope — not as abstract optimism, but as an embodied, relational capacity to act within uncertainty.

The contribution of this work is threefold. Conceptually, it provides greater clarity and empirical grounding for futurization as a defined psychological construct with observable, measurable effects. Methodologically, it demonstrates how participatory installations can function as both research tools and anticipatory interventions, complementing conventional scenario practices with psychological realism and affective depth. Finally, in relation to the conference themes, the paper connects Embodying and Sensing Futures (Theme 4) through affective and sensory engagement, Futuring by Designing (Theme 5) through design-as-inquiry, and Caring Futures (Theme 6) by framing anticipation as a relational and ethical practice. Together, these insights offer a transferable model — now being developed into a Replication Kit for festivals, universities, and youth organisations — for making anticipation more emotionally intelligent, inclusive, and capable of supporting agency in times of profound uncertainty.

References

Boniwell, I., & Zimbardo, P. G. (2004). Balancing time perspective in pursuit of optimal functioning. In P. A. Linley & S. Joseph (Eds.), *Positive psychology in practice* (pp. 165–178). John Wiley & Sons. https://doi.org/10.1002/9780470939338.ch10

Butler, J. R. A., Bergseng, A. M., Bohensky, E., Pedde, S., Aitkenhead, M., & Hamden, R. (2020). Adapting scenarios for climate adaptation: Practitioners' perspectives on a popular planning method. *Environmental Science & Policy*, *104*, 13–19. https://doi.org/10.1016/j.envsci.2019.10.014

Green, L., Fry, A. F., & Myerson, J. (1994). Discounting of delayed rewards: A life-span comparison. *Psychological Science*, *5*(1), 33–36.

Gumbrecht, H. U. (2015, December 4). *Our "broad present" as a "universe of contingency": A cultural and epistemological diagnostic* [Conference lecture]. Challenging the Human Sciences Conference, Copenhagen Business School, Denmark.

Hershfield, H. E. (2011). Future self-continuity: How conceptions of the future self transform intertemporal choice. *Annals of the New York Academy of Sciences*, *1235*(1), 30–43. https://doi.org/10.1111/j.1749-6632.2011.06201.x

Ipsos. (2025). *People and climate change 2025*. https://www.ipsos.com/sites/default/files/ct/news/documents/2025-04/People&ClimateChange2025.pdf

Pihkala, P. (2020). Anxiety and the ecological crisis: An analysis of eco-anxiety and climate anxiety. *Sustainability*, *12*(19), 7836. https://doi.org/10.3390/su12197836

Richter, I., Gabe-Thomas, E., Queirós, A. M., Sheppard, S. R. J., & Pahl, S. (2023). Advancing the potential impact of future scenarios by integrating psychological principles. *Environmental Science and Policy*, *140*, 68–79. https://doi.org/10.1016/j.envsci.2022.11.015

Sircova, A. (2018, May). *Futurization — Summary of results, SP18*. https://doi.org/10.13140/RG.2.2.16617.54880

Sircova, A., & Ilic, Z. (2023, May 3–8). *Finding a personal response to global challenges* [Conference presentation]. 3rd World Congress of Existential Therapy, Athens, Greece.

Sircova, A., Karimi, F., Osin, E. N., Lee, S., Holme, P., et al. (2015). Simulating irrational human behavior to prevent resource depletion. *PLOS ONE*, *10*(3), e0117612. https://doi.org/10.1371/journal.pone.0117612

Sircova, A., Scharf, A. E., Kennedy, M., & Päivinen, P. R. (2019). Futurization of thinking and behavior: Exploring people's imaginaries about the future and futurization. In *Managing screen time in an online society* (pp. 219–245). IGI Global.

Trope, Y., & Liberman, N. (2010). Construal-level theory of psychological distance. *Psychological Review*, *117*(2), 440–463. https://doi.org/10.1037/a0018963

Zaleski, Z. (2006). Future orientation and anxiety. In *Understanding behavior in the context of time* (pp. 135–151). Psychology Press.

Getting over with the tragedy of weak signals: from a preconceived notion to an operational concept

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Keywords: weak signal; strategic foresight

The concept of weak signals is used with increasing frequency in management and strategic foresight literature, yet it remains insufficiently defined. Many studies invoke weak signals as central to organizational learning, innovation, or environmental sensing, but typically without providing a precise characterization of the term. Although foundational work by Ansoff (1975) contrasted weak and strong signals and emphasized their strategic importance, subsequent contributions—such as those by Coffman (1997), Hiltunen (2006), Kuosa (2010), Saritas and Smith (2011), and Van Veen and Ortt (2021)—offer heterogeneous interpretations and categorizations. These attempts range from contextual and sense-making approaches to taxonomies of future-oriented indicators, yet they diverge significantly and suffer from either conceptual narrowness or excessive generality.

This paper argues that the notion of weak signals encompasses three distinct types, only one of which corresponds to Ansoff's original formulation. It further contends that Coffman's underexplored work provides valuable insights, while existing unifying definitions remain too generic for operational use in strategic foresight. Ultimately, the paper seeks to transform weak signals from a loosely used notion into a rigorous and actionable concept for management sciences, particularly in contexts of profound uncertainty.

Lingering in the Liminal: From States of Emergency to Spaces of Emergence

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Keywords: liminality; emergence; quantum physics; crisis management; liminal intelligence

The aim of this paper is to propose a radical rethinking of leadership and organizations in response to the rapidly shifting, liquid conditions of hypermodernity. It does so by integrating insights from sociology, complexity science, quantum management, and social scientific approaches to liminality. We argue that liminality should be positioned as a central concept for understanding human responses to change and for designing new frameworks of transformation management.

Liminality refers to transitional moments or periods in which the normal limits of thought, self-understanding, and behavior loosen, opening pathways to novelty, imagination, construction, and destruction. In times of overlapping crises, or what we have elsewhere termed “permanent liminality,” we are called not only to withstand acceleration and abstraction, but to bring new meaning to it. As the contemporary world experiences what may be described as a collective aporia: a state of cognitive impasse in which assumptions no longer hold, we suggest that liminality offers conceptual resources for creative breakthroughs and new directions.

The classical anthropological understanding of liminality refers to the transitional phase between established roles, identities, and social contexts. In Arnold van Gennep’s foundational work on rites of passage, liminality is the middle phase in a sequence of separation, threshold crossing, and reaggregation. Victor Turner later adapted the concept for modern societies, emphasizing ambiguity, uncertainty, and the suspension of norms beyond ritual settings. Despite differences in approach, scholars agree that liminality is both necessary and unavoidable in processes of transition. Yet when prolonged, it is often perceived as a threat to social order and stability.

Historically, liminal phases were overseen by ritual authorities whose task was to ensure reintegration into societal structures. Consequently, emphasis was placed on reaggregation and restoration rather than on the liminal phase itself. This paper reorients that dynamic: from managing liminality as a state of emergency toward cultivating what we term spaces of emergence: environments in which the generative potential of liminal states can unfold.

Drawing on classical liminality theory (van Gennep, Turner, Thomassen) in dialogue with complexity science (Prigogine), resonance theory (Rosa), the philosophy of the implicate order (Bohm, Zohar), and organizational antifragility (Kleist), we identify six preconditions for the emergence of genuinely novel forms in human and organizational systems. Across disciplines, evidence suggests that becoming more is not about doing more or faster, but about removing constraints so that latent possibilities may reveal themselves.

The six preconditions for emergence are as follows. First, shared context: emergence is a field phenomenon. Without collectively held orientation in meaning, attention, and relation, signals arising in the liminal remain fragmented and cannot stabilize into

coherent patterns. Second, relational autonomy: not independence from the collective, but periodic freedom to explore, resonate, respond, and reintegrate within the relational field. This allows relationships to evolve dynamically and supports new configurations. Third, temporal rhythm: emergence cannot be rushed, as new patterns require incubation before stabilization. Fourth, protective obscurity: in early stages, what seeks to take form is highly sensitive to observation and measurement. This condition protects the emerging from premature exposure, echoing both the Quantum Zeno Effect and anthropological accounts of seclusion during transformation. Fifth, delayed closure: the deliberate postponement of conclusions and decisions so that informational patterns may build new relationships and coherent contexts. Sixth, structured oscillation: emergence occurs at the edge of the fixed and the unfixed, where stability and instability meet to generate new order.

Despite the prevalence of liminal conditions in contemporary life, organizations frequently fail to harness their transformative potential. Efforts to regain control often produce rigidity, closing the temporal and relational space necessary for adaptive forms to emerge. This tendency reinforces outdated patterns and inherited errors, causing systems to loop rather than leap into novelty.

This framework offers a distinctive liminal lens on change and crisis management while advocating for the revival of transitional rituals in contemporary organizations. We propose the development of what we term liminal intelligence: the capacity to remain with the unknown, resonate with subtle stimuli, recognize patterns, tolerate paradox and ambiguity, remain open to multiple possibilities, and support processes of self-organization without prematurely collapsing them into imposed outcomes.

Central to this intelligence is the practice of liminal linger—the disciplined ability to sustain tension longer than instinct permits. While prolonged liminality was historically seen as a threat to order, in contemporary complexity it may be the inability to remain in liminal space that represents the greater danger. This paper speaks directly to the conference themes of Temporalities in Tension and Embodying Futures, asking how anticipatory practice might learn to dwell in uncertainty rather than resolve it and what organisational capacities are needed to do so.

References

Bohm, D. (1980). Wholeness and the implicate order. Routledge.

Bohm, D. (1996). On dialogue. Routledge.

Carson, T., & Pasternak, E. (2024). Liminal spaces and quantum reality: Threshold worlds and transformation. In Proceedings of the 9th International Conference on Research in Humanities and Social Sciences (Cambridge, United Kingdom, December 2024).

Kauffman, S. A. (1995). At home in the universe: The search for laws of self-organization and complexity. Oxford University Press.

Kleist, J. K. (2025). The Antifragile Organisation: From Hierarchies to Ecosystems. LID Publishing

Misra, B., & Sudarshan, E. C. G. (1977). The Zeno's paradox in quantum theory. Journal of Mathematical Physics, 18(4), 756–763.

Prigogine, I., & Stengers, I. (1984). Order out of chaos: Man's new dialogue with nature. Bantam.

Rosa, H. (2019). Resonance: A sociology of our relationship to the world. Polity.

Szakolczai, A. (2000). Reflexive historical sociology. Routledge.

Thomassen, B. (2014). Liminality and the modern: Living through the in-between. Ashgate.

Turner, V. (1969). The ritual process: Structure and anti-structure. Aldine.

van Gennep, A. (1960). The rites of passage (M. B. Vizedom & G. L. Caffee, Trans.). University of Chicago Press. (Original work published 1909)

Zohar, D. (2016). The quantum leader: A revolution in business thinking and practice. Prometheus Books.

Zohar, D. (2022). Zero distance: Management in the quantum age. Palgrave Macmillan.

Mapping Temporalities - Temporal structures in Futures-Oriented Science Education

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Keywords: upper secondary science education; complexity science; temporal structures of physics; futures literacy; time and futures competences

In the current context—marked by dominant narratives that constrain our imagination of the futures—this contribution reflects on the role of science education in reopening the space of possible, plausible, probable, and desirable futures. The field of Futures Studies, with its transformative potential to cultivate engagement with complex, uncertain, and open-ended scenarios that empower agency, is increasingly entering education, both in research agendas and in classroom practices.

The growing international movement to embed futures thinking into education is supported by organisations such as Teach the Future (https://www.teachthefuture.org) and by European reports such as the GreenComp (Bianchi et al., 2022), the European sustainability competence framework, which identifies futures literacy as a key competence for imagining alternative scenarios and recognising the steps needed to achieve a preferred sustainable future.

This raises the problem of how to foster in youth the capacity to use the futures in order to act in the present (Miller, 2018) and, more specifically, how to integrate futures literacy into school curricula. Physics education, for example, still assigns a privileged role to the temporality of Newtonian mechanics, which shaped the project of Modernity and still underpins the optimism of the hegemonic technocratic model of the future (Levrini et al., 2024). Linear, quantitative, standardised time remains the dominant—or even the only—temporal conception in physics curricula, contributing to an image of the future as deterministically predictable, the necessary consequence of precisely known initial conditions.

We therefore ask whether, and how, it is possible to rethink disciplinary content so as to value alternative “temporal framings” capable of problematising dominant ones and of epistemologically grounding open and plural visions of the future.

The EU-funded projects I SEE (2016-2019) and FEDORA (2020–2023) - and the newly launched FEDORAS (2025–2028) - aimed to regenerate school scientific content by helping students recognise, within science itself, the resources they need to expand their imagination of the future and to develop time and futures competences. The regeneration agenda in many project activities is guided by the epistemology of complexity science, which reflects a nonlinear temporal structure, sensitive to contingency and capable of opening, in unpredictable ways, emergent spaces of possibility.

This contribution presents a study developed within the Horizon 2020 FEDORA project, whose results have informed and enriched the foundational assumptions of the Erasmus+ Teacher Academy FEDORAS. The study consists of a qualitative comparative analysis, conducted through a temporal lens, on two sets of texts produced by secondary school students in different contexts. The first dataset, A Day in 2040, includes 27 individual essays written by students aged 17–19 before participating in extracurricular activities organised by the Physics Education Research

Group at the University of Bologna. The second dataset, Physics of Clouds, comprises six group-written stories by students aged 14–15 after completing an interdisciplinary module on the physics of complex systems and creative writing.

Both datasets reveal a wide range of ways in which students conceive of and relate to time. A thematic analysis identified two main temporal images—the time of the clock and the time of experience—each characterised by specific markers further articulated into sub-markers. The analysis highlights a clear distinction: the essays are dominated by the time of the clock, whereas the stories exhibit a combination of the two temporal images.

A subsequent emotional analysis explored correlations between temporal images and expressed emotions. A second analysis, focusing on the sources of emotions, suggests a link between emotions and the types of change or novelty described by the students. In the future essays, environmental, technological, and socio-political-cultural transformations emerge; in the stories, instead, characters experience primarily experiential novelties related to otherness and to the plurality of perspectives adopted on reality.

The combination of temporal and non-temporal markers led to the identification of three temporal profiles in the essays and a fourth in the stories. The first profile, Alienation from time (Rosa, 2010), reveals a pessimistic, distant, or hostile attitude toward a world whose change is experienced as imposed by external temporal structures. The second and third profiles, functional adaptation and functional equilibrium, draw on Benasayag (2018). Both show a conformist attitude toward external rhythms in the name of efficiency and performance; however, while in the former characters display a naïve optimism toward technological progress, in the latter they exhibit a “two-track attitude” toward technology and other dimensions of change. The stories, in contrast, display a profile linked to resonance (Rosa, 2019), where time is lived with openness and receptivity, and experiential novelties generate new awareness and personal meanings.

Overall, the results highlight the formative potential of complexity science within the school curriculum by expanding the ways in which young people conceptualise time and relate to it. Through this study, the contribution illustrates the epistemological richness of science in offering alternative temporal framings to the dominant Newtonian classical ones, thereby supporting the expansion of students’ imagination of possible and desirable futures.

References

Benasayag, M. (2018). Fonctionner ou exister? Éditions le Pommier.

(Missana, E., Trans.). (2019). Funzionare o esistere? Vita e Pensiero.

Bianchi, G., Pisiotis, U., & Cabrera Giraldez, M. (2022). GreenComp—The European sustainability competence framework (EUR 30955 EN). Publications Office of the European Union.

Levrini, O., Pietrocola, M., & Erduran, S. (2024). Breaking free from Laplace’s chains: Reimagining science education beyond determinism. Science & Education, 33(3), 489–494.

Miller, R. (2018). Transforming the future: Anticipation in the 21st century. Routledge.

Rosa, H. (2010). Alienation and acceleration. Toward a critical theory of late-modern temporality. NSU Press.

Rosa, H. (2019). Resonance: A sociology of our relationship to the world. Polity Press.

Narrative Form and the Challenges of Anticipation in the Anthropocene in VanderMeer's Southern Reach Trilogy

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Keywords: storytelling; Anthropocene; novels; enlightenment; conditions of impossibility; Jeff VanderMeer; annihiliation; authority; acceptance

The Anthropocene poses a fundamental challenge to how we know the world, and how we imagine futures within it. This paper argues that the novel is deeply entangled with the same Enlightenment epistemologies that produced the conditions of planetary crisis. Scientific rationality, causality, detachment, accumulation of verifiable data are not only methods for understanding reality, but they are they are also structural premises of realist fiction.

Drawing on Jeff VanderMeer's Southern Reach trilogy this paper examines what happens to anticipatory practice when those premises become untenable. The trilogy stages an encounter with Area X, an anomalous ecological zone that defies rational observation and predictive logic. Focusing on the second novel, Authority, I analyse how the protagonist's attempts to apply scientific frameworks (gathering data, establishing causality, projecting outcomes) are frustrated and actively undone. The paper also analyses how the novel itself struggles with these conditions in its narrative form.

Planning and building for the long term in a time of uncertainty

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Keywords: paradox; uncertainty

Through my company Vivid Futures (https://vividfutures.co.uk), I work with organisations that are building homes, shops, offices, and infrastructure that will last for decades, sometimes centuries. We need housing, energy systems, places to work and to access health and other services. Because of the upfront costs and embodied carbon, we should build to last.

And the very process of building, from conception, through design, funding, planning, construction, fit-out and occupation also takes many years.

At the same time, we live in a world of instability, uncertainty, and rapid change. Technology and the virtual world in particular, develop rapidly. Old certainties evaporate.

Much of the futures literature calls us to embrace this uncertainty and engage with emergence. As part of Barbara Adam's Future Matters Collective, I have worked with holding these tensions between the specific/tangible and the complex/unknown, between the present and the future. This is fine in theory; it is difficult in practice.

It is particularly difficult for those building and funding major developments and large infrastructure projects. Too much uncertainty and nothing gets built.

We have to act in uncertainty. We have to build the homes and infrastructure for the coming decades. As I wrestle these issues with my clients, and as I teach futures and foresight to urban planners, I encourage them to pursue three approaches concurrently: be prepared for the probable; be flexible for the possible; be proactive for the preferable.

Drawing on the cone of the future, I help them to think about probable, possible and preferable futures. Once they begin to open their minds to multiple futures, they can chart a way forward.

Some futures are more certain and knowable: the probable. Ageing population; urbanisation in the developing world; digitisation; climate change. These should be part of design and build.

Some futures are highly uncertain and unknowable: the possible. Design and build for flexibility and adaptability. Favour modular. Allow for repurposing. Leave space for emergence.

Futures are always created, so let's make the ones we want: the preferable. Use our power and agency to create things that are beautiful, inclusive, and sustainable. Bring our values to what we build and how we build it.

In the end it is this care ethos that needs to be sustained throughout the design, plan and build stages. I try to work with companies and organisations that have values and take responsibility. I draw these out and give permission for them to be present. This too needs care from me in the hard world of business and the even harder world of

construction. They need permission to be architects, artisans, and gardeners of the future.

In my 15 minutes, I will draw on examples from companies, agencies and city administrations with whom I have worked. This will be a practitioner talk that draws on academic theory.

Power of Paradoxes - New Lens for Deconstructed Dives into Futures

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Keywords: paradoxes; futures provocation; foresight method; deconstruction; futures clinique

Paradox probing is presented in terms of its origin, contents, aims, and applications. It is a novel foresight method for futures provocation. This means stimulations for futures processes among different stakeholders around any research topics. Paradox probing provides a new lens for deconstructing paradoxes, revealing tensions that are prevalent inside paradoxes. After the paradoxes have been identified and a core set of paradoxes chosen, they can be deconstructed as a participatory process within a futures workshop or clinique. Paradoxes are seemingly illogical statements and contain tensions and oppositions. They are anchored in the present, but by deconstructing and probing, perspectives on the development of futures can be revealed. Our main theme and application case is futures of knowledge work. We propose paradox exploration to be applied and developed, especially as a hybrid method, as part of a future provocation. It can be combined, e.g. with the Causal Layered Analysis (CLA). Another combination is narratives – there the starting point is one paradox being dominant in scheming out a futures narrative for an actor. Accordingly, the actor then faces the challenges posed by the paradox but can find solutions to overcome them. This process requires deconstructing the paradox and finding successful pathways towards preferred futures through designing such futures based on collective intelligence. Such deconstruction of paradoxes will reveal quite different, even radical and rarely thought perspectives and directions for change. Consequently, paradox probing will yield design food for foresight thinking of participants from various backgrounds.

References

Heinonen, S. & Virmajoki, V. (2026). Futures of Work: Frame to Understand the Directions of Change. The Ethics Press. https://ethicspress.com/products/futures-of-work

Heinonen, S. (2026). Hybrid work requires new hybrid leadership skills in digital meanings society. Blog text in Perspectives by University of Turku. 15.1.2026. https://www.utu.fi/en/news/perspective/hybrid-work-requires-new-hybrid-leadership-skills-in-digital-meanings-society

Heinonen, S. Viitamäki, R. & Virmajoki, V. (2026). Why and How to Use Narratives for Stakeholder Engagements? Policy Brief. https://lnkd.in/d5hZ9cWy

Heinonen, S. & Viitamäki, R. (2025). Paradoksiluotaus uusi dekonstruoiva menetelmä tulevaisuudentutkimukseen. Futura 2/2025, 6-20. Tulevaisuuden tutkimuksen seura, Helsinki. (In Finnish)

Virmajoki, V., Heinonen, S., Viitamäki, R., Taylor, A. & Ruotsalainen, J. (2025). When we work. Delphi results on time and temporality within futures of work. Futures & Foresight Science, vol 7. https://doi.org/10.1002/ffo2.70020

Di Berardo, M,, Heinonen, S., Taylor, A., Viitamäki, R. & Virmajoki, V. (2025). Exploring Socio-Technical Futures of Work: A Narrative-Based Foresight Approach. Report of the Millennium Project Session at the Futures of Technologies Conference 2025. FFRC eBooks 4/2025.
https://urn.fi/URN:ISBN:978-952-249-628-7

Heinonen, S., Pättikangas, P., Viitamäki, R. & Taylor, A. (2025). Teasing paradoxes to explore transformative futures of peace. Journal of Futures Studies, Vol 29 Nro 4 June 2025.

Tamkang University, Taipei, Taiwan. https://jfsdigital.org/2025-2/vol-29-no-4-june-2025/teasing-paradoxes-to-explore-transformative-futures-of-peace/
Heinonen, S. & Viitamäki, R. (2025). Society, Skills and Spaces – Curated Conversations on Futures of Work with Foresight Experts. FFRC eBooks 1/2025. Finland Futures Research Centre, University of Turku. ISBN 978-952-249-623-2 (pdf), 978-952-249-624-9 (print). ISSN 1797-1322.
https://urn.fi/URN:ISBN:978-952-249-623-2
Heinonen, S. & Viitamäki, R. (2025). Society, Skills and Spaces – Curated Conversations on Futures of Work with Foresight Experts. FFRC eBooks 1/2025. Finland Futures Research Centre, University of Turku. ISBN 978-952-249-623-2 (pdf), 978-952-249-624-9 (print). ISSN 1797-1322.
https://urn.fi/URN:ISBN:978-952-249-623-2
Heinonen, S. (2024). How to Build Futures Consciousness and Resilience for Operational Foresight. In: Futures in Action. Strategic Anticipations and Deployments in Organizations Facing the Future edited by Carine Dartiguepeyrou et Michel Saloff-Cost. Innovation, Entrepreneurship, Management Series. Innovation and Technology Set. Vol 19. ISTE publications. WILEY.

Quantum Strategic Foresight. A Probabilistic Foundation for Futures Studies

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Keywords: strategic Foresight; quantum information theory; quantum Bayesianism; anticipatory systems; forecasting

Strategic Foresight has become a discipline of paramount relevance for agents and organizations navigating a complex and uncertain world. Futures studies provide models and tools for anticipating long-term developments by analysing present trends and signals of change. Despite its increasing adoption, the field faces criticism for its perceived lack of scientific rigor and the absence of unified theoretical foundations comparable to those that underpin mature scientific domains.

Several initiatives reflect growing recognition that the discipline of futures studies would benefit from stronger foundations. Notable among them is Roberto Poli et al.'s effort to develop a Discipline of Anticipation, building on Robert Rosen's pioneering work using Category Theory to establish mathematical foundations for "Anticipatory Systems." Also worth citing are recent works by Andrée C. Ehresmann on Memory Evolutive Systems, Patrick Corsi on C-K Theory, and Alberto Acuto on Causal Networks.

This contribution explores a seemingly unexplored terrain: Quantum Strategic Foresight (QSF) as a conceptual framework for Futures Studies. The success of modern science gave rise to the dominant idea that not knowing something about the future can always be traced back to not knowing something about the present — uncertainty exists only because of incomplete information. We wonder whether this "Newtonian" appeal to determinism is precisely what prevents us from understanding the future and advancing the development of futures studies.

QSF conceives the future as a superposition of multiple possible entangled states in continuous evolution. Rather than treating it as a predetermined trajectory waiting to be revealed, QSF models the future as a structured space of possibilities with varying likelihoods—the "wave function" of the future. Technological, socio-economic, and cultural trends and signals offer glimpses into this distribution of probabilities. Anticipation becomes the process of mapping and continuously updating probability weights across the landscape of potential outcomes. Crucially, the act of looking into the future is not passive observation but constitutes a "measurement" that influences how the wave function collapses—steering which potential futures materialize into present reality. QSF adopts a pragmatic approach. We do not claim that society is governed by quantum mechanics in a literal physical sense, nor that human thoughts and behavior result from quantum processes Instead, we propose Quantum-Like Modelling—employing Hilbert space representation, interference (violation of the formula of total probability), superposition, and non-commutativity of observables—as flexible mathematical resources for capturing non-classical dependencies in information processing and collective action. We adopt Quantum Bayesianism (QBism) as our reference interpretation model. Quantum states represent an agent's

information, expectations, and degrees of belief about possible measurement outcomes. To be a QBist—in the words of Christopher Fuchs—is to use quantum information theory to be a better "bettabilitarian" in this world we shape with our every action.

This proposal should be considered a humble suggestion to explore new terrain. By adopting Quantum Strategic Foresight as a conceptual foundation, we embrace both the suggestive image-metaphor of multiple entangled futures and their collapse into a single present, while using the quantum probabilistic framework as logical foundation. This dual approach—conceptual image and mathematical model—suggests new lines of research into how the future can be perceived and understood. Rather than playing with predetermined scenarios and trajectories, QSF positions strategic foresight as the art and science of navigating—and shaping—an inherently probabilistic universe.

QSF aligns itself with a perceived "Quantum Turn" in social sciences. In recent decades, researchers across disciplines increasingly recognize that many aspects of human cognition, collective behaviour, social and political dynamics, organizational management, economics and game theory resist adequate description within classical probability theory and logic. Phenomena such as order effects and context-dependence in decision-making, violations of the law of total probability in behavioural economics, non-commutative judgment formation in quantum cognition studies, and sudden social mobilizations challenge traditional analytical frameworks. Quantum-inspired approaches offer fresh perspectives: viewing society as an entangled system where structures exert "downward causation" while agents retain genuine choice, modelling organizations as complex adaptive systems exhibiting wave/particle duality between stability and agility, and reconceptualizing social systems as arenas where multiple scenarios exist in superposition until observation collapses them into specific outcomes. These developments suggest quantum-like formalism may provide the mathematical language for irreducible uncertainty, context-sensitivity, and emergence characterizing social futures.

QSF advocates for:

1. Ontological reframing: The future exists as a superposition of open, entangled possibilities. Individuals operate within an entangled social system where cognition itself can be modelled as a wave function describing probability distributions across potential futures.

2. Epistemological shift: Foresight as measurement. Strategic foresight constitutes an act of measurement. Questions and choices by strategic agents actively influence how the wave function collapses, co-creating which potential futures materialize. This participatory relationship recognizes that inquiry shapes outcomes, and that human judgments exhibit non-commutativity: question sequence matters.

3. Methodological evolution: QSF as Wave function engineering: Quantum-Like Modelling offers fresh perspectives for re-examining core foresight practices—horizon scanning, trend analysis, scenario planning, collective intelligence aggregation—through the lens of probability distributions, interference patterns, and superposition.

4. Strategic practice: The Bettabilitarian Agent. Strategic foresight becomes a "Hero's Handbook" for practitioners and activists who navigate uncertainty by making informed bets based on degrees of belief rather than seeking objective certainties. This includes maintaining strategic diversification (a Venture Capital mindset keeping multiple options in superposition), adopting Zero Distance approaches that integrate organizations with evolving environments, and embracing the fundamentally participatory nature of futures work.

References

Acuto, A. (2024). A Mathematical Formulation of Futures Studies. https://doi.org/10.13140/RG.2.2.24090.04809

Busemeyer, J. R., & Bruza, P. D. (2012). Quantum Models of Cognition and Decision. Cambridge University Press.Corsi, P. (2013). A formal approach for designing creative futures based on C-K theory. On the Horizon, 21(1), 54–68.

Ehresmann, A. C. (2013). A theoretical frame for future studies. On the Horizon, 21(1), 46–53

Fuchs, C. A., & Stacey, B. C. (2019). QBism: Quantum theory as a hero's handbook. Foundations of Quantum Theory, 197, 133.

Haven, E., & Khrennikov, A. I. (2013). Quantum Social Science. Cambridge University Press.

Khrennikov, A. (2026). Social laser theory: A quantum-like framework for collective social dynamics. Advances in Complex Systems, 2630001. https://doi.org/10.1142/S021952592630001X

Poli, R. (2010). The many aspects of anticipation. Foresight, 12(3), 7–17.

Sudbery, A. (2017). The logic of the future in quantum theory. Synthese, 194(11), 4429–4453. https://doi.org/10.1007/s11229-016-1142-9Wendt, A. (2015). Quantum Mind and Social Science: Unifying Physical and Social Ontology. Cambridge University Press. https://doi.org/10.1017/CBO9781316005163

Zohar, D. (2022). Zero distance: Management in the quantum age. Springer Nature. https://library.oapen.org/handle/20.500.12657/51913

Reclaiming Polarities: The Backbone of Transitional Futures

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Keywords: dialogical logics; complexity; other ways of knowing; transformational foresight

Much anticipatory work still relies on dualistic ways of knowing that narrow how planetary crises are understood and engaged. Modernity's epistemic architecture—linear, binary and technocratic—silences entire modes of time, relation and embodiment, thereby narrowing what can be imagined and who can participate. This presentation foregrounds a polarity-based epistemology as an ethical orientation for cultivating just futures, a shift with significant implications for anticipatory theory and practice.

Drawing on complexity-informed perspectives, I distinguish between dualisms (which separate and oppose) and polarities (complementary tensions generative of emergence). I argue that many "other ways of knowing"—embodied, intuitive, narrative, indigenous, relational—have been marginalised precisely because they represent the suppressed pole of modernity's dominant paradigm. Reviving these modes of knowing is therefore not simply a matter of inclusion, but an epistemological rebalancing that transforms how transitions can be felt, narrated and enacted. Methodologically, the presentation combines conceptual analysis with insights drawn from transition-oriented art practices.

I conclude that navigating planetary transitions requires practitioners capable of working with polarity—perceiving as complementary what dualistic epistemologies frame as paradox. In this view, transformational foresight becomes inseparable from inner development: the ability to work with polarity externally presupposes the capacity to hold it internally.

Resting on Hope: Shared Situated Autoethnographies of Hopeful Temporalities

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Keywords: situated hope; hopeful temporalities; collective autoethnography; third temporality; relational practice; affect and collaboration; temporal reworking; hope cultivation; situated futures; plural imaginaries

This contribution stems from a two-year collaborative practice initiated during the Anticipation 2024 Summer School. Four participants from different geographical and disciplinary contexts developed a shared digital "scrapbook" as a relational space to explore hope in times of uncertainty, a shared and plural autoethnography that traces the personal and collective meanings of hope in different everyday lives. The scrapbook emerged in response to the school's invitation to "seed hope" through anticipatory methods. Faced with the realization that hope is not universal but deeply situated and shaped by positionality, incorporating culture and lived experience. The group felt compelled to move away from predictive and generalizing framings of the future, rejecting the proposition that the summer school had put forward. Instead, we embraced a situated and relational approach, recognising that what hope means and how it is felt, depends on where and how one stands in the world.

From this departure, the scrapbook took form as a digital shared commons where the experience of hope could unfold through dialogue rather than definition. It became a living, plural and co-constructed artefact, resisting objectivity and inviting difference as a method of anticipation. Through its continued use, hope emerged both as an artefact and as a process a way to resist simplified, solution-oriented narratives within anticipatory design. The scrapbook functioned as a microcosm of relational anticipation, shaped by discontinuous engagement, fatigue, guilt, privilege and the search for self-care amid neoliberal and global crises. The four participants described returning to the space as a form of "resting on hope," a hopeful food for thought and a modest counter-space of affective nourishment. Beyond documenting moments in time, the scrapbook also deconstructs temporal experience itself. Each contribution once recorded and then revisited and reread in relation to others generates what we describe as a "third temporality": an emergent time arising from their entanglement, one that is neither past, nor present, nor projection of the future. This "third time" is oriented forward through the collective act of remembering and rewriting; it is a situated and temporal practice of hope, where cooperation and reflection dissolve linear chronology and produce new forms of anticipation. Grown over a two year period and still evolving, the project remains an open experiment, an approach that the authors consider both valuable and replicable in other contexts where the seeding of hope is needed. It also reminds us that such cultivation should never be seen as absolute or complete, but rather as a continuous, situated, relational and temporal process of becoming hopeful together.

This contribution aligns closely with the conference theme Caring Futures, as it treats hope as a situated, relational, and affective practice of care enacted through collaborative anticipatory methods.

To support this talk, we also propose a small “resting space installation”, whether physical or digital, through a QR code, a participatory setting where visitors can read excerpts from our collective scrapbook, take a moment to rest, and contribute their own hopeful thoughts, extending our digital artefact into a shared, situated physical space.

Rhythm-aware Anticipatory Governance: Towards Smoother Decision-making in Multi-rhythm Organizations

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Keywords: polyrhythm; anticipatory governance; temporal orientation; complexity; smooth decision-making

Introduction

Contemporary foresight often presupposes a chronopolitics of deadlines, roadmaps, and fixed tar-gets that may underestimate the polyrhythmic temporalities of system components of internation-ally operating organizations. Those often operate inside firm timeframes: quarterly plans, audit cy-cles, agile releases, shutdown-maintenance and shipping schedules, and regulatory deadlines. Lin-ear planning and point targets may force rigid synchronization across parts of organization and misrecognize the differing temporalities of system components as noise rather than an organizational characteristic that could be utilized to improve competitiveness as well as seamless operation – and cooperation – of the whole, and resilience in the long term.

At the same time, corporate organizations are increasingly challenged by complex systemic chang-es — for instance environmental, geopolitical, (geo)economic, and technological — which expose the limitations of (traditional) linear planning approaches. Such disruptions may intensify temporal tensions within organizations, revealing mismatches between short-term operational demands and long-term pathways.

Before embarking on my doctoral research, I worked for more than two decades at a large international corporation. My organization operated as part of a matrix structure and was located in several European countries. During my business career I have experienced temporal tensions in complex systemic circumstances and have also recognized the development potential of operational models, especially in turbulent times.

Proposition

An ongoing literature review on organizational transformation, disruption, and complex systemic changes as a background, this study regards international corporate organizations as polyrhythmic systems that operate across multiple, sometimes conflicting, temporal dimensions.

This paper proposes a preliminary design for a rhythm-aware approach to anticipatory governance. The essence of the approach is to recognize the plurality and relationality of time in organizations, and hence, prioritize smooth and flexible decision-making under temporal tension. Temporal orien-tation levels will be sketched, aiming at allowing organizations to align across sites (or functions) without requiring forced simultaneity. Also, a vector-oriented approach for decision-making will be considered. Here, an application derived from Cynefin Model is weighed as a potential lens for sense-making.

The result is planned to be a design that highlights varying pace and coherence across multiple temporal scales, enabling organizations and parts of organizations to act meaningfully under complexity and turbulence. This may also mean a new way of involving parts of the organization in decision-making.

The practical goal of this type of design is to reduce abrupt shifts and enable smooth translation of macro strategies into daily practices within local operational environments, in other words, anticipatory governance for polyrhythmic alignment.

How do “Temporalities in Tension” manifest in this research?

* Time is considered plural and relational: When observing the organization, the starting point is to recognize polyrhythms rather than collapse time into a single timeline of headquarters.

* Cross-scale configuration: Alignment and coordination of essential site/function cycles and corporate calendar rhythms take place via cadence awareness and temporal compacts.

* Utilization of polyrhythmic awareness to transform macro mindset into micro action.

* Navigating short-/long-term paradoxes: Use flexible objectives to smoothen decision-making; enhance near-term viability while advancing long-term commitments.

* Time–space relations: Treat location-specific rhythms as opportunities in anticipatory practices.

Contributions and implications

* Conceptual: The goal is to design a flexible approach to organizational objectives that prioritizes directional movement over static endpoints and promotes polyrhythmic coherence over strict synchronization. Anticipatory governance that emphasizes consistency through shared cadence plays a significant role.

* Methodological: Based on an ongoing literature review, a design paper of toolkit for anticipatory governance and smoother cross-site decision-making under complexity.

* Practical: Guidance for multilevel and multi-location organizations on how to make temporal tensions tangible and visible, leading to reduced strategy oscillation, steadier progress of the whole without sacrificing local strengths; and shared cadence enabling everyday partial capacities to move “in the right direction” in the long term.

Preliminary assumptions suggest that embracing temporal plurality may enable smoother translation of macro strategies into coherent micro-level actions. By making temporal tensions explicit, leaders could facilitate polyrhythmic alignment and reduce friction between time horizons. Distributed decision-making and local response cycles could also enhance resilience, while vector-oriented objectives might shift focus from static targets to continuous progress.

While the framework is still evolving, the ongoing study aims to equip leaders with actionable principles for sustaining momentum and coherence in temporal tensions amid systemic change. These hypotheses remain provisional and will be refined and validated through further data collection and analysis in subsequent phases of the research.

References

Duchek, S. (2020). Organizational resilience: A capability-based conceptualization. Business Research, 13(1), 215–246. https://doi.org/10.1007/s40685-019-0085-7

Fasoli, G., & Poli, R. (2024). Future Orienteering Evaluation Model: Forecasting, foresight and anticipation indices. European Journal of Futures Research, 12(1), 1–8. https://doi.org/10.1186/s40309-024-00242-4
Fuller, T. (2017). Anxious relationships: The unmarked futures for post-normal scenarios in anticipatory systems. Technological Forecasting and Social Change, 124, 41–50. https://doi.org/10.1016/j.techfore.2016.07.045
Fuller, T. (2019). Anticipation in Entrepreneurship. In Handbook of Anticipation (pp. 1539–1555). Springer, Cham. https://doi.org/10.1007/978-3-319-91554-8_109
Furlanetto, A. (2024). Anticipatory risk management: Steps forward. In R. Poli, Handbook of Futures Studies (pp. 280–294). Edward Elgar Publishing Limited. https://doi.org/10.4337/9781035301607.00027
Hernes, T., Blagoev, B., Kunisch, S., & Schultz, M. (2025). From Bouncing Back to Bouncing Forward: A Temporal Trajectory Model of Organizational Resilience. Academy of Management Review, 50(1), 72–92. (182135231). https://doi.org/10.5465/amr.2022.0406
Hernes, T., & Obstfeld, D. (2022). A Temporal Narrative View of Sensemaking. Organization Theory, 3(4). https://doi.org/10.1177/26317877221131585
Hillmann, J., Duchek, S., Meyr, J., & Guenther, E. (2018). Educating Future Managers for Developing Resilient Organizations: The Role of Scenario Planning. Journal of Management Education, 42(4), 461–495. https://doi.org/10.1177/1052562918766350
Kaivo-oja, J. R. L., & Lauraeus, I. T. (2018). The VUCA approach as a solution concept to corporate foresight challenges and global technological disruption. Foresight, 20(1), 27–49. https://doi.org/10.1108/FS-06-2017-0022
Krishnan, A. (2024). Foresight and anticipation in multilateral organisations. In R. Poli, Handbook of Futures Studies (pp. 404–415). Edward Elgar Publishing Limited. https://doi.org/10.4337/9781035301607.00035
Meadows, D. H. (2008). Thinking in systems: A primer. Chelsea Green Publishing.
Snowden, D. (2024). As through a glass darkly: A complex systems approach to futures. In Handbook of Futures Studies (pp. 48–65). Edward Elgar Publishing. https://doi.org/10.4337/9781035301607.00011
Snowden, D., & Rancati, A. (2021). Managing complexity (and chaos) in times of crisis. A field guide for decision makers inspired by the Cynefin framework. JRC Publications Repository. https://doi.org/10.2760/353
Tibbs, H. B. C. (2019). Future Anticipatory Practices. In Handbook of Anticipation (pp. 1049–1070). Springer, Cham. https://doi.org/10.1007/978-3-319-91554-8_79

Stalled Futures at Work: Anticipation and Temporal Tension in Organising Emerging Technologies

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Keywords: Automated futures; Digital technography; Sociology of expectations; Temporal organisation; Futures ethnography

Across contemporary organisations, futures increasingly operate not as distant horizons, but as active forces shaping how work is organised, justified, and lived in the present. Under conditions of uncertainty, anticipation becomes a dominant mode of coordination (Adams et al. 2009), orienting action towards futures that are continuously invoked yet rarely stabilised. This paper develops a sociological analysis of anticipation as an organisational form by examining how automation and emerging digital technologies are taken up in everyday work, not through decisive transformation, but through extended periods of preparation, adjustment, and provisional stabilisation. Rather than resolving uncertainty, anticipation comes to organise it, producing persistent temporal tensions between readiness and arrival, urgency and deferral.

The paper draws on long-term ethnographically oriented research in two empirically distinct domains: automated welfare administration in Swedish municipalities and generative AI in the digital and creative industries. Methodologically, the work is grounded in digital technography (Berg 2022b), an approach designed to interrogate emerging digital technologies and their futures through sustained empirical engagement, and in an ethnography of imaginaries and futures (Fors et al. 2019). These domains differ sharply in institutional form, tempo, and professional culture. Their juxtaposition is not intended to demonstrate simple generalisability, but to analytically isolate anticipation as a temporal organising logic that cuts across contrasting regimes of work. In both settings, emerging technologies are accompanied by powerful imaginaries of future necessity, efficiency, and transformation (Fors et al. 2024), yet these futures rarely arrive in stable or completed form. Instead, they remain perpetually imminent. The future is invoked, mobilised, and acted upon, but continually deferred. Anticipation itself becomes a form of work.

The analysis is conceptually anchored in the forthcoming book Stalled: How Automated Welfare Futures Are Organised -- and Get Stuck (Berg, forthcoming). Welfare automation is treated not primarily as an institutional case but as a critical site for theorising anticipation under conditions shaped by public accountability, normative expectations, and inherited organisational infrastructures. The contrasting empirical setting of digital and creative work allows the same temporal dynamics to be traced under markedly different conditions of labour, building on prior ethnographic work examining how organisations experience and anticipate automation as an everyday phenomenon (Pink et al. 2022; Berg & Pink 2026). Across both domains, anticipation operates less as a bridge towards a defined endpoint than as a persistent condition shaping how work is coordinated, justified, and lived.

Engaging directly with the conference theme Temporalities in Tension, the paper argues that anticipation does not reconcile conflicts between short- and long-term horizons, but actively sustains them. Automation and AI are repeatedly framed as long-term solutions to structural challenges, such as demographic pressure in welfare provision or competitive innovation in creative industries.At the same time,

organisations must continue to operate in the present, maintaining service delivery, productivity, and professional legitimacy. Anticipation is expected to translate macro-scale futures into local, everyday action. Empirically, however, it often produces a condition in which action is continuous, yet arrival is indefinitely postponed. To conceptualise this condition, the paper introduces the notion of stalled futures. Stalling does not imply failure, resistance, or slowness. Rather, it describes a temporal configuration characterised by movement without arrival -- one in which the sociology of expectations (Borup et al. 2006) helps illuminate how promissory futures are sustained even as they recede.
Organisations continue to invest, adapt, and experiment, yet what they primarily produce is further preparation. The future becomes actionable precisely because it is never fully realised. In welfare automation, this dynamic appears in repeated pilots and temporary solutions that harden into permanent arrangements (Berg 2022a; Lehtiniemi & Tarkkala 2025). In digital and creative work, it appears in parallel workflows and ongoing recalibration, including the reconfiguration of professional identity that accompanies generative AI (Berg 2025).

The paper mobilises a set of mid-level sociological concepts forming the conceptual backbone of the book. Automation journeys describe how futures are structured as ongoing processes rather than endpoints, orienting organisational time around readiness rather than completion. Click-level bureaucracy captures how work is reorganised in anticipation of imagined technological demands, as tasks are standardised, fragmented, and rendered legible to systems not yet in their final form. Duct-tape solutionism describes the patching, workarounds, and provisional fixes that sustain emerging technologies when visions of transformation collide with infrastructural, legal, or practical constraints. By positioning anticipation as an organisational condition rather than a representational or design problem, the paper contributes to engaged futures scholarship in a specific sense. Engagement here lies in sustained empirical attention to how futures are lived with, negotiated, and carried through everyday work. Rather than intervening by proposing alternative futures, the analysis engages with actors who must continuously adapt to futures that remain unresolved, tracing how anticipation becomes embedded in routines, responsibilities, and temporal discipline.

The analysis also speaks to broader questions of time and scale in anticipatory practice. Macro-scale narratives about welfare sustainability, innovation, or AI-driven transformation are translated into local, everyday actions that rarely align neatly with those visions. Temporalities multiply rather than converge. Short-term improvisation, medium-term optimisation and long-term imaginaries coexist in uneasy relation, sustained by digital technologies whose updatability and version cycles ensure that the prospect of completion is continually deferred. Certain forms of time, such as readiness and acceleration, are foregrounded, while others, such as consolidation, care, or reflection, are postponed or marginalised. The paper concludes by advancing the idea of a forward-looking sociology (Halford & Southerton 2023): an analytical stance that takes the not-yet-existent seriously, not to forecast or prescribe futures, but to understand how they are constructed, inhabited, and negotiated in practice. By examining how futures become stalled yet operational across different domains of work, the paper advances a sociological vocabulary for analysing anticipation as an everyday organisational condition under uncertainty, indeterminacy and unknowing.

References

Adams, V., Murphy, M., & Clarke, A. E. (2009). Anticipation: Technoscience, life, affect, temporality. Subjectivity, 28(1), 246--265. https://doi.org/10.1057/sub.2009.18

Berg, M. (2022a). Hate it? Automate it! Thinking and doing robotic process automation and beyond. In S. Pink, M. Berg, D. Lupton, & M. Ruckenstein (Eds.), Everyday automation: Experiencing and anticipating emerging technologies (pp. 157--170). Routledge. https://doi.org/10.4324/9781003170884

Berg, M. (2022b). Digital technography: A methodology for interrogating emerging digital technologies and their futures. Qualitative Inquiry, 28(7), 827--836. https://doi.org/10.1177/10778004221096851

Berg, M. (2025). From Mead to machine: Conversational choreographies with ChatGPT and the emergence of the socio-technical self in generative AI. Studies in Symbolic Interaction, 61, 27--72. https://doi.org/10.1108/S0163-239620250000061003

Berg, M. (forthcoming). Stalled: How automated welfare futures are organised -- and get stuck. Bristol University Press.

Berg, M., & Pink, S. (2026). Speculating with machines: Generative AI in futures ethnography. Qualitative Inquiry. Advance online publication. https://doi.org/10.1177/10778004261434468

Borup, M., Brown, N., Konrad, K., & Van Lente, H. (2006). The sociology of expectations in science and technology. Technology Analysis & Strategic Management, 18(3--4), 285--298. https://doi.org/10.1080/09537320600777002

Fors, V., Berg, M., & Brodersen, M. (Eds.). (2024). The De Gruyter handbook of automated futures: Imaginaries, interactions and impact. De Gruyter. https://doi.org/10.1515/9783110792256-001

Fors, V., Pink, S., Berg, M., & O'Dell, T. (2019). Imagining personal data: Experiences of self-tracking. Routledge. https://doi.org/10.4324/9781003085676

Halford, S., & Southerton, D. (2023). What future for the sociology of futures? Visions, concepts and methods. Sociology, 57(2), 263--278. https://doi.org/10.1177/00380385231157586

Lehtiniemi, T., & Tarkkala, H. (2025). Repairing (with) algorithmic systems. Science & Technology Studies, 38(4), 2--12. https://doi.org/10.23987/sts.177039

Pink, S., Berg, M., Lupton, D., & Ruckenstein, M. (Eds.). (2022). Everyday automation: Experiencing and anticipating emerging technologies. Routledge. https://doi.org/10.4324/9781003170884

Tempoiesis: Crafting temporalities of becoming in the ruins of the present, for futures yet to come

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Keywords: time; temporalities; futures; anticipation; chronopolitics

I was drawn to a deepened inquiry into transformation by a growing gap between my professional practice as futurist and the increasing social and political turbulence and ecological devastation in the world. In the course of my research, my framing has changed. Rather than adapt internally in response to accelerating change and unpredictability, I started to question how individuals and organizations, with our habituated ways of knowing and being, contribute to the problems in the first place. Critique, interlaced with creative anticipation, aspires to imagine the conditions of possibility for transformation and the emergence of genuine novelty. Or as Indian writer Arundhati Roy once remarked, “another world is not only possible, she is on her way. On a quiet day, I can hear her breathing.” (“Confronting Empire,” January 27, 2003). How to slow down, hear her breathing, and help usher her in – rather than stifle her breath by busily doing more of the same?

Epistemological and ontological positions

Ontologically, I ground my work in the crannies between process philosophy and poststructuralism, brought to the present day by critical posthumanist scholars such as Rosi Braidotti and feminist new materialists Karen Barad, Elizabeth Grosz, Donna Harraway, in alliance with the work of Bayo Akomolafe, Erin Manning, William E. Connolly, political ecologist Martin Savransky, process philosopher Alfred North Whitehead, and woman-of-colour feminist scholar Gloria Anzaldua. Broader alliances of kinship-in-difference, as in the image of Edouard Glissant’s ‘archipelago’ is where my ethico-onto-epistemological allegiances lie. Time is an important concept in my work for both for self and world – especially for a self between worlds. I engage with the question of time by problematizing the chrononormativity of linear time and the synchronized clock-time of modernity’s progress. Interlacing human and more-than-human temporalities suggest an irreducible uncertainty and indeterminacy of the future which overflows purely human categories and monocultural predeterminations in an ongoing, unfinished pluriverse. In a world of twists and turns that habitually challenges us and upsets our expectations, perhaps we are called to grow “sea-legs” (in the words of Cynthia Bourgeault, referring to Peter Kingsley’s quote: “Metis to know when to stand back, and when to interact strategically with the chaos. Sometimes you withdraw, and sometimes you act – and when you act, you act with the right force and the right timing. It’s a skill that can only be learnt in the present. Drawing not on external templates of what you think but on the information that’s there, right in the now.”). The “when of knowing” (Petranker) and acting in an anticipatory, ‘thick’ present is what I think of as ‘metic knowing’.

Methods and field work

Arts-based research methods are compelling for me because I long to bring my whole, embodied, self into the inquiry – and I know the joy and wisdom of working with my hands, or what Ursula K. Le Guin calls “hand mind” (Always Coming Home). Wet-felting felt particularly suitable to my inquiry question, because the process begins with cumulative layering of a project (e.g., a tapestry), then moves to the detailed work of painting or sculpting the top layer with wool, silk, and other fibers – and then proceeds to introduce ‘turbulence’ into the system with soapy water and physical pressure, resulting in unexpected and irreversible transformations. The final result cannot be predicted in advance because it emerges in the interactions between layers, fibers, pressure, water and soap – not unlike many of the processes in complex living systems. It also mirrors, in my understanding, the developmental arc from conventional to post-conventional stages (Torbert, 2004, Action Inquiry: The Secret of Timely and Transforming Leadership), passing through a period of deep turbulence.

The Three Horizons model similarly highlights a period of indeterminacy in temporal Horizon 2, between a receding Horizon 1 and a still obscure Horizon 3. Edouard Glissant’s ‘archipelago’ vision imagines historical change as “a comingling and fecund process, a fertilizing combination of the living and the dead. History as we encounter it […] is shot through with multiple temporalities.” Mentz uses the term ‘composture’ where an “accumulated layering of exchange and entanglement replaces the baton passing of historical epochs. The history of composture is a history of oceanic fluidity rather than terrestrial separation.” (Mentz, 2015, Shipwreck Modernity).

This is how I have come to think about change in our time between worlds, through cycles of wet-felting in which emergent novelty – new, experimental ways of thinking, feeling, sensing, perceiving, articulating, styling, and communicating – are generated. My chosen method of first-person arts-based inquiry, a/r/tography, allows me to work in the interstices between art, research, multiple temporalities, and writing (which I sometimes refer to as ‘autofeltnography’).

A/r/tography helps me re-imagine transformation between the no-longer and the not-yet in the ‘thick present’ (Poli, 2017, Introduction to Anticipation Studies) as facilitator of experimental, living, processes of knowing and becoming for futures otherwise, without guarantees. My hope in wet-felting and group encounters is to stay attuned to what has been called an ‘eventful sensibility’ to temporality, “a time marked by the unexpected eruptions of the (im)possible, of social, political, economic, philosophical and ecological events that cannot be anticipated and open up possible futures that cannot be managed in advance’” (Savransky et al., in Priyadharshini, 2021, Pedagogies for the Post-Anthropocene, p. 22).

Implications

This ‘eventful sensibility’ to the slipstream of time’s eruptions is in itself a relational and mutational process, a ‘making-with’ time and a time-in-the-making I call ‘tempoiesis’ – a generative, riverine temporality that opens up the present to futures otherwise where self and world meet to transform and temporalize each other for their mutual becoming rather than spatialize time to freeze-dry life into chrononormative categories and algorithmic logics.

Time as a Field, Not a Line: Expanding Anticipatory Practice Through Plural Temporal Heuristics

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Keywords: anticipatory practice; plural temporalities; hermeneutic method; decolonising anticipation; practice-based futures research; work-in-progress

This paper offers a conceptual–hermeneutic contribution to futures studies by examining how implicit assumptions about linear time shape anticipatory practice. Drawing on Riel Miller's formulation of Futures Literacy as the capacity to recognize and use multiple futures in the present (Miller, 2018), the paper explores how engaging with non-linear temporal sensibilities can function as a futures literacy exercise, expanding how anticipation is sensed and enacted.

The analysis stages a hermeneutic encounter between two temporal heuristics: Rumi's reflections on the present as a site of immediacy and transformation (Chittick, 2007; Lewisohn, 2020), and the Quechua conception of pacha as relational space-time characterized by cycles, reversals, and reciprocity (Arnold & Yapita, 2006). These traditions are not treated as alternative ontologies of time, but as interpretive lenses that make visible the often-unexamined linearity embedded in dominant anticipatory frameworks.

The paper situates this inquiry within the anthropological perspective on plural and entangled temporalities (Bryant and Knight, 2019; Webb, 2012), alongside decolonial critiques that question the universality of Western progress narratives in anticipatory practice (Inayatullah, 2015; Feukeu, 2021). Recent methodological and decolonial developments in futures research underscore the importance of working with multiple temporalities. Terry et al. introduce the Entangled Time Tree as a heuristic for engaging with diverse pasts, overlapping presents, and intersecting futures, emphasizing the role of storytelling in processes of diversification, repair, and collective sense-making (Terry et al., 2024; Stockholm Resilience Centre, 2024). From a complementary perspective, Ewa Kwamou Feukeu argues that decolonising anticipation requires reconfiguring anticipatory systems themselves, including who participates in imagining futures, which temporal frameworks are legitimized, and how collective intelligence is structured (Kwamou Feukeu, 2021; IDRC, 2024). Together, these contributions align with Futures Literacy's focus on expanding uses-of-the-future beyond prediction and control toward sense-making, exploration, and emergence (Miller & Sandford, 2019).

This paper reports on an ongoing series of exploratory workshops (altogether 4-6 of them till May 2026) testing a hermeneutic method for expanding futures literacy through plural temporal heuristics. Advancing through practice, the workshops bring distinct temporal sensibilities into dialogue, with the encounter itself functioning as a futures literacy method that reshapes how participants articulate uncertainty, imagine alternatives, and relate present action to future possibility. As an interim report, the paper reflects on early workshop observations—including shifts in temporal framing, moments of resistance, and methodological challenges—and identifies conditions under which hermeneutic encounter appears to support futures literacy as a basis for further empirical study.

This paper supports the Anticipation conference aims not only by demonstrating how a hermeneutic encounter between Rumi and Quechua pacha resists closure, and how it challenges dominant foresight logics. At the same time, it offers a transdisciplinary approach that reorients anticipation from prediction toward participation, cultivating hope and care through regenerative imagination and entangled time.

Time Will Tell: Weaving pasts, presents and futures for socio-ecological change through remembering

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Keywords: participatory design; memory; temporalities; future-making; socio-ecological transformation

Current socio-ecological challenges such as climate change require new participatory Current socio-ecological challenges such as climate change require new participatory design approaches which challenge linear understanding of and relationships with time and embrace more fluid, emergent and dynamic temporalities able to understand, encounter and embrace change as contingent and non-linear. As suggested by Head (2016), the current age of the Anthropocene has particularly exposed the limitations of linear time: the future has stopped being a place for growth and progress and the past is not somewhere we can go back to. Here, weaving of pasts, presents and futures can unveil a more complex understanding of short- and long-term actions and their consequences, opening-up new, collective imaginative processes which can contribute to ecological and social transformation (Head, 2016).

The field of Participatory Design has traditionally focused on developing tools and approaches for collective and collaborative present- and future-making. However, recent explorations have started to trouble linear temporalities by engaging with pasts as a resource in transformation processes which engage with people's everyday life to co-create more viable futures (Huybrechts and Hendriks, 2016; Zuljevic and Huybrechts, 2021; Light, 2021; Kambunga et al., 2024). We build on and contribute to this more dynamic approach to temporalities by exploring how memory – within participatory design – can become a potentially transformative resource, not something of the past, but a tool to be activated in the present towards alternative, more ecologically and socially just futures (Garde-Hansen et al. 2017).

Starting from this perspective in the paper we present and discuss "Time Will Tell", a participatory design approach which engages with remembering as a transformational practice for socio-ecological change. The approach has been developed over the years by researchers at the Hasselt University working in the context of participatory spatial transformation processes and adapted by researchers of the Free University of Bozen-Bolzano to eco-social design projects in the educational environment. The approach makes use of illustrated, interactive timelines as tangible tools for remembering transformation processes together with heterogeneous actors, from citizens to policy-makers, from NGOs to companies, from design students to artists and beyond. This technique of mapping collective temporalities supports the emergence and visualisation of the "turning points" – positive and challenging – and the "actions" which have characterised transformation processes from a multi-stakeholder perspective. This does not only bring a more layered, complex and heterogenous understanding of transformation, but it becomes itself a transformative practice in which past experiences are remembered and reactivated in the present to make space for situated and critical imaginations of the future.

With the ambition to propose remembering as a critical anticipatory practice able to weave together pasts, presents and futures to imagine and activate eco-social change, we present, reflect on and compare three case studies of participatory design projects in which the “Time Will Tell” approach was applied to participatory future-making in the past ten years (since its first version discussed in Huybrechts & Hendriks, 2016 and later further refined in Huybrechts et al, 2019). The first case study presents the “Wonen Werken Recreëren Rupel 2030”. The Rupel region, located in Belgium, in the south of Antwerp, once site of extensive brick industry thanks to its particular clay soils, is today characterised by a combination between green, recreational areas (some of which affected by soil pollution and characterised by current processes of soil remediation), residential areas and companies (e.g. in the field of technology and entertainment).

In the project, the “Time Will Tell” approach was used to remember together with company owners, park directors and civil servants how the relationship between living, working and recreational activities developed over time and re-activate these memories to imagine a more sustainable relationship between these three activities in the region. The second case study discusses the project “Art in Socio-environmental Transitions”, a research project funded by “Kunst in Opdracht” platform of the Flemish government which supports the development of art projects in the region with an eye on socio-ecological transition. The project researched the role that art can play in raising awareness of the relationships between people and their built and natural environments by looking back at how they interrelated through time (Huybrechts & Mertens, 2024). In the research, “Time Will Tell” involved heterogenous actors (e.g. governmental agencies and organisations, artists and mediators) in remembering past artistic projects and processes for socio-ecological transitions towards re-imagining more impactful future practices and supportive governmental facilitation. The third and last case study reflects on the Erasmus+ Co-funded project “Change Agents”. The research project explored how to set up infrastructures for inter-institutional collaboration between NGOs and Eco-social Design Courses with the intention to support the development and spreading of transformational design pedagogical approaches and practices able to train designers contributing to the real needs of communities. In the project, “Time Will Tell” was used to remember with professors, students, NGO operators and local communities their subjective experiences of collaboration as part of the educational format called Project 1 of the Master of Eco-Social Design of the Free University of Bolzano. In Project 1 the motioned actors collaborate to develop situated projects for eco-social transformation in the city of Bolzano. The collaborative mapping of temporalities made space for critical imagination on future collaborations between academia and the third sector in eco-social design projects.

Altogether the case studies provide a rich knowledge base which will be analysed to propose how remembering through the “Time Will Tell” approach can facilitate collective imaginations which engage with futures not as empty but as open spaces (Maze, 2016) which in order to be critically imagined need to be able to weave together pasts, presents and futures. With this cross-case analysis it is our intention to contribute to discourses on anticipation with both conceptual and practical tools which can be used by designers, researchers and others to embrace those more dynamic, horizontal connections between pasts, presents and futures which are necessary to imagine and activate much needed eco-social change.

References

Garde-Hansen, J., McEwen, L., Holmes, A., and J., Owain (2017). Sustainable Flood Memory: Remembering as Resilience, Memory Studies 10, no. 4 (2017): 384–405.

Head, L. (2016). Hope and Grief in the Anthropocene: Re-conceptualising human-nature relations. Oxon and New York: Routledge.

Huybrechts, L., and Hendriks, N. (2016). Counterfactual scripting: acknowledging the past as a resource for PD. In Proceedings of the 14th Participatory Design Conference: Full papers - Volume 1 (PDC '16). Association for Computing Machinery, New York, NY, USA, 111–120.

Huybrechts, L., & Mertens, L. (2024). The art of mediating between people and the environment—The role of commissioned art in socio-ecological transitions. Department of Youth, Culture and Media.

Huybrechts, L., Pennincx, I., De Mulder, S., Zaman, J., Tack, B., & Giaretta, F. (2019). Transition requires collaborative work. Discovering and defining actions that support supermixed cities. In Planning for Transition – AESOP book of proceedings 31; 2.

Kambunga, A. P., Smith, R. C., & Winschiers-Theophilus, H. (2024). Extending temporalities in design: designing pluriversal futures. CoDesign, 20(1), 36–54.

Light, A. (2021). Collaborative speculation: Anticipation, inclusion and designing counterfactual futures for appropriation. Futures, 134.

Maze, R. (2016). Politics of Designing visions of the Future. Journal of Future Studies 23(3): 23-38.

Zuljevic, M., and Huybrechts, L. (2021). Historicising design space: Uses of the past in participatory prefiguring of spatial development. Design Studies, 73.

Transcendental Futures and Expanding the Futures of Humanity: The Case for a New Subdiscipline

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Keywords: transcendental Futures; intergenerational responsibility; temporalities; long-term stewardship; more-than-human futures; anticipatory governance

Humanity faces an intensifying convergence of global challenges, increasing the complexity of anticipation work. Research addressing the long-term futures of humanity has expanded significantly in recent decades, including scholarship on human extinction, global catastrophic risks, societal collapse, and obligations to future generations. Yet this emerging body of work remains conceptually fragmented across disciplines and lacks a coherent home within futures studies. Building on our recent Futures article (Tonn & Hill, 2025), this paper proposes Transcendental Futures as a new subdiscipline intended to consolidate and advance this growing domain of inquiry.

Transcendental Futures extends pragmatic foresight by introducing a deeper enquiry into values, moral purpose, and intergenerational ethics, situating anticipation within broader questions of responsibility across time. The term transcendental, derived from the Latin transcendere ("to go beyond"), signals a move beyond narrow progress narratives toward foresight grounded in long-term stewardship and ethical responsibility. Rather than focusing primarily on near and mid-term decision support, this perspective engages with deeper temporal horizons where prediction is limited but moral responsibility remains essential.

The paper outlines several core characteristics of Transcendental Futures. These include an expanded sense of self across space and time, recognition of humanity's embeddedness within ecological systems, collective wisdom, and affective capacities such as empathy, humility, and awe that support long-term responsibility. Together these qualities represent the capacities required for a broader civilisational transformation understood as the expansion of moral awareness necessary to sustain life on Earth and uphold obligations to future generations.

A key distinction concerns applied futures, a term used in our work to describe practical foresight methods such as forecasting, trend analysis, horizon scanning, strategic foresight, and scenario development that support near and mid-term decision making. While these approaches remain essential, they are not necessarily designed to address millennial scale risks, intergenerational obligations, or the deeper ethical questions raised by catastrophic and existential threats. Transcendental Futures therefore complements applied futures by providing the ethical and temporal grounding required to engage humanity's long term responsibilities.

Central to this perspective is the concept of perpetual obligation, referring to the ongoing responsibilities that present generations hold toward future generations, including preventing human extinction and safeguarding the conditions necessary for sustainable societies and life on Earth. This perspective treats time as an ethical continuum, recognising that responsibility extends across generations, and aligns with Indigenous and ecological understandings of temporality. The concept of the journey,

drawing on Jung and Campbell, provides a useful framework for understanding how such responsibilities evolve across generations.

By reframing anticipation as care for the continuity of life across generations and species, Transcendental Futures contributes directly to the conference themes of temporalities, governance, caring futures, futures literacy, and design. The paper concludes by outlining a research agenda for the subdiscipline that explores the moral foundations of intergenerational responsibility, the institutional conditions required for long-term stewardship, and the capacities needed for societies to navigate deep existential uncertainty. Together, these questions outline a programme of inquiry for guiding long term stewardship across intergenerational and planetary scales.

References

Alemanno, A. (2023). Protecting future People's future: how to operationalise present People's unfulfilled promises to future generations. European Journal of Risk Regulation, 14(4), 641–655. https://doi.org/10.1017/err.2023.86

Avin, S., Wintle, B. C., Weitzdörfer, J., Ó hÉigeartaigh, S. S., Sutherland, W. J., & Rees, M. J. (2018). Classifying global catastrophic risks. Futures, 102(1), 20–26. https://doi.org/10.1016/j.futures.2018.02.001

Baum, S. D. (2024). Climate change, uncertainty, and global catastrophic risk. Futures, 162. https://doi.org/10.1016/j.futures.2024.103432

Bell, W. (1993). Why should we care about future generations. In H. Didsbury (Ed.), The Years Ahead: Perils, Problems, and Promises (pp. 25–41). World Future Society.

Bostrom, N. (2002). Existential risks: analyzing human extinction scenarios and related hazards. Journal of Evolution and Technology, 9(1).

Brozović, D. (2023). Societal collapse: a literature review. Futures, 145, Article 103075. https://doi.org/10.1016/j.futures.2022.103075

Fritz, M., Koch, M., Johansson, H., & Emilsson, K. (2025). What have future generations ever done for us? Future expectations and present dispositions for social-ecological transformations. Futures, 169. https://doi.org/10.1016/j.futures.2025.103593

Miller, R. (2018). Transforming the future: Anticipation in the 21st century. Routledge.

Ord, T. (2020). The precipice: existential risk and the future of humanity. Hachette Books.

Partridge, E. (1980). Responsibilities to future generations: environmental ethics. Prometheus Books.

Sanklecha, P. (2017). Our obligations to future generations: the limits of intergenerational justice and the necessity of the ethics of metaphysics. Canadian Journal of Philosophy, 47(2–3), 229–245. https://doi.org/10.1080/00455091.2017.1282275

Slaughter, R. A. (1994). Why we should care for future generations now. Futures, 26(10), 1077–1085. https://doi.org/10.1016/0016-3287(94)90074-4

Tonn, B. E., & Hill, C. J. (2025). Capturing the expanding research areas of the future of humanity within the field of futures studies: The case for a transcendental futures subdiscipline. Futures, 174, 103692.

Tonn, B. E., & Stiefel, D. (2014). Human extinction risk and uncertainty: assessing conditions for action. Futures, 63, 134–144. https://doi.org/10.1016/j.futures.2014.07.001

Transformation, change, anticipation: a semiotic and strategic approach

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Keywords: transformation; semiotics; scenarios; rhythm; strategy

We understand anticipation -whether it develops narratively in a utopian or uchronic direction-as a semantic field of change: a concept that, in this contribution, is interpreted in its aspectual dimension, as the endpoint of a process of transformation that manages the relationship between two states of existence. From this perspective, the logical articulation of anticipatory scenarios emerges, and it's conceived as mapping of alternative hypotheses that oppose possibilities and resistances, focusing on the exploration of the pathemic, as well as cognitive and pragmatic, dimensions of anticipatory thinking as a strategic tool.

The presentation will be particularly related to Section 4 of the Congress,

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References

G.Ceriani, Hot spot e sfere di cristallo. Semiotica della tendenza e ricerca strategica, Franco Angeli, Milano, 2007

A.J.Greimas, De l'imperfection, Pierre Fanlac, Périgueux, 1987

A.J.Greimas, J. Courtés, Sémiotique. Dictionnaire raisonné de la théorie du langage, Hachette, Paris, 1969 e 1986

F.Jullien, Les transformations silencieuses, Grasset, Paris, 2009 (tr.it. Le trasformazioni silenziose, Raffaello Cortina Editore, Milano, 2010 E.

Landowski, Les interactions risquées, PULIM, Limoges, 1995 (tr.it. Rischiare nelle interazioni, Franco Angeli, Milano, 2010)

Working through the Quantum Ecology: Operationalizing Uncertainty and Entanglement in/for Urban Data Design

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Keywords: quantum ecology; uncertainty; entanglement; design; city; digital twin; education

In their book, Calzati and de Kerckhove (2024) discuss the "quantum ecology" as both an onto-epistemological framework that can help us navigate today's critical and polarized sociocultural and geopolitical landscape, and an emerging technological paradigm pivoting around quantum information technologies.

At the core of the quantum ecology as an onto-epistemological framework are two key tenets derived from quantum physics: uncertainty and entanglement. Taking the lead from Easterling's (2021) ideas that "it is the architecture of interplay and entanglement that is the real innovation", and that "design is indeterminate in order to be practical [italics in original]", in this talk I build upon Calzati and de Kerckhove's quantum ecology to explore what it means to think, design, and govern data-driven urban spaces with/through entanglement and uncertainty.

I will specifically develop two complementary lines. On the one hand, I will discuss what happens when computation is systemically applied to the city through digital twin technologies (Fuller et al., 2020). Whenever this happens through the modelling of city digital twins (CDTs), at stake are issues of both design and governance (Kitchin et al., 2021); after all, digital data generate only one possible world-sensing among others, as Calzati and de Kerckhove (2024) stress. Hence, instead of CDTs, we shall better think in terms of "urban digital twinning" (Calzati & van Loenen, 2023), stressing the procedural nature of the design practice at stake in the digitalization of the urban space, and moving beyond a risk mitigation approach to cities' problems to rather understand the urban digital twinning as a context-based, iterative, and open-ended collective endeavor (Sennett, 2018).

On the other hand, I will discuss how the tenets of uncertainty and entanglement can inform the teaching of courses that aim to investigate the ethical tensions embedded in the digitalization process of urban spaces. Notably, I will discuss the results of a course titled "Ethics for the data-driven city", which was purposedly designed and taught (by myself and a colleague) as part of the Geomatics master program at Delft University of Technology. Starting from the idea that data technologies are always good and bad at once, insofar as they produce, at all times, value-laden entanglements and un/intended consequences that cannot be predetermined or taken apart, we developed a "problem-opening" approach (Calzati & Ploeger, 2024) to help students recognize and problematize the irreducibility of all ethical stances (Mittelstadt, 2019) and the contingency of all technological "solutions" (Stahl, 2022), especially when these are situated in the city as a complex system that resists computation. This is an inherent transdisciplinary standpoint (Nicolescu, 2005) which cuts across epistemological boundaries, resists any privilege point of reference, and configures an ongoing multidimensional analysis. Overall, the course compels students to think critically about (the definition of) problems, by shifting the ground on which engineering problem-solving usually rests, and to materialize such critical shift into their final assignments,

conceived in the form of digital or physical artefacts that expose the identified ethical tensions beyond axiomatic “good” vs “bad” design.

References

Calzati, S. & de Kerckhove, D. (2024). Quantum Ecology: Why and How New Information Technologies Will Reshape Societies. MIT Press.

Calzati, S., & Ploeger, H. (2024). Problem-solving? No, problem-opening! A method to reframe and teach data ethics as a transdisciplinary endeavour. Big Data & Society, 11(3). https://doi.org/10.1177/20539517241270687

Calzati, S. & van Loenen, B. (2023). Towards a citizen- and citizenry-centric digitalization of the urban environment: urban digital twinning as commoning. Digital Society, 2(38). https://doi.org/10.1007/s44206-023-00064-0

Easterling, K. (2021). Medium design. Knowing how to work on the world. London: Verso

Fuller, A., et al. (2020). Digital twin: Enabling technologies, challenges and open research. IEEE Access, 8, 108952–108971.

Kitchin, R., Young, G., & Dawkins, O. (2021). Planning and 3D spatial media: Progress, prospects, and the knowledge and experiences of local government planners in Ireland. Planning Theory & Practice, 22(3), 349–367.

Mittelstadt, B. (2019). Principles alone cannot guarantee ethical AI. Nature Machine Intelligence, 1, 501–507.

Nicolescu (2005) Towards transdisciplinary education. The Journal for Transdisciplinary Research in Southern Africa 1(1): 5–16.

Sennett, R. (2018). Building and dwelling: ethics for the city. New York: Farrar, Straus & Giroux.

Stahl, B.C. (2022). From computer ethics and the ethics of AI towards an ethics of digital ecosystems. AI and Ethics, 2, 65–77

2. Critical capacities and futures literacy

An encounter-based approach to collaborative anticipation: exploring, making and agenda-setting for collective issues

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Keywords: collective sensemaking; transdisciplinary framework; encounter-based approach; collaborative anticipation

In this paper, we propose an Encounters Chain, a sequenced transdisciplinary framework designed to bring together communities of artists, citizens, policymakers, and researchers to collectively make sense of local issues by employing different modes of engagement. Through this 'chain', participants engage in a relational and creative practice that produces reinforcing cycles of exploring, making, and agenda-setting across interconnected modes of engagement. This sustains a collective ownership of local issues, and can inform agenda-setting and policy development to better reflect collective concerns.

We developed this framework as a self-initiated transdisciplinary collaboration among artists, public administrators, and researchers. Our aim was to create a shared space and moment in which diverse groups could reimagine alternatives related to ongoing societal transitions, such as digital transformation and sustainability challenges, thereby opening up the space for imagination. To do so, we conducted an experiment that combined different forms of engagement to support collective sensemaking (Maitlis, 2005; Weick, 1995; Weick et al., 2005) and anticipation (Miller, 2018) around the topic of technology in public space. This experiment allowed us to explore the process and impact of alternative ways of engaging communities on topics of public concern. In this paper, we introduce the framework and reflect on our experiences piloting it in the city of Rotterdam, where we used it to reimagine how technology in public space might better support community life.

We structure the Encounters Chain as three sequential and linked encounters. Each session offers a distinct mode of engagement (exploring, making, agenda setting) , while the agenda was shaped by the input of participants. Each stage provides a different vantage point on the future and invites different forms of knowledge to surface. Through this process, anticipation and imagination become a shared capability accessible to citizens, professionals, and institutions alike. The chain is open-ended, guided only by a theme explored over time. We deliberately employed open formats, such as an unconference and unhackathon, to move away from the common hierarchical events with presenting speakers on stage and a listening audience, and to create a participant-oriented meeting where the content is generated by all attendees (Budd et al., 2015). These formats allow for bottom-up issue-identification (Latour, 2005). Shared ownership between initiators and participants is essential, and each encounter remains receptive to whatever emerges in the previous one, allowing the next stage to unfold organically. Participants may join one, several, or all stages. As organizers, we ensured continuity by linking insights from each session.

The first stage is an unconference (exploring), which opens space for exploration and serendipity, allowing for the participants to identify their own matters-of-concern around an overarching theme. It provides a moment of collective attention rooted in lived experience and grounded in noticing what emerges through interaction. Because of its open format, the unconference fosters plurality and accommodates the diverse expectations and experiences that coexist around a shared issue. As the first encounter, it sets the tone for the open-ended nature of the framework. Whatever arises here becomes the foundation for what follows, without forcing participants into predetermined pathways.

The second stage is an unhackathon (making), that focuses on making the possible tangible and learning through doing. Building on the themes that emerged in the unconference, participants move from collective discussion to co-creating speculative prototypes that can steer further reflection. The prototypes act as mediators that surface values and ideas that might otherwise remain unspoken. Making together gives form to shared possibilities and generates artifacts that reimagine technology and reappropriation.

The third stage involves speculation as a reflective practice (agenda-setting). Through storytelling and guided reflection, participants explore the futures the artifacts from the previous stage might inhabit. This stage sheds light into the tensions, assumptions, and ethical considerations embedded in current practices, helping participants revisit their values, relations, and responsibilities. It allows for active reflection on the present by exploring how different futures might unfold. At the same time, this final stage provides a summary of the different learnings of each mode of engagement, and gives grounded input for local policymakers.

The Encounters Chain provides a methodological innovation for transdisciplinary engagement. Rather than relying on one-off workshops, we experiment with ways of cultivating participation across a sequence of linked encounters that deepen over time. This structured rhythm allows ideas to mature, and creates a pattern that participants can easily join. Its open and flexible design supports a more inclusive form of anticipatory and transdisciplinary engagement.

We tested the framework in Rotterdam to explore how technology in public space might support community life. Based on our observations, we acknowledge the value of beginning with an open format that allows participants to raise issues relevant to their context. The making-aspect allows for different knowledge and experiences to surface, and brings a deeper aspect to the final reflecting session due to the involvement of different materialities and modes of participation with the issue at stake. The shared reflections become more grounded, nuanced and sustained, whilst simultaneously opening up new possibilities and alternative realities. While our focus was technology, the same approach can be applied to other locally relevant topics. Providing an overarching theme and letting participants specify the areas they wish to explore encourages intrinsic motivation and enables contributions grounded in lived experience. The variety of engagement modes and the material nature of the activities appealed to a broader group of participants, creating a richer space for reflection compared to traditional and often unidirectional consultations.

We present this experiment as a foundation for scaling and adapting the framework to other contexts. It offers a form of engagement that can inspire new approaches to transdisciplinary collaboration. Our findings are preliminary, but they point to alternative engagement forms with potential for broader application. A key question concerns how to sustain such processes over time and who carries ownership as initiators. We recommend further research into how multi-modal experiences can enhance participatory processes.

References

Budd, A., Dinkel, H., Corpas, M., Fuller, J. C., Rubinat, L., Devos, D. P., ... & Wood, N. T. (2015). Ten simple rules for organizing an unconference. PLoS computational biology, 11(1), e1003905.

Latour, B. (2005). From realpolitik to dingpolitik. Making things public: Atmosheres of democracy. MIT press.

Maitlis, S. (2005). The social processes of organizational sensemaking. Academy of management journal, 48(1), 21-49. https://doi.org/10.5465/amj.2005.15993111

Miller, R. (Ed.). (2018). Transforming the Future: Anticipation in the 21st Century (1st ed.). Routledge. https://doi.org/10.4324/9781351048002

Weick, K. E., & Weick, K. E. (1995). Sensemaking in organizations (Vol. 3, No. 10.1002). Thousand Oaks, CA: Sage publications.

Weick, K. E., Sutcliffe, K. M., & Obstfeld, D. (2005). Organizing and the process of sensemaking. Organization science, 16(4), 409-421.

Zamenopoulos, T., & Alexiou, K. (2020). Collective design anticipation. Futures, 120, 102563.

Anticipating “ No-thing” Teaching “Eveving” Gendlin’s Process Model and the Pedagogics of Possibility

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Keywords: Gert Biesta; Karl Friston; Eugence Gendlin; Eve Kosovsky Sedgwick; Roberto Poli; Avital Ronell; anticipation; neurophenomenology; pedagogy

This paper by considering Roberto Poli’s field defining work on the “Ontology of Anticipation” (Poli, 2010) in the light of Eugene Gendlin’s work on the hermeneutic/phenomenological disclosure of “sense” in The Process Model (2004), as well as Karl Friston’s work on the thermodynamic basis of cognition in Active Inference: The Free Energy Principle in Mind, Brain, and Behaviour (2022) will attempt to define what a “Pedagogics of Possibility” might be. That is a form of learning that, as both Greg Ulmer (1994) and Gert Biesta has suggested (2014), recognises that all learning should be a form of “in-vention” rather than the mere “re-production” of the already known or “anticipated”.

In doing so it will also explore a number of other contemporary critical interventions into the question of how a "Pedagogics of Possibility" might be understood. Most notably in terms of Eve Kosofsky Sedgwick's work on the "Pedagogy of Buddhism" in Touching Feeling: Affect, Pedagogy, Performativity (2003) and Avital Ronell's work on Zen Koans in Koan Practice or Taking Down the Test (2010). Along with Kimmel, Imran, and Luger's dynamic systems theoretically inspired work on how various "somaesthetic" knowledge practices both stabilise and delimit individuals cognitive - and indeed "anticipatory" - ability and potential.

This will then ultimately be further considered in terms of the two themes of "Embodying and Sensing Futures" and Futuring by Designing" And even more specifically what the implications are for both design practice and pedagogy.

References

Biesta, G. (2016). The Beautiful Risk of Education. London: Routledge.
Clark, A. (2023). The Experience Machine. Random House.
Gendlin, E.T. (2017). A Process Model. Northwestern University Press.
Kimmel, M., Irran, C. and Luger, M.A. (2015). Bodywork as systemic and inter-enactive competence: participatory process management in FeldenkraisÂ® Method and Zen Shiatsu. Frontiers in Psychology, 5. doi:https://doi.org/10.3389/fpsyg.2014.01424.
Eve Kosofsky Sedgwick and Frank, A. (2003). Touching Feeling : Affect, Pedagogy, Performativity. Durham: Duke University Press.
Parr, T., Pezzulo, G. and Friston, K.J. (2022). Active Inference. MIT Press.
Poli, R. (2017). Introduction to Anticipation Studies. Cham, Switzerland: Springer.
Ronell, A. (2004). Koan Practice or Taking Down the Test. Parallax, 10(1), pp.58–71. doi:https://doi.org/10.1080/1353464032000171091.
Ulmer, G.L. (1994). Heuretics : the logic of invention. Baltimore: Johns Hopkins University Press.

Anticipating Collapse in Everyday Routines: T3 Mapping, Structural Modelling, and Reframed PSS as Systemic Counterweights

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Keywords: anticipation; PSSD; daily routines; 3D vignette

Everyday life is sustained by a dense ecology of routines that keep work, households, logistics, health, and personal systems running. These activities are often read through behavioural or psychological lenses—discipline, motivation, organisation, and cognitive load (Duhigg, 2012; Fogg, 2020; Kahneman, 2011)—yet routine failures are often symptoms of maintenance systems under structural strain. While contemporary behavioral studies rightly identify that failures are frequently due to a 'design flaw' rather than a 'personal flaw (Fogg, 2020), their methodologies remain confined to the subject, focusing on individual micro-behavioral changes and internal cognitive energy management. This paper adopts a design-led standpoint: it examines how the configuration of Resources, Quality, and Time (T3 Framework) shapes routine stability. This approach contributes a structural perspective and a necessary reboot for the Product-Service System (PSS) field by anchoring intervention in material diagnosis.

We propose a design-led anticipatory method for diagnosing and reconfiguring routine ecologies before breakdown occurs. Through T3 mapping, the method identifies where routines deform under competing forces and extends this analysis through structural modelling using wire vignettes that materialise tension points and load concentrations. To intervene in these tensions, the paper introduces a functional reclassification of Product-Service Systems. Instead of classical servitization taxonomies (Tukker & Tischner, 2006), PSS are reframed by the type of load they counterbalance within a deformed T3 system—reducing physical effort, cognitive load, switching cost, or routine complexity, or stabilising motivational continuity. PSS operate as systemic counterweights.

The contribution is twofold: it positions everyday routines as anticipatory infrastructures where collapse becomes materially legible, and offers a structural, design-led approach for restoring equilibrium. The methods presented here constitute one module within the broader SONAR framework (Sustainability-Oriented Narratives Reconciliation), a methodology integrating structural diagnosis, symbolic modelling, and systemic load rebalancing.

Background

Everyday routines operate as temporal infrastructures governed by limited Resources, fluctuating Quality requirements, and non-negotiable Time. Their failures are commonly addressed through behaviour change or cognitive load strategies. Within Anticipation research, the focus is often placed on the construction of future scenarios or symbolic narratives (Miller et al., 2018). However, the most pressing anticipatory challenge lies in the material present. Routines can be understood as designed structural systems that deform and collapse under pressure. This paper addresses the gap in PSS design by treating routine ecologies as structural systems whose failure modes can be diagnosed materially and anticipatorily.

The T3 Framework

T3 articulates three core variables: Resources (labor, tools, mental energy), Quality (standards, coherence), and Time (duration, cadence). When these forces pull unevenly, the T3 triangle deforms, signalling structural instability. Deformation is both diagnostic and problematic: it marks where the routine absorbs more load than it can carry (Figure 1, pdf paper).

Mapping and Diagnosis

Diagnosis begins with a storyboard (Figure 2, pdf) that shows how Quality depends on Resource load and Time pressure. A deformed T3 shows which variable is over-pulling the system. Yellow dots indicate inefficiencies; red dots mark potential collapse points. These deformation points act as a diagnostic stamp identifying priority zones for redesign.

Zoom-In: Structural Nodes and Wire Vignettes

Segments absorbing disproportionate strain are isolated as structural nodes and modelled as three-dimensional wire vignettes (Figure 3, pdf). Stress testing follows: small weights—each representing a single maintenance task—are applied to points where Resources and Time are most consumed. The vignette reveals whether the segment sustains its load or collapses, localising structural fragilities.

Balancing and Transformation — Reconfiguring the Load

Once the cost of Quality is explicit, rebalancing begins. Hypothetical interventions—counterweights, mechanical levers—are introduced as analogues for external services, micro-automations, execution presets, or regenerative inserts. The vignette becomes a mechanical analogue of the routine, with levers, pendulums, and pulleys modelling efficiency gains and structural support needed to ensure Quality circulates rather than collapses (Figure 4, pdf).

Reclassifying PSS as Systemic Counterweights

Structural insights from T3 deformation and wire modelling allow a functional reclassification of Product–Service Systems. PSS are defined by the type of load they counterbalance within the T3 system (Table 1, pdf). Each category represents a distinct form of counterweight capable of redistributing tension in a deformed routine system.

Discussion

T3 mapping and structural modelling demonstrate anticipation as material diagnosis, directly challenging methodological views that over-rely on speculative futures. Collapse is not a future scenario but a present deformation encoded in the routine. This enables intervention through structural redesign rather than behavioural correction.

This approach frames the reconfigured PSS in terms of explicit anticipation. The methodology supports Optimization Futures by restoring equilibrium and preventing collapse, and Contingency Futures by deploying counterweights against specific, anticipated failure points. Furthermore, the framework's use of Regenerative Anchors and the act of structural discovery contributes to Novelty Futures, expanding the capacity to make sense of the emergent present. This shifts anticipatory design from speculative futures toward grounded reconfiguration of everyday routine ecologies (Fogg, 2020). The use of design methods is the force (vim) and virtue that enables this precise linkage between PSS and anticipatory action, forming a transdisciplinary contribution.

Conclusion

Everyday routines function as anticipatory infrastructures whose stability depends on the equilibrium between Resources, Quality, and Time. Through T3 mapping, structural modelling, and a reclassification of PSS as systemic counterweights, this paper provides a material method for diagnosing and rebalancing routine systems. Collapse becomes legible through deformation; stability emerges through targeted counterweights. Future work will test scalability across routine ecologies and integrate this diagnostic method into broader anticipatory practices.

References

Duhigg, C. (2012). The Power of Habit: Why We Do What We Do in Life and Business. Random House Publishing Group.

Fogg, B. J. (2020). Tiny Habits: The Small Changes that Change Everything. Houghton Mifflin Harcourt.

Kahneman, D. (2011). Thinking, Fast and Slow. Allen Lane.

Miller, R., Poli, R., & Rossel, P. (2018). The Discipline of Anticipation. In Foundations for Futures Literacy 1 (1st ed.). Routledge. https://doi.org/10.4324/9781351048002-3

Tukker, A., & Tischner, U. (2006). Product-services as a research field: Past, present and future. Reflections from a decade of research. Journal of Cleaner Production, 14(17), 1552–1556. https://doi.org/10.1016/j.jclepro.2006.01.022

Anticipating education after AI

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Keywords: education; futures; Haraway; cyborg; hope

This paper approaches the question of education futures by re-visiting a highly influential historical instance of anticipation – that originally mapped forty years ago by Donna Haraway in 'A Cyborg Manifesto' (1985). I will provide a re-evaluation of the manifesto's prescience in imagining a future for education shaped by the 'informatics of domination', an aspect of the work which has been under-recognised. The paper will then move on to draw out the main points of divergence between the manifesto and contemporary, anticipatory approaches to the 'futuring' of education.

I will suggest that cyborg theory to an extent lacks explanatory power in relation to contemporary artificial intelligence, anthropocentrism and technology acceleration, but will also argue strongly for the methodological value of Haraway's call to balance the critique of contemporary digital society with an embrace of human/machine kinship and anticipatory pleasure in the 'dangerous possibilities' opened up by the metaphor of the cyborg.

To expand on this argument, I will propose three potential pathways for anticipatory work in education with and beyond AI. Each of these links interestingly with the spirit of cyborg theory and has potential for helping us imagine, design and govern more hopeful education futures.

First, I will outline the possibilities for education of 'thinking from within the machine'. This approach has been proposed by Majaca and Parisi (2016) in their exploration of alien logic and 'incomputability' as routes to helping us reclaim automation in the face of the dominant, careless technofuturing of the tech giants, and growing corporate control over education systems, infrastructures and governance.

Second, I will touch on the openings provided by utopia and the education of desire as strategies for the reclamation of the future from the technodeterminist anticipatory regimes which currently dominate them. This draws on Levitas' (2010) development of the concept of utopia as a foundation for critical, interdisciplinary work capable of radically re-imagining the boundaries of possibility for social change.

Finally, I will present a provocation proposing that the future of education should be more like music. I refer here to Osberg & Biesta's (2021) work which counters the dominant view of education as an instrument with the idea of it as an emergent entity with 'its own unique aesthetic qualities' (58).

The paper's argument weaves through the conference themes of learning and unlearning; governance, empowerment and justice; and aesthetics and affect – it aims to map new, critical approaches to the anticipation and futuring of education.

References

Haraway, D. (1985). A Cyborg Manifesto: Science, Technology, and Socialist Feminism in the Late Twentieth Century. In Simians, Cyborgs and Women: The Reinvention of Nature (pp. 149–181). Routledge.

Levitas, R. (2010). The concept of Utopia. Peter Lang.

Majaca, A., & Parisi, L. (2016). The Incomputable and Instrumental Possibility. e-flux Journal 77:11–16.

Osberg, D., & Biesta, G. (2021). Beyond Curriculum: Groundwork for a Non-Instrumental Theory of Education. Educational Philosophy and Theory, 53(1).

Anticipation and Responsibility: Futures Literacy Labs, Facilitation, and Critical Hope in Economic Education

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Keywords: anticipation; futures literacy; critical hope; economic education; facilitation

Anticipation has become a central orientation in contemporary debates on futures, education, and design, particularly under conditions of uncertainty, indeterminacy, and crisis. In the field of economic education, anticipatory practices are deeply entangled with narratives of inevitability, growth, crisis, and technological transformation. This paper builds on theoretical work and empirically informed research on anticipation and Futures Literacy in economic education (Beyer, 2025) and introduces an ongoing qualitative research project that examines how anticipatory educational spaces are enacted and shaped in a responsible way in the practice of facilitators.

Following Roberto Poli (2017), anticipation is understood as a practice that occurs when the future is used in the present, combining forward-looking orientations with present decisions. From this perspective, anticipation is neither neutral nor merely speculative: it operates through internal forms of anticipation—expectations, imaginaries, and assumptions that guide action in the present. This conceptualisation raises a critical educational question: how are such anticipatory orientations shaped, and what responsibilities emerge when futures are actively brought into educational practice?

The paper focuses on Futures Literacy Labs as anticipatory settings in economic education, drawing on the conceptual framework of Futures Literacy (Miller, 2018) and its role in higher education contexts (Damhof et al., 2020). Empirically, the contribution is informed by an ongoing qualitative study based on semi-structured interviews with facilitators of Futures Literacy Labs, analysed using qualitative content analysis (Kuckartz & Rädiker, 2023) linking to observations form facilitators in the field in the recent publication “Seeing the Unseen” (Zadeh et al., 2025).

The empirical focus of the ongoing study is facilitation as a situated process—attuned to atmospheres, embodied experiences, and participants’ biographical trajectories—while also shaped by didactical reflection and institutional conditions. Findings will be presented through a differentiated account using Causal Layered Analysis (Inayatullah, 2019).

To conceptualise the normative and political dimension of these practices, the paper draws on Critical Hope (Ojala, 2017), building on Ernst Bloch’s (2017) notion of concrete hope and recent work on radical hope as an anticipatory stance (Damhof & Gulmans, 2023). Anticipation is thus conceptualised as a practice of judgement under uncertainty, rather than an “anything goes” exercise in imagination. The paper argues that Futures Literacy Labs in economic education can become spaces of responsible anticipation only when facilitation actively engages with internal anticipatory assumptions and sustains Critical Hope as a reflective orientation—grounded in disciplinary knowledge and socio-scientific inquiry, and therefore resistant to naïve or depoliticised enactments that bracket power relations, institutional constraints, and structural inequalities.

References

Beyer, M. (2025). Imagine the possible! Dealing with barriers to new economic thinking in higher education. Possibility Studies & Society, 2(1). https://doi.org/10.1177/27538699251381964

Bloch, E. (2017). Ernst Bloch: Das Prinzip Hoffnung (R. E. Zimmermann, Hrsg.). De Gruyter.

Damhof, L., & Gulmans, J. (2023). Imagining the impossible: An act of radical hope. Possibility Studies & Society, 1(1–2), 51–55. https://doi.org/10.1177/27538699231174821

Damhof, L., Kazemier, E., Gulmans, J., Cremers, P., & Beenen, P. (2020). Anticipation for emergence: Defining, designing and refining futures literacy in higher education. In: Humanistic futures of learning: Perspectives from UNESCO Chairs and UNITWIN Networks. Paris: Unesco. (S. 168–171).

Inayatullah, S. (2019). Causal Layered Analysis A Four-Level Approach to Alternative Futures RELEVANCE AND USE IN FORESIGHT. Futuribles International.

Kuckartz, U., & Rädiker, S. (2023). Qualitative content analysis: Methods, practice and software (Second). SAGE Publications.

Miller, R. (2018). Transforming the Future: Anticipation in the 21st Century. Routledge.

Ojala, M. (2017). Hope and anticipation in education for a sustainable future. Futures, 94, 76–84. https://doi.org/10.1016/j.futures.2016.10.004

Poli, R. (2017). Introducing Anticipation. In R. Poli (Hrsg.), Handbook of Anticipation (S. 1–14). Springer International Publishing. https://doi.org/10.1007/978-3-319-31737-3_1-1

Zadeh, R. K., Gulmans, J., & Damhof, L. (2025). Seeing the unseen. Uncovering personal journeys in futures literacy. UNESCO Chair Futures Literacy in Higher Education.

Between English Dominance and Multilingual Sustainability: Exploring Tensions in the Futures of Language Education

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Keywords: multilingualism; alternative futures; english dominance; causal layered analysis (CLA); futures studies; language education

This presentation draws from ongoing doctoral research that examines how multilingual futures are imagined, negotiated, and contested in the Nordic region. The work builds on the findings of a completed European baseline study (Article I, under review), in which fifteen language teachers used Causal Layered Analysis (CLA) to articulate their concerns and expectations regarding the future of language education. The perspectives and underlying assumptions reflected in their responses highlighted a set of tensions that resonate across European contexts: the increasing reliance on English as a practical necessity, the aspiration to sustain linguistic diversity, the uneven impacts of digitalisation, and the emotional labour teachers invest in maintaining meaningful language learning in systems under pressure. These findings form the empirical starting point for a broader investigation of how multilingual futures take shape in the Nordic countries.

The doctoral project extends this work by examining how Nordic language policies, public discourses, and everyday practices reflect and reproduce contradictory expectations about the role of English. High proficiency in English is celebrated as a marker of openness and international competitiveness, yet concerns about the vitality of national and minority languages persist. English is simultaneously valued, resisted, normalised, and problematised—creating a paradoxical landscape in which different groups (teachers, policymakers, young people, migrants) experience linguistic futures in uneven ways. The project investigates these contradictions through the combined use of CLA, policy analysis, interviews, and a participatory scenario workshop.

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Rather than predicting outcomes, the project approaches futures as a space for reflection and reframing. Scenario-building is used as a way to explore alternative possibilities, identify leverage points, and open conversations about responsibility in the present. By engaging with both empirical tensions and the deeper stories that sustain them, the research aims to support more anticipatory and equitable approaches to language policy—approaches that recognise the strengths of the Nordic linguistic ecology while also addressing its contradictions.

Ultimately, this work argues that multilingual futures cannot be reduced to simple trajectories of growth or decline. They are shaped by the everyday experiences of educators, by historical narratives, by political and economic pressures, and by the

hopes and anxieties carried within public discourse. In this complexity, there is room for practical imagination: for futures in which English remains a valuable resource without overshadowing other languages, and in which multilingualism is sustained as a social, cultural, and ethical commitment.

Beyond Method: Anticipation as Emergent Practice in Engineering

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Keywords: anticipation as practice; emergence; collective action; anticipatory practices; enacted futures; ontology of anticipation

Anticipation is commonly framed as a cognitive capacity or a methodological tool, deployed by individuals or institutions to predict, plan for, or manage future outcomes. Within engineering, this framing has reinforced approaches centered on optimization, control, and foresight techniques, often treating the future as a problem to be solved in advance. This paper moves beyond method to reframe anticipation as an emergent practice, enacted through engineering work itself. Rather than residing in models, scenarios, or expert projections, anticipation is understood here as something that comes into being through collective action: through doing, negotiating, and experimenting with futures as part of everyday practice. This paper intervenes in anticipation studies by shifting the question from how futures are anticipated to how anticipation itself is enacted through practice.

Drawing on work from the Emergent Futures Lab in Northern California, we examine how anticipatory capacity emerges through collective action across diverse groups, including high school students, college students, academics, and engineering practitioners working in energy and development fields. Rooted in the idea that emergence occurs through collective action, the lab operates as a connective framework where futures are not just imagined, but actively enacted through situated practices. The contribution of this work is a conceptual reframing of anticipation as a collective, enacted practice that precedes method, becoming visible through engineering work when prediction is no longer privileged.

The Problem of Engineered Futures

Engineering today occupies a paradoxical position. Engineers are increasingly called upon to address complex, systemic challenges such as climate adaptation, decarbonization, and social inequity, yet these challenges resist straightforward technical solutions. On the other hand, dominant engineering cultures continue to emphasize certainty, control, and optimization, reinforcing the belief that better models, more data, and more sophisticated algorithms will yield better futures. Under conditions of profound uncertainty and systemic change, these approaches increasingly struggle to account for futures that cannot be optimized or stabilized in advance.

This orientation is particularly visible in the technology sector, where engineering is often framed as a means of building the future. In this framing, futures appear as products to be designed, scaled, and deployed. Anticipation becomes a matter of forecasting trends, minimizing risk, and maintaining competitive advantage. While such approaches may produce technical innovation, they often obscure the social, political, and environmental consequences of engineering decisions, as well as the values embedded within them.

Within anticipation studies, these dynamics have been widely critiqued. Scholars have shown how predictive models and technocratic foresight practices can close down alternative futures, privileging certain actors, temporalities, and imaginaries while marginalizing others. Yet engineering itself is frequently treated as a black box within

these critiques, as a domain that applies anticipation rather than one that actively produces it. This paper addresses that gap by treating engineering practice as a site where anticipation is continuously enacted, negotiated, and contested. In doing so, it positions engineering not as an application domain for anticipation, but as a productive terrain in which anticipatory practices are formed and transformed.

Defining the Anticipatory Landscape

The work of the Emergent Futures Lab is grounded in Northern California, a region densely saturated with future imaginaries. Silicon Valley has long positioned itself as a global engine of innovation, where technology companies claim not only to predict the future but to actively engineer it, advancing narratives of disruption, progress, and inevitability across domains ranging from artificial intelligence to energy systems. At the same time, California has been a powerful site of cultural future-making through media and entertainment, where Hollywood's depictions of utopian, dystopian, and apocalyptic futures have shaped collective expectations about technology and human life. Together, these forces produce a constrained anticipatory environment in which futures appear either as engineered outcomes delivered by experts or as spectacles to be consumed rather than shaped.

Against this backdrop, the Emergent Futures Lab intervenes by shifting anticipation away from institutional centers of authority and toward collective, situated engagement. The lab locates anticipatory practice within everyday environments and diverse communities, where dominant anticipatory logics can be examined, contested, and reworked through shared action.

Anticipation as Collective, Enacted Practice

Central to this work is a reframing of anticipation beyond method. Anticipation is defined here not as a forecasting technique or cognitive stance, but as an emergent practice enacted through engineering work as it unfolds. It comes into being through collective activity, as people engage material conditions, negotiate possibilities, and make future-oriented decisions in practice. Collectivity is therefore not a call for inclusion, but an ontological condition of anticipation: without collective action, anticipation does not occur. This framing grounds the methodological orientation that follows.

Methodological Orientation: Making Anticipation Visible

The approach taken in this work does not seek to introduce a new anticipatory method or technique. Rather, it examines how anticipation emerges through engineering practice when prediction is no longer privileged. The activities organized by the Emergent Futures Lab are therefore designed to create conditions in which the emergent character of anticipation can be made visible. These activities do not generate anticipation, but intensify and render legible anticipatory dynamics that are already embedded in engineering practice.

These collective anticipation sessions convene diverse participants, including high school students, undergraduate and graduate students, academics, and practitioners working in engineering and energy-related fields, to engage futures collaboratively. A central component of these sessions involves walking-based explorations augmented by AR overlays. Rather than presenting fixed visions of the future, AR functions as a provocation that reconfigures attention, inviting participants to notice how futures are already embedded in existing infrastructures, landscapes, and socio-technical arrangements.

The walking format situates anticipation within familiar environments, grounding futures in lived experience rather than abstract speculation. Participants are encouraged to observe how particular anticipations (such as those related to energy use, automation, development, or sustainability) are already being enacted in the present. Subsequent

collective reflection sessions invite participants to articulate, debate, and reinterpret these observations, connecting them to questions of agency, responsibility, and alternative trajectories.

Crucially, the emphasis is not on predicting outcomes but on enacting anticipatory capacity. Participants move from speculation toward action by identifying small but meaningful interventions (including educational, technical, or social) that could begin to shift existing trajectories. In this way, anticipation becomes inseparable from practice.

Contirbutions

This paper contributes to anticipation studies by reframing anticipation as an emergent, collective practice enacted through engineering work, extending anticipation-as-practice scholarship into engineering education and professional contexts. It positions engineering not as a domain that merely applies anticipation, but as a site where anticipation is actively produced through everyday practices, decisions, and negotiations.

For engineering education and practice, the work suggests new ways of cultivating anticipatory capacity, ones that move beyond optimization and control toward collective engagement with uncertainty. Anticipation, understood as collective action rather than methodological foresight, offers a pathway toward more plural, responsible, and adaptive engineering futures under conditions of uncertainty.

Critical capacities and futures literacies for designer change agents from an earth logic perspective

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Keywords: critical capacities; emergence; designer roles; metadesign; paradigm bridging

How can designers anticipate deeper needs of design, and design designer roles and capacities from a different paradigm than that of the economic growth logic – a root cause of entangled environmental emergency and social injustice? This is the premise of the research project Earth Logic Design, which, informed by metadesign, takes the license to reimagine the very purpose, as well as practices, affiliations, and success criteria of design. This is visionary, radical work AND work in close dialogue with actors that are inevitably tied to the dominant paradigm, through cultures, infrastructures and systems, not least the labour market and norms of employability. This poses the dilemma of how to both design far and beyond and enable conversations with a dominant paradigm.

This paper will present and reflect on a specific instance of this research, a survey to shed light on designers currently taking on the challenge of working with change from a systemic sustainability perspective. It asked, what guides and conditions their work, how is the impact of the work evaluated? What critical capacities and futures literacies do these designer-change agents have, and which do they need to develop?

As a whole, the Earth Logic Design research has been emergent, co-creative, place-based and mixed a range of critical and creative approaches including rehearsing a speculative design agency. In contrast, the method of the survey – a more conventional approach - was selected as one way of bridging the earth logic work to a dominant paradigm.

The paper therefore unfolds in two parts:

1. Sharing results from the survey directed to designers working as change agents addressing a broad range of sustainability issues, with a focus on critical capacities and futures literacies.
2. Sharing insights from the use of a survey as a strategy of anticipation in bridging different paradigms of work, which created both opportunities and struggles.

The survey was designed to explore practices, conditions and values of change work. The respondents worked with a wide variety of change practices – from feminist cultural organisations, climate-focused art, and regenerative farming research to sustainable product design, and organizational transformation. The survey was distributed globally through education and research networks as well as social media channels. Although a majority of the around thirty respondents were women based in Europe and academia, many worked through self-initiated collaborative projects with mixed sources of funding. Positions did also span business and independent entrepreneurship, which meant that the survey covered a scale of change from within the workplace, to building one's own infrastructure and rethinking funding structures.

This paper will discuss futures literacies in relation to the respondents' understandings of futures making as ongoing, relational, and in dialogue with one's own motivation. For the respondents this takes place through collaborative change work that is personally grounded. Critical capacities are then seen as abilities to work in emergent and interdisciplinary collaboration; to be in the complex realities of working with change. This means questioning and staying open to learning and unlearning, listening and

engaging in dialogue, and grounding oneself in one's values and ethics. As this takes time, building long-term trusting relationships, communities and funding structures are seen as essential to support change work. We ask, how can these temporalities and relational approaches be negotiated in relation to a dominant paradigm's systems prioritizing speed and efficiency?

As most respondents have the capacities needed to work emergently in interdisciplinary collaboration, what is lacking is not abilities, but rather the infrastructure and funding to support people already doing this work. While respondents from business backgrounds expressed lacking necessary 'soft collaboration skills', in contrast those from an artistic design background expressed that they lack time to work in depth, and most crucially: sufficient financial resources. The research shows how the tension between funding and legitimization of different knowledge traditions, as well as deciding whose terms we collaborate on, are still challenges in interdisciplinary work.

The researchers represent two generations of women - professor and postdoctoral fellow, from participatory design traditions, situated in the global North. The anthology Rescuing All Our Futures: The Future of Futures Studies which brought together perspectives on critical futures studies (Sardar, 1999), was a key tenet in the senior researcher's PhD project (Tham, 2008) which, from a systemic futures perspective, explored new potential paradigms for the fashion sector. Since, design has taken a speculative and futures turn, with Dunne and Raby's Speculative Everything (2013) as a pivotal moment. The metadesign perspective (in dialogue with second order cybernetics and feminist technoscience) centres agency and response-ability (e.g. Barad, 2007; Haraway, 2016) and emergence – a purposeful, yet open, co-creation across a multitude of actors to achieve healthy futures. It draws on relational discourses which emphasise entanglements; for example, decolonialism, posthumanism, feminist techno science and systems thinking.

This paper highlights that there are entanglements across the paradigm we seek to work from (proposed as earth logic), and a dominant (growth logic) paradigm, including friction between their embedded ontologies and epistemologies. For our work on change to be authentically helpful, we therefore regard the work of bridging to be essential. This paper contributes insights into the tensions and opportunities that emerge from attempts to work across paradigms, and proposes that facilitating such bridging is in itself a critical capacity crucial for futures literacy.

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References

Barad, K. (2007). Meeting the Universe Halfway: Quantum physics and the entanglement of matter and meaning. Duke University Press.

Dunne, A., & Raby, F. (2013). Speculative everything: Design, Fiction and Social Dreaming. MIT Press.

Haraway, D. J. (2016). Staying with the Trouble: Making Kin in the Chthulucene (1st ed.). Duke University Press.

Fletcher, K. & Tham, M. (2019). Earth Logic Fashion Action Research Plan. The JJ Charitable Trust.

Fletcher, K. & Tham, M. (2023). Earth Logic Gardening: A practical guide to growing ecological, social, cultural and economic change. Earth Logic Publishing.

Sardar, Z. (Ed.). (1999). Rescuing all our futures. Adamantine Press.

Tham, M. (2008). Lucky People Forecast: a systemic futures perspective on fashion and sustainability. [Docoral thesis, University of London]. Goldsmiths Research Online. https://research.gold.ac.uk/id/eprint/11301/1/Tham_PhD%20reduced.pdf

Cultivating Caring and Critical Capacities: Futures Literacy as a Relational and Political Practice in European Higher Education

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Keywords: futures literacy; critical thought; anticipatory approaches; collaborative scenarios

Contemporary societies confront overlapping ecological, political, and social disruptions that intensify uncertainty about collective futures. In this context, emerging debates in futures studies and social sciences underscore the need to rethink anticipatory practices not merely as technical exercises but as relational, ethical, and situated engagements with what is yet to come. This paper draws on the experience of the ECIU Challenge “Engaging with the Futures”, a blended intensive program involving European BA students, to examine how futures literacy can be nurtured as a form of caring, collaborative practice capable of challenging dominant technocratic imaginaries and fostering more just and livable futures.

The program—developed by the Universities of Trento and Linköping within the European Consortium of Innovative Universities—invites students from multiple disciplines to collectively develop future scenarios on issues such as migration, air quality, demographic crises, and ecological transformations. Rather than treating the future as a domain to be predicted, controlled, or optimized, the initiative encourages participants to recognize the political and ethical tensions inherent in anticipatory work. This pedagogical model aligns with critical debates on hope, and anticipatory capacities: it foregrounds the uncertainties, paradoxes, and responsibilities that arise when imagining futures across asymmetrical and historically uneven contexts. Specifically, hope, in this framework, is not an abstract or depoliticized sentiment; it is a material and relational practice that acknowledges conflict and divergence while still cultivating generative spaces for collective imagination. Students engaged in the program encounter these tensions directly: through intense workshops, facilitated dialogues, and challenge-based learning activities, they grapple with the contested nature of desirable futures and with the ethical dilemmas involved in envisioning systemic transformations beyond dominant technocratic paradigms.

At the same time, the initiative illuminates how futures literacy can be reconceptualized as a critical capacity—one rooted not in individual cognitive skills but in communal, affective, and pedagogical infrastructures. While UNESCO and other frameworks have typically approached futures literacy as a set of competencies for anticipating disruptions, this experience stimulates students to confront and dismantle inherited assumptions, harmful imaginaries, and disciplinary silos in order to meaningfully reorient their sense of what futures are possible or desirable. While describing the format and contents of the ECIU Challenge “Engaging with the Futures”, we will focus the paper on three main contributions.

First, showing how collaborative scenario-building enables students to develop anticipatory skills that are inherently multidisciplinary. Sharing practices of listening, maintaining group cohesion, and recognizing interdependence across disciplines, cultures, and positionalities students experience that dialogic tensions are essential for building collaboration among a diverse humanity and setting the bases for social innovations that may lead to challenging futures.

Second, the paper demonstrates how critical perspectives and hope can both function as methodological lenses within futures literacy. By debating diverse visions, negotiating disagreements, and acknowledging asymmetries in power and expertise, students experience how futures work is embedded in social relations rather than isolated intellectual and scientific exercises. Moreover, the political dimension of imagining the futures becomes particularly salient when addressing issues such as migration governance or ecological crisis, where competing visions of the future reflect broader struggles over justice, sovereignty, and planetary responsibility. Within this critical perspective, hope operates as a generative force that motivates students to imagine alternatives despite uncertainty, without collapsing complexity into simplified or technocratic solutions. Together, these practices counter linear, solutionist, or managerial forms of anticipation and instead foster plural, open-ended orientations to the future.

Finally, we will address questions about the responsibilities of universities in caring for futures across colonial legacies, uneven global impacts, and divergent visions of change. Contrasting the isomorphic tendencies in the international educational panorama, flexible educational infrastructures—including challenge-based learning, tutoring networks, and interdisciplinary workshop formats—can cultivate democratic and accessible forms of anticipatory practice. By situating futures literacy within a broader institutional context, the program reveals both the possibilities and limits of transforming higher education into a site for experimenting with systemic transitions.

Overall, the paper argues that integrating collaborative frameworks, hope, and critical capacities into futures literacy teaching programs is essential for navigating the political challenges of the 21st century. As students learn to anticipate not only risks and disruptions, but also relational obligations and ethical entanglements, they begin to craft imaginaries that are attentive to justice, planetary interdependence, and the fragility of democratic institutions. The ECIU Challenge EWTF thus offers a valuable model for rethinking how European higher education can equip emerging generations to engage with uncertain futures—not by mastering predictive tools, but by cultivating the relational, affective, and collective dimensions of anticipation.

Designing a Field Guide: Collective Authorship as Futures Literacy and Practice Shaping

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Keywords: collective authorship; futures literacy; distributed meaning-making; dissemination-as-learning; design futures

This work examines The Field Guide to Design Futures as a designed epistemic object that cultivates collective futures literacy and enables shared knowledge-making. Here, futures literacy is understood not as predictive competence, but as a situated social practice (Ungureanu, 2024) that emerges through the intersection of plural futures-oriented perspectives, exposure to adjacent viewpoints, comparison across contributions mediated by editors and readers, and the invitation to develop one's own view. The book functions as a publication about Design Futures and a methodological device through which the field can be interpreted, questioned, and partially articulated. Rather than documenting an evolving design domain, it uses this format to explore how futures literacy is shaped by the collective negotiation of meanings, boundaries, and orientations in Design Futures.

This editorial experiment is situated within Design Futures, understood here as an evolving constellation of approaches including participatory futures (Ramos et al., 2019), experiential futures (Candy & Dunagan, 2017; Candy & Kornet, 2019), speculative design (Dunne & Raby, 2013), and design fiction (Bleecker et al., 2022). After more than two decades of dialogue between design and futures studies, the field remains productive yet unsettled, still negotiating its location. In this context, the Field Guide was conceived not to stabilize Design Futures through a canonical definition, but to make its plurality legible and usable. It therefore does not stand outside the domain it addresses; it stages reflection within an ongoing practice and participates in its provisional articulation (Mazé, 2019).

Central to this approach was the orchestration of heterogeneous voices. Written through a distributed, multi-voiced process, the book integrates texts by nearly forty academics, designers, and practitioners across regions, invited separately and without disclosure of the wider cohort. Invitations were framed not as requests for authoritative chapters, but as short, situated provocations that, when layered together, trace a participatory and speculative design practice without stabilizing its boundaries. Contributors responded from their own experience and perspective, often offering partial views, lessons, or observations rather than statements. Because invitees did not know who else had been approached, this mode reduced pressure toward alignment or reproducing an expected collective line. What emerged instead was a polyphonic body of material in which overlaps, recurring concerns, and conceptual divergences remained visible. Plurality became the condition through which the practice reflected on itself.

The editorial apparatus served this aim. Length constraints encouraged precision, while a non-linear structure of entries, contributions, and quotations was paired with indexing. The result is an anti-manual: fragmentary, indexable, and open to remixing, designed to support interpretive skills, futures literacy, and ongoing knowledge-building rather than prescribing fixed methods (Redström, 2017). The absence of chapters and the modular organization of pages were methodological decisions. Each entry was brief and self-contained, allowing readers to move sequentially, recursively, or

selectively through the book. As such, the Field Guide functions less as a manual than as a companion for orientation. Its designed incompleteness creates space for disagreement, adaptation, and recontextualization, encouraging readers to treat the material as provisional and reusable.

On the contributor side, the process was straightforward and minimally mediated. Drafts moved through light-touch editorial guidance, and differences were retained when they productively expanded the field's vocabulary. The brief format lowered the threshold for participation while prompting clarity, scoping, and institutional positionality.

The aim was not simply to collect many voices, but to stage conditions in which the field could appear through juxtaposition. Collective authorship became infrastructural: it structured participation without requiring alignment, organized relations among contributors, editors, and readers, and provided a repeatable framework through which perspectives could be connected, indexed, and extended over time (Zamenopoulos & Alexiou, 2020). The same participatory logic continued into the book launch itself.

The process culminated in an online launch that became a methodological experiment. Over 130 people registered, and more than thirty participated. Rather than presenting the book's contents, the event invited attendees to draft short reflections and compose blurbs from the future for a book they had not yet read. Framed as collective learning, this activity enlarged the circle of voices and turned dissemination into participatory production. Selected materials from the event were included in the book, expanding earlier entries. The launch therefore operated not simply as dissemination, but as a methodological extension that reopened the book to further contribution and interpretation without prior disclosure of its contents. Participants thus engaged the book as an unfinished prompt rather than as a completed object.

Empirically, the project draws on editorial records, version histories, and launch materials to examine how prompts, sequencing, and selection criteria shaped contributions, while dissemination generated additional interpretive layers and re-entry into the book. These materials indicate how prompts framed participation, editorial interventions balanced openness with coherence, fragmentary organization supported comparative reading, and launch activities extended the editorial process. Taken together, these elements position the project as a sequence of design decisions through which an emergent domain can collectively articulate itself without forcing premature closure. The main contribution shows how collaborative publishing can operate as a method of inquiry through dissemination-as-learning, supported by an anti-manual editorial pattern. What is transferable is not a fixed format, but a set of principles: distributed invitation, short-form contributions, light-touch mediation, non-linear organization, and participatory dissemination.

By framing the book's creation and launch as a knowledge infrastructure for collective inquiry, the study engages debates on design as a reflexive, plural, and situated mode of knowing. More broadly, it suggests that publishing can function as a research method and that collective authorship can serve as an epistemic and pedagogical infrastructure for futures literacy practices, plural perspectives, worldviews, interpretive flexibility, and constructive engagement with uncertainty.

References

Bleecker, J., Foster, N., Girardin, F., & Nova, N. (2022). The manual of design fiction. Near Future Laboratory Press.

Candy, S., & Dunagan, J. (2017). Designing an experiential scenario: The People Who Vanished. Futures, 86, 136–153. https://doi.org/10.1016/j.futures.2016.05.006

Candy, S., & Kornet, K. (2019). Turning foresight inside out: An introduction to experiential futures. Journal of Futures Studies, 23(3), 3–22. https://doi.org/10.6531/JFS.201903_23(3).0001
Dunne, A., & Raby, F. (2013). Speculative everything: Design, fiction, and social dreaming. MIT Press.
Mazé, R. (2019). Politics of designing visions of the future. Journal of Futures Studies, 23(3), 23–38. https://doi.org/10.6531/JFS.201903_23(3).0003
Miller, R. (2018). Transforming the future: Anticipation in the 21st century. Routledge.
Ramos, J., Sweeney, J. A., Peach, K., & Smith, L. (2019). Our futures: By the people, for the people. Nesta. https://www.nesta.org.uk/report/our-futures-people-people/
Redström, J. (2017). Making design theory. MIT Press.
Ungureanu, E. (2024). Literacy as a social practice: Exploring teacher representations. Journal of Educational Sciences, 50, 83–96. https://doi.org/10.35923/JES.2024.2.06.
Zamenopoulos, T., & Alexiou, K. (2020). Collective design anticipation. Futures, 120, 102563. https://doi.org/10.1016/j.futures.2020.102563

Engaging Science through Science Fiction: Regenerative Dialogues through the Brazilian University Extension Model

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Keywords: science fiction; literature and science; moral imagination; brazilian extension model; environmental humanities.

Philosophers of Science such as Helen Longino (1990, 2002), Heather Douglas (2000; 2009) and Mathew Brown (2020) have long argued for the benefits of scientific knowledge and scientific practice that are permeated by critical discursive interaction and wider public participation. As Douglas (2009) highlights, because evidence is rarely perfect, scientists must make judgment calls about when evidence is strong enough to act on, and when those decisions carry social consequences – such as impacts on health, safety, or the environment – science cannot be separate from public responsibility; it must be open to ethical reflection and accountability . As a cultural product that demands a particular kind of engagement that is both individual and collective – involving reader, narrative and society –, literature allows us to observe what is and imagine what could be.

As Jay Clayton (2023) has argued, fiction can actively shape public engagement with science, as cultural narratives mediate the social imagination around knowledge-making. Science fiction, as I argue on my doctoral thesis , is especially attuned to the alliances modern science establishes with capitalism and colonialism. As such, it offers a powerful framework for examining the entangled forces that underpin many of today's environmental and political challenges – especially the complex role of science in shaping them.

Beyond enabling critique and expression, science fiction also supports a deeper ethical function: it cultivates what Matthew Brown (2020) refers to as 'moral imagination' – the capacity to play out possible actions and consequences before they happen, in a kind of ethical dramatic rehearsal . This imaginative foresight is essential to scientific responsibility, and it is precisely here that science fiction becomes especially powerful. By offering a space to explore alternative futures, weigh risks, and question dominant assumptions in ways that are emotionally resonant and publicly accessible, science fiction narratives may allow both scientists and the broader public to anticipate consequences, understand the entanglements of science with social and cultural structures, and imagine more just and sustainable futures.

This paper aims to share reflections on a pedagogical framework that builds upon these theoretical foundations to explore how speculative fiction can function as a tool for regenerative dialogues through the Brazilian university extension model. In Brazil, extension programs (extensão universitária) are a constitutionally mandated part of public higher education, positioning universities as active participants in social transformation. These courses are typically free and open to a wide audience, including university students, professionals, and members of the public.

Drawing on three case studies – the 20-hour extension course "Regenerative Ecologies: Imagining Sustainable Futures through Science Fiction" (2024), the 20-hour extension course "Sisters of the Revolution: Reading and Discussing Science Fiction

by Women" (2025), and the 2.5-hour workshop "Science, Literature, and Sustainability: Approximations through Science Fiction" (2025), designed and taught by me, and implemented in public institutions in Brazil – this paper examines the combined potential of speculative narratives and the Brazilian university extension framework. For universities, these can evidence how extension programs can bridge gaps not only between disciplines but also between academic institutions and local communities, cultivating inclusive and transformative forms of learning. For educators and scientists, they highlight science fiction's capacity to serve as a pedagogical bridge. And for scholars and writers of science fiction, especially in the Global South, they underscore the genre's role as a site of public intervention where science, culture, and hope converge in the urgent task of imagining more just and sustainable futures.

References

Candido, Antonio, and Howard S. Becker. Antonio Candido: On Literature and Society. Princeton University Press, 1995.

Clayton, Jay. Literature, Science, and Public Policy: From Darwin to Genomics. 1st ed, Cambridge University Press, 2023.

Brown, Matthew J. Science and moral imagination: a new ideal for values in science. Science, values, and the public. Pittsburgh: University of Pittsburgh Press, 2020.

To Be Taught, If Fortunate: A Novella. London: Hodder, 2019.

Douglas, Heather. "Inductive Risk and Values in Science." Philosophy of Science 67, no. 4 (2000): 559–79.

Science, Policy, and the Value-Free Ideal. University of Pittsburgh Press, 2009.

Freedman, Carl. Critical Theory and Science Fiction. 1st ed. Middletown: Wesleyan University Press, 2000.

Longino, Helen E. Science as social knowledge: values and objectivity in scientific inquiry. Princeton, N.J: Princeton University Press, 1990.

Science as Social Knowledge: Values and Objectivity in Scientific Inquiry. Princeton University Press, 2020. https://doi.org/10.2307/j.ctvx5wbfz.

Moita, Filomena Maria Gonçalves Da Silva Cordeiro, & Fernando Cézar Bezerra De Andrade. "Ensino-pesquisa-extensão: um exercício de indissociabilidade na pós-graduação". Revista Brasileira de Educação 14, no 41 (agosto de 2009): 269–80. https://doi.org/10.1590/S1413-24782009000200006.

Experiential Futures Pedagogy: Ministry for the Future Framework for Cultivating Futures Literacy in Design Education

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Keywords: design futures; design education; futures literacy; ministry for the future; experiential futures

As global challenges become increasingly interconnected, uncertain, and disruptive, design education must evolve to cultivate new forms of anticipatory capacity (OECD, 2018; UN, 2023). Traditional innovation approaches, such as Design Thinking, often fall short in preparing learners to navigate multiple, entangled, and non-linear futures (Løgager et al, 2021). While effective for addressing present-day problems, Design Thinking remains anchored in the "now," lacking the tools to critically interrogate dominant imaginaries, confront long-term uncertainty, or unlearn inherited assumptions about what futures are possible or desirable (Meyer & Norman, 2019). In response, this paper argues for the integration of Design Futures as a pedagogical approach that expands futures literacy, reshapes design practice, and fosters collective capacities to imagine, critique, and materialise alternative futures.

The paper introduces Design Futures as a pedagogical process that blends design thinking, futures thinking, and the integration of generative AI to strengthen students' ability to anticipate change, identify signals, explore alternative futures, construct meaningful scenarios, and translate them into actionable strategies. Central to this approach is an emphasis on experiential learning and unlearning: students are encouraged to question taken-for-granted assumptions, employ speculative and critical perspectives, and engage in forms of futuring that foreground plurality, inclusivity, and ethical imagination.

To embed these principles within a coherent experiential infrastructure and situate the educational process in an immersive anticipatory context, the paper presents a "Ministry for the Future" storytelling framework developed by the authors. Within this narrative world, learners act as members of a fictional governmental body tasked with shaping future societies. This role-play mechanism exemplifies the experiential futures approach (Candy & Dunagan, 2017), by taking on roles within speculative ministries and departments, learners engage in narrative worldbuilding, collaborative scenario development, and embodied role-play that mobilise not only cognitive but also affective, emotional, and relational dimensions of anticipatory learning (Miller, 2018). This immersion enacts what the Design Futures literature frames as the design of futures: the intentional orchestration of processes through which futures are imagined, debated, and materialized. It reveals the tacit values, desires, and anxieties that shape how futures are envisioned and created, thereby opening up space for unlearning harmful or limiting imaginaries and experimenting with more plural, situated, and inclusive futures. More than a methodological enhancement, the authors propose the Ministry for the Future framework as a reorientation of design education toward critical, reflexive, and future-oriented learning that activates affect, empathy, desire, and relationality- key dimensions that shape anticipatory learning and expand how futures are sensed, taught, and critiqued.

Drawing on the Design Futures course implemented at Politecnico di Milano with master's design students, this paper presents insights from a three-phase exploration of the future of food, including Horizon Scanning, Visioning, and Worldbuilding, embedded within the Ministry for the Future of Food. The paper examines how the integration of this framework and the Design Futures process strengthens students' creative, analytical, and anticipatory capacities. We examine how the combination of Design Futures methods and narrative immersion fosters students' critical, creative, and anticipatory capacities. In particular, it demonstrates how learners develop skills in identifying signals of change, interpreting them to potential future impacts and opportunities, and using speculative design tools to challenge assumptions, expand their imagination, and build future scenarios. In this approach, the creation of tangible future artefacts played a central pedagogical role, serving as mediators that materialise and valorise future scenarios, enabling students to emotionally and sensorially engage with possible worlds. These artefacts, alongside the Ministry framework, support the translation of scenario insights into strategic proposals, reinforcing a sense of agency and illustrating how anticipatory learning can shift from passive forecasting to collective future shaping, thereby supporting learners in developing anti-fragile mindsets and enhancing critical capacities (Topîrceanu, 2017; Piscitelli, 2020).

This paper contributes to the Anticipation 2026 track Critical Capacities and Futures Literacy by demonstrating how anticipatory capacities can be cultivated through experiential, narrative-based, and collaborative learning infrastructures in design education. It highlights the role of storytelling, role-play, and futures prototyping in broadening access to futures thinking and activating emotional, affective, and relational dimensions often overlooked in traditional pedagogies. Dimensions essential for building imaginaries and fostering more situated, relational, and accessible futures thinking. Ultimately, the paper argues that Design Futures offers a transformative pathway for design education, preparing students to engage critically and creatively with the uncertainties that surround them. By framing futures literacy as a collective practice, this approach empowers emerging designers to make meaningful contributions to more just, responsible, and desirable futures.

Extending knowledge systems analysis toward the anticipatory

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Keywords: knowledge system analysis; energy; foresight; scenario analysis; forecasting

Organizations make consequential decisions based on knowledge claims concerning potential futures that are uncertain and contested. Knowledge systems analysis offers a powerful framework for understanding how organizations construct, validate, and mobilize knowledge; yet its theoretical foundations remain primarily oriented toward present conditions. Building on the work of Munoz-Erickson et al. (2017), this paper proposes extending knowledge systems analysis to explicitly examine how organizational knowledge systems engage with uncertain futures.

This extension proceeds along two paths. First, it situates foresight practices within the broader epistemic routines of knowledge systems, showing how anticipatory tools such as scenario analysis, forecasting models, and strategic planning processes operate as knowledge functions within existing organizational configurations. Second, it introduces the problem of disruptive uncertainty. Knowledge systems analysis largely presupposes stability, but periods of sociotechnical disruption require organizations to reconfigure their temporal orientations, epistemic commitments, and anticipatory equipment.

These theoretical developments are grounded in a case study of a US-based public power utility, the Salt River Project, at a moment when longstanding sociotechnical momentum meets rapidly shifting pressures in the energy transition. This case illustrates how actors renegotiated their orientation to the future and, in doing so, reshaped their anticipatory knowledge system.

By extending knowledge system analysis toward the anticipatory, this paper addresses broader questions about how organizations assess uncertainty, risk, and ambiguity, and how such assessments shape the futures they imagine. Because imagined futures guide present decisions, understanding how anticipatory knowledge is reconfigured during sociotechnical transitions offers critical insights for anticipatory governance, transition studies, and organizational epistemology.

Discussion:

This paper resonates with the conference theme Tensions in Temporalities in two critical ways. For decades, the electric utility had been gaining what Thomas Hughes called “technological momentum” (Bijker et al., 1989). This resulted in a narrowing of focus on the future as an object that can be forecast, optimized for, and scientifically managed. This corresponded well with the disciplinary commitments of the engineers and management professionals who led the organization. These tendencies would have served well in times of stability and certainty. In fact, these are the practices: efficiency-seeking, optimization, cost-minimization, etc., that would have been rewarded and reinforced. However, as the conditions of operations for utilities have changed, due to the emerging complexity of global climate change and the subsequent climate action, the modes of handling and orientation toward the future needed to change. This paper contributes to an ongoing scholarly dialogue about how futures become actionable in the present, a theme central to Grunwald (2011), Selin & Pereira (2013), and the Losch et al. (2019) edited volume. Each of these works examines

epistemic, methodological, and sociotechnical conditions under which future-oriented claims are produced, legitimized, and utilized. This paper aims to extend the plausibility of foresight from a methodological concern to a structural property of organizational knowledge systems, thereby deepening the link between foresight studies and science and technology studies.

References

Bijker, Wiebe E., Thomas P. Hughes, Trevor J. Pinch, and Trevor Pinch, eds. 1989. The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology. N.p.: MIT Press.

Grunwald, A. (2011). Energy futures: Diversity and the need for assessment. Futures, 43, 820-830.

Lösch, Andreas, Armin Grunwald, Martin Meister, and Ingo Schulz-Schaeffer, eds. 2019. Socio-Technical Futures Shaping the Present: Empirical Examples and Analytical Challenges. N.p.: Springer Fachmedien Wiesbaden.

Munoz-Erickson, Tischa A., Clark A. Miller, and Thaddeus R. Miller. 2017. “How Cities Think: Knowledge Co-Production for Urban Sustainability and Resilience.” Forests 8 (6): 1-17.

Selin, C., & Pereira, A. G. (2013). Pursuing Plausibility. International Journal of Foresight and Innovation Policy, 9, 93-109.

From Anticipation to Aspiration: Reorienting Design Pedagogy for Uncertain Futures

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Keywords: futures literacy; design pedagogy; futures making; futures education

Design pedagogy has long been entangled with the "not-yet," cultivating learners' capacities to navigate ambiguity, work within uncertainty, and materialize emerging possibilities. This paper argues that such pedagogical orientations offer crucial resources for rethinking how education can respond to climate volatility, technological acceleration, and systemic inequity. While design historically embodies a futural mode of learning, dominant pedagogical models often remain aligned with linear, solutionist, and industry-driven logics that emphasize prediction and problem-solving. A futures-literate approach requires reorienting design education around how students sense, interpret, and imagine emergent conditions rather than around what they produce. Doing so embeds futures literacy as a foundational pedagogical stance, enabling more pluralistic, relational, and aspirational engagements with the future(s).

The paper situates this reorientation within the broader history and politics of futuring. As scholars such as Urry (2016) and Appadurai (2013) note, since the post-war era, institutionalized futuring practices have relied on forecasting, extrapolation, and "business-as-usual" assumptions that reinforce capitalism, neoliberalism, consumerism, and individualism. Such expert-driven systems cast futures as commodities and marginalize people from participating in collective future-making. In contrast, recent scholarship on wicked problems, democracy, and collective action argues that meaningful responses to systemic crises require futures literacy and imagination. Futures literacy enables people to sense complexity, perceive relationality, and interrogate the socio-historical forces shaping the present. As Miller (2018) suggests, it cultivates new ways of making sense while opening possibilities for imagining transformational futures beyond linear projections. Scholars such as Haiven (2014), Appadurai (2013), Benjamin (2024), and others insist that expanding people's imaginative capacities is a civic responsibility, which is central to challenging hegemonic futurities and for shaping more just and sustainable alternatives.

Within this landscape, design offers a powerful set of epistemic and material practices for futures making. Futures making, as articulated by Ehn et al. (2014), invites participants to imagine and express their ideas for possible futures using the tactile, expressive, and speculative capacities of design. Social design, sustainability, and decolonial studies understand these practices as forms of ontological design. Following Willis (2006), ontological design asks how we come to be who and what we are, and how alternative futures might require reshaping values, institutions, and ways of living. As Whyte et al. (2022) describe, futures making is a participatory form of reflective inquiry that allows people to negotiate, evaluate, and give form to preferred futures, using tools designed to reimagine relationships between people and their world(s).

Building on these insights, this paper proposes that design pedagogy can play a far more expansive role, both within its own disciplinary boundaries and across other

educational fields, through a shifting from an ethic of anticipation and towards an ethic of aspiration. Drawing on Appadurai's notion of aspiration as a socially distributed capacity to imagine and enact alternative worlds, we propose aspirational futures practice as a foundational pedagogical orientation for educating in and for complex, uncertain times. In doing this we outline a shift in futures thinking from: fixed to in-flux, probable to possible, singular to plural, expert-driven to people-driven, industry-serving to society-serving, top-down to distributed, constrained imaginaries to critical imaginaries. Ultimately, we argue that design futures education can provide a crucial foundation for reimagining how pedagogy at large can nurture the collective capacities needed not only to anticipate uncertainty, but to critically and creatively shape more just worlds, and in doing so offer a model for pedagogical transformation across disciplines.

References

Appadurai, Arjun. The Future as Cultural Fact: Essays on the Global Condition. 1st ed. Verso, 2013.

Ehn, Pelle, Erling Björgvinsson, Elisabet M. Nilsson, Richard Topgaard, Anders Emilson, Per-Anders Hillgren, Anna Seravalli, Sanna Marttila, Mads Hobye, and David Cuartielles. Making Futures: Marginal Notes on Innovation, Design, and Democracy. Cambridge, US: MIT Press, 2014.

Haiven, Max. Crises of Imagination, Crises of Power: Capitalism, Creativity and the Commons. London: NBN International, 2014.

Miller, Riel. 2018. "Introduction: Futures Literacy: Transforming the Future." In Transforming the Future: Anticipation in the 21st Century, edited by Riel Miller, 1–12. London: Taylor & Francis.

Urry, John. What Is the Future? London: Polity, 2016.

Whyte, Jennifer, Alice Comi, and Luigi Mosca. "Making Futures That Matter: Future Making, Online Working and Organizing Remotely." Organization Theory 3, no. 1 (January 1, 2022): 26317877211069138. https://doi.org/10.1177/26317877211069138.

Willis, Anne-Marie. 2006 "Ontological designing." Design philosophy papers 4 (2), 69-92.

From Individual Futures Literacy to Social Foresight: A Collective Capability Framework

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Keywords: social foresight; futures literacy; collective capacities; critical futures research; anticipation

Contemporary futures work remains dominated by corporate, technological and strategic foresight traditions, which privilege prediction, optimisation and expert-driven planning. These approaches often neglect the social, relational and power-sensitive dimensions of anticipatory practice, resulting in narrow, path-dependent imaginaries. Scholars have warned that this produces collective blindness (Poli, 2015; Slaughter, 2004) and forms of futurelessness (Tutton, 2023) in which communities lack the capacity to imagine or act toward alternative futures.

Parallel to this, there are growing calls within futures studies and related fields to widen the futures gaze: to embrace plural, multicultural and post-capitalist imaginaries (Roth & Kaivo-oja, 2016; Escobar, 2018) and to build anticipatory capabilities across society rather than within institutions alone. As humanity faces interlocking crises that expose our systemic fragilities and injustices, the question of how societies can imagine and navigate shared and context-sensitive futures becomes ever more urgent. Social foresight resurfaces as a promising response, not merely as a method for planning, but as a societal capability to anticipate, imagine, and act collectively (Slaughter, 2004).

The paper presents the first systematic literature review dedicated to SF. Its contribution is fourfold. First, it consolidates how SF is conceptualised. Second, it develops a multi-dimensional capability framework that clarifies what makes foresight social. Third, it identifies the conditions, enablers, barriers and contexts that shape its emergence. Fourth, it articulates emerging perspectives. It reviews 82 peer-reviewed articles across futures studies, sustainability transitions, design, STS, community development, cognitive science and participatory governance. The analysis reveals that existing work converges into a coherent framework in which anticipatory capacity, collective capability and action constitute three interdependent dimensions of social foresight. Rather than treating these as discrete components, the framework conceptualises them as a dynamic capability system through which communities develop the abilities to imagine, share, negotiate and enact alternative futures. Participation emerges as a situated and relational process that enables the activation and sharing of images of the future (Lopez-Gomez & Criado, 2021). Anticipatory capacity encompasses reflexive, imaginative and ethical orientations that support anticipatory sense-making (Armanto, 2024). Action is understood as the concrete enactment of agency aligned with views of anticipation as a mechanism of social emergence (Fuller, 2019) and with design-oriented practices that shape material and institutional worlds (Zamenopoulos & Alexiou, 2020).

A key contribution of this review is to propose social foresight as a multi-dimensional capability system, integrating external participatory practices with internal reflexive, imaginative and moral development. This view extends previous work on futures literacy and futures consciousness by emphasising their local social embedding and relational character rather than a set of individual competences. At the same time, the review identifies critical tensions within the discourse. One of the most contested topics concerns the planning of “desirable futures.” While some strands of the literature

emphasize visioning and roadmapping toward preferred futures, others highlight the inherent risks of prescriptive desirability frameworks: Who defines what is “desirable”? Which cultural, political or institutional interests dominate? Early national foresight strategies illustrate how visions of the future can consolidate state power or marginalise alternative imaginaries. Other literature, in contrast, positions desirability as negotiated, situated and emergent, grounded in plural values and shaped by ongoing local deliberation rather than imposed. It highlights the need for infrastructures that can seed social foresight over time, moving beyond one-off participatory events toward iterative processes that create learning, identity and agency. By consolidating dispersed literatures, the paper advances critical understandings of how anticipatory capacities are cultivated, shared and transformed, contributing directly to the Anticipation 2026 theme of Critical Capacities and Futures Literacy.

References

Akavarapu, S. V. (2025). A systematic literature review furthering the participatory futures and governance debate to capacities. Futures, 173, 103670. https://doi.org/10.1016/j.futures.2025.103670

Bourgeois, R., Karuri-Sebina, G., & Feukeu, K. E. (2022). The future as a public good: Decolonising the future through anticipatory participatory action research. Foresight, 26(4), 533–549. https://doi.org/10.1108/FS-11-2021-0225

Fuller, T. (2019). Anticipation and the Normative Stance (Vol. 1, pp. 93–108). Scopus. https://doi.org/10.1007/978-3-319-91554-8_6

Koch, F., Resende, N., Cristofani, G. et Bozza, F. (2025b). Chapitre 3. Liminarités, vulnérabilisation et anticipation collective. Dans P. Frouté, F. Grima et O. Meier Migrations et transitions : Enjeux et perspectives : une approche pluridisciplinaire (p. 79-103). EMS Éditions. https://doi.org/10.3917/ems.frout.2025.01.0079.

Lehoux, P., Miller, F. A., & Williams-Jones, B. (2020). Anticipatory governance and moral imagination: Methodological insights from a scenario-based public deliberation study. Technological Forecasting and Social Change, 151. Scopus. https://doi.org/10.1016/j.techfore.2019.119800

Lichty, S. (2025). Trauma-Transformative Foresight: Exploring the Liminal Spaces between Futures Unconsciousness and Futures Consciousness. Journal of Futures Studies, 29(4), 57–73. Scopus. https://doi.org/10.6531/JFS.202506_29(4).0006

Maraud, S., & Roturier, S. (2023). Producing futures for the Arctic: What agency for Indigenous communities in foresight arenas? Futures, 153, 103240. https://doi.org/10.1016/j.futures.2023.103240

Miller, R., & Sandford, R. (2018). Futures Literacy: The Capacity to Diversify Conscious Human Anticipation. In R. Poli (Ed.), Handbook of Anticipation (pp. 1–20). Springer International Publishing. https://doi.org/10.1007/978-3-319-31737-3_77-1

Poli, R. (2015). Social foresight. On the Horizon, 23(2), 85–99. https://doi.org/10.1108/OTH-01-2015-0003

Roth, S., & Kaivo-oja, J. (2016). Is the future a political economy? Functional analysis of three leading foresight and futures studies journals. Futures, 81, 15–26. https://doi.org/10.1016/j.futures.2015.10.002

Slaughter, R. A. (2004). Futures beyond dystopia: Creating social foresight. Routledge.

Tutton, R. (2023). The Sociology of Futurelessness. Sociology, 57(2), 438–453. https://doi.org/10.1177/00380385221122420

Zamenopoulos, T., & Alexiou, K. (2020). Collective design anticipation. Futures, 120. Scopus. https://doi.org/10.1016/j.futures.2020.102563

Futures Literacy for Fashion: Initial Constructions to Activate Transformations in Imaginaries

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Keywords: futures literacy; anticipatory capacities; unlearning; regenerative fashion; plural futures

This work proposes Futures Literacy as a critical and transformative approach for the fashion industry. From an anthropological perspective, we understand fashion as a multifaceted phenomenon intertwined in everyday pluriversal living experiences, which influences and is influenced by sociocultural changes across multiple dimensions. We argue that the current hegemonic model—oriented by the logic of fast/ultra-fast reproduction, brief futures disconnected from plural realities—perpetuates imaginaries colonized by modern Western Eurocentric ideology, generating profound negative socio-environmental impacts and preventing the manifestation of alternative futures.

Learning and unlearning Futures Literacy, established as a UNESCO Chair in 2012, is grounded in the recognition that anticipation is a property common to all living beings, operating at three levels: conscious, subconscious, and unconscious. Our proposal cultivates anticipatory capacities through collective, situated, and relational processes that transcend the notion of individual skills.

In this context, unlearning emerges as a fundamental practice for dismantling limiting imaginaries. Specifically, we propose to deconstruct: temporal linearity (past-present-future as coordinated sequence), belief in imminent progress and infinite natural resources, hierarchization as means of organizing society, dualistic thinking that distances people from nature, and the notion of a single and universal reality of Western modernity.

This process of unlearning is not merely cognitive, but deeply affective and emotional. We recognize that affects, feelings, desires, and perceptions are fundamental elements that circulate in social imaginaries and underpin the formation, conformation, and transformation of different coexisting realities. The "awakening of the senses"—developed through constant investigation in everyday living culture—transcends rationalization, operating in the territory of feeling/perceiving/affecting/thinking as a way of perceiving weak signals and emerging ruptures.

To put this approach into practice, we have developed an integrated set of tools that expands how futures are perceived, taught, and critically analyzed:

The "Cone of Time" breaks with linear representations, proposing the interdependence between pasts, presents, and futures. Immaterial elements, such as ideas, values, and beliefs, circulate in decentralized spiral trajectories within the instances of the "Cone." This recognizes multiple types of futures (Possible, Plausible, Probable, Preferable, Predicted, Unimaginable/Absurd) and, crucially, multiple dimensions of the past—including "Unknown or Erased Pasts from History," referring to narratives deliberately made invisible by the hegemonic Eurocentric discourse.

STEEPHCOSI Framework: critical expansion of the STEEPH Prism incorporating macro spheres of Communication and Science. Enables systemic and ecosystemic

thinking by relating Social, Technological, Economic, Environmental, Political, Human, Communication, and Science dimensions interdependently, operating as instrument for conscious anticipation.

Weak Signals/Future Signals Analysis Canvas: systematizes investigation of emerging ruptures, facilitating multidimensional analysis and pre-imagination of scenarios through open, and questioning investigative posture.

Transversal and Vertical Investigation Strategies: cultivate immersion in everyday living culture through transdisciplinary reading, embracing complexity and complementarity beyond apparent oppositions.

Our approach explicitly dialogues with critical pedagogies by centering pluralities and diversities (recognizing futures in plural to manifest pluriversal experiences), practicing radical inclusion (involving diverse stakeholders from conception), valuing situated and relational knowledges (recovering ancestral epistemologies through exaptation, compensating communities), embracing relationality (rhizomatic understanding inspired by "Tangled Tree of Time"), and questioning normativities through "Unimaginable, Unexpected, or Absurd Futures."

We reformulate Futures Literacy for fashion through co-design practices: Speculative and Critical Design materializing alternative futures; Circular and Regenerative Design (longevity, modularity, biodegradable materials, zero waste); Technologies as democratizers (AI, digital twins, blockchain for transparency and traceability); Practices of sufficiency (services over products, degrowth strategies).

Our central argument is that fashion can transition from a destructive area to a "nursery of life"—a metaphor inspired by Clusia, a plant that in coastal plains stops strangling to become a cradle for other species. This transformation requires:

Regenerating lost connections: reconnecting the human-nature relationship, understanding that "we are nature."

Practicing reciprocity: establishing fair exchange relations with ecosystems and communities.

Liberating imaginations: creating conditions for people to conceive visions where regeneration is not a distant concept, but an everyday reality.

Regeneration emerges as a bolder horizon: being circular, responsible, and measurable is not enough—we must actively practice the healing and restoration of natural, social, and cultural systems. This implies the transition from extractivist logic ("how much can I take?") to transdimensional care logic ("how can I contribute?").

In our view, this work contributes to Critical Thinking and Literacy for the Future by:

Offering concrete tools that expand how futures are sensed, taught, and critiqued.

Proposing radical reshaping of design practices to make futures accessible.

Integrating critical pedagogies that value pluralities, relationalities, and situated knowledges.

Deconstructing limiting imaginaries anchored in linearity, progress, and extraction.

Reformulating Futures Literacy as a collective, situated, and relational practice in post-normal times.

The transformation in the deep structures of today's fashion system requires not only technical tools, but cultivating the collective capacity to radically imagine other futures, unlearn oppressive structures, and practice anticipation as transtemporal and intergenerational care aimed at planetary well-being.

References

Bezio, K., & Evans, J. (2016). Worldbuilding: Using imagination to create futures. In The Routledge companion to design research (pp. 198–220). Routledge.

Bleecker, J. (2009). Design fiction: A short essay on design, science, fact and fiction. Near Future Laboratory.

Cole, R. J. (2012). Regenerative design and development: Current theory and practice. Building Research & Information, 40(1), 1–6.

Deleuze, G., & Guattari, F. (1980). Mil platôs: Capitalismo e esquizofrenia 2. Ed. 34.

Dunne, A., & Raby, F. (2013). Speculative everything: Design, fiction, and social dreaming. The MIT Press.

Escobar, A. (2020). Pluriversal politics: The real and the possible. Duke University Press.

Gould, S. J., & Vrba, E. S. (1982). Exaptation — A missing term in the science of form. Paleobiology, 8(1), 4–15.

Hawken, P. (2017). Regeneration: Ending the climate crisis in one generation. Penguin Books.

Maffesoli, M. (2012). O tempo retorna: Formas elementares da pós-modernidade. Forense.

Miller, R., et al. (2018). Transforming the future: Anticipation in the 21st century. UNESCO.

Morin, E. (2011). O método vol. 4: As ideias — Habitat, vida, costumes. Sulina.

Scarano, F. R. (2024). Regenerative dialogues for sustainable futures: Integrating science, arts, spirituality and ancestral knowledge for planetary wellbeing. Springer.

Terry, N., et al. (2024). Inviting a decolonial praxis for future imaginaries of nature: Introducing the Entangled Time Tree. Environmental Science and Policy, 151, Article 103615. https://www.researchgate.net/publication/377040140_Inviting_a_decolonial_praxis_for_future_imaginaries_of_nature_Introducing_the_Entangled_Time_Tree

Tharp, B. M., & Tharp, S. M. (2018). Discursive design: Critical, speculative, and alternative things. The MIT Press.

How Cognition Shapes Foresight: A Narrative Tool to Explore Heuristics and Biases in Futures Thinking

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Keywords: futures literacy; cognitive correlates; psychology; biases; temporal orientation; foresight tools

The ways in which individuals imagine long-term futures and scenarios are shaped by cognitive processes that remain insufficiently explored in Futures Studies. This work integrates insights from cognitive psychology and Futures Studies to examine two key cognitive dimensions related to futures thinking: temporal orientations and cognitive distortions. Furthermore, a narrative tool designed to explore heuristics and biases in futures thinking is presented. The main aim is to integrate knowledge from cognitive psychology and Futures Studies to promote futures literacy (Miller, 2015).

Thinking about the collective and long-term future is a demanding activity for our cognitive system. It requires energy and effort to imagine long-term future possibilities about which we have few details and little urgency. Futures Studies methodologies help people imagine long-term possible, plausible, probable, and preferable futures (Poli, 2018; Voros, 2005). While there is ample work on theoretical and practical aspects of Futures Studies, the individualities of "homo prospectus" (Seligman et al., 2016) tend to be overlooked. Relatively little is known about the psychological correlates of futures thinking, particularly when long-term time spans are concerned (Faiella & Corazza, 2025). By understanding how we think and imagine futures and recognizing the plurality of futures (Voros; 2005), it is possible to cultivate futures literacy: the ability not only to anticipate possibilities, but to consciously design them (Miller, 2007). Furthermore, this understanding can facilitate more open, inclusive, and transformative scenarios, stimulating creative thinking, essential for anticipation (Corazza, 2017).

Even if numerous methodologies are used in Futures Studies (Poli, 2018), to the best of our knowledge no tool focuses specifically on the awareness of the role of the cognitive dimension in the foresight process. In the present work we consider specifically two aspects of cognition related to futures thinking: temporal orientations and cognitive distortions. Furthermore, we present a narrative tool to explore these dimensions. The main aim is to integrate knowledge of cognitive psychology and futures studies to promote futures literacy (Miller, 2015).

First, we focus on different temporal orientations that influence expectations and decisions: Past-Negative, Past-Positive, Present-Hedonistic, Present-Fatalistic, Future-Positive and Future-Negative (Zimbardo & Boyd, 2014; Košťál et al. 2016). Differences between thinking about personal futures and the futures of a community are also discussed (Page & Putnam, 2025).

Second, we analyze "mental shortcuts" (i.e., heuristics) and "cognitive distortions" (i.e., biases) related to futures-thinking. Heuristics and biases (H&B), while useful for dealing with complexity (Tversky & Kahneman, 1974), can influence imagination and scenario building (Schirrmeister et al., 2020). Twenty-five H&Bs are presented, classified into three categories that reflect three critical dimensions of foresight: information selection

(cherry-picking category), group dynamics (group-bubble category), and evaluation of expected outcomes (outcome misperception category) (Faiella et al., 2025).

Finally, the Archetypes cards are presented. Archetypes cards are a narrative tool to promote awareness of the cognitive dimension within foresight processes. Each card presents a short story accompanied by a series of questions meant to stimulate conversation around the biases and heuristics evoked by the narrative. The tool uses fictional characters to address behaviors that commonly inhabit group dynamics in foresight work. After an initial individual phase of reflection and inspiration, the cards are explored in sub-groups and then in plenary sessions. This structure helps participants familiarize themselves with the three categories of cognitive distortions (cherry-picking, group-bubble, and outcome misperception) and reflect on how these behaviors often emerge during teamwork.

The topics covered in this paper are related to the conference themes, particularly theme 2: Critical Capacities and Futures Literacy.

References

Corazza, G. E. (2017). Creativity and anticipation. In Handbook of Anticipation (pp. 1-13). Springer, Cham.

Faiella, A., Coletto, I., & Corazza, G. E. (accepted). Seeing the future through colored glasses: Heuristics and biases in futures thinking. Possibility studies

Faiella, A., & Corazza, G. E. (2025). Cognitive mechanisms in foresight: A bridge between psychology and futures studies. Futures, 166, 103547. https://doi.org/10.1016/j.futures.2025.103547

Košťál, J., Klicperova-Baker, M., Lukavská, K., & Lukavský, J. (2016). Short version of the Zimbardo Time Perspective Inventory (ZTPI–short) with and without the Future-Negative scale, verified on nationally representative samples. Time & Society, 25(2), 169-192. https://doi.org/10.1177/0961463X15577254

Miller, R. (2007). Futures literacy: A hybrid strategic scenario method. Futures, 39(4), 341-362. https://doi.org/10.1016/j.futures.2006.12.001

Page, E. R., & Putnam, A. L. (2025). Temporal consistency of collective future thinking. Journal of Applied Research in Memory and Cognition. https://doi.org/10.1037/mac0000262

Schirrmeister, E., Göhring, A. L., & Warnke, P. (2020). Psychological biases and heuristics in the context of foresight and scenario processes. Futures & Foresight Science, 2(2), e31. https://doi.org/10.1002/ffo2.31

Seligman, M. E., Railton, P., Baumeister, R. F., & Sripada, C. (2016). Homo prospectus. Oxford University Press.

Voros, J. (2003). A generic foresight process framework. foresight, 5(3), 10-21. https://doi.org/10.1108/14636680310698379

Zimbardo, P. G., & Boyd, J. N. (2014). Putting time in perspective: A valid, reliable individual-differences metric. In Time perspective theory; review, research and application: Essays in honor of Philip G. Zimbardo (pp. 17-55). Cham: Springer International Publishing.

Tversky, A., & Kahneman, D. (1974). Judgment under Uncertainty: Heuristics and Biases: Biases in judgments reveal some heuristics of thinking under uncertainty. science, 185(4157), 1124-1131.

Implementing Futures Literacy in Higher Education: The FuturesComp Framework as a Conceptual and Practice-Oriented Approach for Inclusive and Intergenerational Anticipation

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Keywords: futures literacy; FuturesComp; anticipation; higher education; POLY-futures; competence framework; transformative education; intergenerational responsibility

The profound ecological, social, cultural, and economic disruptions of the Anthropocene era challenge higher education institutions to reconsider their societal role and the way they facilitate learning. Futures Literacy (FL), as emphasized by UNESCO, provides individuals and communities with the democratic and anticipatory capacity to navigate uncertainty, critically examine assumptions, and engage with plural futures as a resource for collective action (Miller, 2018). However, FL is frequently considered an individual cognitive skill rather than a situated, relational, and institutional practice.

This contribution presents FuturesComp: a practice-oriented reference framework for Futures Literacy in Austrian higher education. It was developed between 2024 and 2025 by an interdisciplinary team, in collaboration with two UNESCO Chairs. Based on a systematic analysis of literature, expert interviews, and focus group workshops, FuturesComp introduces a comprehensive model comprising five interconnected competence areas: exploring, shaping, taking responsibility, participating, and developing oneself in POLY-futures – a term that highlights the variety and diversity of possible, probable, desirable, and disruptive, etc. futures.

FuturesComp builds on existing approaches by integrating the cognitive, affective, conative, and, crucially, imaginative aspects of anticipatory thinking and action. This positions FL as an embodied, creative, ethical, and intergenerational practice. It reimagines higher education institutions as not only sites of competence development, but also as public infrastructures of anticipation that promote inclusive, dialogical, and transdisciplinary work on the future (Kazemier et al., 2021).

As a conceptual practice contribution, this paper outlines how the framework can inform the design of curricula, pedagogical innovation, and institutional culture. Five 'Next Practices' demonstrate how Futures Literacy (FL) can be integrated into different disciplines and levels, supporting learners and educators in developing situated hope, reflexive agency, and plural anticipatory capacities. FuturesComp is presented as an open, evolving framework that encourages collaboration and promotes ethical, transformative, and caring futures in an era of accelerating global change.

Just thinking about the future. Foresight as a form of escapism

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Keywords: foresight; escapism; short term; long term; history

Many people have a tough time coping with life and lose themselves in drugs, social media, games or attending business meetings. But you can escape not only in a specific activity or by going to another place, but also by moving in time.

For many people, the past is a safe haven to avoid undergoing too much of the hardships of daily life. Nostalgic feelings or musings give many people a certain amount of peace. Especially in dynamic and complex times. It often reassures people that although the current times are uncertain and dynamic, history always repeats itself and that quieter times are therefore on the way. And that the current dynamics and uncertainty are therefore nothing new because we already had them in earlier times. History thus offers us comfort because it enables us to escape from the dreary present.

We can also escape into the present by leaving that traumatic future behind us (definitively?) and not worry too much about the future. Because we cannot predict it anyway: que sera, sera. The rise of 'mindfulness' is a fine exponent of this need that has thus grown into a social trend. In fact, the various mechanisms by which we avoid the future by focussing on the present are numerous: procrastination, short-terminism, future and managerial myopia, the failure by organisations to become ambidextrous, and so on. You could indeed consider this a form of escapism: we flee the future so that we can focus on the present. This can also be defined negatively: because we only focus on the present, we do not have to worry about the future. After all, in the long run we are all dead.

The focus on the present, also known as the short term, is a key factor in explaining why foresight studies are rarely really successful and have an impact. 'The urgent drives out the important', so that today's concerns take precedence in attention and in the distribution of scarce resources over the opportunities and threats of tomorrow and the day after tomorrow. Many empirical studies of the future (i.e., not of the future itself but of how organizations look at the future) try to explain which factors play a role in this. Examples: the users of foresight studies often have a different mindset than their producers, the timing of the foresight study is wrong because it does not fit into the planning cycle of the organization, and the outlined future images differ too much from the official or default future of the organization or of the powerful CEO.

The somewhat paradoxical question is whether the future can also be a factor in this. The thesis is that the future is used as an excuse not to decide anything in the present so that no other future arises (the essential goal of foresight) and the status quo will continue and provide an 'old' future that is pleasing to 'the powers that be'. The future is then always pushed forward and is then nothing more than a place that can and may be freely fantasized about, but which must be kept far away from the current reality so that the decision-making process cannot be disturbed and can continue to be based on current, if not historically conditioned, assumptions and parameters. It is like an ‘utopian reflex’ where decision makers like to fantasize and speculate about the distant future, but at the same time let their decisions about it be guided by daily worries. There is no question of 'ambidexterity', in which the short and long term are neatly balanced, and again we have that ‘the urgent drives out the important’.

Thus, escapism in this form therefore has a rather different meaning than in the 'classical' sense. In that situation, it is a coping mechanism to deal with the harshness of daily existence, while in this future escapism-variant it is a way to get (deliberately) stuck in the present. So paradoxically, we do not escape to the future to be in that future, but rather to make sure that we do nothing with that future so that the present can take its course.

‘Future escapism’ is then precisely a postponement of the future because that future will never be shaped for our decisions and actions in the present. It is precisely the failure to act on the future that causes stagnation, or a future that does not change in itself, and is not intended to change. It is interesting that even in publications that praise the (current) technological and social dynamics, people often speak as if we are on the eve of something very big or that the future has yet to really begin.

It must be said that it is also possible for organizations to escape into the future by not caring about the present at all, let alone the past. The phenomenon of 'managerial hyperopia' (Burt, McKay &Perchard, 2015) in which organisations pay too much attention to the future and forget the present is an apt expression of this. But I don't think this happens in many organizations. Usually lip service is paid to the future and people talk about it, but they do not know how to make the link with decisions in the present that then get their own dynamics in which daily considerations are dominant. The desired dialectical relation between the present and the future is thus deliberately abandoned.

From postponement comes cancellation, is a Dutch saying. Those who escape the future postpone the future and will never benefit from what is sown in the present. For foresight to be truly effective, she will have to become more aware of this form of escapism and develop ways to combat it.

References

Burt, G., MacKay, D., & Perchard, A. (2015). Managerial hyperopia: A potential unintended consequence of foresight in a top management team? Technological Forecasting and Social Change, 101, 134–146. https://doi.org/10.1016/j.techfore.2013.12.012

Learning to Stay with the Unknown: A Processual Journey of Futures Literacy in Iran

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Keywords: futures literacy; uncertainty; collective Learning; anticipatory practices; Iran

This paper narrates a collective learning journey that led to the emergence of the National Futures Literacy Network in Iran. Rather than presenting Futures Literacy as a predefined methodology or transferable toolkit, the paper offers a situated, processual, and reflective account of how the concept was encountered, questioned, translated, and practiced within a context marked by uncertainty, institutional fragility, and constrained agency.

The starting point of this journey was an initial encounter with Futures Literacy through a public lecture by Riel Miller. This moment was experienced as both inspiring and unsettling. Futures Literacy was introduced not as a technique for predicting or controlling the future, but as a fundamentally different way of relating to time, uncertainty, and human agency. While this perspective resonated strongly with the lived experience of working within Iran's higher education and health systems—systems shaped by rapid change, instability, and weak futures—it also raised critical questions: What does it mean to "use the future" in contexts where futures often appear constrained or fragile? How can anticipatory practices avoid becoming abstract, imported, or detached from everyday institutional realities?

Following this initial encounter, a period of collective inquiry, dialogue, and study unfolded, gradually leading to the formation of an interdisciplinary team committed to exploring Futures Literacy in practice. One of the team's first collective decisions was to translate UNESCO's Futures Literacy book into Persian. This translation was understood not merely as a linguistic exercise, but as an epistemic and cultural intervention aimed at widening access, fostering dialogue, and testing the resonance of Futures Literacy concepts within local academic and professional communities. The translation process itself became a site of Futures Literacy practice, revealing tensions between global conceptual frameworks and local meanings, and prompting continuous reflection on interpretation, relevance, and contextual adaptation.

The official launch of the Persian translation marked another turning point: the formal emergence of the National Futures Literacy Network in Iran. The network was intentionally conceived not as a rigid institutional structure, but as an open, relational space for experimentation, learning, and dialogue across disciplines, with a particular focus on education and the integrated health system.

Within this evolving network, two Futures Literacy Laboratories were designed and implemented as key experiential milestones. The first laboratory focused on students and foregrounded the importance of revealing hidden assumptions about the future. Participants became aware of how their present concerns, anxieties, and choices were shaped by implicit and often unexamined images of the future. A central learning outcome was the distinction between probable, possible, and desirable futures, and the recognition that the future is not only something to be anticipated, but a resource for

questioning the present. The role of emotions—especially anxiety and hope—in shaping anticipatory reasoning emerged as a critical insight.

The second laboratory engaged academic staff from diverse disciplines within Iran's integrated education and health system. Here, the most significant learning related to the connection between Futures Literacy and science convergence. Participants came to see convergence not simply as a structural or policy requirement, but as a deeply cognitive, relational, and ethical process. Scenario-based and assumption-disrupting exercises highlighted the need for new shared languages, openness to uncertainty, and a redefinition of the academic role—from knowledge transmission toward facilitation, care, and the cultivation of collective agency.

Across both laboratories, Futures Literacy was experienced less as an individual cognitive skill and more as a relational, affective, and ethical capacity: the capacity to stay with uncertainty, to hold paradox, and to mobilize the future as a space for reflection rather than prediction. Hope emerged as a central theme, understood not as naïve optimism, but as an active, disciplined, and project-oriented imagination that enables action within constraints.

At the same time, the journey revealed significant challenges, including institutional inertia, expectations for immediate instrumental outcomes, and tensions between participatory, reflective practices and dominant managerial logics in higher education. Despite these challenges, key opportunities emerged: the formation of a human network of practitioners, the creation of a shared anticipatory language across disciplines, and renewed reflection on the role of universities in shaping futures under conditions of uncertainty.

The paper argues that the experience of the National Futures Literacy Network in Iran demonstrates how Futures Literacy, when approached as a collective, situated, and experiential journey, can support learning to live with uncertainty, reconfigure agency, and cultivate active hope within fragile systems. By sharing this contextualized trajectory, the paper contributes to broader conversations within the Anticipation community on how Futures Literacy travels, transforms, and takes root across diverse socio-cultural contexts.

Learning to use the Future without Acting? The Action Paradox of Futures Literacy

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Keywords: futures literacy; reframed futures; transformative learning; action; paradox

Futures Literacy, as developed by Riel Miller, describes the capability to consciously use the future in shaping present perception, decision-making and action. Central to this approach is the distinction between Anticipation for the Future (AfF), which reproduces routine, goal-oriented future imaginaries, and Anticipation for Emergence (AfE), which employs the future as a non-deterministic, "disposable" construct to expand anticipatory imagination. Futures Literacy Laboratories operationalise this shift through the use of reframed futures. However, a paradox lies at the core of this framework: while reframed futures are intended to open radically new possibilities, the translation of these insights into concrete action is discouraged, as action is framed as a form of future colonization. Drawing on pragmatist learning theory, this paper argues that learning can only become a sustained capability if reframed perspectives give rise to experimental forms of action. The paper therefore examines under what conditions reframed futures can support durable Futures Literacy while enabling action without undermining its non-deterministic principles.

Futures Literacy (FL) has been coined by Miller (2018a:15) as the capability that enables people to better understand the role of the future in what they perceive, decide and do in the present. Drawing on anticipatory systems theory (Rosen 1985) and the Theory of Anticipation (Poli 2017), Miller (2018b:10) argues that human behaviour is inherently expectation-based and therefore anticipatory.

Miller distinguishes two paradigms of anticipation. Anticipation for the Future (AfF) uses the future as a probable or desirable goal, representing socially learned patterns that often reproduce the same expectations and may confine both imagination and action to narrow, seemingly predetermined futures. Anticipation for Emergence (AfE) instead treats the future as a non-goal whose imaginability is unconstrained by probability or desirability. AfE seeks novelty in the present by expanding anticipatory imagination beyond presently dominant ideas of what is realistic, achievable or preferable. FL is attained as a capability when individuals can consciously navigate both AfF and AfE (Miller 2018a:20-21).

Futures Literacy Labs (FLLs) provide the main didactic framework for developing FL (Miller 2018b:7). FLLs' linchpin constitutes the reframe, an alternative scenario free from routine anticipatory assumptions. Confronting participants with a reframe ideally disrupts habitual AfF thinking and facilitates a shift toward AfE, making the reframe the central learning moment in FLLs (Miller 2018c:104).

And yet, a paradox appears to lie at the heart of FL. While reframed futures are intended to free learners from deterministic assumptions and enable them to imagine radically new possibilities, the Futures Literacy Framework discourages translating these new perspectives into concrete action, since acting is understood as an attempt to "colonise" the future (Miller 2018a:21). Consequently, FL as conceptualised by Miller asks learners to generate transformative insights but provides no means to enact or empirically test them. From a pragmatist perspective (Dewey 1910), though, learning can only occur if the newly generated perspectives give rise to new forms of action that are experimentally explored. Thus, becoming futures literate seems to depend on

precisely what its own theory prohibits: the move from reframed imagination to practical experimentation.

Put differently, it remains unclear how the temporary disruption of routine ways of imagining the future can support learners in building FL as a sustained capability, or how such capability might translate into altered future-oriented action in the present. Against this backdrop, the objective of my PhD research project is to examine whether, and under what conditions, reframed futures generated through FL practices can contribute to the stabilisation of such a capability. In doing so, the project investigates how alternative futures might inform or enable concrete forms of action without contradicting FL's commitment to non-deterministic, non-colonising principles of anticipation.

References

Dewey, J. (1910). How we think. Buffalo/New York: Prometheus Books.

Miller, R. (2018a). Sensing and making-sense of futures literacy. Towards a Futures Literacy Framework (FLF). In: Miller, R. (Ed.). Transforming the future. Anticipation in the 21st century. London: Routledge, 15-50.

Miller, R. (2018b). Introduction: Futures literacy: Transforming the future. In: Miller, R. (Ed.). Transforming the future. Anticipation in the 21st century. London: Routledge, 1-12.

Miller, R. (2018c). Futures Literacy Laboratories (FLL) in practice. An overview of key design and implementation issues. In: Miller, R. (Ed.). Transforming the future: Anticipation in the 21st century. London: Routledge, 95-109.

Poli, R. (2017). Introduction to anticipation studies. Cham: Springer.

Rosen, R. (1985). Anticipatory systems: Philosophical, mathematical, and methodological foundations. Oxford: Pergamon Press.

Mapping images of the future regarding Artificial Intelligence: A Scenario Planning activity with in-service Science and Mathematics Teachers

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Keywords: futures literacy; science education; scenario planning; artificial intelligence narratives

This study utilizes a dataset of four narratives, generated by in-service Science and Mathematics teachers from São Paulo, Brazil, to explore their images of the future concerning Artificial Intelligence. We analyse how participants envisioned present conflicts, future possibilities, and recurring thematic concerns. Our analysis reveals that teachers emphasized current challenges, such as data privacy and the influence of AI on behaviour, positing that these issues may be resolved in the future. Concurrently, they projected new future challenges and expressed optimistic expectations regarding AI advancement, citing improvements in living conditions and an increase in spare time. We argue that these situated narratives, even those with optimistic outcomes, underscore a critical need to move beyond passive anticipation. Therefore, our findings emphasize the necessity of active construction and navigation of possible futures to foster anticipation, complexity thinking, and enhanced decision-making skills.

Rationale

The pursuit of predictability ensures security, in providing a sense of control over our lives and supports us in anticipating the potential risks of our decisions (Hines & Bishop, 2015). Yet, as Ulrich Beck's Risk Society theory (1992) suggests, we are now living in a world characterized by pervasive, often invisible risks that transcend national boundaries. These risks demand new ways of thinking about the future.

Science education has long acknowledged the socio-political dimensions of scientific and technological change through approaches such as Science, Technology, Society, and Environment and Socioscientific Issues education (Rasa & Laherto, 2022). However, these frameworks frequently remain anchored in present-centered dilemmas. What remains underdeveloped is the explicit cultivation of future-oriented reasoning, which helps learners imagine multiple possible futures. Approaches informed by anticipation studies (Levrini et al., 2019) offer valuable opportunities for science education, treating the future as a conceptual resource to explore uncertainty and open alternative possibilities for action.

As demonstrated by the “future focus” principle in The New Zealand Curriculum (Ministry of Education, 2007), Futures Thinking connects learning areas and key competencies, essential not only for individual decision-making but also for collective democratic engagement (Ministry of Education, 2011).

Against this backdrop, science education is crucial for fostering anticipatory capacities that enable learners to interpret, imagine, and critically assess the societal impacts of scientific and technological developments. This rationale underpins the present study, which investigates how practicing teachers construct images of the future in relation to Artificial Intelligence.

Design and methods

To address participants' perceived futures, we design an activity of scenario planning following Peter Schwartz's scenario planning framework (Schwartz, 1992), which involves an 8-step procedure: (1) Identifying the Focal Issue; (2) Establishing Key-Factors; (3) Determining Driving Forces; (4) Ranking Driving Forces by Importance and Uncertainty; (5) Selecting Scenario Logics; (6) Fleshing out the Scenarios; (7) Implications; (8) Selecting Leading Indicators and Signposts. Due to time restraints, steps (7) and (8) do not apply for this study.

Participants in this study were 16 in-service Science and Mathematics teachers enrolled in a training course. They were required to respond to the following issue: "What will be the impact of Artificial Intelligence on São Paulo's society over the next 30 years, and its implications for the economy, labour market, education, health, and governance?". Twenty-six Key-Factors were given to participants based on two reports (WEF, 2024; Future Today Institute, 2024).

In four groups, participants engaged in steps (3) through (6), resulting in a two-by-two scenario planning matrix (Schwartz, 1992). Each group selected a preferred scenario and constructed a narrative pertaining to it. Qualitative data were collected from these four narratives. Subsequent analysis followed a thematic analysis approach (Braun & Clarke, 2006).

Results

The results derive from a qualitative thematic analysis of the four narratives. Since each group constructed a preferred scenario, the narratives reflect how participants translated the analytical steps of the scenario planning process into narrative interpretations of long-term sociotechnical change.

Across the four narratives, the corpus reveals a consistent pattern in how teachers imagined long-term sociotechnical futures. Although scenarios varied, most groups constructed futures that combined optimistic expectations about technological progress with concerns rooted in present-day individual vulnerabilities. Our qualitative analysis focused on identifying recurrent themes, tensions, and anticipatory assumptions embedded in these narratives.

For instance, Group 1 suggested that AI's impact on individual behaviour and the absence of data control will cease through continuous regimentation and public sphere intervention. While this outcome would lead to reduced consumption and sustainable measures, the group stressed that society will face massive unemployment due to AI replacing human services, significantly increasing government welfare expenditure.

The narratives generally balanced AI opportunities and threats, reflecting current challenges and future expectations (Groups 2 and 3 yielded similar outcomes). Group 4 focused only on the best future outcomes, whereas Group 2 emphasized negative future aspects but included proactive measures to mitigate them.

Microfoundations and the collaborative anticipation of business transitions : a research agenda

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Keywords: collaborative anticipation; organizational foresight; microfoundations; strategy-in-practices ; sustainability transitions ; organizational change

Within the perspective of the coordinated and collaborative actions required to address grand challenges (George et al., 2016), collaborative anticipation approaches (Heger and Rohrbeck, 2012; Wiener et al., 2020; Jokinen et al., 2022) are playing an increasingly important role in how industries explore and debate their future transformations, particularly in the context of sustainability transitions. While this literature has largely shown how such approaches can contribute to the construction of shared sectoral visions, their conditions of emergence, modes of diffusion, and concrete effects within organizations remain underexplored. This paper addresses this gap by examining the microfoundations (Foss & Pedersen, 2016) of collaborative foresight approaches, understood as the routines, roles, actor profiles, and devices that foster their emergence, enable organizational participation in anticipation communities, and support their subsequent operational integration.

The paper adopts a processual and inter-level perspective (Geels, 2005), grounded in the Strategy-in-Practices literature (MacKay et al., 2020) and, more broadly, in processual and longitudinal approaches to strategy and organizational change (Pettigrew, 1990). It examines how anticipatory orientations take shape, stabilize, and transform through organizational activity, in connection with the practices, routines, and devices mobilized in strategic work. The objective is to better understand how collaborative anticipation becomes embedded in situated organizational dynamics, without reducing it to a purely cognitive exercise or an isolated strategic artifact.

Empirically, the study draws on qualitative materials from sector-level collaborative foresight programs, complemented by organizational case studies, focus groups, and semi-structured interviews with actors involved both in collective anticipation initiatives and in internal strategic work. These materials are used to explore the conditions under which anticipatory orientations emerge, diffuse, are reworked, distanced, or mobilized within processes of organizational reconfiguration.

In the context of transitions driven by grand challenges, this paper contributes to research on organizational foresight (Gordon et al., 2022) and responsible futures (Arnaldi et al., 2020) by proposing an open analytical framework for studying collaborative anticipation as a situated process embedded in organizational practices and dynamics. It opens a research agenda on the microfoundations of collective anticipation, the role of practices in articulating sectoral dynamics and organizational transformations, and the concrete ways in which anticipation may support (or constrain) organizational transformation trajectories.

Misinformation Dynamics and Emerging Vulnerabilities

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Keywords: misinformation; futures vulnerabilities; futures thinking challenges; misleading information

The spread of fake news and dis/misinformation dates back to the earliest human interactions and remains an inseparable part of communication (Cassar, 2023). Today, people need to be more sensitive to the risks of misinformation and consuming right information. Misinformation, like harmful medicine, leaves lasting effects that weaken us over time, in decision-making and thinking abilities. At present, even small errors or misinformation can have serious consequences, especially with the current stage of AI systems and digital media. This research focuses on misinformation and misleading information and how the dynamics of interactions are shaped.

In the context of the distribution of falsehoods, we are dealing with disinformation, false information that is shared consciously and with deliberate intent, and misinformation, which refers to false content that may not stem from malicious intent (Cassar, 2023; Jin et al., 2020; Karinshak & Jin, 2023; Lewandowsky et al., 2012). The perceived truthfulness of information may vary according to specific geographical, historical, or ideological contexts (Ruokolainen, Widén, & Eskola, 2023). Moreover, temporal dynamics play a significant role in determining whether information is considered misinformation. Therefore, a critical aspect of misinformation, is linked with contextual validity, meaning that an information can appear factual under a special state, but later prove false or conversely, one day in the future it turns out to be true, because of limited resources or special context of a specific place

No matter what it's called, this kind of inaccurate information can have serious consequences on various aspects by distorting facts, influencing personal preferences, and creating misperceptions (Jin et al., 2020). When it comes to the futures decision-making, uncertainty is inherent in every decisions of the futures. Therefore, within futures-oriented inquires, inherent biases make misinformation an inseparable element of futures knowledge construction. Futures knowledge comprises five components: observer, object, perspective, context, and local knowledge (Ahlqvist & Uotila, 2020), each of these elements can contribute to partial, distorted, or misleading interpretations of the futures and we will have a fertile ground for misinformation as a result which can create social divisions, people who believe the right and those who believe the wrong information (Monsees, 2023), which lead to a culture of mistrust. Additionally, correcting misinformation is difficult. There is a system of agents, including object, observer, and the process of dissemination, with interconnected relations. Due to this, even for fact-checking, which depends on various conditions, like context and time, we need to be aware of how a piece of potential misinformation changed the entire system, causing false information to be perceived as truth. Research tends it is often ill-defined in practice, resembling a black box within an emerging field, with focusing narrowly on the individual level, despite the fact that misinformation operates within complex, multi-agent networks (Cacciatore, 2021; Cassar, 2023; Havelin, 2021).

The accuracy of information is threatened by the nature of the content itself, the interactions between its creators and receivers, and the feedback loops that emerge from these interactions, as previously discussed. The most challenging part is the impacts of these drivers on the system, such as the ability to regenerate misinformation or change a system attribute. For instance, futures thinking abilities and taking action

for desired futures for individuals in the system can be easily influenced. As a result, these challenging area creates vulnerabilities for people and underscoring the need to raise awareness in societies. Therefore, understanding the key elements of how misinformation is created and spread is essential for effectively addressing it.

In this research, we assume a system of misinformation which can explain the dynamics among different elements. From this perspective, the implications are stemming from the complex interactions among different layers of the system. The dynamics of the system are unpredictable and the behaviors of the agents are depended on the system interactions. As Igor Ansoff (Ansoff, 1980) stated, three information filters could be important, including observation, mentality and power filters. Thus, we need to consider the group of agents from micro, meso, or macro level which can easily change the whole environment and affect interactions in the system. From Macro level of the system, upstream policies, and grand challenges, and from Micro level, interpersonal or agents, interactions would affect the dynamics of misinformation. Meso level of the system, such as the linking institutions between micro-level actions to macro-level structures would have influences, as well. Additionally, these three levels are also connected through mutual information flows. From this point of view, various triggers can initiate risk pathways, resulting in vulnerability exposure.

This study, based on a literature review, introduce misinformation dynamics, through a system view, collectively give rise to the harmful impacts. It focuses on the potential drivers that generate and spread misinformation in societies within the lens of complex system and futures studies, and how their impacts can create a feedback loop, increasing vulnerability to misinformation and pose threats to societies.

References

Ahlqvist, T., & Uotila, T. (2020). Contextualising weak signals: Towards a relational theory of futures knowledge. Futures, 119, 102543. https://doi.org/https://doi.org/10.1016/j.futures.2020.102543

Ansoff, H. I. (1980). Strategic issue management. Strategic management journal, 1(2), 131-148.

Cacciatore, M. A. (2021). Misinformation and public opinion of science and health: Approaches, findings, and future directions. Proceedings of the National Academy of Sciences - PNAS, 118(15), 1-8. https://doi.org/10.1073/pnas.1912437117

Cassar, D. (2023). The Misinformation Threat: A Techno-Governance Approach for Curbing the Fake News of Tomorrow. Digital Government: Research and Practice, 4(4), 1-28.

Havelin, M. (2021). Misinformation & Disinformation in Canadian Society. A system analysis & futures study.

Jin, Y., van der Meer, T. G. L. A., Lee, Y.-I., & Lu, X. (2020). The Effects of Corrective Communication and Employee Backup on the Effectiveness of Fighting Crisis Misinformation. Public Relations Review, 46(3), 101910. https://doi.org/https://doi.org/10.1016/j.pubrev.2020.101910

Karinshak, E., & Jin, Y. (2023). AI-driven disinformation: a framework for organizational preparation and response. Journal of communication management (London, England), 27(4), 539-562. https://doi.org/10.1108/JCOM-09-2022-0113

Lewandowsky, S., Ecker, U. K. H., Seifert, C. M., Schwarz, N., & Cook, J. (2012). Misinformation and Its Correction: Continued Influence and Successful Debiasing. Psychological Science in the Public Interest, 13(3), 106-131. https://doi.org/10.1177/1529100612451018

Monsees, L. (2023). Information disorder, fake news and the future of democracy. Globalizations, 20(1), 153-168.

Ruokolainen, H., Widén, G., & Eskola, E. L. (2023). How and why does official information become misinformation? A typology of official misinformation [Article]. Library and Information Science Research, 45(2), Article 101237. https://doi.org/10.1016/j.lisr.2023.101237

Modeling Anticipatory Systems and Processes in Futures Literacy Laboratories: A Multi-Layer Agent-Based Exploration

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Keywords: futures literacy iaratories; anticipatory systems and processes (ASP); agent-based modelling; collective anticipatory capacity; using-the-future

Futures Literacy Laboratories (FLLs) have proven effective as experiential spaces for disrupting dominant assumptions about the future and enabling new ways of sensing, interpreting, and using the future in the present. Yet a persistent empirical and theoretical puzzle remains: similar FLL designs often generate markedly different anticipatory and behavioral outcomes. While some participants undergo deep transformation and sustained changes in action, others develop only conceptual awareness, and some resist or disengage altogether.

This research approaches Anticipatory Systems and Processes (ASP) as a multi-layer, non-linear phenomenon unfolding across internal sense-making, social interaction, and collective patterns of action. Building on Futures Literacy theory and practice, it proposes an agent-based modeling (ABM) framework as a complementary exploratory method to examine how anticipatory capacities emerge, differentiate, and stabilize through dialogic encounters under conditions of uncertainty and plurality.

Rather than assuming uniform learning trajectories, the contribution foregrounds heterogeneity, emergence, and path dependence in anticipatory learning. The models explore how structural design conditions of FLLs, differences in how participants process disruption, and micro-level behavioral mechanisms interact to produce divergent anticipatory outcomes. Particular attention is given to the critical gap between understanding futures and acting differently in the present, as well as to the role of social influence, credibility, and contextual pressures in enabling or constraining the scaling of individual transformation into collective futures capability.

By conceptualizing ASP as a dynamic interplay between cognitive openness, behavioral agency, and relational dynamics, the research offers a novel analytical lens for studying futures literacy as a situated, relational, and practice-based capacity. The proposed modeling framework does not seek prediction, but rather supports hypothesis generation, identification of leverage points, and clarification of conditions under which collective anticipatory capability can emerge, or fail to do so, even when individual learning is present. The contribution speaks directly to ongoing debates on critical capacities and futures literacy by showing how anticipatory learning is shaped not only by design or pedagogy, but by layered interactions between people, practices, and contexts in post-normal conditions.

The models presented should be read as evolving analytical lenses rather than finalized representations. They reflect a progressive exploration of ASP layers, moving from structural conditions to learning diversity and behavioral mechanisms.

Putting anticipation in its place? Towards a repertoire of temporal imagination

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Keywords: time; temporality; transformation; pedagogy; education

The field of Futures Studies and, more latterly, Anticipation studies, has for nearly 80 years worked to create conditions for critical, reflective 'uses of the future' (Miller, 2018) with the hope of opening up the possibilities of better worlds that might be latent in the present (Adam & Groves, 2007)

Today, however, we live in a world racked with geopolitical conflict, genocide and ecocide, rising authoritarianism and rampant extractivism. Young people around the globe report deep anxiety and pessimism about the futures that they are promised (Hickman et al., 2021) and in many countries, there is growing concern that the life chances of the next generation will not exceed those of the current. The SDGs, the last gasp of 20th century planetary planning paradigms, are struggling to gain traction as a coordination device and our collective proximity to a world beyond hunger and at peace, seems as far away as ever.

In response to this, there are calls for education programmes to educate students about better futures and increasingly fraught demands for better stories about the future to make visible the alternatives that might be available. In this paper, however, we ask whether 'the future' might be part of the problem, whether 'anticipation' is potentially pathological, and whether viable responses to the escalating failures of our global societies today, may demand a complete rethinking of western, industrialised temporal assumptions dominated by timelines and projections, scenarios and deadlines. Indeed, we argue that the near exclusive conflation of 'possibility' with the future tense may be blinding us to sources of social imagination and collective coordination that are urgently needed in the present.

Instead, we make the case that situating, or provincializing, anticipation as one mode of temporal imagination (Facer, 2023, 2024) amongst many, is necessary if we are to address the underlying failures of relationality (de Oliveira Andreotti, 2021) that create the conditions for the present polycrisis. To make this argument, we report on a two-year programme of activist design-research partnering universities with policy makers, communities and activists concerned with the question of clean water in the UK. It describes a series of pedagogic interventions – cards, games, facilitation techniques - designed to decentre human temporalities and to better understand how ecological, technological, social, geological and cultural rhythms lock current practices in place, and to explore what it would take to unpick and realign social rhythms to create new possibilities (Facer & Hand, 2026). The paper introduces the concept of a 'field guide for time' – showing how attunement to multiple temporal elements and shapes can feed awareness of more abundant resources for (and barriers to) transformation.

Drawing on this research the paper shows the limitations of futures-oriented discourses of change and foregrounds how, by playing with time and rhythm, histories and futures, a wider range of possibilities for social transformation might become visible.

References

Adam, B., & Groves, C. (2007). Future Matters: Action, Knowledge, Ethics. Brill.

de Oliveira Andreotti, V. (2021). Hospicing Modernity: Facing Humanity's Wrongs and the implications for social activism. North Atlantic Books.
Facer, K. (2023). Possibility and the temporal imagination. Possibility Studies & Society, 1(1–2), 60–66. https://doi.org/10.1177/27538699231171797
Facer, K. (2024). Educating the temporal imagination: Teaching time for justice in a warming world. Educational Philosophy and Theory, 1–14. https://doi.org/10.1080/00131857.2024.2378086
Hickman, C., Marks, E., Pihkala, P., Clayton, S., Lewandowski, R. E., Mayall, E. E., Wray, B., Mellor, C., & van Susteren, L. (2021). Climate anxiety in children and young people and their beliefs about government responses to climate change: A global survey. The Lancet Planetary Health, 5(12), e863–e873. https://doi.org/10.1016/S2542-5196(21)00278-3
Miller, R. (2018). Transforming the Future: Anticipation in the 21st Century. Routledge/Unesco.

Renewed emergences of organizational foresight. Longitudinal study of the French Gendarmerie's anticipation capacity

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Keywords: anticipatory capacity; emergence; corporate foresight; strategy-as-practice; public organisation

This contribution analyses the conditions for the emergence of an anticipatory foresight capacity within public organisations, from the case of the French National Gendarmerie, focusing on the articulation between strategic management and operational management (OECD, 2025). It is part of a research project whose overarching question is : what are the conditions for emergence and development of an anticipatory foresight capacity that articulates these two levels in a public organisation? The paper concentrates on the emergence dimension, drawing on a longitudinal research on the foresight capacity within the Gendarmerie – particularly through the Centre de Prospective de la Gendarmerie Nationale (CPGN) – and on a first round of qualitative interviews.

The empirical case foregrounds a constitutive tension : the Gendarmerie is simultaneously exposed to the short-term of operational urgency (crisis management, immediate responses) and the long-term of anticipation and strategic transformation. In this context, the foresight capacity does not emerge in a continuous or linear fashion. The longitudinal analysis of the case instead reveals cycles of activation, dormancy and renewal of the anticipatory capacity : creation of dedicated structures, reforms and reorganisations, redeployments, shifting institutional mandates. The issue is to understand how, across these cycles, an anticipatory capacity is progressively constructed that, at certain moments, is able to articulate long-term strategic concerns with day-to-day operational constraints.

Methodologically, the contribution combines two types of material. First, a longitudinal analysis (Pettigrew, 1990) of the foresight capacity within the Gendarmerie, centred on the creation of the CPGN in 1998, its early developments, and the subsequent transformations up to its formal dissolution and the reconfiguration of the anticipation capacity within other structures, particularly the Centre de Recherche de la Gendarmerie Nationale (CRGN). This longitudinal analysis of the organisational anticipation capacity relies on analysis of official documents, study reports, internal archives and the "library" of studies produced, which together constitute the institutional memory of the foresight capacity. Second, a first round of semi-structured interviews has been conducted with stakeholders involved at different moments in these activities (former CPGN members). These interviews are analysed using an analytical framework structured around three emergence perspectives : emergence and anticipation (Gordon et al., 2020) ; emergence and organisational transformation (Christensen & Lægreid, 2025; Vanhengel et al., 2025); emergence and strategy-as / in practices (Jarzabkowski et al., 2022; MacKay et al., 2020; Whittington, 1996).

The contribution sits at the intersection of several research streams. First, it mobilises work on corporate foresight (Gordon et al., 2020) through to ethical and responsible futures (Arnaldi et al., 2020; Fuller et al., 2024; van der Duin, 2019), which examines how public organisations do more than predict and instead make certain futures

debatable, just and governable. This perspective shows situations where interviewees talk about the future, risks, responsibilities, and the justification of foresight towards the authorities and hierarchy.

Second, the contribution engages with literature on transformation of public organisations (Christensen & Lægreid, 2025; Vanhengel et al., 2025), showing that anticipatory foresight capacity does not follow a linear trajectory. By tracing moments when respondents evoke reforms, structural changes, the creation or suppression of units and devices, and episodes where foresight appears, disappears or is redeployed, the analysis uncovers sequences of reconfiguration in which the foresight capacity is requalified and displaced. Here, emergence is conditioned by political windows (reforms, changes of tutelage, new priorities),

organisational resources (positions, budgets, reporting lines) and formal arrangements (centres, committees, units). This allows us to nuance approaches that treat anticipation as a simple "tool" to be implemented, by re-embedding it in the shifting and sometimes fragile dynamics of public institutions.

Finally, the contribution engages with strategy-as-practice (Jarzabkowski et al., 2022; Whittington, 1996) and strategy-in-practices approaches (MacKay et al., 2020), focusing on concrete practices (meetings, tools, routines, improvisation) through which anticipation is done in practice and, in some cases, moves up towards the strategic level. At this level, the analytical framework identifies sequences where interviewees describe foresight meetings, tools used, work routines, document flows that introduce anticipatory thinking into otherwise highly constrained daily activities. The analysis underscores the role of key stakeholders and formal validation circuits that can either enable the upward movement of these practices into strategic decision-making or conversely block or render them invisible.

By combining these three perspectives, the longitudinal analysis brings to light a set of conditions for emergence (organisational, political, practical) of an anticipatory foresight capacity articulating strategy and operations. At the organisational level, favourable conditions appear when the foresight capacity has an explicit mandate, dedicated resources, and a recognisable place in the institutional architecture, even if this place is temporary and subject to revision. At the political level, emergence is tied to crises, reforms and explicit demands for long-term projection, which create windows of opportunity but may also generate hard-to-meet expectations. At the level of practice, emergence depends on the constitution and stabilisation of micro-practices of anticipation, routines, tools and networks that make it possible to produce and circulate visions of the future beyond restricted circles.

The connection with the conference themes operates on several levels. On one hand, the case study illustrates Theme 1 on temporalities in tension: anticipatory capacity emerges precisely within the tension between a short time dominated by urgency and a long-term oriented towards transformation, with foresight playing a mediating role in relating these temporalities rather than definitively harmonising them. On the other hand, the analysis of cycles of appearance, dormancy and renewal of the foresight capacity speaks to discussions under Theme 2 on critical capacities and futures literacy in the public sector, by showing how anticipatory learning sediments, is partially lost, and is reactivated in renewed contexts. And to some extent, by treating anticipation as a situated practice, traversed by issues of legitimation, responsibility and power, the contribution engages ongoing debates with Theme 3 on governance, justice and the inherently political nature of anticipatory practices in public organisations.

References

Arnaldi, S., Eidinow, E., Siebers, J., & Wangel, J. (2020). Wisdom, Responsibility and Futures : Introduction to WiseFutures N.0. Futures, 118, 102529. https://doi.org/10.1016/j.futures.2020.102529

Christensen, T., & Lægreid, P. (2025). Future Challenges of Public Administration. Public Performance & Management Review, 0(0), 1-26. https://doi.org/10.1080/15309576.2025.2549297

Fuller, T., Marchais-Roubelat, A., Roubelat, F., Heraclide, N., & Ward, A. K. (2024). Towards principles for responsible futures.

Gordon, A. V., Ramic, M., Rohrbeck, R., & Spaniol, M. J. (2020). 50 Years of corporate and organizational foresight : Looking back and going forward. Technological Forecasting and Social Change, 154, 119966. https://doi.org/10.1016/j.techfore.2020.119966

Jarzabkowski, P., Seidl, D., & Ballogun, J. (2022). From germination to propagation : Two decades of Strategy-as-Practice research and potential future directions. Human Relations, 75(8), 1533-1559.

MacKay, B., Chia, R., & Nair, A. (2020). Strategy- in -Practices : A process philosophical approach to understanding strategy emergence and organizational outcomes. Human Relations, 74, 001872672092939. https://doi.org/10.1177/0018726720929397

OECD. (2025). Building Anticipatory Capacity with Strategic Foresight in Government : Lessons from Lithuania, Italy, and Malta. OECD Public Governance Reviews. https://doi.org/10.1787/d7eb0bb6-en

Pettigrew, A. M. (1990). Longitudinal Field Research on Change : Theory and Practice. Organization Science, 1(3), 267-292. https://www.jstor.org/stable/2635006

Van der Duin, P. (2019). Toward “Responsible Foresight” : Developing Futures that Enable Matching Future Technologies with Societal Demands. World Futures Review, 11(1), 69-79. https://doi.org/10.1177/1946756718803721

Vanhengel, S., George, B., Letens, G., & Verweire, K. (2025). The organizational change capability of public organizations : Concept and measurement. Public Money & Management, 0(0), 1-12. https://doi.org/10.1080/09540962.2025.2506732

Whittington, R. (1996). Strategy as practice. Long Range Planning, 29(5), 731-735. https://doi.org/10.1016/0024-6301(96)00068-4

Secondary Education in Times of Uncertainty: Futures Literacy as a Pedagogy of Freedom in the Age of AI

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Keywords: futures literacy; secondary education; critical pedagogy; digital innovation

In a historical moment shaped by accelerating digital transformation and the expanding influence of artificial intelligence, education can no longer be confined to the transmission of technical skills or the passive adaptation to externally defined futures. Today's secondary schools are confronted with a generational need that is both epistemic and existential: the need for young people to develop the anticipatory capacities required to inhabit uncertainty, question dominant narratives of technological inevitability, and cultivate the imaginative and ethical agency to shape alternative futures. This paper proposes a theoretical and methodological framework for integrating futures literacy and anticipatory practices into secondary education, drawing on research and experimental programmes developed by the Institute for Educational Technology of the Italian National Research Council (CNR-ITD). Anchored in critical pedagogy, futures studies, and sustainable digital innovation, the approach reframes the school as a cultural ecosystem in which students and teachers learn to work with the future rather than merely prepare for it. Against pervasive narratives that depict digital innovation as neutral, unstoppable, and detached from questions of justice and responsibility, the proposed perspective treats anticipatory education as a democratic and emancipatory practice. Futures literacy is presented not as an optional enrichment but as a necessary cultural capability for enabling young people to understand complexity, interrogate socio-technical imaginaries, and articulate desirable futures grounded in equity, sustainability, and care.

Empirical insights are drawn from two experimental initiatives. In the course Artificial Intelligence and Robotics: New Generations, New Visions, students and teachers used backcasting to build desirable futures with technology, transforming uncertainty into a generative space for collective orientation. In the speculative design laboratory InspAIr, students created artefacts and narratives that exposed hidden power structures, values, and inequalities embedded in emerging AI systems. Across these experiences, learning emerged as a relational and creative process: technologies became prompts for inquiry rather than predetermined solutions, and the classroom became a shared laboratory where imagination, critical reflection, and ethical responsibility converged. Students learned not only to anticipate change but to contest it, reinterpret it, and envision futures they consider worth striving for.

The results suggest that introducing anticipatory practices in secondary education has a transformative capacity that extends beyond innovation or curriculum design. It repositions the future itself as an educational space—a space in which fear gives way to informed hope, where uncertainty becomes a site of inquiry rather than anxiety, and where collective imagination becomes a form of civic agency. In line with Freire and bell hooks, this perspective understands education as a practice of freedom: a place where knowledge and emotion, critique and creativity, responsibility and wonder coexist, enabling students to recognise themselves as active participants in shaping the world that is coming. Anticipatory education thus becomes a form of cultural and political preparation, equipping new generations with the tools to navigate paradox, engage with technological complexity, and resist visions of the future that are narrow, exclusionary, or predetermined by commercial and technocratic logics.

At a time marked by ecological crises, technological acceleration, and widespread social disorientation, the urgency of embedding futures literacy within education is evident. Cultivating anticipatory thinking is not simply an educational reform; it is a commitment to safeguarding the imaginative and democratic capacities of young people. It means offering them the cultural resources to reimagine coexistence, to reclaim agency over the conditions of their lives, and to use the future not as a distant horizon but as a lens for transforming the present. By integrating futures-oriented practices into secondary education, we can help seed forms of freedom, responsibility, and hope that are essential for sustaining more just and livable futures.

Rooted in the conference theme Critical Capacities and Futures Literacy, this contribution also speaks across the conference's transversal concerns, engaging the affective and experiential dimensions of Embodying and Sensing Futures, the speculative and participatory orientations of Futuring by Designing, and the democratic and ethical questions reflected in Governance, Justice, and the Public.

Teaching Futures Consciousness: An Empirical Analysis of Pedagogical Practices in Higher Education

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Keywords: futures consciousness; futures literacy; higher education; pedagogical practice; anticipatory capacities; relational learning

This study investigates the tacit process knowledge and pedagogical reasoning educators employ to cultivate Futures Consciousness within the complex reality of higher education. While the field of futures-oriented education is expanding, recent integrative reviews indicate a persistent gap between theoretical aspirations and pedagogical reality. Theoretical contributions regarding Futures Consciousness (FC) and Futures Literacy (FL) remain fragmented, and empirical insights into how educators translate these concepts into complex learning environments are scarce (Ketonen-Oksi & Vigren, 2024; Koch et al., 2025). Furthermore, existing research often relies on short-term interventions or single workshops, the long-term impact of which remains questionable (Armanto, 2024). This leaves the situated reality of how educators actually design and facilitate these learning experiences largely unexplored. To address this, the present study adopts Educational Design Research (EDR), a methodology chosen to generate ecological validity by investigating interventions within the constraints of authentic practice (McKenney & Reeves, 2019). EDR operates in a context of discovery, serving as an exploratory tool to identify the mechanisms that connect pedagogical practices to outcomes (Kelly, 2006).

This paper addresses the identified gap by presenting findings from an expert interview study among higher education practitioners. It positions itself within the broader movement to make Futures Literacy a tangible, lived capability, resonating with the narrative approach of the recent Seeing the Unseen publication (Khafaji Zadeh et al., 2024), which highlights how futures literacy helps uncover new perspectives and reimagine personal and collective futures. Just as Seeing the Unseen reveals the personal journeys of FL practitioners, this study seeks to document the experiential knowledge held by educators, which often remains tacit and undocumented (Pauw & Beneker, 2015).

The analysis builds on a dual analytical framework developed in a preceding review (Koch et al., 2025), combining the Futures Consciousness model (Ahvenharju et al., 2018) with the 3-P model of learning (Tynjälä, 2013). This framework supports analysis of how contextual conditions (Presage), pedagogical processes (Process), and intended outcomes (Product) interact in futures education. Data was collected through ten expert interview sessions: nine individual interviews and one joint expert interview involving three participants, resulting in a total of twelve respondents. Participants were educators and teacher-researchers primarily affiliated with universities of applied sciences, complemented by one respondent from a research university and one from a commercially offered master's program. This diversity was included to surface variation in institutional context rather than to enable representative or comparative claims. Interviews followed an apprentice orientation (Langley & Meziani, 2020) to elicit process knowledge, defined as knowledge grounded in practice that can be articulated verbally but often remains unconscious (Bogner et al., 2018). Consistent with the study's constructivist epistemology, data were analysed using Reflexive Thematic Analysis (Braun & Clarke, 2022). In the analysis, contributions from the joint interview were treated as situated expert accounts, not as expressions of group consensus.

The findings reveal a pedagogical tension that transcends specific learning objectives or target groups. While the study identifies distinct design orientations, ranging from professional application in disciplinary practices to broader civic engagement, a recurring meta theme emerged regarding the student posture toward learning. Educators consistently reported that students have been socialized to view study as a finite task to be accomplished rather than an unbounded inquiry into the self, the world, and their potential talents or professions . The pedagogical intent to foster curiosity, wonder, and deep engagement often stands in direct opposition to the transactional expectations students bring to the curriculum, a tension educators actively struggle to overcome. Consequently, the process knowledge held by these educators centers heavily on the relational conditions required to disrupt this transactional logic. The study highlights that inviting students to share, explore, and open up requires a carefully cultivated sense of safety within the group and in relation to the teacher. This finding suggests a critical theoretical insight: if individuals construct their views of the future and the world in relation to others and their culture, the process of unlearning these entrenched narratives and rebuilding new futures must also be fundamentally relational.

By making visible the situated pedagogical practices through which futures consciousness is currently taught, this paper contributes to Theme 2 by foregrounding anticipatory capacity-building as a relational and normative educational practice. It shows that fostering Futures Consciousness cannot be reduced to cognitive instruction or the application of standardized methods, but involves educators actively working against the transactional logic of higher education. The study highlights the importance of pedagogical spaces in which students are invited to unlearn inherited narratives and engage with the open nature of their own possible futures.

References

Ahvenharju, S., Minkkinen, M., & Lalot, F. (2018). The five dimensions of Futures Consciousness. Futures, 104, 1–13. https://doi.org/10.1016/j.futures.2018.06.010

Armanto, A. R. A. (2024). Futures participation as anticipatory practice — what do futures workshops do? European Journal of Futures Research, 12(3). https://doi.org/10.1186/s40309-024-00226-4

Bogner, A., Littig, B., & Menz, W. (2018). Generating qualitative data with experts and elites. In U. Flick (Ed.), The SAGE handbook of qualitative data collection (pp. 652–667). SAGE Publications.

Braun, V., & Clarke, V. (2022). Thematic analysis: A practical guide. SAGE. •Kelly, A. E. (2006). Quality criteria for design research: Evidence and commitments. In J. van den Akker, K. Gravemeijer, S. McKenney, & N. Nieveen (Eds.), Educational design research (pp. 107–118). Routledge. •Ketonen-Oksi, S., & Vigren, M. (2024). Methods to imagine transformative futures: An integrative literature review. Futures, 157, 103341. https://doi.org/10.1016/j.futures.2024.103341

Khafaji Zadeh, R., Gulmans, J., & Damhof, L. (Eds.). (2024). Seeing the unseen: Uncovering personal journeys in futures literacy. Hanze University of Applied Sciences.

Koch, M. J., Sools, A. M., Spaas, G. H. J., & Westerhof, G. J. (2025). Learning Futures Consciousness: An integrative review. Futures, 173, 103654. https://doi.org/10.1016/j.futures.2025.103654

Langley, A., & Meziani, N. (2020). Making interviews meaningful. The Journal of Applied Behavioral Science, 56(3), 370–391.

McKenney, S., & Reeves, T. C. (2019). Conducting educational design research (2nd ed.). Routledge.

Pauw, I., & Béneker, T. (2015). A futures perspective in Dutch geography education. Futures, 66, 96–105. https://doi.org/10.1016/j.futures.2015.01.00

Tynjälä, P. (2013). Toward a 3-P model of workplace learning: A literature review. Vocations and Learning, 6(1), 11–36. https://doi.org/10.1007/s12186-012-9091-z

Teaching Futures in Design: What happens in the classroom

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Keywords: design futures; design education; futures methods

The link between design and futures has become increasingly emphasized in design research (e.g., Morrison et al., 2025; Fu et al., 2025; Swan et al., 2025). As Candy and Dunagan (2017, p. 136) noted, the connection between design and futures has evolved into '(…) a more intimate and collaborative relationship': designers are adopting futures methods (e.g., scenario building, foresight tools), while futurists utilize design practices (e.g., prototyping). Similarly, Buehring and Bishop (2020) argued that integrating design and foresight offers a way to 'understand change, the future, and the means of influencing it in preferable ways' (p. 427). Overall, this close relationship between the fields of design and the future forms the foundation for our study.

In this paper, we examine how futures perspectives are taught in design education across three universities: LAB University of Applied Sciences (Finland), Royal College of Art (United Kingdom), and Aalborg University (Denmark). Specifically, we analyze the programme and course descriptions of the bachelor's and master's programmes at these universities, paying special attention to specific courses – Future Foresight (LAB, 5 ECTS), Design Futures (Aalborg, 5 ECTS), and the programme (Design Futures, Royal College of Art, 1-year MDes program). At each institution, we interviewed the responsible educators to understand what methods and activities are taught to students to promote future thinking among the next generation of design professionals.

The intersection of design and futures is a growing research field with many terms. Here, we cite a few examples of terms used. Irwin (2015) proposes transition design for sustainable futures. Candy and Dunagan (2017) introduce experiential futures to craft situations that inspire insights and change. Mazé (2020) discusses concept, critical, and persuasive design, which engage with possible futures: concept design explores speculative ideas; critical design challenges existing narratives; persuasive design influences behavior. Simeone and D'Ippolito (2022) present design-driven foresight, combining design and foresight to create immersive future representations that impact strategy. Gross and Mandir (2024) define design futuring as a practice that helps stakeholders imagine desirable futures. Dunne and Raby (2024) apply speculative design to address wicked problems. Galdon (2025) lists approaches such as speculative design, cybernetics futures, co-speculative, prospective, and xeno design as methods of applying futures to design. These varied terms in the field are also reflected in design education, where a multitude of terms and methods are used (Dziobczenski, Niemelä-Nyrhinen, in review).

In connecting our study to the Anticipation 2026 themes, this paper mainly contributes to "Critical Capacities and Futures Literacy" by providing empirical evidence of how futures is actually taught in design education across three universities. By outlining the methods and activities in the courses and programmes, we offer concrete examples that other design schools can use as inspiration or benchmarks when incorporating futures into their own curricula. This study is an initial, exploratory investigation

intended to open a dialogue with the Anticipation 2026 community, bringing the perspective of design education into conversation with futures studies scholars and practitioners, and inviting reflection on how the two fields can further inform each other.

References

Buehring, J., & Bishop, P. C. (2020). Foresight and Design: New Support for Strategic Decision Making. She Ji, 6(3), 408–432.

Candy, S., & Dunagan, J. (2017). Designing an experiential scenario: The People Who Vanished. Futures, 86, 136–153.

Dunne, A., and F. Raby. 2024. Speculative Everything, With a New Preface by the Authors: Design, Fiction, and Social Dreaming. MIT press.

Galdon, F. 2025. RCA/Futuring; A Decade of Future(s) Research at the Royal College of Art. The Design Journal 28, no. 1: 165-172

Gross, B., and E. Mandir. 2024. Designing Futures: Speculation, Critique, Innovation. 1st ed. Vol. 1.

Irwin, T. 2015. Transition Design: A Proposal for a New Area of Design Practice, Study, and Research. Design and Culture 7, no. 2: 229–246.

Mazé, R. 2020. Design and the Future: Temporal Politics of “Making a Difference.” In Design Anthropological Futures, 37–54. Routledge.

Morrison, A., Celi, M., Clèries, L., & Dudani, P. (2021). Anticipatory Design and Futures Literacies: A Need and a Hope.

Simeone, L., and B. D’Ippolito. 2022. The Potential of Design-Driven Foresight to Support Strategy Articulation through Experiential Learning. Long Range Planning 55, no. 6 (December 1).

Swan, K. S., Valentine, L., & Candi, M. (2025). Dream of 2053: Futuring innovative product design. The Design Journal, 28(1), 1–8.

Widening the field's anticipatory bandwidth: the Futures Reframed journal as experiment for reimagining scholarly publishing.

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Keywords: futures; publishing; academia; anticipation

Futures and anticipation studies often examine how futures are shaped in society. This paper turn the lens inward. We ask how the field's own academic publishing infrastructures shape the futures it can imagine, the uncertainties it can face, and the darkness it can bear.

Our starting point is a widespread unease about academic publishing: research that becomes increasingly commercialized and competitive, review systems that strain under pressure and diminishing time for genuine intellectual engagement. These pressures show up in mundane ways: paywalls around publicly funded knowledge, author fees that restrict who can publish and review cultures that are emotionally costly for many.

We founded the Futures Reframed journal as an experiment in reimagining scholarly publishing, grounded in openness and genuine care. In practical terms, the journal operates as Diamond Open Access: articles are free to read and free to publish, meaning neither readers nor authors pay publication fees. We also work with a double open and fully transparent 'kind' review policy: authors and reviewers know one another, collaborate in strengthening a manuscript and the review process can be shared alongside the published piece. We hope that these choices change what risks authors can take and how disagreement is held.

Futures discourse often drifts toward light: hope, possibility, progress, solutions. Our inaugural issue begins from a simple observation: the future also holds grief, rage, uncertainty, loss, hopelessness, silence, exhaustion and the unknown. The issue Darkness Reframed engages with these elements as more than emotions to manage; they become an epistemic space from which futures thinking can deepen. The point is not catharsis. The point is scholarly permission to stay with discomfort long enough for more honest questions to surface, including questions about what cannot be fixed in time, what is already lost and what forms of responsibility remain when optimism no longer performs well.

When review systems reward fast clarity and confident positioning, authors may learn to smooth over ambivalence and suppress darker registers that are part of many crises too. Futures Reframed experiments with the question of whether publishing could also widen the field's anticipatory bandwidth: its capacity to hold grief and uncertainty as legitimate scholarly material, without immediately converting them into reassurance.

As such, we treat the journal as an empirical site. In the paper, we draw on early process documentation: editorial decision-making, author-reviewer trajectories, review

artefacts, and reflective accounts by the editorial team. Our analysis reads these materials through anticipation studies and scholarship on knowledge infrastructures and open peer review, focusing on what they accelerate, what they stall, what they render safe, and what they make socially costly.

The paper contributes to the Anticipation 2026 conversation in a way that fits Theme 7, Open Explorations. We present a field-facing experiment that explores anticipation at the level of the scientific publishing culture. Futures Reframed positions the journal itself as a research object and a research intervention: a place where the futures field can test what happens when publishing supports openness, collaboration and care and when darkness is welcomed as a serious starting point for anticipatory inquiry.

Young people's trust and cynicism in anticipating digital futures for education

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Keywords: education; speculative methods; AI; digital futures; trust

Speculative digital education future-making with young people is a form of anticipation that has the potential to surface crucial possibilities, but also creates risks. Activating critical digital literacies is an essential part of cultivating anticipatory capacities and countering the sense that digital futures are already written. However, developing critiques of technology in educational settings can produce dissonance and cynicism amongst young people, who generally lack agency to avoid or repair what they may come to regard as unfair or undesirable tech uses in schools. Drawing on Ojala's work on hope and trust in relation to global sustainability futures, the talk discusses how participatory and speculative methods can work at the boundaries of critique and trust in school contexts. It examines these issues in relation to a research project which sought to understand how speculative futures methods could mobilise the voices of young people in UK secondary schools, guiding education leaders towards materialising responsible AI principles in educational policy and practice.

Cynicism, or what has been described as "digital resignation" (Draper & Turow, 2019), comes about when risks and problems with technology are understood, but where agency to act and change things is limited or not perceived to be effective. In educational settings, young people have little meaningful ability to affect how their data is used or withdraw consent for the use of technology (Day et al., 2024; Pangrazio & Bunn, 2024; Persson, 2024). Speculative and other participatory work with young people that activates critical questions and perspectives about technology may risk students' digital resignation, if knowledge about what is unfair, exploitative or opaque cannot translate to change. Ojala (2017) asserts that a critical stance towards sustainability must be combined with trust in order for anticipatory thinking to function transformatively. This paper explores how to mobilise this principle in relation to digital futures work.

It does so by building on research, undertaken in 2024, with groups of young people from three schools in Scotland and England. The groups worked with artist-educators and researchers in a series of speculative workshops about the future of responsible AI in Education (AIEd). The workshops revealed a generally hopeful orientation towards education, and a belief that schools could and should work against the problematic aspects of AI and big tech they perceived in their personal and social lives, for example in relation to privacy, creativity and sustainability. Participants did not believe that big tech would protect them from these problems, but they thought that schools could and would erect boundaries on their behalf (Ross et al., in press).

This belief does not necessarily reflect the reality of AIEd, which is producing a range of tensions and issues for educators and education leaders, including around unanticipated impacts of platformisation and datafication on teaching and learning, and pressures on education systems to authorise for-profit AI and other tech interventions in schools (Williamson et al., 2023). Young people's belief in schools to provide protection from extractive and unethical aspects of big tech is also at odds with many educational visions of increasing integration between schools and AI, for example those of the current UK Government, which seeks to "accelerate development of

pioneering AI tools" to help with assessment and feedback , and views AI as a "a fundamental part of its mission to break down barriers to opportunity for children and young people" (Ofsted, 2025).

Young people's voices have been argued to be a crucial resource to inform ethical implementation and governance of technology (Aleman et al., 2025; Brossi et al., 2022). However, in considering responsibility to the present as well as the future of education, it is essential to consider how critical digital literacies might both expand and constrain how futures are experienced, and what empowerment looks like (and doesn't look like) when attempting to mobilise critical digital literacies.

References

Aleman, E., Martinez, R., & Salazar, A. (2025). Theory, Research, and Practice in Critical AI Literacy: From Empowerment to Liberation through Youth-Led Inquiry. 2101–2113. https://www.learntechlib.org/primary/p/225773/

Brossi, L., Castillo, A. M., & Cortesi, S. (2022). Student-centred requirements for the ethics of AI in education. In The Ethics of Artificial Intelligence in Education. Routledge.

Day, E., Pothong, K., Atabey, A., & Livingstone, S. (2024). Who controls children's education data? A socio-legal analysis of the UK governance regimes for schools and EdTech. Learning, Media and Technology, 49(3), 356–370. https://doi.org/10.1080/17439884.2022.2152838

Draper, N. A., & Turow, J. (2019). The corporate cultivation of digital resignation. New Media & Society, 21(8), 1824–1839. https://doi.org/10.1177/1461444819833331

Ofsted. (2025). 'The biggest risk is doing nothing': Insights from early adopters of artificial intelligence in schools and further education colleges. UK Government. https://www.gov.uk/government/publications/ai-in-schools-and-further-education-findings-from-early-adopters/the-biggest-risk-is-doing-nothing-insights-from-early-adopters-of-artificial-intelligence-in-schools-and-further-education-colleges

Ojala, M. (2017). Hope and anticipation in education for a sustainable future. Futures, Learning the Future Otherwise: Emerging Approaches to Critical Anticipation in Education, 94, 76–84. https://doi.org/10.1016/j.futures.2016.10.004

Pangrazio, L., & Bunn, A. (2024). Assessing the privacy of digital products in Australian schools: Protecting the digital rights of children and young people. Computers and Education Open, 6, 100187. https://doi.org/10.1016/j.caeo.2024.100187

Persson, J. (2024). Artificial Intelligence and UK Education: Research, the Redistribution of Authority, and Rights. International Journal of Artificial Intelligence in Education, 34(1), 62–72. https://doi.org/10.1007/s40593-023-00347-0

Ross, J., Priyadharshini, E., Dyer, H., Atabey, A., Botta, C., Wilson, C., & Robertson, J. (in press). Imaginaries of responsible generative AI in secondary education. In W. Holmes (Ed.), Handbook of Critical Studies of Artificial Intelligence and Education. Edward Elgar Publishing.

Williamson, B., Macgilchrist, F., & Potter, J. (2023). Re-examining AI, automation and datafication in education. Learning, Media and Technology, 48(1), 1–5. https://doi.org/10.1080/17439884.2023.2167830

3. Governance, Justice and the Public

"Co-creating our future society": Futuring at World Expos

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Keywords: world expos; participatory futures; public engagement; futures lab

The work of shaping just, vibrant futures belong to everyone. Yet, prominent global governance forums depend largely on words and diplomacy from invited delegates. World Expos—part fair, part trade show, part museum—are global mega-events which offer spectacular, multi-sensory, and deeply moving venues for a public audience to explore futures. Furthermore, they feature most countries on the planet. Rather than offering a single unified narrative, this multiplicity of voices can help participants envision a world where many worlds fit (Escobar, 2017). The most recent World Expo concluded in October 2025 in Osaka, Japan. The hosts boldly proclaimed that visitors would "co-create our future society." In Osaka, 158 countries told their own stories, far beyond the 'usual suspects' of the wealthiest countries. This variety feels like a series of dreams: vivid, intense, and discordant.

This paper will share findings from field research exploring the many ways diverse publics are engaged in experiences of futures at Expo 2025: a subversive art installation (Brazil), evocative color-soaked rooms and rhythms (Spain), vibrant hospitality (Indonesia), mossy dark (Ireland), the hospitable sands of Jordan, plant-centered themes (the Baltics and Poland), critical histories (the Marshall Islands and Malawi), and multi-sensory exhibits (Croatia, Kuwait, Bahrain, Monaco and Colombia). This presentation follows up one I gave at Anticipation 2024, prior to fieldwork at the 2025 Expo in Osaka.

Background

We are facing complex challenges from climate change to seemingly ineradicable conflict and inequality, responsibility for which and whose impacts are experienced unevenly across geographies and communities in ways that trouble the very concept of "we." Furthermore, these problems are woven from a fabric which includes technological artifacts and systems as well as underlying histories and epistemologies. For 175 years, World Expos have promoted scientific and technological progress; Robert Rydell (2006), a preeminent historian of Expos, argues that they have "shaped both the form and substance of the modern world" (p. 136). Past Expos promoted universal visions of the future led by empires, but in recent years they have offered a platform for a more diverse set of voices. Across these three phases and centuries, there has been a shift in the stories told at Expos and the techniques used to promote visitor participation. If "it matters what stories we tell to tell other stories with," it also matters who tells stories and how (Haraway, 2016, p. 12). Contemporary Expos offer a platform for a multitude of voices. Each Expo has an overall theme. The host country offers pavilions within sub-themes of the overall theme as well as its own individual country pavilion. Every participating country has a pavilion or part of a pavilion with its own theme, and there can be many exhibits within that, each with different messages. Going through an Expo, each visitor will be at times delighted, amused, educated, awed, moved, or even challenged or upset by new experiences, conversations, and ideas. The depth and complexity of participation offers to widen visitors' view of the world. This in turn invites them to consider different visions for the future and their role in building or avoiding those futures.

Expos as Sites for Futuring

Expos are grand exercises in futuring. Futuring scholarship and practice develops, deploys, and evaluates techniques that can deeply engage participants' creativity and diverse epistemologies to plan for, predict, or shape futures. Care must be taken, though; futuring efforts exist within structures and agendas and can come with (and mask) implicit assumptions, biases, and priorities from sponsors, facilitators, and participants (Stirling, 2008). Furthermore, Selin (2008) cautions that telling stories about futures may make certain futures more likely; these efforts are not neutral. Based on analysis of four World Expos – Paris 1900, Montreal 1967, Hannover 2000, and Shanghai 2010 – Lopez-Galviz, Nordin, and Dunn (2019) build on Umberto Eco's assertion that World's Fairs are more packaging than substance, to argue that Expos promote latent fictions, that is a future which is already in the present, staging trends as predictive when the future displayed is in fact already underway. While Jasanoff and Kim's (2015) concept of sociotechnical imaginaries describes national-scale, power-backed stories about futures; Keeler and colleagues (2015), Ramos and colleagues (2019), and Ollenburg (2019) put forward methods that are localized, contextual, culturally-specific, and collaborative. Expos hold the potential to engage diverse publics in collective efforts to sense the present, account for the past, and co-create futures.

Methodology

My research analyzes the kinds of futuring happening at Expos, through a Multidimensional Engagement Matrix (MEM) with four dimensions: Temporality, Multiplicity, Representation, and Participation. Through the dimension of Temporality I examined stories for the inclusion of futures, pasts, and the present, and how responsibility – or the "ability to respond" as Haraway (2016) defines it – is afforded by the interconnection of these timescales. The dimension of Multiplicity helped me to determine the variety of voices that shape and are represented in the stories told at Expos, while also taking up the challenge of seeing the technologies and more-than-human worlds we are inextricably interconnected with (Escobar, 2017; Haraway, 2016). Style of Representation helped me to note which senses were stimulated by exhibits, and whose voices were present (and absent). Finally, the MEM also accounted for differing levels from passive to more meaningful Participation in the exhibit and/or the issue it is addressing, as storytellers, decision-makers, characters, (im)material participants, or audiences (Hooper-Greenhill, 2006; Ash and Simpson, 2018; Ramos, et al., 2019; Cardini and Paniagua, 2021).

References

Ash, J. and Simpson, P. (2018). Postphenomenology and method: Styles for thinking the (non)human. GeoHumanities, 5(1), 139-156.

Cardini, P. and Paniagua. K. (2021). Hyper-contextual futures in Mexico City. Design Culture (of) Multiplicity: Gender, Pluralism, Diversity track, Cumulus 2020 Roma Conference Proceedings, 2011-2024.

Escobar, A. (2017). Designs for the pluriverse: Radical interdependence, autonomy, and the making of worlds. Duke University Press.

Haraway, D.J. (2016). Staying with the trouble: Making kin in the Chthulucene. Duke University Press.

Hooper-Greenhill, E. (2006). Studying visitors. In Macdonald, S. (Ed.), A companion to museum studies. Wiley-Blackwell.

Jasanoff, S. and Kim, S. (2015). Dreamscapes of modernity: Sociotechnical imaginaries and the fabrication of power. Chicago University Press.

Keeler, L.W., Wiek, A., White, D.D., and Sampson, D.A. (2015) Linking stakeholder survey, scenario analysis, and simulation modeling to explore the long-term impacts of regional water governance regimes. Environmental Science and Policy 48, 237-249.

Lopez-Galviz, C., Nordin, A., and Dunn, N. (2019). Latent fictions: The anticipation of World's Fairs. In Poli, R. (Ed.) Handbook of Anticipation. Springer.

Ollenburg, S.A. (2019). A futures-design-process model for participatory futures. Journal of Futures Studies, 23(4), 51–62.
Ramos, J., Sweeney, J., Peach, K., and Smith, L. (2019). Our futures: By the people, for the people. Nesta.
Rydell, R.W. (2006). World Fairs and museums. In Macdonald, S. (Ed.), A companion to museum studies. Wiley-Blackwell.
Selin, C. (2008). The sociology of the future: Tracing stories of technology and time. Sociology Compass 2(6), 1878-895.
Stirling, A. (2008). “Opening up” and “closing down”: Power, participation, and pluralism in the social appraisal of technology. Science, Technology, and Human Values, 33(2), 262-294.

Anticipating policy futures through speculative design: Cosmopolitics and prefiguration

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Keywords: policy design; policy futures; policy innovation; design futures; anticipatory governance

Governments increasingly deal with complexity, ambiguity and uncertainty. Failures to achieve public policy intentions, gain democratic legitimacy and respond to urgent cross-government issues such as climate change and migration have led to governments innovating in how policy is made and delivered. In this context, design – broadly understood as citizen-centred, creative, participatory and experimental – is one approach growing in visibility in many government contexts in the affluent Global North. Along with related approaches such as systems thinking, futures and co-production, design is seen as enabling public administrations to anticipate, explore and respond to complex challenges. In this context, this paper examines the possibilities and limitations of deploying creative "speculative design" futures approaches in such contexts through the lenses of policy studies and critical design research.

The paper begins with a discussion of the current literature analysing the emergence of design as a capability in public administrations. This literature notes the growing interest in and use of creative design within public administrations, sometimes taking the form of building design capabilities in 'policy labs' (eg Olejniczak et al, 2020) using design approaches, methods and tools across different stages of the policy process (eg Mortati et al, 2022; Villa et al, 2022) with varied relations between design and policy (Richardson et al, 2025). The visibility of design in public administrations can be made sense of as part of a shift towards potentiality and performativity in a context of neo-liberalism (Julier 2017). In this, design practices rooted in pluralism have the potential to offer not just policy options, within a deterministic rational framework, but alternative cosmopolitical visions prefiguring how things could be (Tironi, 2024).

Against this background, this paper aims to assess the possibilities and limitations emerging when creative or speculative design futures approaches are developed and institutionalised in governments. Two cases are discussed: the EU Policy Lab, a team within the European Commission (EC)'s Joint Research Centre, and Policy Lab, a team within the UK Government, both with a remit to explore and develop new approaches to policy development. Set up in 2016, EU Policy Lab has expertise in foresight, behavioural science and design working on projects which sometimes combine these approaches working with other parts of the EC (EC, nd). Established in 2014, UK Policy Lab is a team of about 30 people in the UK Civil Service (UK Government, nd). Among its offerings is speculative design (UK Government, 2024)

As prominent and established examples of public administrations developing new capacities including creative design, these organisations have contributed to knowledge sharing through participation in events, communicating through digital and social media and producing reports and research outputs. To develop the cases, data gathered and analysed include publicly available materials including reports, blog posts and social media produced by these teams and field notes from participant observation by the authors in events at which members of these teams participated. Through

analysing these public discussions of speculative and futures design approaches, we reveal the potential and limitations of such approaches.

Our analysis shows how speculative and futures-oriented design approaches inside government enact forms of anticipatory practice that are simultaneously generative and constrained. In both cases, future-oriented design artefacts — scenarios, provocations, prototypes and materialisations of imagined worlds — operate as boundary objects that convene actors around emerging issues and reveal the implicit norms, geopolitical assumptions and sociotechnical imaginaries underpinning policy thinking. Yet while such artefacts can momentarily unsettle institutional logics, broaden who and what is rendered visible, and surface marginal or contested futures, their anticipatory potential is often attenuated by organisational demands for consensus, legibility and alignment with pre-existing policy priorities.

Across the cases, we identify a recurring tension: speculative design practices invite plural and sometimes agonistic engagements with the future but are subsequently channelled into procedural framings that privilege futures already compatible with institutional mandates. As a result, the anticipatory practices adopted by governments risk reproducing dominant imaginaries of control, innovation and optimisation rather than enabling deliberation around alternative (and possibly more just) futures. For example, activities intended to explore alternative sociotechnical arrangements become translated into inputs for predefined strategic programmes; similarly, invitations to publics or cross-government groups to speculate about uncertainty are moderated by the need to produce actionable insights within bureaucratic cycles.

Nevertheless, we also observe moments in which these teams open up spaces for different anticipatory relations.

By making tangible the lived experience of regulatory, technological or social change, speculative design sometimes creates opportunities for civil servants to recognise exclusions, challenge assumptions, and imagine alternative distributions of responsibility or care. These practices can reorient agendas by legitimising forms of knowledge that tend to be marginalised in technocratic settings, such as experiential, affective or tacit accounts of possible futures. They also prompt reflection on the ethics and politics of anticipation within public administrations, revealing how futures work is shaped by power, positionality and institutional architectures.

Overall, we argue that design-led futures within governments constitute an important but ambivalent form of situated political anticipation. While they expand repertoires for imagining and governing futures, they also illuminate how anticipatory practices may reinforce or destabilise prevailing narratives, boundaries and modes of governance. By analysing how speculative design becomes institutionalised — and with what effects on whose futures count — the paper contributes to debates on the possibilities for more plural, just and reflexive anticipatory governance.

Alignment with the conference themes

This paper aligns with the theme Governance, Justice, and the Public offering an analysis of how speculative design inside governments shapes, constrains and occasionally expands public futures. By analysing two established cases, we show how anticipatory practices inside administrations reveal—and sometimes contest—the normative, geopolitical and organisational assumptions that shape whose futures become actionable. Focusing on speculative design within bureaucratic settings, the paper highlights how such practices open possibilities for plural and disruptive cosmopolitical visions while also being constrained by institutional logics. In doing so, it contributes to debates on how anticipatory governance might become more reflexive, inclusive and attuned to questions of justice.

References

European Commission (nd) Design for policy. https://policy-lab.ec.europa.eu/what-we-do/design-policy_en, accessed 11 December 2025.

Julier, G. (2017) Economies of Design. London: Sage.

Mortati, M., Mullagh, L., Schmidt, S. (2022). Design-led policy and governance in practice: a global perspective. Policy Design and Practice. https://doi.org/10.1080/25741292.2022.2152592

Olejniczak, K., Borkowska-Waszak, S., Domaradzka-Widła, A., & Park, Y. (2020). Policy labs: The next frontier of policy design and evaluation? Policy & Politics, 48(1), 89–110. https://doi.org/10 .1332/030557319X15579230420108

Richardson, L., Durose, C., Kimbell, L., & Mazé, R. (2025). How do policy and design intersect? Three relationships. Policy & Politics. https://doi.org/10.1332/03055736Y2025D000000072

Tironi, M. (2024). Introduction. In Tironi, M; Hermansen, P.; Chilet, M; Ureta, C. (2024) Design For More-Than-Human Futures: Towards Post-Anthropocentric Worlding. Routledge Research in Design, Technology and Society, pp.1-28.

UK Government. (9 July 2024) Policy Lab Prospectus. https://openpolicy.blog.gov.uk/wp-content/uploads/sites/35/2024/07/PUBLIC_Policy_Lab_Prospectus_2024-25-1.pdf, accessed 11 December 2025.

UK Government. (nd) Open policy blog. https://openpolicy.blog.gov.uk, accessed 11 December 2025.

Villa D. P., Auricchio A., Mortati M. (2022). Mapping design activities and methods of public sector innovation units through the policy cycle model. Policy Science. https://doi.org/10.1007/s11077-022-09448-4

Artificial Welfare: Speculative Futures of Discretion and Sovereignty in EU Public-Sector AI

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Keywords: speculative design; public sector AI; ideological futures; bureaucratic discretion; design fiction

We investigate how political ideologies shape imaginaries and governance of public-sector AI in Europe, using speculative design to construct and interrogate contrasting future scenarios. Our focus is on welfare and administrative contexts where roles, discretion, and accountability are already shifting due to data-driven systems and automation (Drobotowicz et al., 2021). To surface how ideological commitments (Gebru & Torres, 2024; Rehak, 2025) reconfigure problems, actors, and institutional boundaries in public services, we developed two design fictions: YourDoc, an AI healthcare triage platform with gig-worker clinician sign-off, under a conservative/far-right trajectory and Care Block, a fictional neighbourhood welfare organisation embedded in a broader EU-level environmental governance initiative, under a green-authoritarian trajectory. We ground the work in design futuring as inquiry and situate it within debates on digital sovereignty, sphere transgressions, and changing bureaucratic discretion.

Public-sector AI is not only a question of technical feasibility or risk; it carries political assumptions about what counts as a problem, who defines legitimate stakeholders, and where discretion resides (street-level versus system-level) (Drobotowicz et al., 2021). In European welfare contexts, tensions include: the migration of discretionary power from street-level bureaucrats to screen- and system-level processes (Giest & Klievink, 2024); the pressure to automate beyond “easy” decisions (Drobotowicz et al., 2026); and growing reliance on private infrastructures that blur public–private spheres (Sharon & Gellert, 2024). “Sphere transgressions”—where actors from one domain exert outsized influence over another, such as platform providers in health or welfare—raise concerns about governance and legitimacy; digital sovereignty debates further reveal contested control over data, models, and compute (Calderaro & Blumfelde, 2022; Sharon & Gellert, 2024). Our scenarios foreground these tensions by asking how ideological positions reframe administrative roles, redistribute discretion, and restructure public accountability in AI-mediated services, situating anticipation as political practice and examining how inclusion, exclusion, and legitimacy are reconfigured across public–private and other boundaries.

Treating speculative design as an inquiry into the unknown that unsettles technocentric trajectories, we follow a process that builds on systemic scenario planning. Scenario foundations draw on signals across the EU welfare domain—sovereignty, platformisation, climate politics—and on ideological framings that move beyond the discourse of universal values, addressing critiques that value-centric methods can overlook power relations and institutional constraints (Raihan, 2025). Through worldbuilding and design fictions we materialise how these framings configure problems and features—not only how systems are built, but what becomes a technological reality. The fictions are instantiated as interactive prototypes across Finnish, German, and Polish local contexts—so that ideological stakes can be

inhabited rather than merely described. Juxtaposing trajectories makes the stakes of ideological choice legible across governance, discretion, and institutional boundaries.

In the conservative/far-right trajectory, YourDoc—a simulated AI triage platform pairing a patient-facing LLM chat with a gig-worker clinician review panel—promises efficiency across national systems while institutionalising gig-work logics and private governance in healthcare access. Bureaucratic roles shift toward risk-based screening and platform compliance, thereby amplifying screen- and system-level discretion and narrowing avenues for contestation.

In the authoritarian environmentalism trajectory, Care Block is a fictional neighbourhood welfare organisation embedded in a broader EU-level environmental governance initiative. Its prototype materialises through interoperating artefacts—a community app, AI-assisted deliberation, and environmental sensing. Framed as participatory commons, discretion de facto concentrates in the initiative's resource allocation logic, local caretakers, and IT administrators, raising questions about pluralism, local agency, and the legitimacy of enforced transitions.

The scenarios are not presented as exhaustive or predictive; they function as probes into how ideology reorganises governance, imaginaries, and accountability around AI in welfare. This connects to research on how AI reshapes bureaucratic roles, discretion, and evaluation practices across organisational contexts (Giest & Klievink, 2024). Speculative and discursive design traditions ground the approach—using artefacts and scenarios to make complex issues accessible for reflection and public discourse (Tharp & Tharp, 2019). Scenario-based techniques are extended by operationalising the "political" domain through ideologies rather than generic "values," responding to calls to confront power relations and institutional constraints in design and critical computing (Raihan, 2025). Futures literacy and anticipatory practice frame anticipation as the use of possible futures to guide present action (Miller, 2018), supported by systemic scanning (e.g., STEEPLE as in Epp et al., 2022), reflective practices, and attention to the "quality of speculation"—plausibility, grounding in signals, and clarity of stakes (Selin & Guimaraes Pereira, 2013; Ringfort-Felner et al., 2025).

The contribution is twofold: (1) an example of how a scenario-building approach can connect ideological analysis to design futuring and worldbuilding; (2) two contrasted design fictions that materialise how ideologies reshape discretionary power, boundaries, and accountability in welfare AI. Positioned as a discursive inquiry rather than a generalised account, the work aims to support deliberation among designers, policymakers, and researchers.

References

Calderaro, A., & Blumfelde, S. (2022). Artificial intelligence and EU security: The false promise of digital sovereignty. European Security, 31(3), 415–434. https://doi.org/10.1080/09662839.2022.2101885

Drobotowicz, K., Kauppinen, M., & Kujala, S. (2021). Trustworthy AI Services in the Public Sector: What Are Citizens Saying About It? In F. Dalpiaz & P. Spoletini (Eds.), Requirements Engineering: Foundation for Software Quality (pp. 99–115). Springer International Publishing. https://doi.org/10.1007/978-3-030-73128-1_7

Drobotowicz, K., Ylipulli, J., Varanasi, U. S., & Mäkitalo, H. S. (2026). Automate, Assist, Avoid: Caseworkers' Perspectives on Applying Large Language Model-Based Assistance in Public Sector Decision-Making Processes. In Proceedings of the 2026 CHI Conference on Human Factors in Computing Systems. ACM.

Epp, F. A., Moesgen, T., Salovaara, A., Pouta, E., & Gaziulusoy, İ. (2022). Reinventing the Wheel: The Future Ripples Method for Activating Anticipatory Capacities in Innovation Teams. In Proceedings of the 2022 ACM Designing Interactive Systems Conference (pp. 387–399). ACM. https://doi.org/10.1145/3532106.3534570

Gebru, T., & Torres, É. P. (2024). The TESCREAL bundle: Eugenics and the promise of utopia through artificial general intelligence. First Monday. https://doi.org/10.5210/fm.v29i4.13636
Giest, S. N., & Klievink, B. (2024). More than a digital system: How AI is changing the role of bureaucrats in different organizational contexts. Public Management Review, 26(2), 379–398. https://doi.org/10.1080/14719037.2022.2095001
Miller, R. (2018). Sensing and making-sense of Futures Literacy: Towards a Futures Literacy Framework (FLF). In R. Miller (Ed.), Transforming the Future: Anticipation in the 21st Century (pp. 15–50). Routledge. https://doi.org/10.4324/9781351048002
Raihan, J. (2025). The colonial legacy of the human in human-computer interaction: Implications for critical design approaches. In Proceedings of the Sixth Decennial Aarhus Conference: Computing X Crisis (Aar '25) (pp. 140–152). ACM. https://doi.org/10.1145/3744169.3744184
Rehak, R. (2025). AI Narrative Breakdown: A Critical Assessment of Power and Promise. In Proceedings of the 2025 ACM Conference on Fairness, Accountability, and Transparency (FAccT '25) (pp. 1250–1260). ACM. https://doi.org/10.1145/3715275.3732083
Ringfort-Felner, R., Dörrenbächer, J., & Hassenzahl, M. (2025). The Quality of Speculation – A Scoping Review. In Proceedings of the 2025 ACM Designing Interactive Systems Conference (DIS '25) (pp. 2373–2394). ACM. https://doi.org/10.1145/3715336.3735794
Selin, C., & Guimaraes Pereira, Â. (2013). Pursuing plausibility. International Journal of Foresight and Innovation Policy, 9(2/3/4), 93. https://doi.org/10.1504/IJFIP.2013.058616
Sharon, T., & Gellert, R. (2024). Regulating Big Tech expansionism? Sphere transgressions and the limits of Europe's digital regulatory strategy. Information, Communication & Society, 27(15), 2651–2668. https://doi.org/10.1080/1369118X.2023.2246526
Tharp, B. M., & Tharp, S. M. (2019). Discursive Design: Critical, Speculative, and Alternative Things. MIT Press.

Children, Public Space, and the Governance of Urban Futures

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Keywords: child-friendly cities; public space; urban governance; children's participation; spatial justice

Public space has long functioned as a central arena where societies imagine and negotiate collective futures, yet in contemporary cities, shaped by adult-centric planning paradigms, children have become progressively invisible. A growing body of research recognises children's right to access and inhabit public space as well as acknowledges the influence of urban environments on children's physical, cognitive, and social development. Despite this growing recognition, children have historically remained marginal actors within dominant urban imaginaries and decision-making processes. In recent years, policy frameworks and city-level initiatives have sought to address this gap and promote more child-responsive urban environments (Gill, 2021). This contribution examines the structural, spatial and policy conditions driving children's exclusion from public space and argues that making cities genuinely inclusive for children is a way for producing more just, plural, and democratic urban futures.

Early critical reflections by Colin Ward (1973) foreground children's everyday spatial practices and their capacity to appropriate and reinterpret the built environment. He emphasized the central role of public space in childhood development, arguing that children require autonomy and freedom to explore, play, and engage socially. Such insights have contributed to the understanding of contemporary childhood within a broader set of socio-spatial transformations that have progressively redefined the meaning and the function of public space. At the same time, the rise of use of the car, alongside increasing dynamics of surveillance and securitization, has contributed to reshaping streets and public environments around adult norms of productivity, efficiency, and control (Wyness, 2015). Within these frameworks, children have been increasingly framed as vulnerable, dependent, and in need of protection, a conception deeply rooted in Eurocentric constructions of childhood (Satta, 2014). Such framing has legitimized the privatization of play and the removal of children from streets, squares, and public commons, confining them to segregated and purpose-built spaces such as playgrounds, schools, and recreational facilities. John Gillis's notion of the "islanding of children" captures this process of spatial and social separation, in which children are positioned primarily as objects of care rather than as political subjects (Valentine, 1997), rendering their absence from public space structurally embedded. Again, Ward, already in 1973, critiqued the over-regulation of urban environments, highlighting how excessive control diminishes opportunities for informal learning and creative agency (Burke, 2014).

Since the ratification of the United Nations Convention on the Rights of the Child (CRC) in 1989, children's rights have formally entered urban policy agendas, reshaping discourses around inclusion, participation, and well-being (Powell, 2024). The rise of the child-friendly city model, which is supported by programs like UNICEF's Child-Friendly Cities, is an attempt to make children's rights a part of how cities are run (Riggio, 2002). Across Europe and beyond, policies addressing mobility, safety, and access to services increasingly recognize children as legitimate urban users. However, their translation into spatial practice is not always visible in the spatial quality and

everyday experience of public environments, which often fail to meet the needs and preferences of children, leading to environments that do not support their active participation and well-being. This gap can be understood within broader debates on anticipatory governance and public futuring. While children are frequently invoked as symbols of the future in political and policy rhetoric, they remain largely excluded from the processes through which urban futures are imagined, negotiated, and materialized (Anderson, 2010).

This paradox raises central questions: how do current child-centered urban policies and governance frameworks address children's presence in public space, and how might these approaches be expanded to support more just, plural, and future-oriented urban environments?

A selection of key international and urban policy frameworks has been critically examined to understand how children are positioned within contemporary governance and future-oriented agendas. These policies demonstrate significant progress in formally recognizing children as legitimate urban users, establishing principles of mobility, safety, and inclusion, and providing institutional mechanisms for their participation.

Since the 1960s and 1970s, participatory planning theories have emphasized the involvement of marginalized groups, including children, in decision-making processes (Chawla, 2001; Krishnamurthy, 2019). Kevin Lynch's Growing Up in Cities project (1977), later expanded by UNESCO, provided early insights into how children perceive and navigate urban environments. Roger Hart's Ladder of Children's Participation (1992), adapted from Arnstein's (1969) framework, exposed the power relations embedded in participatory practices and warned against tokenistic engagement that offers visibility without influence. Despite widespread support for participation within child-friendly city initiatives, children's contributions rarely reshape governance and design outcomes in meaningful ways. While participatory methods such as neighborhood walks, mapping, and storytelling have demonstrated that even very young children can articulate spatial knowledge (Derr et al., 2017), their insights are seldom integrated into decision-making structures. This highlights a critical limitation of current governance models, where participation is acknowledged but not structurally empowered.

In response, child-friendly public space can be reframed as a matter of spatial justice and anticipatory governance. It contends that expanding child-friendly urban agendas requires moving beyond symbolic inclusion (Hart, 1992) toward governance frameworks that recognize children's everyday presence in public space as a legitimate dimension of urban life (Christensen & O'Brien, 2003). Rather than positioning children solely as future beneficiaries of policy, their spatial experiences can be understood as critical sites where anticipatory governance is enacted, contested, and reimagined. By foregrounding the intersections between rights-based policy, participatory practices, and the socio-spatial conditions of public space, this contribution demonstrates how childhood offers a powerful lens for exposing the limits of adult-centric urban futures. Reframing child-friendly public space in this way contributes to broader debates on spatial justice and public futuring, emphasizing the necessity of governance approaches that support more plural, responsive, and ethically grounded urban imaginaries.

References

Anderson, B. (2010). Preemption, precaution, preparedness: Anticipatory action and future geographies. Progress in Human Geography, 34(6), 777-798. https://doi.org/10.1177/0309132510362600

Burke, C. (2014). "Fleeting pockets of anarchy": Streetwork. The exploding school. Paedagogica Historica, 50(4), 433–442. https://doi.org/10.1080/00309230.2014.899376

Chawla, L. (2001). Growing up in an urbanising world. UNESCO/Earthscan.
Christensen, P., & O'Brien, M. (Eds.). (2003). Children in the City: Home Neighbourhood and Community (1st ed.). Routledge. https://doi.org/10.4324/9780203167236
Derr, V., et al. (2017). Children's participation in planning: A review. Journal of Planning Literature, 32(3), 1–15.
Gill, T. (2021). Urban playground: How child-friendly planning and design can save cities. RIBA Publishing.
Hart, R. (1992). Children's participation: From tokenism to citizenship. UNICEF.
Marzi, I., & Reimers, A. K. (2018). Children's independent mobility: Current knowledge, future directions, and public health implications. International Journal of Environmental Research and Public Health, 19(3), 1222.
Powell, R. (2024). Child-Friendly Cities and Communities: opportunities and challenges. Routeldge
Riggio, E. (2002). Child friendly cities: Good governance in the best interests of the child. Environment and Urbanization, 14(2), 45–58.
Satta, C. (2014). Una città giusta è una città a misura di bambini? Note critiche su un immaginario urbano. MONDI MIGRANTI, 1, 83–99.
Ward, C. (1973). The child in the city. Architectural Press.
Wyness, M. (2015). Childhood. Cambridge: Polity Press
Valentine, G. (1997). "Oh yes I can." "Oh no you can't": Children and parents' understandings of kids' competence to negotiate public space safely. Antipode, 29(1), 65–89.
https://doi.org/10.1111/1467-8330.00035

Designing Eco-Social Policy for Appropriation by Community

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Keywords: configuration; social change; contestation; law; zoöp

This presentation brings together two projects that seek to make inclusive eco-social change by enabling designs to enact, in subtle and creative ways, a form of regulation that speaks to open and more-than-human futures. Building on the idea that designers configure systems and that this configuration has politics and influence beyond the design of the artefact (e.g. Suchman, 2007), we explore the deliberate creation of policy through design.

The first project, exploring the entanglements between environmental sustainability, waste management, and regulatory practices, has aimed to equip designers with a set of ambitions in taking social change measures through creating regulatory designs. With the purpose of moving beyond narratives of legal compliance and helping designers reflect on their agency as regulators, the project has drawn on the work of legal scholar Lessig (2006), particularly his conceptualisation of four regulatory modalities, that is: law, market, norms, and architecture (e.g., from code and interface design to network protocols or transmission standards). The project has developed a design toolkit in the form of cards to help designers reflect on how these four modalities can regulate – that is, enable and constrain practices – but also how exploring possible dynamics between them can become a source for social change and for imagining futures. To outline these ambitions, the toolkit encompasses cards that specifically draw attention to the tensions between modalities, with a special focus on contesting, advocating, protecting, and counteracting. The overarching intention is to demonstrate (to designers) how design regulates, alongside more formal policy and hard laws. This, in turn, draws attention to the agency of designers as regulators advocating for social change (rather than merely complying with laws), and envisioning alternative futures or opportunities for policy-making. While changes in legal codes require formal processes and structural politics, exploring the role of design, social norms, and market in regulating emphasises the designers' agency to influence and produce social change (Rossitto et al., 2026). The cards have been tested with professional designers and part of the presentation will be a short report into what we learnt.

The second project is a study of the workings of the Zoöp model, a prefigurative system devised by designers at the not-for-profit Zoönomic Institute, which enables organisations that wish to develop a regenerative practice to adopt a learning cycle and a Speaker for the Living to promote greater openness to and support for all life. This offers a regulatory structure at organisational level, designed to support ambitions to make effective ecological change alongside social and economic sustainability practices. It draws on New Materialist (Barad, 2007; Braidotti ,2010; Haraway, 2016) and more-than-human philosophy to offer systemic exercises and other support to those developing as a zoöp. In bringing in an (independent) Speaker for the Living who can understand and advocate for all species and the balance between them, the design of this process recognises that all responses must be grounded in the immediate context, and, any abstraction, such as policy that abandons the here-and-now, cannot deal meaningfully with prioritising life (see Light, 2025).

Policy Design is a rising field, supported by work such as Kimbell et. al (2022) and Saward (2021). It demonstrates the value of design to strategic fields implementing legal rulings and making policy effective. However, our contribution is slightly different. Here, we are looking at mechanisms that work at a more local and specific level, where the design of a tool or structure can shape and promote or inhibit behaviours, beliefs and other social norms. In the case of the zoöp, for instance, signing up to and employing the zoöp structure shapes organisational policy by foregrounding impact on other species; the device of the Speaker for the Living invites care behaviours but inhibits actions that might reduce regeneration and adversely impact other beings.

By bringing the two projects into discussion, we can apply insights from each to offer an anticipatory reading of these designs, showing how they create the potential for some futures and not others, through the work of design. By looking at this in the context of policy and regulation at local level, we draw attention to the work of shaping worlds through design and how attending to these aspects can help us move towards the worlds we want and away from the shortcomings of mainstream design short-sightedness (Anusas and Harkness, 2014).

We are considering anticipation as situated political practice, discussing who is included, expanding common understandings of regulation, and thus enabling wider inclusion/representation in decision-making and empowering communities and organisations to develop their own local policies. Further, with the emphasis on the role of the designer as active agent in implementing strategy and facilitating it, we tackle futuring through design, acting on our desire to unsettle dominant futures. There is also a strong connection to sustainability, hope and situated, embodied, or more-than-human futures in the way that we weave systemic challenges across scales and stakeholders.

References

Anusas, M. and Harkness, R. (2014). “Things Could Be Different”: Design Anthropology as Hopeful, Critical, Ecological. Research Network for Design Anthropology: Ethnographies of the Possible. Aarhus.

Barad, K. (2007). Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning. Duke University Press, Princeton, MA.

Braidotti, R. (2010). The Posthuman Predicament. In Anneke Smelik (ed.) The Scientific Imaginary in Visual Culture. V&R unipress GmbH, Göttingen, ISBN: 9783899717563.

Haraway, D. J. (2016). Staying with the Trouble: Making Kin in the Chthulucene. Duke University Press Books, Durham.

Kimbell, L., Richardson, L., Mazé, R. and Durose, C. (2022). ‘Design for public policy: Embracing uncertainty and hybridity in mapping future research’, Annual Review of Policy Design, 10(1), pp. 1–20.

Lessig, L. (2006). Code: version 2.0 (2nd ed. ed.). Basic books, New York.

Light, A. (2025) Advice for sea-facing, more-than-human eco-social change-making. Bauhaus of the Seas Report. https://bauhaus-seas.eu/deliverables/.

Saward, M. (2021). Approaches to Democracy, in M. Saward (ed.) Democratic Design. Oxford University Press.

Rossitto, C., Comber, R., Poikolainen Rosen, A., Bakhshoudeh, F. and Greenstein, S. J. (2026). Modalities of Regulation in Sustainable HCI: Rethinking the Role of Design in Shaping Sustainable Behaviours and Society. In Proc. 2026 CHI Conference on Human Factors in Computing Systems (CHI ’26). ACM, New York, USA. https://doi.org/10.1145/3772318.3791464

Suchman, L. (2007). Human-Machine Reconfigurations: Plans and Situated Actions. Cambridge University Press. https://doi.org/10.1017/CBO9780511808418

Embedding Strategic Foresight to Develop Resilient and Sustainable Infrastructure: Introducing the PRISM framework

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Keywords: strategic foresight; infrastructure planning; transdisciplinary design; resilience and sustainability; african context

Historically, infrastructure projects have been celebrated for pushing the boundaries of what had been previously accomplished. Today, effective infrastructure is now assessed based on its sustainability, its ability to improve the resilience of communities and the environment, and its capacity to adapt swiftly to rapidly changing conditions and needs. Creating solutions that meet these new criteria requires creativity, open conversations and a multidisciplinary approach.

Traditional built environment disciplines (urban planning, engineering and architecture) rely heavily on quantitative methods to design infrastructure. While these approaches are essential, they often focus on conventional, “tried and tested”, textbook solutions - often overlooking the broader uncertainties and long-term challenges that determine whether infrastructure is sustainable and successful in terms of impact.

This paper explores the value of integrating strategic foresight into infrastructure development, arguing that foresight should not remain a distant, conceptual exercise, but rather a practical, structured approach to building resilience. The PRISM framework (Planning Resilient and Sustainable Infrastructure using Strategic Foresight Methodologies) was developed as a response to this need. It combines qualitative futures thinking with quantitative design processes to bridge the gap between possibility and practicality.

Through several African case studies, this paper demonstrates how PRISM helps translate future uncertainties into tangible design parameters, risk assessments, and operational strategies. By doing so, PRISM empowers designers to navigate uncertainty, strengthen collaboration, and build infrastructure that endures in relevance and impact.

Why is this paper important to this conference:

This paper presents an experimental, transdisciplinary approach that integrates quantitative engineering methods with qualitative futures thinking, enabling practitioners to anticipate uncertainty, explore multiple plausible futures, and translate strategic scenarios into actionable design, governance, and operational decisions. It is relevant to researchers, policymakers, and practitioners across disciplines, as it demonstrates how anticipatory practice can enhance resilience and foster inclusive, adaptive infrastructure planning. Its focus on uncertainty, iterative learning, and reflective organisational practices aligns directly with the conference’s commitment to exploring radical, post-normal approaches to anticipation.

Envisioning the Future of Public Open Spaces in Rapidly Urbanizing Cities: Anticipatory Community-Led Practice

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Keywords: anticipatory community-led practice; public open spaces; urbanization; participatory design; digital governance infrastructure

Rapid urbanization is transforming the social, ecological, and spatial dynamics of cities, increasing competition for land and placing unprecedented demands on public open spaces. These spaces are critical for recreation, informal livelihoods, micro-climate regulation, social connection, and neighborhood identity. However, many planning approaches remain reactive and expert-driven, focusing on immediate needs rather than future urban changes, especially in areas with hybrid governance, where statutory plans coexist with informal land allocations, selective enforcement, and limited institutional capacity.

This paper introduces anticipatory community-led practice (ACLP) as a way to envision and shape the future of public open spaces in hybrid governance contexts. ACLP combines participatory futures methods, such as scenario building and spatial prototyping, with community-driven stewardship practices and a co-designed digital reporting platform. This platform supports traceable follow-up and clearer pathways from reporting to response.

Empirically, this study draws on a qualitative case study in Tegeta, Kinondoni Municipality, Dar es Salaam, where open spaces are under constant pressure from encroachment and conversion. The study involved two participatory workshops with 47 participants, including residents, local leaders, NGO representatives, and municipal experts. Workshops were complemented by guided site walks, participatory mapping, governance mapping, and iterative prototyping of a reporting platform. The data comprised scenario narratives, sketches, field notes, and prototyping outputs.

Participants identified three possible futures for local open spaces: (1) a "silent loss" trajectory where encroachment fragments access; (2) a "commercial capture" trajectory where spaces are privatized through ambiguous permits; and (3) a "negotiated commons" trajectory, where spaces remain public through active use, shared maintenance, and fast reporting of infringements. The preferred future, a stewardship trajectory, included: (i) active community use through events to strengthen legitimacy; (ii) routine collective maintenance to counter visible decline; and (iii) early reporting through the digital platform for faster feedback and coordinated response.

The digital platform prototype emphasized inclusivity, offering mobile web/Android for richer reports, SMS/USSD for basic phones, and automatic ticketing. It prioritized low-barrier incident logging, standardized issue categories (e.g., encroachment, dumping), and location referencing. A key principle was traceability, supporting small verifiable actions (acknowledge, visit, warn, remove, mediate) with reasons for delays.

Participants also suggested role-based moderation and public-facing summaries to balance transparency with privacy.

The findings demonstrate how anticipatory engagement shifts participation from episodic consultation to continuous co-management by linking imagined futures to present-day actions. ACLP transforms futures thinking into collective action while addressing contradictions between community expectations and limited enforcement capacity. This paper contributes a practical framework for ACLP in rapidly urbanizing contexts, evidence on how community agency can be fostered through futures-oriented engagement, and design implications for digital governance infrastructure that supports effective reporting-to-response pathways.

ACLP represents a shift in how public open spaces are governed: rather than waiting for conflicts to escalate, it emphasizes early warning, shared monitoring, and low-cost interventions. For municipal actors, the platform outputs help prioritize actions and support coordination, while for communities, it lowers participation costs and builds trust. The study suggests that digital tools are most effective when integrated into everyday stewardship practices, not standalone solutions. Future work should explore ACLP in other urban contexts.

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References

Ansell, C., & Gash, A. (2008). Collaborative governance in theory and practice. Journal of Public Administration Research and Theory, 18(4), 543–571. https://www.jstor.org/stable/2509638.

Bovaird, T., & Loeffler, E. (2012). From engagement to co-production: The contribution of users and communities to outcomes and public value. Voluntas: International Journal of Voluntary and Nonprofit Organizations, 23(4), 1119–1138. DOI: https://doi.org/10.1007/s11266-012-9309-6.

Cardullo, P., & Kitchin, R. (2019). Being a “citizen” in the smart city: Up and down the scaffold of smart citizen participation in Dublin, Ireland. GeoJournal, 84, 1–13. https://doi.org/10.1007/s10708-018-9845-8.

Kabisch, N., Qureshi, S., & Haase, D. (2015). Human–environment interactions in urban green spaces—A systematic review of contemporary issues and prospects for future research. Environmental Impact Assessment Review, 50, 25–34. https://doi.org/10.1016/j.eiar.2014.08.007.

Kamalipour, H., & Peimani, N. (2019). Negotiating space and visibility: Forms of informality in public space. Sustainability, 11(17), 4807. https://doi.org/10.3390/su11174807.

Kitchin, R. (2014). The real-time city? Big data and smart urbanism. GeoJournal, 79(1), 1–14. https://doi.org/10.1007/s10708-013-9516-8.

Kombe, W. J. (2005). Land use dynamics in peri-urban areas and their implications on the urban growth and form: The case of Dar es Salaam, Tanzania. Habitat International, 29(1), 113–135. https://doi.org/10.1016/S0197-3975(03)00076-6.

Manzini, E., & Rizzo, F. (2011). Small projects/large changes: Participatory design as an open participated process. CoDesign, 7(3–4), 199–215. https://doi.org/10.1080/15710882.2011.630472.

McFarlane, C., & Söderström, O. (2017). On alternative smart cities: From a technology-intensive to a knowledge-intensive smart urbanism. City, 21(3–4), 312–328. https://doi.org/10.1080/13604813.2017.1327166.

Miller, R. (2018). Transforming the future: Anticipation in the 21st century. Routledge/UNESCO.

Mitchell, D. (2003). The right to the city: Social justice and the fight for public space. Guilford Press.

Sanders, E. B.-N., & Stappers, P. J. (2008). Co-creation and the new landscapes of design. CoDesign, 4(1), 5–18. https://doi.org/10.1080/15710880701875068.

UN-Habitat. (2020). World cities report 2020: The value of sustainable urbanization (Abridged version). United Nations Human Settlements Programme.

Watson, V. (2014). African urban fantasies: Dreams or nightmares? Environment and Urbanization, 26(1), 215–231. https://doi.org/10.1177/0956247813513705.

Fluid, gaseous, and solid. Thinking governance through watery states.

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Keywords: water governance; water; hydrofeminism; sensory futuring; participatory design

Fluid narratives dominate today's world. Fluidity is often discussed as a preferred watery state, one that transcends the binary, fluctuates in-between, and allows for transitions. What if observing the world through the metaphor of fluidity is reductive itself? Even if Zygmunt Bauman (2013) baptized liquidity and fluidity as metaphors that best describe the condition of today's world, other watery states are just as valuable in understanding the dynamics that define processes we live by. This paper seeks to introduce watery metaphors into the realm of governance, a field generally reluctant to any poetic comparison. At first glance, this association might seem unnecessary, but it hopefully proposes alternatives to how, particularly water-related governance processes, are perceived by us, humans. It anticipates another, material and embodied, understanding of decision- and policy-making.

This work draws on Astrida Neimanis' (2017) posthuman feminist phenomenology, where water is considered an element that, more than any other, ties human beings and bodies to the world around them. The interconnected nature of crises that dominate the world requires recognizing human bodies as bodies of water themselves: if the waters of the world are suffering, we, as bodies of water, will suffer as well. Such a framing enhances a sense of co-dependence of humans with the more-than-human (MTH). Building on watery metaphors, Neimanis, however, is not limited to discussing fluidity as a dominant state. She invites to think in terms of "water as materiality instead of fluidity as property" (p. 80). Neimanis writes: "Water, as we know, is a shape-shifter—moving from solid to liquid and gas, and taking up residence in and as bodies of all kinds" (Ibid.). From here, we invite a speculation: what if we imagined governance as a body of water? How could this imagination help us better relate to its processes in an embodied way? And when and why would it flow, evaporate, or freeze?

Governmental power has often been described as a system of control, particularly as something that acts upon bodies: ordering, managing, and normalizing them (Foucalt, 1979). This fundamentally explains how power operates. However, it tends to position governance as an abstract apparatus that acts from above and outside embodied life. To counteract this, we challenge the way water governance is imagined, seeing it as an embodied and material condition, itself entangled with human and MTH bodies. If we approach governance as a body of water, we re-situate its power, we make it more approachable and potentially more open to be reshaped by other bodies of water that it interacts with (like our human bodies of water, or MTH, be those rivers, lakes, seas– typically, objects of governance).

In such framing, governance is not experienced from the outsider's standpoint, but is lived through. And like other water bodies, it is a shape-shifter, constantly moving between the states. While contemporary governance strives to be more open, adaptive, and responsive (Ansell, 2023)—a condition that can be typically referred to as fluid—it still encounters tensions that emerge when governance shifts into other watery states. Thinking through the latter allows to live governance processes as conditions of uncertainty, intrinsically complex, that cannot be simply labelled as 'good' or 'bad'. These conditions require a more nuanced reading, which the materiality of

water can provide. For instance, if liquid water indeed moves freely and adapts to the surroundings, liquid governance similarly manifests as open to negotiation and responsive to changing circumstances. At the same time, fluidity also carries inertia: the running water is difficult to redirect, making this a rather uncontrolled movement than an intentional change.

When water solidifies and freezes, it may appear rigid, metaphorically reflecting the tendency of governance processes towards intransigence, where they stagnate in established norms that resist transformation. Yet, solidity can also be a sign of resilience, necessary to cope with emerging challenges. Dispersed, gaseous water is suspended, seemingly volumeless and nearly invisible. Similarly, gaseous governance might be perceived as both absent and omnipresent, but without necessarily being supportive or grounding.

The research looks at these shape-shifting states within the context of water governance in Flanders, Northern Belgium, where water has become a central concern across multiple policy domains, including climate adaptation, agriculture, and environmental protection. For over a year, we have worked closely with regional policymakers involved in several public-led initiatives operating in the water domain, and have had the opportunity to directly engage and observe how governance processes materialize through water. The empirical focus of this paper is 'Water-Land-Scape,' an initiative guided by the Flemish Land Agency (VLM) that supports 29 local coalition groups composed of citizens, farmers, environmental organizations, civil society actors, and public authorities. These coalitions are tasked with co-creating a shared mission, ambitions, and approach in response to locally situated water governance challenges (Water-Land-Schap, n.d). Rather than implementing predefined solutions, the initiative foregrounds processes of collaboration, experimentation, and negotiation, making it a fertile site for observing how governance shifts between different watery states.

To engage with these processes, the research draws inspiration from a method of "thick documentation," emerged particularly in the field of Participatory Design (PD) (Schoffelen & Huybrechts, 2013; Geertz, 1973). In the context of our work, it is understood as an embodied and relational qualitative research practice through which governance is traced as it materializes across everyday practices, documents, and encounters. Documentation becomes a process of sensing the watery states of governance, where experiences emerging from research activities are bodily felt and described in a "thick"—rich in detail—manner.

Thinking of governance as a body of water allows it to be understood as a dynamic and vulnerable material formation, continually made and remade through interactions with other human and MTH bodies of water. Its shape-shifting capacities reflect its complexity. It is, therefore, necessary to anticipate and sense when flowing, freezing, or evaporating are about to materialize. If governance can be felt, its futures can be approached with more trust and hope, resonating with what Pink called 'sensory futuring' (Pink, 2015, 2021, 2023). Our work thus invites a reimagining of governance through these terms, opening a space for discussion where alternative imaginaries of its present states may emerge through bodily relations with its waters.

References

Ansell, C. K. (2023). Rethinking theories of governance. Edward Elgar Publishing.
Bauman, Z. (2013). Liquid modernity. polity.
Foucalt, M. (1979). Governmentality. Ideology & Consciousness, 6, 5–21.
Geertz, C. (1973). The interpretation of cultures. Basic Books.
Neimanis, A. (2017). Bodies of water: Posthuman feminist phenomenology. Bloomsbury academic. https://doi.org/10.5040/9781474275415

Pink, S. (2015). Doing Sensory Ethnography (2nd ed.). SAGE. https://doi.org/10.4135/9781473917057
Pink, S. (2021). Sensuous futures: Re-thinking the concept of trust in design anthropology. The Senses and Society, 16(2), 193–202. https://doi.org/10.1080/17458927.2020.1858655
Pink, S. (2023). Sensory Futures Ethnography. In P. Vannini, The Routledge International Handbook of Sensory Ethnography (1st ed., pp. 82–94). Routledge. https://doi.org/10.4324/9781003317111-8
Schoffelen, J., & Huybrechts, L. (2013). Sharing is caring. Sharing and documenting complex participatory projects to enable generative participation. Interaction Design and Architecture(s) Journal - IxD&A, 18, 9–22.
Water-Land-Schap. (n.d.). Vlaamse Landmaatschappij. Retrieved January 20, 2025, from https://www.vlm.be/nl/projecten/vlm-projecten/waterlandschap

From Indicator Systems to the Cognitive High Ground: Rankings, Exhibitions, and the Dissolution of Situated Futures

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Keywords: urban narratives; smart city indicators; exhibition planning; global south; urban governance

Through the lenses of the two parallel infrastructures of future-making aspects, global smart city indicator systems and locally generated exhibition- and narrative-based public planning practice, this paper explores how the anticipatory practices of Asian cities are constructed, normalized, and challenged.

Although indicator systems offer urban futures of the objective, comparable, and globally comparable, exhibition and planning spaces generate affective, experiential, and embodied imaginaries of urban futures. Making these brings of Asian cities come into a discussion, the paper contends the politics of anticipation to be produced by a dialectic between the standardization of futures and the maintenance of situated, narrative and community-oriented temporality in Asian cities.

Based on the literature on quantification, commensuration and global circulation of indicators (Espeland and Stevens, 1998; Merry, 2011; Rottenburg et al. , 2015), the paper formalizes smart city indicator regimes to generate what I am calling cognitive terrain high grounds cognitively produced platforms where heterogeneous urban realities are re-coded into more similar forms and projected as calculable, linear, and generalizable futures. However, in this process, conflicting temporalities are flattened, and cities, especially those of the Global South, are reorganized in technocratic isotopes of competitiveness and performance.

Contrarily, the paper finds the second, frequently ignored, infrastructure of anticipation, an exhibition-based and narrative-based planning practice. Based on resources found in the Urban Redevelopment Authority City Gallery, Singapore, the related public-facing work of the Draft Master Plan 2025, and the City Gallery of Hong Kong Planning Department (2016 to 2025), the analysis demonstrates the development of futures by the neighbourhood, walkability, heritage, community identity, and long-term transformation aspects of narrative grammars.

Through text analysis (where the frequency of keywords, thematic clustering and frame-word analysis are utilized), the paper shows that these forms of writing form another form of anticipatory knowledge, based not on metrics but on experience, emotion and proximity.

Empirically, the research determines a post-2020 change in the Hong Kong corpus of exhibition: previous place-based and invested vocabularies (e.g., heritage, harbour, family, walkability) are replaced by the more standard and future-oriented ones (e.g., liveable, green, vibrant, world city). This change is not entirely congruent with indicator-related technocratic discourse, and it does not maintain previous situated discourse. It creates rather, a branded anticipatory rhetoric, a de-politicized, positive and extremely standardized vision of the future.

In fact, the Singapore case still maintains some extent of discrepancy between narrative and indicator logics, allowing slight yet significant loopholes of situated knowledge, involvement, and experiential temporality.

This paper argues that the politics of future-making in Asian cities is increasingly shaped by processes of quantification and rhetorical stabilization. Yet these processes do not fully resolve the plurality of urban futures.

Instead, what emerges is a condition of partial alignment: while indicator systems and branded narratives seek to consolidate a coherent and globally legible future, situated narrative practices continue to generate forms of anticipation that remain only unevenly absorbed, leaving behind persistent zones of ambiguity, tension, and incompleteness.

References

Merry, S. E. (2011). Measuring the world: Indicators, human rights, and global governance. Current Anthropology, 52(S3), S83–S95.

Espeland, W. N., & Stevens, M. L. (1998). Commensuration as a social process. Annual Review of Sociology, 24(1), 313–343.

Rottenburg, R., Merry, S. E., Park, S.-J., & Mugler, J. (Eds.). (2015). The world of indicators: The making of governmental knowledge through quantification. Cambridge University Press.

Rose, G. (2017). Posthuman agency in the digitally mediated city: Exteriorization, individuation, reinvention. Annals of the American Association of Geographers, 107(4), 779–793.

Bina, O., Inch, A., & Pereira, L. (2020). Beyond techno-utopia and its discontents: On the role of utopianism and speculative fiction in shaping alternatives to the smart city imaginary. Futures, 115, 102475.

From Smart Cities to Humane Cities: Designing Urban Data Systems as Collective Anticipatory Infrastructures

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Keywords: public trust; socio-technical systems; sensemaking; participatory futures; anticipatory governance; urban futures

Over the past decade, “smart city” initiatives have promised efficiency, optimization, and predictive capability through data-driven urban systems. However, despite unprecedented growth in urban data collection, many cities continue to experience declining public trust, widening inequities, and policy failures that appear to arrive as surprises. This paper argues that these failures stem not from insufficient data or analytic sophistication, but from a misalignment between urban data systems and their role as anticipatory infrastructures.

Rather than treating cities as sites of centralized prediction and control, this paper reframes urban data systems—dashboards, models, indicators, and data pipelines—as sensemaking devices that shape how futures are perceived, discussed, and acted upon. When these systems privilege technical optimization over human comprehension, they suppress weak signals, obscure uncertainty, and concentrate anticipatory capacity within narrow institutional roles.

Rooted in Data Humanism, the paper positions anticipation as a collective, participatory process grounded in human experience. Urban data systems are understood as socio-technical constructs shaped by cognitive load, accessibility, emotional response, institutional context, and power dynamics. From this perspective, inequity is not merely a design flaw or ethical afterthought, but an anticipatory failure—a signal that futures are being imagined, modeled, and governed for some groups while excluding others.

Drawing on applied examples from public-sector governance, healthcare systems, accessibility-first data design, and enterprise-scale decision environments, the paper demonstrates that humane urban data systems do not eliminate uncertainty. Instead, they make uncertainty legible, discussable, and negotiable, enabling policymakers, practitioners, and residents to engage in shared anticipation. The paper argues that humane cities are those in which citizens are not passive data subjects, but anticipatory agents capable of participating meaningfully in how futures are sensed, debated, and shaped.

Relation to Existing Research, Literature, and Practice

This paper builds on and extends several strands of scholarship and practice relevant to anticipation studies, urban governance, and socio-technical systems.

First, it aligns with research on anticipatory governance and futures studies that emphasize preparedness, institutional learning, and sensemaking over prediction alone (Fuerth & Faber, 2012; Poli, 2019). While much of this literature focuses on formal foresight methods—such as scenario planning or horizon scanning—this paper extends the field by identifying urban data infrastructures themselves as everyday anticipatory systems. Dashboards, indicators, and analytic pipelines are not neutral reporting tools, but mechanisms through which futures are rendered visible or invisible.

Second, the paper engages critically with smart city scholarship that documents the risks of technocratic governance, algorithmic opacity, and democratic erosion in data-

driven urbanism (Kitchin, 2014; Greenfield, 2013). Rather than framing these concerns solely as governance or policy failures, this paper contributes a sensemaking-oriented perspective, examining how inequity emerges when urban data systems restrict who can interpret signals, question assumptions, or contest projected futures.

Third, the paper draws from human-centered design, information design, and science and technology studies (STS), particularly research on explainability and socio-technical systems. Prior work has shown that transparency does not guarantee understanding, trust, or accountability—especially in algorithmic systems (Ananny & Crawford, 2018; Selbst et al., 2019). This paper advances that insight by framing explainability as an anticipatory practice, one that must support dialogue, disagreement, and negotiation under uncertainty rather than delivering false certainty.

Finally, the paper is grounded in applied practice across healthcare, public-sector data systems, accessibility-focused design initiatives, and enterprise governance. These domains share critical characteristics with cities: distributed authority, high stakes, and irreversible consequences when futures are misread. Across these contexts, inequitable outcomes consistently signal a failure to incorporate diverse lived experiences into anticipatory sensemaking. Data Humanism is positioned here as an operational bridge between futures theory and the practical design of inclusive anticipatory infrastructures.

Connection to Conference Themes

This paper directly contributes to the Anticipation Conference themes of urban futures, anticipatory governance, socio-technical systems, and collective sensemaking.

By reframing cities as anticipatory infrastructures, the paper challenges dominant assumptions that anticipation is best achieved through centralized analytics or predictive models. Instead, it argues that anticipatory capacity emerges through collective sensemaking, supported—or undermined—by the design of urban data systems.

In this framing, anticipation is not a technical function performed solely by experts, but a distributed social capability. Urban data systems that treat residents solely as data sources weaken this capability. Humane cities, by contrast, design data systems that enable citizens to act as anticipatory agents—able to understand uncertainty, recognize emerging risks, and participate in shaping shared futures.

The paper complements existing futures methodologies by focusing on the material and experiential conditions that enable anticipation in everyday governance. It demonstrates how making uncertainty legible and negotiable strengthens democratic legitimacy, resilience, and trust—qualities essential for navigating complex and contested urban futures.

References

Ananny, M., & Crawford, K. (2018). Seeing without knowing: Limitations of the transparency ideal and its application to algorithmic accountability. New Media & Society, 20(3), 973–989. https://doi.org/10.1177/1461444816676645

Fuerth, L. S., & Faber, E. M. (2012). Anticipatory governance: Practical upgrades for the governance of risk and opportunity. Foresight, 14(4), 346–357. https://doi.org/10.1108/14636681211269829

Greenfield, A. (2013). Against the Smart City. Do Projects.

Kahneman, D. (2011). Thinking, Fast and Slow. Farrar, Straus and Giroux.

Kitchin, R. (2014). The real-time city? Big data and smart urbanism. GeoJournal, 79(1), 1–14. https://doi.org/10.1007/s10708-013-9516-8

Norman, D. A. (2013). The Design of Everyday Things (Revised and expanded ed.). Basic Books.

Poli, R. (2019). Introduction to Anticipation Studies. Springer.

Selbst, A. D., Boyd, D., Friedler, S. A., Venkatasubramanian, S., & Vertesi, J. (2019). Fairness and abstraction in socio-technical systems. In Proceedings of the Conference on Fairness, Accountability, and Transparency (FAT*) (pp. 59–68). ACM. https://doi.org/10.1145/3287560.3287598

Infrastructures of Listening. The case of the Municipality of Milan in reframing qualitative monitoring as situated anticipatory governance in youth policies.

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Keywords: anticipatory governance; futures literacy; qualitative monitoring; youth policies; collaborative design, speculative design

Introduction

The construction of public futures is inherently a political act, yet it raises urgent questions about power and visibility: Who is included or excluded in the imagination of the public future? And how do epistemic boundaries shape the legitimacy of these diverging imaginaries? In the context of youth transitions, the dominant governance model often answers these questions through exclusion. By relying on predictive metrics and standardized linear trajectories, institutions implicitly validate only those futures that fit within established economic parameters, rendering invisible the "lived futures" of those on the margins.

In the field of youth policy and school-to-work transitions, public administrations operate within a paradox. On one hand, they are tasked with designing futures for a generation facing unprecedented uncertainty, "permacrisis," and non-linear biographical trajectories. On the other hand, the administrative tools used to monitor and evaluate these policies remain tethered to a paradigm of prediction and control. Traditional monitoring systems rely heavily on quantitative metrics which are essentially historical data. They measure what has already happened, projecting past trends onto future scenarios.

This paper argues that this reliance on retrospective metrics creates a "temporal gap" between the rigid, linear time of the institution and the fluid, anxious "lived futures" of young people. To bridge this gap, we propose a shift from predictive metrics to Anticipatory Governance (Guston, 2014), operationalised through qualitative monitoring. We explore how the Youth Promotion and School-to-Work Transition Project Management of the Municipality of Milan is attempting to reframe monitoring not as a bureaucratic auditing tool, but as a situated infrastructure of listening. Attraverso l'uso di strumenti qualitativi dovremmo liberarci dall'ossessione di monitorare l'avanzamento dei progetti e dare più spazio invece all'avanzamento dei cambiamenti che occorrono sulle persone.

By engaging with Design for Policy (Bason, 2014) and Futures Studies, this paper conceptualises qualitative monitoring as a political practice capable of detecting weak signals (Ansoff, 1975) and nurturing the Futures Literacy (Miller, 2018) of both the administration and the youth.

Case Context: "Testing Action" – Municipality of Milan The "Youth Promotion and School-to-Work Transition Project Management" of the Municipality of Milan has recently recognised the limitations of its conventional project evaluation systems in capturing the "human becoming" within its youth services. Quantitative indicators struggle to describe the dynamics of change occurring through participation: emotional shifts, evolving motivations, and transformations in self-perception.

Consequently, the Administration has launched a "Testing Action" developed by the researchers of the Polimi Desis Lab research group (Politecnico di Milano, Department of Design, Italy) to prototype, test, and compare three qualitative data collection methods: the most significant change, the photovoice and the research wall.

These methods—conceived as participatory, visual, and narrative tools—aim to integrate numerical information with biographical and transformative data. Rather than producing static snapshots, they generate dynamic "visual storylines" that invite interpretation. Crucially, this external experimentation is mirrored by an internal "mini-academy" for staff: a space for collective reflection where public servants learn to formulate better questions and interpret qualitative materials not as anecdotes, but as evidence. This paper analyses this initiative not merely as a methodological update, but as a systemic design intervention aimed at reconfiguring the organization’s anticipatory capacities.

Theoretical Framework and Discussion

The core argument of the paper is twofold, addressing both the agency of the youth (Justice) and the responsiveness of the institution (Governance).

First, we posit that qualitative monitoring acts as an educational infrastructure for Futures Literacy. In standard policy environments, the future is often "colonized" by institutional narratives of employability and economic success. However, when monitoring is designed as a space for deep listening and storytelling, it supports what Appadurai (2004) calls the "capacity to aspire."

The narrative methods tested in Milan encourage young people to articulate their trajectories, turning vague anxieties into structured narratives. In this sense, the act of being monitored—when done through an ethic of care (Tronto, 1993; Puig de la Bellacasa, 2017)—becomes a moment of agency. It validates the "used future" of the participants versus the "official future" of the policy. The monitoring tool thus functions as a pedagogical device: it does not just extract data from the subjects, but builds anticipatory competence with them, allowing them to imagine and navigate alternative futures beyond the standard linear transitions.

Second, the contribution frames qualitative data as weak signals essential for a post-predictive governance model. Traditional quantitative data are "strong signals"—clear, but often lagging indicators of phenomena that have already solidified. In contrast, the stories, frictions, and emotions captured by qualitative monitoring are "weak signals": early warnings of emerging trends, hidden vulnerabilities, or new forms of marginalization that have not yet reached statistical significance.

By treating these qualitative materials as infrastructures of anticipation, the Municipality moves from a logic of Plan and Control to a logic of Sense and Respond (Weick, 1995). For instance, a drop in attendance (quantitative) is a lagging indicator of failure; a story about a young person’s loss of trust in institutions (qualitative) is a leading indicator—a weak signal that allows for intervention before the failure occurs. This shift requires the institution to value the "partial" and "situated" nature of knowledge (Haraway, 1988), accepting that meaningful insights often come from contradictions rather than averages.

Design Implications: Towards Anticipatory Care The transition to this model is not frictionless. It requires designing new organizational rituals to metabolize qualitative ambiguity. The paper discusses the design of the qualitative methods tools as boundary objects that facilitate negotiation between the rigid requirements of the bureaucracy and the fluid reality of the field.

We propose the concept of "Anticipatory Care" to describe this new institutional posture. Anticipatory Care is the practice of attending to the futures of others not by defining them in advance, but by holding space for their emergence. It is a form of

Design Justice (Costanza-Chock, 2020) that redistributes epistemic power: it acknowledges that the expert on the future of a young person is the young person themselves, and the role of the institution is to build infrastructures that can hear and support those diverging futures.

Conclusion

The case of the Municipality of Milan illustrates that "Anticipatory Governance" does not necessarily require sophisticated algorithmic predictive tools. Instead, it can emerge from the careful design of everyday practices of listening, documenting, and interpreting. By reframing qualitative monitoring as a strategic asset for detecting weak signals and fostering futures literacy, public administrations can transform themselves from rigid planners into responsive, learning organisms.

Ultimately, the paper argues that the future of public monitoring lies not in producing better metrics, but in building better relationships. It is in the "thick descriptions" of qualitative monitoring that institutions can find the necessary intelligence to navigate the complexity of the 21st century, ensuring that the governance of youth transitions is not an act of imposition, but a situated political practice of co-evolution.

References

Ansoff, H. I. (1975). Managing Strategic Surprise by Response to Weak Signals. California Management Review.

Appadurai, A. (2004). The Capacity to Aspire: Culture and the Terms of Recognition. In Culture and Public Action. Stanford University Press.

Bason, C. (2014). Design for Policy. Gower Publishing.

Costanza-Chock, S. (2020). Design Justice: Community-Led Practices to Build the Worlds We Need. MIT Press.

Guston, D. H. (2014). Understanding ‘anticipatory governance’. Social Studies of Science.

Haraway, D. (1988). Situated Knowledges: The Science Question in Feminism. Feminist Studies.

Manzini, E. (2015). Design, When Everybody Designs. MIT Press.

Miller, R. (2018). Transforming the Future: Anticipation in the 21st Century. Routledge.

Puig de la Bellacasa, M. (2017). Matters of Care: Speculative Ethics in More Than Human Worlds. University of Minnesota Press.

Integrated Anticipatory Foresight for the Strategy on Intergenerational Fairness of the European Commission

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Keywords: anticipatory governance; intergenerational fairness; epistemologies of futures; participatory foresight; care and temporal justice

This paper examines the Integrated Anticipatory Foresight Process (IAFP) underpinning the European Commission's Strategy on Intergenerational Fairness (IGF). The IAFP represents a novel methodological and epistemological approach to policy design - one that integrates scientific analysis, participatory co-creation, and narrative imagination to support anticipatory governance across generations. Its central purpose is to build a shared capacity for imagining, evaluating, and enacting fair futures that respect both present and future generations.

Through an epistemological lens, the paper traces the IAFP's progression from probable to performative futures, outlining how knowledge about the future evolves from predictive and data-driven reasoning toward participatory and action-oriented practices. The four stages -probable, plausible, pluralistic, and performative futures - mark a transition from positivist to constructivist and performative ways of knowing. This progression reveals how epistemic reflexivity can strengthen intergenerational justice by democratizing foresight and embedding fairness within the act of imagining and making futures together.

Empirically, the paper analyzes the IGF as an experiment in anticipatory governance (Vervoort & Gupta, 2018) and futures literacy (Miller, 2007, 2018). It shows how the process operationalizes the ethical commitments of intergenerational justice (Rawls, 1999; Caney, 2010) through participatory foresight frameworks (Voros, 2003; Sharpe et al., 2016). By combining evidence-based analysis with storytelling and performative visioning, the process turns foresight into a tool of collective empowerment and long-term policy learning. The paper thus contributes to the emerging literature on epistemologies of the future (Inayatullah, 1998; Poli, 2017; Sardar, 2010), proposing that sustainable policymaking requires not just better data about what may happen, but richer modes of knowing that enable society to imagine and enact what ought to happen.

Ultimately, the IAFP redefines futures knowledge as a form of intergenerational dialogue - an ongoing social practice that transforms imagination into governance. The analysis concludes that by moving from prediction to performance, the European Commission's approach offers a template for integrating foresight, ethics, and participation into EU policy systems in ways that promote justice across time.

The IAFP explicitly works against linear, predictive time, reframing futures as plural, relational, and co-constructed across generations. It creates epistemic spaces where multiple temporalities - scientific projections, lived experiences, and imagined futures - intersect. Through intergenerational dialogue, participants learn to navigate the tension between short-term policy cycles and long-term planetary responsibilities, turning temporal plurality into a resource for anticipatory governance. In doing so, the process redefines time as shared and contested, rather than sequential or technocratic.

The Strategy situates anticipation as a political and ethical practice, embedding public participation and epistemic justice into EU governance. It challenges expert-driven policy by including citizens, younger and older generations, and proxies for future generations in co-creating visions of fairness. This inclusive foresight process questions who has the authority to imagine futures and redistributes that power through participatory, pluralistic methods. It thereby reimagines governance as anticipatory and democratic, grounded in justice across temporal, social, and epistemic borders.

At its heart, the IAFP is a practice of care across time: it operationalizes intergenerational fairness as a form of relational ethics, rooted in empathy and responsibility toward future beings. By using narrative and imagination, it cultivates situated hope - a collective, caring capacity to envision and enact livable futures beyond technocratic control. This approach foregrounds care, dialogue, and shared learning as transformative forces in policymaking, showing how institutions can foster futures built on solidarity, mutual flourishing, and ecological responsibility.

References

Anderson, B. (2010). Preemption, precaution, preparedness: Anticipatory action and future geographies. Progress in Human Geography, 34(6), 777–798. https://doi.org/10.1177/0309132510362600

Bell, W. (1997). Foundations of futures studies: Human science for a new era (Vol. 1–2). Transaction Publishers.

Bussey, M. (2014). Futures in the making: Practice, ethics and emergence in transformative foresight. World Futures Review, 6(3), 219–232. https://doi.org/10.1177/1946756714553475

Caney, S. (2010). Climate change and the duties of the advantaged. Critical Review of International Social and Political Philosophy, 13(1), 203–228. https://doi.org/10.1080/13698230903326331

Coulton, P., Lindley, J., & Akmal, H. A. (2020). Design fiction as world building. Digital Creativity, 31(1), 1–16. https://doi.org/10.1080/14626268.2020.1736821

Fricker, M. (2007). Epistemic injustice: Power and the ethics of knowing. Oxford University Press.

Inayatullah, S. (1990). Deconstructing and reconstructing the future: Predictive, cultural and critical epistemologies. Futures, 22(2), 115–141. https://doi.org/10.1016/0016-3287(90)90077-U

Inayatullah, S. (1998). Causal layered analysis: Poststructuralism as method. Futures, 30(8), 815–829. https://doi.org/10.1016/S0016-3287(98)00086-X

Miller, R. (2007). Futures literacy: A hybrid strategic scenario method. Futures, 39(4), 341–362. https://doi.org/10.1016/j.futures.2006.12.001

Miller, R. (2018). Transforming the future: Anticipation in the 21st century. Routledge.

Poli, R. (2017). Introduction to anticipation studies. Springer.

Ramos, J. (2019). Linking foresight and action: Toward a futures action research. Futures, 108, 85–94. https://doi.org/10.1016/j.futures.2018.12.001

Rawls, J. (1999). A theory of justice (rev. ed.). Harvard University Press.

Raven, P. G., & Elahi, S. (2015). The new narrative: Applying narratology to the shaping of futures outputs. Futures, 74, 49–61. https://doi.org/10.1016/j.futures.2015.09.003

Sardar, Z. (2010). Welcome to postnormal times. Futures, 42(5), 435–444. https://doi.org/10.1016/j.futures.2009.11.028

Sharpe, B., Hodgson, A., Leicester, G., Lyon, A., & Fazey, I. (2016). Three horizons: A pathways practice for transformation. Ecology and Society, 21(2), 47. https://doi.org/10.5751/ES-08388-210247

Slaughter, R. A. (1996). The knowledge base of futures studies: Aspects and sources. Foresight, 1(1), 43–49.

Vervoort, J. M., & Gupta, A. (2018). Anticipating climate futures in a 1.5 °C era: The link between foresight and governance. Current Opinion in Environmental Sustainability, 31, 104–111. https://doi.org/10.1016/j.cosust.2018.01.004

Voros, J. (2003). A generic foresight process framework. Foresight, 5(3), 10–21. https://doi.org/10.1108/14636680310698379

Learning Across Futures: Scenario Comparison, Temporal Distance, and Collective Anticipation in FHH is to EVOLVE

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Keywords: anticipatory practice; comparative learning; backcasting; collective intelligence design-led futures; systems thinking

Anticipatory practices often struggle to escape present-day assumptions, institutional constraints, and cognitive biases that limit the exploration of alternative futures. This paper presents The Future Human Habitat (FHH) is to EVOLVE, an international, design-led futures workshop held in July 2024 at IMREDD (Université Côte d'Azur, Nice), as a practice-based experiment in working with temporalities in tension through scenario comparison, collective intelligence, systems thinking, and backcasting. The project demonstrates how distancing, plural futures, and comparative learning can support more grounded and actionable anticipatory practices. In our case, the work focused on the neighborhood scale. This approach is situated within work on anticipatory systems (Poli, 2017), futures thinking (Inayatullah, 2008), social fantasy (Victor et al., 2005), and new design-led transitions that emphasize uncertainty, complexity, and action in the present (Irwin, 2015).

A central methodological choice of FHH is to EVOLVE was the use of probable, possible, and plausible future scenarios situated in the year 2065. This temporal horizon was intentionally selected to create sufficient distance from the present, allowing participants to disconnect from current political agendas, technological hype, and habitual planning logics. By working with 2065 rather than near-term futures, the process aimed to reduce participants' cognitive biases, encourage speculative openness, and enable participants to question dominant assumptions about growth, progress, and neighborhood development. This use of temporal distance builds on established scenario practice and long-range futures methods that use the concept of alternative futures to move beyond present-day framings, support decision-making, and guide action (Dator, 2009; Voros, 2021).

The workshop engaged 32 participants from across Europe, representing 18 cities, as well as one participant from Egypt, and drawing from the full spectrum of the human habitat ecosystem, including urban design, architecture, governance, mobility, energy, technology, sociology, ecology, and futures studies. The group composition was deliberately diverse: approximately 78% of participants identified as women, and representation from the public and private sectors was evenly balanced. This diversity was not incidental but foundational to the process, enabling a disruptive form of exchange in which contrasting institutional logics, lived experiences, and professional cultures could productively collide.

Participants worked with three contrasting scenarios applied to two real urban contexts—Parc Méridia EcoQuartier (Nice) and Jernbanebyen (Copenhagen). Rather than converging on a preferred future, the process emphasized comparative learning between scenarios pre-developed in-house. This approach allowed participants to learn not only from "successful" futures but also from dysfunctional, unequal, or environmentally degraded ones. The comparison between scenarios functioned as a learning device, revealing trade-offs, unintended consequences, and systemic vulnerabilities that might otherwise remain invisible. In this sense, the workshop treated

scenarios not as predictive tools but as devices for discovery, exploration, reflection, and experiential learning (Candy & Dunagan, 2017; Victor et al., 2005).

The anticipatory process unfolded in three interconnected phases:

• Complexity – Exploring Future Scales: Using systems thinking and PESTEL+V analysis (Gillespie, 2019), participants explored long-term drivers shaping neighborhood transformation, including climate risk, governance shifts, resource scarcity, mobility, technological change, and context-specific drivers across Northern and Southern Europe. This phase encouraged participants to work with uncertainty and contradiction rather than seeking consensus or prediction, in line with post-normal approaches to futures thinking (Sardar, 2015).

• Intimacy – Everyday Life in 2065: To bring abstract futures closer to lived experience, participants developed ethnographic narratives describing a full day in the life of future inhabitants. These stories focused on habitation, care, food, mobility, work, and social relations, revealing how long-term systemic changes affect daily rhythms, intergenerational relations, and human–non-human interactions. This step made visible forms of time often overlooked in planning processes, such as care time, adaptive time, and ecological time (Adam, 2005).

• Connecting – Backcasting to the Present: In the final phase, participants used backcasting to link future challenges to the present (Robinson, 1990), creating timelines and concrete recommendations for policymakers, planners, and designers. These included governance models, spatial strategies, low-tech solutions, and community-based actions that could be implemented starting in 2024. This step explicitly addressed tensions between short-term feasibility and long-term responsibility, while avoiding a worst-case scenario (Inayatullah, 2008).

Through this structure, FHH is to EVOLVE enabled participants to navigate paradoxical temporal tensions—urgency versus patience, innovation versus care (Tsing et al., 2017), acceleration versus slowness, Northern EU culture versus Southern EU culture, and high-tech imaginaries versus low-tech or regenerative practices. Importantly, the process foregrounded intergenerational and more-than-human temporalities, challenging anthropocentric and colonial notions of time embedded in modern urban planning (Haraway, 2016).

The outcomes of the workshop extend beyond speculative visioning. They include visual and narrative artefacts for local municipalities, policymakers, and public audiences, place-based recommendations for climate adaptation and social cohesion, and inputs for a forthcoming experimental process white paper and ongoing international collaborations. These outcomes demonstrate how anticipatory practices can translate macro-scale strategies into local, everyday actions without collapsing into short-termism.

The paper situates FHH is to EVOLVE within research on anticipatory systems, post-normal times, new ways of designing futures (Irwin, 2015), and feminist (Haraway, 2016) and decolonial critiques of linear temporality. It contributes empirically to debates on how anticipation can remain actionable while embracing uncertainty. In doing so, it argues that anticipation should be understood not as alignment toward a single future, but as the ongoing work of holding multiple temporalities in tension—across scales, bodies, species, and generations.

References

Adam, B. (2005). Timescapes of modernity. https://doi.org/10.4324/9780203981382

Candy, S., & Dunagan, J. (2016). Designing an experiential scenario: The People Who Vanished. Futures, 86, 136–153. https://doi.org/10.1016/j.futures.2016.05.006

Dator, J. (2009). Alternative futures at the Manoa School. Journal of Futures Studies, 14(2), 1–18.
Gillespie, A. (2019). Foundations of economics. In Oxford University Press eBooks. https://doi.org/10.1093/hebz/9780198806523.001.0001
Haraway, D. (2016). Staying with the trouble: making kin in the Chthulucene. Duke University Press.
Inayatullah, S. (2008). Six pillars: futures thinking for transforming. Foresight, 10(1), 4–21. https://doi.org/10.1108/14636680810855991
Irwin, T. (2015). Transition Design: a proposal for a new area of design practice, study, and research. Design and Culture, 7(2), 229–246. https://doi.org/10.1080/17547075.2015.1051829
Poli, R. (2017). Introduction to anticipation studies. In Anticipation Science. https://doi.org/10.1007/978-3-319-63023-6
Robinson, J. B. (1990). Futures under glass. Futures, 22(8), 820–842. https://doi.org/10.1016/0016-3287(90)90018-d
Sardar, Z. (2015). Postnormal times revisited. Futures, 67, 26–39. https://doi.org/10.1016/j.futures.2015.02.003
Tsing, A. L., Swanson, H. A., Gan, E., & Bubandt, N. (2017). Arts of living on a damaged planet: Ghosts of the Anthropocene.
Victor, R., Technical University Of Denmark. Informatics And Mathematical Modelling, Danmarks Tekniske Universitet. Informatik Og Matematisk Modellering, Imm. Informatik Og Matematisk Modellering, & Dtu. (2005). The future workshop: Democratic problem solving. Lyngby.
Voros, J. (2021, March 12). A primer on Futures Studies, foresight and the use of scenarios. The Voroscope. https://thevoroscope.com/publications/foresight-primer/

Navigating the new economy: qualitatively and quantitatively exploring four beyond growth storylines

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Keywords: alternative economic paradigms; transformative change; strategic foresight workshop

Amid intensifying geopolitical turbulence, accelerating ecological breakdown, and widening economic precarity, institutions across public, private, and civic sectors need to navigate profound uncertainty. Such complex challenges require a systemic lens and the identification of opportunities for transformative change. Yet we still too often see a continuity of, and reliance on, linear planning models to inform decision making. These linear models assume stability and continuous economic growth. Such frameworks not only fall short in addressing the complexities of contemporary crises, but also constrain the imagination of alternative futures. In this context, the expanding Beyond Growth debate has become a crucial site for rethinking the economic and normative foundations of modern social order. This paper examines how anticipatory practices within organizations are reshaped when oriented toward new economies. In this paper, we present a threefold approach to demystify the different alternative economic paradigms, and turn them more actionable to support transformative change. First, by an analysis of emerging paradigms we constitute four main scenarios for the future of the economy. This analysis then provides the basis for a strategic foresight workshop that we develop, test and evaluate. Additionally, this analysis provides input to extend and enhance current macroeconomic models with innovative policy options. We show how this threefold approach systemically broadens the scope for policy action towards sustainable societies, and supports public and private institutions in navigating the new economy.

Realizing the urgency of the existing and ensuing global environmental and socio-economic challenges, an international scientific and public debate has emerged about the possibilities for societal system adaptations beyond incremental change. The basis of this debate is whether our present interpretation of ‘societal welfare’ is intrinsically linked to economic growth, or needs to be revisited to fundamentally reduce global energy and materials demand and to stay within climate and planetary boundaries. Based on a qualitative assessment of seven international and four Dutch alternative socio-economic concepts (e.g. Donut Economy, Ubuntu, Buen Vivir, Brede Welvaart), followed by a quantitative AI analysis, we create a summarizing taxonomy of the different alternative economic paradigms. Both studies made use of an ex-ante policy evaluation methodology. This provided an identification of four main storylines in the Beyond Growth debate: Green growth, Post-growth, Mission economy, and Great mindshift (Slingerland et al., 2024). These storylines are mapped across 1) their relative position towards economic growth (seen respectively as a ‘precondition’ or ‘subordinate’ to social and environmental sustainability targets) 2) their views on behaviour, norms and values, and 3) their view on governance.

To explore these scenarios empirically, the research involved the design and implementation of a series of strategic foresight workshops with stakeholders from semi-public institutions and private institutions. These workshops served as experimental spaces where participants engaged with the scenarios, contested assumptions about economic directionality, and collectively articulated possible

trajectories. Through collaborative exercises, such as plotting the strategy on the Beyond Growth matrix, and reflecting on the robustness and resilience of this strategy, participants tested how their organizations might cultivate resilience within different futures.

In two pilots, executed at a DSO and financial organization, we found that i) the four scenarios support a neutral discussion in highly ideologized field, ii) the four scenarios widen the perspective to include not only technological, but also social innovation, and iii) the four scenarios function as an assessment tool for the organizational strategy in terms of robustness and resilience. Analysis of these sessions reveals how anticipatory practices can surface latent tensions, reconfigure institutional imaginaries, and expand the repertoire of actionable futures.

In parallel with these participatory engagements, the research team developed an interface that connects the qualitative storylines with quantitative modeling tools and vice versa. The Beyond Growth scenarios are extended into quantified transition scenarios using a set of 'beyond GDP' indicators to assess the potential for achieving a climate-neutral, just, and resilient society. Anticipatory work often struggles to bridge qualitative narratives with the computational models used in economic and environmental forecasting. Our prototype interface seeks to address this gap by enabling iterative translation between narrative-driven visions and model-based projections. Qualitative storylines emerging from workshops can be parameterized into modeling environments, while model outputs can be re-materialized as stories, visual prompts, and alternative scenario logics, thereby providing a bidirectional knowledge exchange.

By foregrounding anticipatory practices as both analytical and performative interventions, the paper highlights how futures-oriented methods can actively shape institutional sensemaking regarding alternative economic paradigms, rather than merely describe possible outcomes. The proposed approach offers a transferable framework for policymakers, strategists, and researchers seeking to engage with economic pluralism without collapsing complex debates into singular policy prescriptions. Rather than advocating one preferred pathway, the paper emphasizes the importance of maintaining productive tension between competing paradigms to enhance institutional learning, reflexivity, and adaptive capacity. This perspective positions anticipation not as a tool for prediction, but as a means for expanding collective agency under conditions of deep uncertainty.

By integrating theoretical, methodological, and practice-based perspectives, the paper contributes to conversations at the Anticipation 2026 conference on how futures of new economies can be imagined. Ultimately, the paper argues that designing resilient futures in a Beyond Growth world requires a deep reorientation of the imaginaries, infrastructures, and institutional logics that sustain extractive patterns of production and consumption. The ongoing research provides policymakers with a comprehensive understanding of alternative paradigms and a broader range of policy options to accelerate progress towards a climate-neutral, just, and resilient society.

References

Slingerland et al. (2024). Mapping and analysis of alternative growth paradigms. Deliverable No. D1.1 of the MultiFutures project funded under the European Union's Horizon Europe research and innovation programme Grant Agreement number 101121353. Draft Report, approval from CINEA pending.

Proximity as Anticipatory Practice: How Fashion Entrepreneurs Enact Localized Circular Strategies in New York City

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Keywords: proximity; circular economy; fashion; entrepreneurship; localization

As concerns around overproduction, overconsumption, and resource depletion intensify, sufficiency-oriented circular business models are increasingly mobilized as pathways toward alternative futures of production and consumption. Within the fashion industry, efforts to localize circular strategies foreground not only material reconfigurations of supply chains, but also anticipatory practices through which designers and entrepreneurs navigate uncertainty and experiment with more sustainable modes of organizing. This paper examines how fashion designers and entrepreneurs engage in anticipatory work by shortening and localizing value chains around high-R strategies in fashion such as rethink, reduce, and reuse. Drawing on the economic geography concept of proximity, we ask how geographical and organized proximity enable entrepreneurs to collectively imagine, test, and stabilize sufficiency-oriented futures. In doing so, the paper opens a conceptual dialogue between economic geography and anticipatory design, showing how proximity-based perspectives can inform understandings of entrepreneuring as an anticipatory practice shaping pathways toward sustainable futures.

The analysis is based on 13 qualitative case studies of designers and entrepreneurs operating in New York City. Data were collected through semi-structured interviews conducted between 2020 and 2023 and analyzed using a proximity framework that captures the micro-dynamics of coordination, learning, and expectation-building among interdependent actors. This approach allows us to examine how proximity relations shape not only present interactions, but also anticipatory orientations toward future markets, production rhythms, and consumer relations. Additional interviews are planned for 2026 to extend the analysis and capture evolving anticipatory practices over time.

The findings show that proximity coordination functions as an anticipatory practice through which designers and entrepreneurs translate long-term sustainability aspirations into situated, everyday practices. Geographical and organized proximity support experimentation with small-batch and made-to-order production, repair and reuse services, and localized sourcing arrangements, while also enabling continuous feedback loops with consumers. These practices give rise to three interrelated dynamics: (1) the emergence of localized production networks and material sourcing routines oriented toward residual materials upcycling, (2) the development of alternative market channels that rely on direct and iterative engagement with consumers through pop-ups, events, and hybrid physical-digital spaces, and (3) the formation of communities of practice in which designers and consumers collectively learn, negotiate norms, and cultivate shared understandings of sufficiency.

By conceptualizing localization and proximity as anticipatory practices rather than static conditions, this paper contributes to interdisciplinary conversations on anticipation, design, and entrepreneurship. It highlights how urban entrepreneurs engage in futuring through material, relational, and organizational experimentation, and how localized economies can serve as sites where alternative modes of production and consumption

are actively rehearsed. More broadly, the study suggests that linking anticipatory design frameworks with economic geography offers a promising avenue for understanding how sustainable futures are enacted through everyday entrepreneurial practice.

Speculative Futuring from Fashion to Cities: Adapting the Fashion Futuring Methodology for Urban Foresight

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Keywords: speculative design; foresight methodology; urban futures; values

As the world grapples with increasingly volatile, uncertain, and complex factors that make futures unpredictable, there is a pressing need to critically re-evaluate the limitations of conventional trend forecasting and explore more pluralistic and imaginative approaches to fashion futures practices. Traditional fashion forecasting prioritises predictability, linearity, products, and consumption-driven narratives, often reinforcing existing systems based on efficiency and profitability despite the costs to the planet and the risks of life extinction.

Although important to maintain current fashion systems operating at full speed, fashion forecasting entails the contradiction of being a practice for defuturing. Tony Fry (2008) defines defuturing as any deliberate or negligent action that works against the possibility of viable futures, equating progress with economic expansion while threatening not only human existence but that of countless other species. This means that fashion forecasting is aligned with epistemic assumptions that privilege rational planning, linear temporality, technological progress, and standardisation. However, at a time when paradigmatic shifts towards more sustainable and just worlds is paramount, how can we reimagine futures thinking for fashion? What other paths can we take if we commit to being agents of futuring instead of defuturing?

Fashion Futuring emerged from these questions as a values-driven methodology created during practice-based doctoral research conducted at RMIT University between 2019 and 2023. Fashion Futuring is an alternative to fashion forecasting as the dominant mode of futures thinking in this industry, which is centred on products and economic growth. It is a seven-step methodology that relies on cfiction, specualtion and collaborative imagination to bridge inspiration and strategic planning, dreams and concrete action.

Although created for the field of fashion, the methodology is anchored in a four-step framework—referred to as the ‘Speculative Futuring Framework’—that illuminates possibilities for expanding its application beyond the fashion field. The framework articulates four interconnected and porous levels - knowns, unknowns, values, and transitions. 1) 'Knowns' is dedicated to investigating assumptions and beliefs about the pasts, presents, and futures of a particular sector. 2) 'Unknowns' focuses on enhancing collaborative imagination, allowing reality, pasts, and presents to create space for fiction and futures. 3) 'Values'is a level dedicated to identifying collective values to guide systemic transitions systems for flourishing futures. 4) 'Transitions' is where values identified through collaborative imagination become the north star for a multidimensional backcasting exercise aimed at envisioning pathways towards desirable futures.

This study suggests the transposition of Fashion Futuring and its framework to the field of urban foresight. To enable this methodological adaptation, the artifacts and backcasting tool were redefined based on concepts related to cities. Therefore, instead of using fashion artifacts, concepts such as "shelter,” " passage,” " Modular architecture,” and "Convival Space" were introduced as prompts in the speculative

design stage. These prompts encourage participants to imagine how everyday spatial elements can evolve under different future conditions. Furthermore, an

Adaptation in the backcasting tool is required at the system level. Instead of focusing on fashion systems components (e.g., materials and textiles, manufacturing, commerce), the tool was redesigned using dimensions that structure urban systems and the planning decisions. These include mobility, infrastructure, housing, social belonging and citizenship. Emerging findings reveal that when used to imagine values-driven futures for cities, the toolkit helped stakeholders to ditch the pressure of analysing multiple data sets at once and feeling overwhelmed by the complexity of the decisions they need to take when using traditional foresight methods. Participants mentioned the power of fcition as a faciltitator for having meaningful conversations about values and futures facilitated as a novel approach to futures thinking in the urban planning domain. They also mentioned their ability to translate fictional discussions into factual and feasible principles to guide governments, institutions, and policymakers for future planning. When used in the context of cities, the methodology also revealed to be more easily accepted by urban stakeholders as opposed to fashion stakeholders, as cities planning do not face market constraints mainly guided by profit and capitalist principles, as fashion does.

Ultimately, in the field of fashion, Fashion Futuring advocates for an expanded understanding of the relationships between fashion systems, values and futures, inviting forecasters, designers, and strategists to redirect their skills and practices towards futures. In the context of cities, the Fashion Futuring toolkit, re-titled as the Speculative Futuring Cities edition toolkit, becomes a tool to help urban planners, architects, citizens, and policymakers detach from reality for a moment and use playfulness and collaborative imagination as a strategy to unlock collective values, and unthought, yet still desirable, possibilities for building better cities from now towards the future.

References

Buehring, J., & Bishop, P. C. (2020). Foresight and design: new support for strategic decision making. She Ji: The Journal of Design, Economics and Innovation, 6(3), 408–432. https://doi.org/10.1016/j.sheji.2020.07.002

Dunne, A., & Raby, F. (2013). Speculative Everything. The MIT Press.

Fry, T. (2008). Design Futuring: Sustainability. Ethics and New Practice. Berg Publishers.

Garcia, C.C.(2023). Fashion futuring: Intertwining speculative design, foresight and material culture towards sustainable futures, Futures, Volume 153, October 2023, 103242.

Slaughter, R. A. (1999b). Towards responsible dissent and the rise of transformational futures. Futures, 31(1999), 147–154.

Willis, A. (2005). Scenarios, futures and design. Design Philosophy, 3(1), 1–7. https://doi.org/10.2752/144871305×1396625412407

4. Embodying and Sensing Futures

Advancing bodily mediation otherwise. Arts-based biohacking as co-existential patterning

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Keywords: arts-based biohacking; relational technologies; bodily ambiguity; co-existential ethics; response-ability

What are the fate and future meanings of the body and embodied experience in the datafied lifeworld that redefines lived dimensions of vulnerability and relationality through the pervasive experiential embedding of AI? As bodies are increasingly transcoded, what is at stake?

Combining critiques of existential media studies (Lagerkvist et al., 2025; Lagerkvist et al., 2023; Tudor, 2025); and the digital humanities (Ajana, 2010; Atanasoski & Vora, 2019; Sharma & Singh, 2022) suggests that "the age of AI" presents a central contradiction, and in effect a pressing research problem for humanistic, anticipatory AI research: On the one hand, it empties the body of its relevance by fostering a disembodied logos as the human core. On the other hand, it revalues the physical body devoid of its phenomenology, based on data, as the ultimate source of truth. Thereby, advanced computational bodily meditations produce beyond depicting the body along a dualist, metric and normate pattern that is centralized and solidified through AI (Crawford, 2021; van Dijck, 2014).

These techno-logics (Sharma & Singh, 2022) concern ethical dimensions in and with a world of relational technologies (Lagerkvist & Smolicki, forthcoming). As "ethics is bodies" (Ajana, 2013, p. 3), they mandate acknowledging the ambiguities of relationality to anticipate and encounter our shared vulnerability response-ably (Martin et al., 2015). The present moment of technological transformation and interrelated global crises entrenches these existential and ethico-political stakes of media in ways that imply the necessity and opportunity to recenter ethics as inclusive of but also beyond human singularity (Lagerkvist, 2020, 2023; Lagerkvist et al., 2022).

Theoretically grounded in probing the productive tensions between existential media theory (ibid., Lagerkvist, 2017, 2018, 2022) and the ontological turn (Escobar, 2018), this paper suggests that biohacking expresses the contradictions of advanced bodily mediation. It submits that biohacking is both indicative of ruling techno-logics regarding the body, as well as of ways to re-interpret them. Thereby, it departs from the body as a prism for (co-)existence as conditioned by limits, relationality and responsibility.

With a pronounced material interest in the body, science and technology, biohackers explore their corporeality through experiences of techno-cultural transition. Against transhumanist inscriptions into the biohacking label (Boss, 2023; Petersén, 2019), this paper turns to activist artists and designers based in the gyne- and cyberpunk, grinder and body mod movements (cf. Boss, 2023; Doerksen, 2018) that seize biohacking as their medium to counter techno-utopias by fleshing out co-existential qualities. Based on the ongoing (Haraway, 2016) and yet concretely situated material needs of disabled communities and environments, they query common assumptions about the relation between the body and technology at its limits and in flux.

Based on a multi-sited ethnography patched through times and spaces of varying materialities and ontologies, five extended cases form its foundation to interpret how arts-based biohacking practices surface the underlying logics of mediating the body existentially. Virtual, hybrid and offline ethnographic data on biohacking mingle with in-

depth interviews and my participatory observations during fieldwork by appointment with the artists and designers Mary Maggic, Idun Idrake, Theresa Tanenbaum, Giulia Tomasello and the collective BruiXes_Lab.

Therein, arts-based biohacking appears as a risky and opportune manifestation of the possible that twists ruling techno-logics regarding the body toward a renewed ethic of ambiguity (de Beauvoir, 1976/ 2018). These counter-technoperformances (Coeckelbergh, 2022) cultivate singular-plural (Nancy, 2000) sensitivities that seize the limits of embodiment, technology and the earth for an existential knowing to attend care-fully to technologically co-forged norm enforcements and environmental exigency (cf. de La Bellacasa, 2017). With(in) and against relational technologies, biometrics are queered to grow and nurture living materials and unmake clock-time to linger at thresholds and maintain a sense for the indeterminate as an opening for the untold and unknown (cf. Ciobanu & Fernaeus, 2024; Lagerkvist, 2023; Muñoz, 2009; Sullivan, 2009). That forges provisional, in(ter)ventive and response-able trials of bodily ambiguity that re-cognize the existential body as limited and full of potential as a relational subject at once. Following this, arts-based biohacking is interpreted as an anticipatory analytic to intervene a co-existential ethics of response-ability (cf. Martin et al., 2015). Such ethic recenters the human as a co-exister, differently situated along power asymmetries, yet united in their condition of vulnerable relationality (Lagerkvist, 2017, 2022). It doesn't fix the mushrooming entanglements of dualist legacies but faces them as an ethico-political quest to anticipate relational technologies otherwise.

As a summary of my PhD dissertation that I aim to defend in spring 2027, the paper meets an untapped need to research biohacking from an existential-phenomenological perspective as lived experience. Hence studying this topic considerate of but also beyond power and ontology differs from the assemblage and governmentality approaches which equally characterize previous research on biohacking (e.g. Britton & Semaan, 2017; Lupton, 2016) and the predicaments of advanced bodily mediation (e.g. Ajana, 2018; Benjamin, 2019). The provisional category of arts-based biohacking moreover counters the trend to reduce the variety of biohacking cultures by primarily studying the narratives of white men who represent technoliberal interests and elites (Boss, 2023).

Arts-based biohackers endorse the historical origins of free and open-source software hacking by generating dense cultural worlds that negotiate liberal social and legal systems set in capitalism (Coleman, 2013). The mediation of such projects through artworks highlights both the construction and the thickness of these imaginaries. Art can illuminate them speculatively as lived experience. Equipped with an agency to present and simultaneously anticipate – imagine, fabulate and shape – the status quo, it reflects its ambiguities and can yet yield them differently.

Anticipating with the Senses and AI: The Olfactory Attribution Circle as a Tool for Futures Literacy

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Keywords: futures literacy; sensory design; embodied cognition; generative AI; speculative design

This paper investigates how sensory-centred design methods and generative AI can contribute to futures literacy in design education and to the anticipation of future public and phygital environments. It departs from UNESCO's understanding of futures literacy as the capacity to imagine, interrogate and use the future in order to make sense of the present. While contemporary uses of AI in creative practice often privilege efficiency, prediction and rapid image generation, they frequently neglect embodied cognition, sensory awareness and the situated nature of anticipation. In response, this study proposes that futures literacy can be strengthened when anticipation is grounded in sensory experience and when AI is positioned not as an authority that predicts the future, but as a speculative partner that helps make anticipatory assumptions visible and discussable.

The paper reports on the design and implementation of a three-hour workshop entitled "Designing Speculative Futures with the Senses and AI". The workshop repurposed the Olfactory Attribution Circle (OAC), originally developed for sensory branding, as a pedagogical tool for exploring possible futures of coexistence in everyday public and phygital spaces. Working in small groups, participants selected one contextual scenario brief and used the OAC to imagine a future version of that setting, with sensory mapping occurring as an integral stage within the OAC process.

The workshop translated the four phases of the OAC—Investigate, Attribute, Designate and Test—into an anticipatory learning sequence. In Investigate, participants selected a contextual scenario brief synthesising information that would normally emerge from fieldwork and desk research. In Attribute, groups constructed an emotional and semantic vocabulary for the scenario, organised around twelve attributes: Delicate, Strong, Dynamic, Static, Fragile, Solid, Light, Heavy, Soft, Hard, Tidy and Messy. Rather than functioning merely as descriptive labels, these attributes operated as elementary units in a semantic grammar of anticipation. They enabled participants to articulate how future environments should feel, and what forms of behaviour, sociability and belonging they could encourage.

In Designate, the semantic attributes were translated into sensory cues through combinations of colour, scent, texture and preliminary ideas for sound. Participants organised these relationships into sensory maps and matrices, thereby transforming abstract expectations about possible futures into material and experiential design directions. This stage foregrounded the embodied and multisensory dimensions of anticipation, showing how futures are imagined not only cognitively, but also through atmospheres, affects and sensory associations.

Finally, in the Test phase, groups converted their semantic-sensory mappings into prompts for generative image systems and collectively interpreted the speculative visualisations produced. Here, AI functioned as a mediating and destabilising device: rather than confirming pre-existing ideas, it exposed ambiguities, tensions and

inconsistencies in participants' anticipatory assumptions. The workshop therefore positioned AI-generated images not as representations of probable futures, but as speculative artefacts through which participants could critically reflect on the social, sensory and symbolic implications of the futures they were constructing. Methodologically, the study adopts an exploratory mixed-methods design combining a narrative literature review with empirical investigation. The review addressed futures literacy, speculative and critical design, embodied cognition, sensory design and human–AI collaboration, providing the conceptual basis for the workshop and the analytical framework. Empirical data collection combined non-participant observation with field notes and an anonymous post-workshop survey (N = 9) composed of ten five-point Likert items and two open questions. Observational material was interpreted descriptively, while survey responses were analysed through descriptive statistics and thematic analysis.

Quantitative findings indicate a strongly positive evaluation, with mean scores ranging from 4.44 to 5.00. The highest ratings concerned the sensory-centred aspects of the method. "Thinking with the senses" and the usefulness of sensory maps and matrices both received the maximum mean score of 5.00. The OAC was also perceived as an effective structure for organising ideas (M = 4.89), supporting collaboration (M = 4.89) and encouraging participants to reuse elements of the method in their own work or studies (M = 4.89).

Items concerning AI-generated images (M = 4.67) and the workshop's ability to stimulate reflection on future public and phygital spaces (M = 4.44) displayed greater variation. Field notes and open responses suggest that time constraints limited deeper experimentation and reflection. Participants also requested clearer explanations and examples to accommodate different levels of familiarity with speculative design, sensory methods and generative AI.

The study is limited by the small scale of the workshop and the reduced number of participants. The findings cannot therefore be generalised. Nevertheless, this limited scale is appropriate to the exploratory and pilot nature of the study. Working with a small group enabled close observation, rapid testing of the tools and the identification of methodological strengths and weaknesses within a relatively safe and controlled environment.

The principal contribution to futures literacy lies in demonstrating that anticipation can be taught as an embodied, sensory and collaborative practice. The workshop enabled participants to externalise and examine the assumptions through which futures are imagined. The twelve semantic attributes of the OAC offered a shared vocabulary for connecting meaning, atmosphere and possible futures, while generative AI functioned as a speculative partner that rendered these assumptions visible, contestable and open to reinterpretation.

References

Barab, S., & Squire, K. (2004). Design-based research: Putting a stake in the ground. The Journal of the Learning Sciences, 13(1), 1–14.

Böhme, G. (1993). Atmosphäre: Essays zur neuen Ästhetik. Suhrkamp.

Candy, S. (2010). The futures of everyday life: Politics and the design of experiential scenarios (Doctoral dissertation, University of Hawai'i at Mānoa).

Dunne, A., & Raby, F. (2013). Speculative everything: Design, fiction, and social dreaming. MIT Press.

Ingold, T. (2011). Being alive: Essays on movement, knowledge and description. Routledge.

Lupton, E., & Lipps, A. (Eds.). (2018). The senses: Design beyond vision. Princeton Architectural Press.

Malnar, J. M., & Vodvarka, F. (2004). Sensory design. University of Minnesota Press.

Miller, R. (Ed.). (2018). Transforming the future: Anticipation in the 21st century. Routledge.

Mozota, B. B. de. (2003). Design management: Using design to build brand value and corporate innovation. Allworth Press.
Myers, H. (2025). A journey to literacy in design futures: Revelations from the global south. The Design Journal, 28(1), 62–81. https://doi.org/10.1080/14606925.2024.2443700
Norman, D. A. (2004). Emotional design: Why we love (or hate) everyday things. Basic Books.
Spence, C. (2020). Olfactory-colour crossmodal correspondences in art, science, and design. Cognitive Research: Principles and Implications, 5(1), 52. https://doi.org/10.1186/s41235-020-00246-1
Tonin, P. E., & Ferrara, M. (2025). Olfactory Attribution Circle (OAC): Designing crossmodal congruence between scent, color, and language. Architecture, 5(4), Article 121. https://doi.org/10.3390/architecture5040121
Varela, F. J., Thompson, E., & Rosch, E. (1991). The embodied mind: Cognitive science and human experience. MIT Press.

Anticipatory Creative Emergence: Designing Conditions for Convivial Futures

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Keywords: anticipation, creativity, emergence, design, participatory, embodied, multi-sensory, co-creation, hope

In anticipation studies, creativity is an important competency, a skill that aids with understanding complexity, often fueling ideation and scenario generation; additionally, it is also an emergent property of designed conditions. This paper frames creativity as systemic and relational, arguing that its manifestation depends on conditions that enable conviviality, care, and collective sense-making. Drawing on design epistemology and embodied cognition, we position making and multisensory engagement as anticipatory practices that surface tacit frames and foster plural imaginaries under radical uncertainty.

We develop this stance through designing for Anticipatory Creative Emergence (ACE), a design-led approach that curates conditions of change over prescriptive outputs. Building on the Futures of Creativity and Compassion Nexus (APF–OCAD, 2025) as a living prototype for creativity-centred anticipation, ACE prioritizes participation over presentation, dialogue over hierarchy, and embodied experience over passive consumption. The Nexus embraced participatory installations, somatic workshops, and convivial rituals—demonstrating how the interplay of space, context, and detail catalyzes imagination beyond discursive foresight. From this case, we distil design principles for cultivating creativity in anticipation work: embed care and sustainability in material choices; integrate affective and embodied modes of knowing; and curate infrastructures that invite improvisation and collective agency.

ACE integrates Futures Literacy scaffolds with creative elicitation techniques—material speculation, multisensory installations, and collaborative storytelling—to surface tacit anticipations and foster situated hope. It operationalizes ambidexterity in anticipatory governance by bridging Scientific Foresight (structured, evidence-driven) and Citizen Foresight (participatory, affective, tacit), combining analytical rigour with democratic practice and co-design principles. Rather than prescribing outputs, ACE curates convivial environments where imagination and care co-exist, modelling futures that embody the values they seek to advance.

We outline considerations for second-order innovation conditions grounded in social technology principles and reflective design practice. Finally, we connect these insights to prototypes for systemic change (e.g., digital sovereignty and shared security), showing how creative conditions strengthen civic foresight by enabling a plurality of communities to imagine otherwise and rehearse democratic choice under complexity—advancing Anticipation's ethos of living with uncertainty, care, and situated hope.

References

Brown, J. (2002). The World Café: A Resource Guide for Hosting Conversations that Matter. Mill Valley.

Doctorow, C. (2025, October 14). Enshittification: Why Everything Suddenly Got Worse and What To Do About It. Verso Books.

Fasoli, G., & Poli, R. (2024). Future Orienteering Evaluation Model: forecasting, foresight and anticipation indices. European Journal of Futures Research, 12(1). https://doi.org/10.1186/s40309-024-00242-4
Goldson, A. (2020). The emergence of creative practice as research. Pacific Journalism Review, 26(1), 226–242.
https://search.informit.org/doi/10.3316/informit.362001384230762
Jütersonke, O., & Munro, E. (2024). Developing anticipatory governance capacities in 0ministries of foreign affairs. Strategic Security Analysis (Issue 34). Geneva Centre for Security Policy. https://www.gcsp.ch Miller, R. (2015). Learning, the future, and complexity: An essay on the emergence of futures literacy. European Journal of Education, 50(4), 513–523. https://doi.org/10.1111/ejed.12157
Norman, D. A. (2004). Emotional design: Why we love (or hate) everyday things. Basic Books.
Panizzon, M., & Janissek-Muniz, R. (2023). A conceptual integration between scientific foresight and citizen foresight: Building anticipatory governance ambidexterity (Conference paper, XLVII Encontro da ANPAD). https://doi.org/10.21714/2177-2576EnANPAD2023
Stein, S., Ghantous, D, Chandler, Z., Simpson, A., & Udupi, I.(2025). Evolving foresight skills: How will we shape the future of strategic foresight? Dubai Future Forum. https://www.dubaifuture.ae/wp-content/uploads/2025/07/Evolving-Foresight-Skills-Output-Report.pdf
Stein, S., Pires, R., & Chandler, Z. (Jan-Feb.2026). Manifesting futures of creativity and compassion: Highlights from the APF–OCAD Nexus event. Compass Magazine, Association of Professional Futurists. 122-133.

ASP and Topologies of the Imaginary: Cultivating Collective Anticipation from Situated Worlds

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Keywords: anticipatory systems and processes; imaginaire; images of the future; collective anticipation; futures literacy

Contemporary futures work remains dominated by corporate, technological and strategic foresight traditions, which privilege prediction, optimisation and expert-driven planning. These approaches often neglect the social, relational and power-sensitive dimensions of anticipatory practice, resulting in narrow, path-dependent imaginaries. Scholars have warned that this produces collective blindness (Poli, 2015; Slaughter, 2004) and forms of futurelessness (Tutton, 2023) in which communities lack the capacity to imagine or act toward alternative futures.

Parallel to this, there are growing calls within futures studies and related fields to widen the futures gaze: to embrace plural, multicultural and post-capitalist imaginaries (Roth & Kaivo-oja, 2016; Escobar, 2018) and to build anticipatory capabilities across society rather than within institutions alone. As humanity faces interlocking crises that expose our systemic fragilities and injustices, the question of how societies can imagine and navigate shared and context-sensitive futures becomes ever more urgent. Social foresight resurfaces as a promising response, not merely as a method for planning, but as a societal capability to anticipate, imagine, and act collectively (Slaughter, 2004). Across many domains, initiatives exist that embody what might be termed social foresight: participatory, power-aware, capability-building anticipatory work. Yet these contributions remain scattered across diverse literatures (participatory foresight, anticipatory governance, design futures, community visioning, sustainability transitions, education, cognitive science), with no shared conceptualisation or systematic synthesis.

This paper addresses this gap. It investigates how social foresight is conceptualised, what dimensions distinguish it from other foresight types, and where and how it emerges in practice. Our contribution is a systematic mapping and synthesis that identifies the conceptual foundations, boundaries, enablers, barriers and capability dimensions of social foresight, offering the first systematic literature review of the subject.

It reviews 76 peer-reviewed articles across futures studies, sustainability transitions, design, STS, community development, cognitive science and participatory governance. The analysis reveals that existing work converges into a coherent framework in which futures thinking, participation and agency constitute three interdependent dimensions of social foresight. Rather than treating these as discrete components, the framework conceptualises them as a dynamic capability system through which communities develop the abilities to imagine, share, negotiate and enact alternative futures. Participation emerges as a situated and relational process that enables the activation and sharing of images of the future (Lopez-Gomez & Criado, 2021). Futures thinking encompasses reflexive, imaginative and ethical orientations that support anticipatory sense-making (Armanto, 2024). Action is understood as the concrete enactment of agency aligned with views of anticipation as a mechanism of social emergence (Fuller, 2019) and with design-oriented practices that shape material and institutional worlds

(Zamenopoulos & Alexiou, 2020). A key contribution of this review is to propose social foresight as a multi-dimensional capability system, integrating external participatory practices with internal reflexive, imaginative and moral development. This view extends previous work on futures literacy and futures consciousness by emphasising their local social embedding and relational character rather than a set of individual competences. At the same time, the review identifies critical tensions within the discourse. One of the most contested topics concerns the planning of "desirable futures." While some strands of the literature emphasize visioning and roadmapping toward preferred futures, others highlight the inherent risks of prescriptive desirability frameworks: Who defines what is "desirable"? Which cultural, political or institutional interests dominate? Early national foresight strategies illustrate how visions of the future can consolidate state power or marginalise alternative imaginaries. Other literature, in contrast, positions desirability as negotiated, situated and emergent, grounded in plural values and shaped by ongoing local deliberation rather than imposed. It highlights the need for infrastructures that can seed social foresight over time, moving beyond one-off participatory events toward iterative processes that create learning, identity and agency. By consolidating dispersed literatures, the paper advances critical understandings of how anticipatory capacities are cultivated, shared and transformed, contributing directly to the Anticipation 2026 theme of Critical Capacities and Futures Literacy.

References

Appadurai, A. (2013). The future as cultural fact: Essays on the global condition. Rassegna Italiana di sociologia, 14(4), 649-650. https://doi.org/10.1423/76023

Armanto, A. R. A. (2024). Futures participation as anticipatory practice—What do futures workshops do? European Journal of Futures Research, 12(1). Scopus. https://doi.org/10.1186/s40309-024-00226-4

Bourgeois, R., Karuri-Sebina, G., & Feukeu, K. E. (2024). The future as a public good: Decolonising the future through anticipatory participatory action research. Foresight, 26(4), 533–549. https://doi.org/10.1108/FS-11-2021-0225

Escobar. (2018). Designs for the Pluriverse: Radical Interdependence, Autonomy, and the Making of Worlds. https://www.dukeupress.edu/designs-for-the-pluriverse?utm_source=blog&utm_medium=blog%20post&utm_campaign=b-Event_Apr19

Fuller, T. (2019). Anticipation and the Normative Stance (Vol. 1, pp. 93–108). Scopus. https://doi.org/10.1007/978-3-319-91554-8_6

Kativu, S. N., Mella, G. E., Muunda, C., & Hornidge, A.-K. (2025). When adults play, futures unravel: Towards the ethnography of future-making through play-centric methodology in rural Africa. Futures, 174. Scopus. https://doi.org/10.1016/j.futures.2025.103700

Miller, R., & Sandford, R. (2018). Futures Literacy: The Capacity to Diversify Conscious Human Anticipation. In R. Poli (Ed.), Handbook of Anticipation (pp. 1–20). Springer International Publishing. https://doi.org/10.1007/978-3-319-31737-3_77-1

Poli, R. (2015). Social foresight. On the Horizon, 23(2), 85–99. https://doi.org/10.1108/OTH-01-2015-0003

Slaughter, R. A. (2004). Futures beyond dystopia: Creating social foresight. Routledge.

Tutton, R. (2023). The Sociology of Futurelessness. Sociology, 57(2), 438–453. https://doi.org/10.1177/00380385221122420

Awe-futuring: cultivating moments of awe to feel, narrate, and embody transitions

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Keywords: awe; experiential futures; speculative design; transitions; awe-futuring

Futures and anticipation studies often examine how futures are shaped in society. This paper turn the lens inward. We ask how the field's own academic publishing infrastructures shape the futures it can imagine, the uncertainties it can face, and the darkness it can bear.

Our starting point is a widespread unease about academic publishing: research that becomes increasingly commercialized and competitive, review systems that strain under pressure and diminishing time for genuine intellectual engagement. These pressures show up in mundane ways: paywalls around publicly funded knowledge, author fees that restrict who can publish and review cultures that are emotionally costly for many.

We founded the Futures Reframed journal as an experiment in reimagining scholarly publishing, grounded in openness and genuine care. In practical terms, the journal operates as Diamond Open Access: articles are free to read and free to publish, meaning neither readers nor authors pay publication fees. We also work with a double open and fully transparent 'kind' review policy: authors and reviewers know one another, collaborate in strengthening a manuscript and the review process can be shared alongside the published piece. We hope that these choices change what risks authors can take and how disagreement is held.

Futures discourse often drifts toward light: hope, possibility, progress, solutions. Our inaugural issue begins from a simple observation: the future also holds grief, rage, uncertainty, loss, hopelessness, silence, exhaustion and the unknown. The issue Darkness Reframed engages with these elements as more than emotions to manage; they become an epistemic space from which futures thinking can deepen. The point is not catharsis. The point is scholarly permission to stay with discomfort long enough for more honest questions to surface, including questions about what cannot be fixed in time, what is already lost and what forms of responsibility remain when optimism no longer performs well.

When review systems reward fast clarity and confident positioning, authors may learn to smooth over ambivalence and suppress darker registers that are part of many crises too. Futures Reframed experiments with the question of whether publishing could also widen the field's anticipatory bandwidth: its capacity to hold grief and uncertainty as legitimate scholarly material, without immediately converting them into reassurance.

As such, we treat the journal as an empirical site. In the paper, we draw on early process documentation: editorial decision-making, author-reviewer trajectories, review artefacts, and reflective accounts by the editorial team. Our analysis reads these materials through anticipation studies and scholarship on knowledge infrastructures and open peer review, focusing on what they accelerate, what they stall, what they render safe, and what they make socially costly.

The paper contributes to the Anticipation 2026 conversation in a way that fits Theme 7, Open Explorations. We present a field-facing experiment that explores anticipation at the level of the scientific publishing culture. Futures Reframed positions the journal

itself as a research object and a research intervention: a place where the futures field can test what happens when publishing supports openness, collaboration and care and when darkness is welcomed as a serious starting point for anticipatory inquiry.

References

van Voorst, R., & Cramer, T. (2026). Editorial Futures Reframed, Issue 1: Darkness Reframed. Futures Reframed journal.

Contemporary Art Revisiting the "Efficiency Craze" of the Early 20th-Century: What Past Anticipations Reveal About Present-Day Anxieties and Future Imaginaries

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Keywords: efficiency studies; motion studies; Gilbreth; contemporary art

One of the quirks of human imagination is that visions of the future rarely stray far from the world in which they are conceived. This is why the dystopian metropolis in Fritz Lang's cinematic imagination appears distinctly Art Deco: its architecture, cars, clothing, and hairstyles reflect a decidedly 1920s vision of the future. Yet it is not only through style and design that future projections remain anchored to their historical moment. Metropolis is also a vision of oppressive working conditions, rampant inequality, and the unsettling prospect of no longer knowing who is human and who is machine—concerns deeply rooted in the early twentieth century cultural imagination. This paper zooms in on another case of visual anticipations from the same era—the visualization of Frank and Lillian Gilbreths' efficiency studies through photographs, films, graphic annotations, and three-dimensional models—and considers what a resurgent interest in these images reveals about our understanding of present-day conditions and imagined futures.

My paper looks in some detail at the future imaged by the Gilbreths during the so-called "efficiency craze" of the early twentieth century. The husband-and-wife team famously conducted motion studies in industrial settings during the first decades of the twentieth century intended to usher in a future free from wasted human energy. Technologies, psychology, management, and marketing were among the tools employed for the Gilbreths' utopian visions, and a number of artists, playwrights, filmmakers, and workers at the time expressed anxieties about the impending reality they proposed. A century later, in the early 21st century artists, novelists, filmmakers, and others have revisited the Gilbreths and their projections, critically engaging with their ideas in ways that draw out aesthetic, ideological, and technological links between past and present. Many of these works suggest that these past anticipations continue to reverberate in current visions of the future of work, the idea of the human machine, notions of efficiency, pattern recognition and surveillance.

Historian Roxanne Panchasi (2002) has argued that the future anticipated within a particular cultural context reveals much about that society's preoccupations and perspectives. My paper builds on Panchasi's claim but extends it along a further trajector by suggesting that we can also learn a great deal by considering which past anticipations of the future draw present day attention.

Contretemps: Dancing between Future Worlds & Systems

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Keywords: systems theory; systemic design; anticipatory science; methodology

Foresight methodologies have matured into a widely-recognized domain of scholarship and practice. Over two decades it has grown from an infrequently-used strategic practice, to a core contribution to strategy. Foresight is now employed by all types of organizations to support visioning, long-range planning, and decision under uncertainty. However, based on discourse analysis and scoping reviews, it appears the development of new theory in the field has dwindled, especially in comparison to the publishing of cases and application of methods. Has there been a plateau in the introduction of new theories or challenges in the futures discourse? Does the successful adoption of methodology contribute to a relative stasis of new theory (due to a preference to sustain a successful school of foresight?)

As foresight methods and tools become canonical, they embed their original epistemological commitments that shape how futures are imagined, constructed, and acted upon. As these tools become widely adopted, they shape thinking as much as outcomes. The epistemologies are not challenged, as they remain situated with the tool use. These practices produce quality and consistency, but at the cost of diminished novelty, critique, and perhaps theoretical development.

A parallel condition exists in modern systems thinking, as well as design. Despite origins in systems theory, cybernetics, and critical theory, contemporary systems practice often privileges method-as-thinking, like foresight. Formal modeling, visual mapping, and classical frameworks have grown in use. Creative and critical theoretical innovation exists, but is comparatively undervalued or cited. Exploratory theory papers are not readily accepted in publication as well, and new ideas may require more conceptual fortitude and persistence to break through into use. This suggests an implicit assumption that theory is no longer necessary for effective practice—that established methods suffice for productive engagement with complexity. Yet when methods lead practice, rather than a pluralist inquiry, the opportunities to challenge assumptions and generate new conceptual advances recedes.

Philosophers of science and design have long critiqued the dominance of method in complex systems and anticipation. Thinkers have observed that reliance on methodology risks reification, narrowing the space of learning, and constraining innovation. Both foresight and systems practices rely on well-established methods that implicitly stabilize particular theories, perhaps limiting the emergence of new theory. In foresight, this shows in our normative commitment to plural futures creation—an emphasis on multiple plausible and possible futures. Anticipation theory could inform and balance the reactivity of crisis fixation, and lead to more effective societal interventions. Drawing on meta-discourse analysis and the developments at several universities, I suggest integration of theory from a systemic design perspective.

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foresight, this shows in our normative commitment to plural futures creation—an emphasis on multiple plausible and possible futures. Anticipation theory could inform and balance the reactivity of crisis fixation, and lead to more effective societal interventions. Drawing on meta-discourse analysis and the developments at several universities, I suggest integration of theory from a systemic design perspective.

I argue that futures research has, for whatever reasons, failed to integrate systems theory and cybernetics as epistemological and theoretical resources. While foresight methods excel at constructing alternative futures, scenarios and prospectives through participatory and narrative approaches (or "worlding"), they frequently under-theorize how structural continuity, reinforcing feedback, institutional persistence, and path dependence shape the space of possible futures. Systems thinking, by contrast, has a long history of describing these dynamics, yet its theoretical contributions still remain marginal within current foresight discourse.

To illustrate this tension, the paper introduces the metaphor of contretemps. Originally meaning "against the time," the term described a musical phrase played off-beat, later a fencing feint or an ill-timed dance move that risks stepping on toes. Today, it denotes a minor disagreement or awkward interruption. Reclaiming its earlier meaning, this paper proposes contretemps as a productive stance for futures research: a willingness to disrupt methodological flow, challenge epistemic comfort, and introduce off-tempo theoretical interventions. The tension between foresight's constructivist pluralism and systems theory's emphasis on continuity and structure is not a problem to be resolved, but a disclosive space from which new theory can emerge.

References

Albrechts, L. (2017). Strategic planning as a catalyst for transformative practices. In Encounters in planning thought (pp. 202-219). Routledge.

de Bono, E. (1994). Creativity and quality. Quality Management in Healthcare, 2(3), 1-4.

Herbert, B. (2024). Systemic design for strategy and future-fit organisations. Proceedings of Relating Systems Thinking and Design RSD13. Oslo, October 12–26, 2024.

Jones, P.H. (2017). The futures of Canadian governance: Foresight competencies for public administration in the digital era. Canadian Public Administration, 60, 657–681. doi:10.1111/capa.12241

Marinković, M., Al-Tabbaa, O., Khan, Z., & Wu, J. (2022). Corporate foresight: A systematic literature review and future research trajectories. Journal of Business Research, 144, 289-311.

Ozbekhan, H. (1969). Toward a General Theory of Planning. In E. Jantsch (Ed.), Perspectives of Planning, 46-155. Éditions de l'OCDE.

Perera, D., & Fry, T. (2022). Contra-Innovation: Expanding the innovation imperative in the context of futuring, defuturing and fictioning. Contexts—The Systemic Design Journal, 1.

Perera, D. (2024, March). Designing in the context of time: On Annetta Pedretti, practicing cybernetics and futuring. In Proceedings of Relating Systems Thinking and Design, RSD11.

Sardar, Z. (2025). Futures thinking and foresight practice. Anticipatory Social Work: Foresight Approaches and Tools for Social Imagining and Collective Praxis, 88.

Turchin, P. (2023). Multipath forecasting: The aftermath of the 2020 American crisis. In How Worlds Collapse (pp. 397-416). Routledge.

Vecchiato, R., & Roveda, C. (2010). Foresight in corporate organisations. Technology Analysis & Strategic Management, 22(1), 99-112.

Weigand, Kirk, Flanagan, TR, Dye, KMC, and Jones, P. (2014). Collaborative foresight: Complementing long-horizon strategic planning. Technological Forecasting & Social Change, 85, 134–152.

Design for Social Dreaming: Speculative Ethnography and the Insistence of the Possible

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Keywords: speculative ethnography; speculative anthropology; futuring; embodiment; affect; wearable technologies

As immersive technologies, smart glasses, augmented-reality systems, and wearables, progressively mediate everyday life, they participate in configuring social norms, affective relations, and anticipatory imaginaries. These technologies do not merely extend sensory capacities; they unsettle established understandings of perception, embodiment, care, and health, reshaping roles across patients, designers, and institutions. This transformation operates across multiple levels, from policy and organizations to services and lived experience. Against this backdrop, this paper advances speculative ethnography as a design-led practice of futuring: a method that does not aim to predict technological outcomes, but to explore how emerging technologies could transform relations between bodies, emotions, environments, and values. Grounded in anthropology, user research, and speculative design, Speculative Ethnography creates imaginative conditions for engaging futures as possibilities rather than probabilities, enabling design to act as a catalyst for social dreaming. Speculative Ethnography creates imaginative conditions for engaging futures as possibilities rather than probabilities, enabling design to act as a catalyst for social dreaming. It operates through the construction of situated scenarios and narratives grounded in present practices, extending ethnographic insight into possible future conditions.

The integration of wearable and med-tech systems into everyday life is part of an ongoing reconfiguration of how humans relate to their bodies, to care, and to technological mediation. These shifts are difficult to grasp through conventional evaluative or predictive methods, particularly when technologies are still emerging. This paper addresses the need for anticipatory practices capable of engaging with uncertainty, transformation, and ethical ambiguity before futures become stabilized.

In literature and popular culture, especially science fiction, technological integration with the body has long been entangled with a sense of the impossible. As the history of science fiction shows, creating the impossible, rendering the possible perceptible, and experimenting with both is a collective and transdisciplinary task. Within this perspective, the human body can be understood as «a malleable idea changing across cultural contexts and technological advancements», one that is «open to become, integrate, or combine with an instrument» (Tanaka and Donnarumma). This reconceptualization of the body is inseparable from shifts in how interaction itself is understood: as Dourish notes, «the style of interaction concerns not simply the set of physical devices […] but also the ways in which the computer fits into our environments and our lives» (Dourish). Such a view resonates with Merleau-Ponty's phenomenology of embodiment, in which the body is not an object in the world but the very condition through which the world is perceived and engaged. Perception and action emerge through a situated, relational involvement with the environment, what he describes as a «being-in-the-world» grounded in the lived body.

The speed and scale of socio-environmental and technological change make it increasingly difficult to remain meaningfully engaged with transformation. Design, in

this context, cannot remain a spectator nor continue to reproduce instrumentalist or client-centred strategies for relating to the world.

Responding to what Isabelle Stengers calls the insistence of the possible: futures that press against the limits of the present and demand new practices of attention, invention, and experimentation. Rather than asking how things should be, speculative ethnography invites the question of how things could be, opening space for alternative relations between humans, technologies, and environments. Following Dunne and Raby's notion of possible futures, the method shifts emphasis from what is probable to what is preferable, while critically asking: preferable for whom, and according to which values?

Ethnographers provide routes into understanding other people's lives, experiences, and values. Rather than offering solutions to predefined problems, speculative ethnography mobilizes design as a way of expanding how we imagine life, value, and connection in relation to technology. As Dunne and Raby argue: «to do this, we need more pluralism in design, not just in style but in ideology and values». Ethnography offers tools for representing this pluralism. Representation here does not mean duplicating reality, but problematizing it, in Foucault's sense: interrogating the cultural assumptions and power relations embedded in design, knowledge, and everyday practices. Its critical function is not to warn against dystopias, but to amplify overlooked or excluded possibilities, futures that might enhance well-being, deepen empathy, or enable new social rituals. To illustrate this approach, the paper introduces a speculative scenario developed through speculative ethnography.

By foregrounding imagination as a culturally situated practice, speculative ethnography draws on anthropology's long-standing interest in analogy, metaphor, and world-making. As Marilyn Strathern suggests, imaginary worlds interest social scientists because they bring together concepts and images to form new models with lives of their own. What a culture can or cannot bring together reveals its limits and possibilities. Speculative ethnography deliberately extends this cultural capacity for analogy, allowing design to operate as a practice of anticipation and potentiation: «Once we know where we are, we can act».

This work is grounded in Speculative Anthropology, which treats imagination, fiction, and world-building as legitimate modes of anthropological inquiry into possible social worlds. The paper also builds on Speculative Research (Wilkie, Savransky & Rosengarten), which reframes speculation as a methodological practice oriented toward possibility rather than prediction. This challenges dominant rationalist and probabilistic approaches to the future, proposing instead that futures are relational, contested, and value-laden.

This paper directly contributes to Theme 5: Futuring by Designing by positioning design as a mode of inquiry into the unknown rather than a problem-solving tool, and to Theme 4: Embodying and Sensing Futures by foregrounding embodied, affective, and sensory experience as central to anticipatory practice. In a context of multi-system crisis, social, environmental, public health, the paper argues for a renewed capacity for design to imagine and make possible alternative futures, opening collective reflection on what futures might be preferable, for whom, and under what conditions.

References

Bryant, Rebecca, and Daniel M. Knight. The Anthropology of the Future. Cambridge University Press, 2019.

Dourish, Paul. Where the Action Is: The Foundations of Embodied Interaction. MIT Press, 2001.

Dunne, Anthony, and Fiona Raby. Speculative Everything: Design, Fiction, and Social Dreaming. MIT Press, 2024.

Foucault, Michel. Le parole e le cose. Un'archeologia delle scienze umane. Bergamo: BUR Rizzoli, 2016.
Knight-Hill, Andrew. Sound and Image. Focal Press, 2020.
Latour, Bruno. "Anthropology at the Time of the Anthropocene: A Personal View of What Is to Be Studied." In The Anthropology of Sustainability: Beyond Development and Progress. Palgrave Macmillan, 2017, pp. 35–49.
Massumi, Brian. Parables for the Virtual: Movement, Affect, Sensation. Duke University Press, 2021.
Merleau-Ponty, Maurice. Phenomenology of Perception. Routledge, 2013.
Pfannstiel, Mario A., Nataliia Brehmer, and Christoph Rasche. Service Design Practices for Healthcare Innovation. Springer, 2022.
Savransky, Martin, and Marsha Rosengarten (eds.). Speculative Research: The Lure of Possible Futures. Routledge, 2017.
Stengers, Isabelle. "L'insistance du possible." In Gestes spéculatifs, 2015, pp. 5–19.
Strathern, Marilyn. Reproducing the Future: Essays on Anthropology, Kinship and the New Reproductive Technologies. Manchester University Press, 1992.
Tanaka, Atau, and Marco Donnarumma. "The Body as Musical." In The Oxford Handbook of Music and the Body, 2019.

Embodied Anticipation: Re-Sensing Hope Through Multisensory Participatory Transdisciplinary Design

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Keywords: embodied anticipation; multisensory participatory design; hope as method; aesthetic inquiry; sensory futures; collective future-making; affective attunement; transdisciplinary design research

Hope has long been recognized as a vital resource for human survival and collective resilience, particularly in periods of prolonged crisis. Reflecting on his survival of Auschwitz, Viktor Frankl described hope as inseparable from meaning and purpose, positioning it as an active and sustaining force (Frankl, 1946/1985). In our zeitgeist overshadowed by a global polycrisis, marked by climate instability, political polarization, and social fragmentation, hope plays a critical role in sustaining agency and future orientation. As a future-oriented phenomenon, hope operates as a form of anticipation, shaping how possible futures are sensed, interpreted, and enacted. In inquiry, hope is primarily approached as a cognitive or psychological construct, measured through language-based and self-report indexes (Snyder et al., 2002; Herth, 1992; Leshem, 2023).

This paper investigates how participatory and multisensory design can ignite and cultivate embodied, action-oriented experiences of hope. It approaches hope not as an abstract mental state, but as a sensory, relational, and experiential phenomenon that can be activated and sustained through intentionally designed encounters. To structure this inquiry, I developed two interconnected frameworks: the Hope Activation Spiral and the Embodied Arc.

The Hope Activation Spiral distinguishes between the processes of igniting and sustaining hope. Igniting hope refers to an initial affective shift that opens individuals to new possibilities. This stage draws on Keltner's work on awe, which demonstrates how moments of perceptual expansion can dissolve the sense of self and create conditions for possibility and connection (Keltner, 2023). Sustaining hope refers to the continuation of this state through repeated, embodied micro-actions. This stage draws on Fogg's work on behavior change, emphasizing how small, achievable actions reinforce agency and build momentum over time (Fogg, 2019). Together, these processes describe hope as a dynamic loop between affective activation and ongoing practice.

The Embodied Arc provides a complementary structure for understanding how hope is experienced and enacted. It frames hope as unfolding through three interconnected movements. Birth refers to the initial felt emergence of possibility. Expansion situates this possibility within broader relational, social, and global contexts, drawing on the relational dimensions of hope (Snyder et al., 2002; Herth, 1992). Action refers to the behavioral expression of hope through concrete steps and commitments. Rather than a linear sequence, these movements operate as a continuous experiential arc through which hope is sensed, shared, and enacted.

These two frameworks directly inform the design of the multisensory research project, The Rebirth of Hope, shaping both its structure and its experiential logic. The project unfolds through a sequence of interconnected touchpoints in which the Embodied Arc

provides the prompts that detail one's sense of hope, while the Hope Activation Spiral structures how participants move through them over time.

The experience begins with a communal dining ritual in which participants engage with taste as an embodied method for accessing memory, affect, and tacit knowledge (Korsmeyer, 1999; Sutton, 2001). Through guided prompts, participants identify and select ingredients corresponding to the Birth, Expansion, and Action dimensions of their hope. The sensory intensity of taste, combined with immersive audio and blindfolding, supports the ignition of hope through affective and perceptual engagement, aligning with Keltner's model of awe.

Interpersonal exchange and shared dining extend this process, situating individual experiences within a relational field. As participants articulate and witness each other's selections, hope expands beyond the individual into a collective orientation. This stage reflects both the Expansion movement of the Embodied Arc and the reinforcing loop of the Hope Activation Spiral.

After a communal dining experience, where each participant eats their unique taste of hope, participants mark their ingredient selections. These selections are then translated through a mapping system into chords, colors, and shapes, drawing on aesthetic notation (Goodman, 1968) and data humanism (Lupi and Posavec, 2016). This translation externalizes internal states, making them perceptible and shareable. The process of seeing one's hope represented visually and musically reinforces engagement and continuity.

These visual scores are performed live as The Collective Music of Hope, where each participant contributes a 5-second segment of sound to a shared composition (Levitin, 2006). This collective performance transforms individual intention into shared expression through an embodied experience. At the same time, participation in the performance reinforces the sustaining dimension of hope, as individuals experience themselves as active contributors to a collective future.

By foregrounding multisensory and participatory engagement, this research expands existing models of hope beyond cognition, introducing an embodied and experiential dimension. It demonstrates how design can function as a mode of inquiry into phenomena that resist verbal articulation, enabling new forms of knowledge production through sensing, making, and collective participation.

Ultimately, the paper positions multisensory participatory design as a rigorous approach for investigating how hope is generated, sustained, and oriented toward action. By treating design and aesthetics as central to anticipatory practice, the research contributes to interdisciplinary discussions on how individuals and communities navigate uncertainty and cultivate future-oriented capacities in conditions of ongoing crisis.

References

Frankl, V. E. (1985). Man's search for meaning. Washington Square Press. (Original work published 1946)

Fogg, B. J. (2019). Tiny habits: The small changes that change everything. Houghton Mifflin Harcourt.

Goodman, N. (1968). Languages of art: An approach to a theory of symbols. Bobbs-Merrill.

Herth, K. (1992). Abbreviated instrument to measure hope: Development and psychometric evaluation. Journal of Advanced Nursing, 17(10), 1251–1259.

Keltner, D. (2023). Awe: The new science of everyday wonder and how it can transform your life. Penguin Press.

Korsmeyer, C. (1999). Making sense of taste: Food and philosophy. Cornell University Press.

Leshem, O. A. (2023). Rethinking hope: A two-dimensional model of hope. Review of General Psychology, 27(2), 178–189.

Levitin, D. J. (2006). This is your brain on music: The science of a human obsession. Dutton.
Lupi, G., & Posavec, S. (2016). Dear data. Princeton Architectural Press.
Pink, S. (2015). Doing sensory ethnography (2nd ed.). Sage. (Original work published 2009)
Schön, D. A. (1983). The reflective practitioner: How professionals think in action. Basic Books.
Snyder, C. R., Irving, L. M., & Anderson, J. R. (2002). Hope and health: Measuring the will and the ways. In C. R. Snyder & S. J. Lopez (Eds.), Handbook of positive psychology (pp. 257–276). Oxford University Press.
Spinuzzi, C. (2005). The methodology of participatory design. Technical Communication, 52(2), 163–174.
Sutton, D. E. (2001). Remembrance of repasts: An anthropology of food and memory. Berg.

Embodied Encounters with Time: Sensing Futures Through Immersive Artistic VR

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Keywords: experiential futures; immersion; movement; artistic; reflection

This study investigates the tacit process knowledge and pedagogical reasoning educators employ to cultivate Futures Consciousness within the complex reality of higher education. While the field of futures-oriented education is expanding, recent integrative reviews indicate a persistent gap between theoretical aspirations and pedagogical reality. Theoretical contributions regarding Futures Consciousness (FC) and Futures Literacy (FL) remain fragmented, and empirical insights into how educators translate these concepts into complex learning environments are scarce (Ketonen-Oksi & Vigren, 2024; Koch et al., 2025). Furthermore, existing research often relies on short-term interventions or single workshops, the long-term impact of which remains questionable (Armanto, 2024). This leaves the situated reality of how educators actually design and facilitate these learning experiences largely unexplored. To address this, the present study adopts Educational Design Research (EDR), a methodology chosen to generate ecological validity by investigating interventions within the constraints of authentic practice (McKenney & Reeves, 2019). EDR operates in a context of discovery, serving as an exploratory tool to identify the mechanisms that connect pedagogical practices to outcomes (Kelly, 2006).

This paper addresses the identified gap by presenting findings from an expert interview study among higher education practitioners. It positions itself within the broader movement to make Futures Literacy a tangible, lived capability, resonating with the narrative approach of the recent Seeing the Unseen publication (Khafaji Zadeh et al., 2024), which highlights how futures literacy helps uncover new perspectives and reimagine personal and collective futures. Just as Seeing the Unseen reveals the personal journeys of FL practitioners, this study seeks to document the experiential knowledge held by educators, which often remains tacit and undocumented (Pauw & Beneker, 2015).

The analysis builds on a dual analytical framework developed in a preceding review (Koch et al., 2025), combining the Futures Consciousness model (Ahvenharju et al., 2018) with the 3-P model of learning (Tynjälä, 2013). This framework supports analysis of how contextual conditions (Presage), pedagogical processes (Process), and intended outcomes (Product) interact in futures education. Data was collected through ten expert interview sessions: nine individual interviews and one joint expert interview involving three participants, resulting in a total of twelve respondents. Participants were educators and teacher-researchers primarily affiliated with universities of applied sciences, complemented by one respondent from a research university and one from a commercially offered master's program. This diversity was included to surface variation in institutional context rather than to enable representative or comparative claims. Interviews followed an apprentice orientation (Langley & Meziani, 2020) to elicit process knowledge, defined as knowledge grounded in practice that can be articulated verbally but often remains unconscious (Bogner et al., 2018). Consistent with the study's constructivist epistemology, data were analysed using Reflexive Thematic Analysis (Braun & Clarke, 2022). In the analysis, contributions from the joint interview were treated as situated expert accounts, not as expressions of group consensus.

The findings reveal a pedagogical tension that transcends specific learning objectives or target groups. While the study identifies distinct design orientations, ranging from professional application in disciplinary practices to broader civic engagement, a recurring meta theme emerged regarding the student posture toward learning. Educators consistently reported that students have been socialized to view study as a finite task to be accomplished rather than an unbounded inquiry into the self, the world, and their potential talents or professions. The pedagogical intent to foster curiosity, wonder, and deep engagement often stands in direct opposition to the transactional expectations students bring to the curriculum, a tension educators actively struggle to overcome. Consequently, the process knowledge held by these educators centers heavily on the relational conditions required to disrupt this transactional logic. The study highlights that inviting students to share, explore, and open up requires a carefully cultivated sense of safety within the group and in relation to the teacher. This finding suggests a critical theoretical insight: if individuals construct their views of the future and the world in relation to others and their culture, the process of unlearning these entrenched narratives and rebuilding new futures must also be fundamentally relational.

By making visible the situated pedagogical practices through which futures consciousness is currently taught, this paper contributes to Theme 2 by foregrounding anticipatory capacity-building as a relational and normative educational practice. It shows that fostering Futures Consciousness cannot be reduced to cognitive instruction or the application of standardized methods, but involves educators actively working against the transactional logic of higher education. The study highlights the importance of pedagogical spaces in which students are invited to unlearn inherited narratives and engage with the open nature of their own possible futures.

References

Ahvenharju, S., Minkkinen, M., & Lalot, F. (2018). The five dimensions of Futures Consciousness. Futures, 104, 1–13. https://doi.org/10.1016/j.futures.2018.06.010

Armanto, A. R. A. (2024). Futures participation as anticipatory practice — what do futures workshops do? European Journal of Futures Research, 12(3). https://doi.org/10.1186/s40309-024-00226-4

Bogner, A., Littig, B., & Menz, W. (2018). Generating qualitative data with experts and elites. In U. Flick (Ed.), The SAGE handbook of qualitative data collection (pp. 652–667). SAGE Publications.

Braun, V., & Clarke, V. (2022). Thematic analysis: A practical guide. SAGE.

Kelly, A. E. (2006). Quality criteria for design research: Evidence and commitments. In J. van den Akker, K. Gravemeijer, S. McKenney, & N. Nieveen (Eds.), Educational design research (pp. 107–118). Routledge.

Ketonen-Oksi, S., & Vigren, M. (2024). Methods to imagine transformative futures: An integrative literature review. Futures, 157, 103341. https://doi.org/10.1016/j.futures.2024.103341

Khafaji Zadeh, R., Gulmans, J., & Damhof, L. (Eds.). (2024). Seeing the unseen: Uncovering personal journeys in futures literacy. Hanze University of Applied Sciences.

Koch, M. J., Sools, A. M., Spaas, G. H. J., & Westerhof, G. J. (2025). Learning Futures Consciousness: An integrative review. Futures, 173, 103654. https://doi.org/10.1016/j.futures.2025.103654

Langley, A., & Meziani, N. (2020). Making interviews meaningful. The Journal of Applied Behavioral Science, 56(3), 370–391.

McKenney, S., & Reeves, T. C. (2019). Conducting educational design research (2nd ed.). Routledge.

Pauw, I., & Béneker, T. (2015). A futures perspective in Dutch geography education. Futures, 66, 96–105. https://doi.org/10.1016/j.futures.2015.01.001

Tynjälä, P. (2013). Toward a 3-P model of workplace learning: A literature review. Vocations and Learning, 6(1), 11–36. https://doi.org/10.1007/s12186-012-9091-z

Embracing the monstrous: Speculative and arts-based approaches to feminist ageing futures in datafield worlds

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Keywords: monsters; vulnerability; arts-based; participatory; futuring; affect; ageing

Socio-technical imaginaries relating to older women tend to be rooted in assumptions and imaginaries that are both sexist and ageist. These dominant technocratic paradigms configure older women as frail and at-risk, ignoring and often reinforcing the socio-cultural conditions that render them vulnerable and deny their agency. Resulting data-driven technologies contribute to the marginalisation of older women despite claiming to increase independence and safety. Attending to older women as a group often excluded from futures studies, our interdisciplinary project utilises arts-based methods to expose and interrupt these dominant imaginaries; aiming to nurture new ways of imagining futures centred on care and community, equity and inclusion. The project is working with a group of older women through a series of 6 creative workshops ,exploring how they resist/ embrace imaginaries about their vulnerability and retain/ regain agency in everyday encounters in datafied worlds.

Situated at the intersection of feminist STS, age studies and anticipation studies, the Feminist Ageing Futures project builds on our previous, ageing and technology focussed, experiments with participatory futuring methods in developing “critical anticipatory practices that disrupt current regimes of anticipation” (Jarke & Manchester 2025, p.2). We aim to further explore possibilities to contest “discursive closure” (Markham 2021) and the possibility of experienced “futurelessness” (Tutton 2023) of older women. The project aims to work with the affective and embodied qualities of creative and arts-based research approaches (Hickey Moody et al., 2025; Manchester and Willatt, 2024; Pikhala and Huuki, 2019; Pikhala and Karasti, 2022) in order to collaboratively imagine alternative futures.

Connecting with Haraway’s cyborg (1985), the figure of the monster is operationalised in our workshops in order to disrupt normative conceptions of vulnerability (Shildrick 2002) and ageing with data-driven technologies. To do so, the project draws on a range of monster theories from the contexts of feminist art (Elkin, 2023), sociology of monsters (Law, 1990), and monster anthropologies (Coeckelbergh, 2019). Through the notion of the monstrous, the project aims to challenge the way that older women’s vulnerability is configured within socio-technical imaginaries, whilst aligning with more ambivalent conceptions of vulnerability that also recognise it as the basis of our interdependence (Brown, 2011; Butler, Gambetti & Sabsay 2016; Butler, 2016; Hartmann & Nungesser, 2025).

This paper explores how working with the figure of the monster enabled our co-researchers and ourselves to hold an ambivalent approach to gendered experiences of ageing and disrupt binary conceptions of vulnerability and power. Our experimentation with a variety of arts-based methods acknowledged and encouraged the older women involved (including ourselves) to bring their bodies and their emotions to engage with these questions and open up possibilities for imagining otherwise. This paper will reflect on our experiences of the creative workshops as well as the affective, embodied and empirical potential of arts-based methods and monstering for speculative futures.

References

Brown, K. (2011). Vulnerability: Handle with care. Ethics and Social Welfare, 5(3), 313–321. https://doi.org/10.1080/17496535.2011.597165

Butler, J., Gambetti, Z., & Sabsay, L. (Eds.). (2016). Vulnerability in resistance. Duke University Press. Butler, J. (2016). Rethinking vulnerability and resistance. In J. Butler, Z. Gambetti, & L. Sabsay (Eds.), Vulnerability in resistance (pp. 12–27). Duke University Press.

Coeckelbergh, M. (2019). Monster anthropologies and technology: Machines, cyborgs and other techno-anthropological tools. In D. Compagna & S. Steinhart (Eds.), Monsters, monstrosities, and the monstrous in culture and society (pp. 353–370). Vernon Press.

Elkin, L. (2023). Art monsters: Unruly bodies in feminist art. Chatto & Windus. London.

Haraway, D. J. (1985). A cyborg manifesto: Science, technology, and socialist-feminism in the late twentieth century. Socialist Review, 15(2), 65–108.

Hartmann, E., & Nungesser, F. (2025). Verletzbarkeit und Gesellschaft: Soziologische Perspektiven auf Vulnerabilität. Zeitschrift Für Soziologie, 54(1), 1–12. https://doi.org/10.1515/zfsoz-2025-2010

Hickey-Moody, A., Pihkala, S., Coombs, G., & Willcox, M. (2025). New materialist affirmations: Creative research interventions in methods and practice. Edinburgh University Press.

Jarke, J., & Manchester, H. (2025). Datafied ageing futures: Regimes of anticipation and participatory futuring. Big Data & Society, 12(1). https://doi.org/10.1177/20539517241306363

Law, J. (1990). Introduction: Monsters, machines and sociotechnical relations. The Sociological Review, 38(1_suppl), 1–23. https://doi.org/10.1111/j.1467-954X.1990.tb03346.x

Manchester, H., & Willatt, A. (2024). Towards care-full co-design with older adults: A feminist posthuman praxis. Journal of Aging Studies, 70, 1–14. https://doi.org/10.1016/j.jaging.2024.101250

Markham, A. (2021). The limits of the imaginary: Challenges to intervening in future speculations of memory, data, and algorithms. New Media & Society, 23(2), 382–405. https://doi.org/10.1177/1461444820929322

Pihkala, S., & Huuki, T. (2019). How a hashtag matters: Crafting response(abilities) through research-activism on sexual harassment in pre-teen peer cultures. Reconceptualizing Educational Research Methodology, 10(2–3), 242–258. https://doi.org/10.7577/rerm.3678

Pihkala, S., & Karasti, H. (2022). Towards response-able PD: Putting feminist new materialisms to work in the practices of participatory design. In Proceedings of the Participatory Design Conference 2022 - Volume 1 (pp. 98–108). https://doi.org/10.1145/3536169.3537784

Shildrick, M. (2002). Embodying the monster: Encounters with the vulnerable self. Sage Publications. London

Tutton, R. (2023). The sociology of futurelessness. Sociology, 57(2), 438–453.

For an argumentation theory approach to narratives of desirable futures

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Keywords: philosophy; argumentation; narratives; ethics

Narrative Foresight, Decolonial Studies, and allied programs have rightly brought attention to and promoted an array of narratives of desirable futures to give voice to marginalized, silenced or under-represented communities and individuals (Milojević and Inayatullah 2015; Bishet 2020). According to these approaches and to classical narratology, these voices (whether Western or non-Western, indigenous or not) favor expressing their visions of desirable futures in narrative form over crafting logically valid arguments to justify what makes those futures desirable (Banks et al. 2006; Sand 2019). These approaches labor under the assumption that there are two distinct and mutually exclusive modes of knowing, characterized by Jerome Bruner (1986) as the Paradigmatic Mode and the Narrative Mode. The former seeks objective truth via logical argumentation, facts, uncovering causal links, and the use of abstract categories, while the latter creates meaning through stories, featuring experiences, actions, intentions, and emotions. In this paper, I argue the following points: (1) the distinction between Paradigmatic and Narrative Modes is a false dichotomy, since there are "narrative arguments", that is, argumentation in narrative form; (2) many narratives of desirable futures produced in Futures Studies contexts should be viewed as narrative arguments. I conclude by sketching the ethical consequences of this shift in perspective: it changes the way we ought to critically engage with narratives createcd by storyteller-arguers.

Let me start with the first point. The view that narratives sometimes function as arguments has gained increased support in argumentation theory and philosophy (Olmos ed. 2017; Boyland 2018; Tindale 2021; Olmos 2023; Plumer 2025) but has been so far ignored in Futures Studies and Anticipation Studies. For instance, Christopher Tindale (2021) highlights the argumentative function of narratives through an example borrowed from Chinese Confucian philosopher Mencius (c.371 – c. 289 BCE). Mencius tells the fictive story of a son who discovers his parent's body being eaten by foxes and gnats, is filled with horror, fetches burial tools and buries his parent. The point is that the reader is supposed to be persuaded that, as Mencius writes, "it is reasonable that all filial sons and benevolent men should bury the remains of their parents." Stories like this work as vivid reasons (thick descriptions eliciting emotions irreducible to a collection of dry propositions) in support of a normative claim, which can be either explicit (like in Mencius) or implicit or even ambiguous. Contemporary argumentation theorists have shown that many daily inferential relationships between reasons and the claims they support cannot be captured with the tools of deductive and inductive logic. They have so far identified roughly one hundred "argument schemes" of this sort (neither deductive, inductive nor abductive but presumptive) that can be dialogically engaged with and assessed using "critical questions" (Walton et al. 2009). Argumentation theorists and philosophers committed to epistemic pluralism (Coliva and Pedersen 2017; Ganeri 2019) are probing the wider space of reasons and argumentation styles. They are inspired by anthropological work on the ubiquity of argumentation in many communities with or without connections to ancient Greece, the birthplace of deductive logic. This perspective is thus argument-focused but not Eurocentric and avoids the pitfall of reducing all argumentation to deductive and

inductive logic, like narratologists tend to do. Thus, it creates a space where argumentation and narratives can overlap.

The second point I argue for is that many narratives of desirable futures should be viewed as narrative arguments. This is because anticipatory storytelling can be used to persuade others (or oneself) of the desirability and plausibility of a future when consensus on ethical, political or social values is absent, where the capacity to hope is reduced, belief in plausibility is shaky, or the imagined future is entirely new or unexpected. While narratives have many acknowledged non-argumentative functions—from self-expression to resistance, community-building, and sensemaking—they are also often meant to be persuasive. In this paper, I identify and classify instances of narrative arguments in narratives of desirable futures produced in Futures Studies, with special attention to voices of marginalized, silenced or under-represented communities.

I conclude by sketching the ethical consequences of this shift in persective. It honors narrators' dialogical capacities as storyteller-arguers responsive to reasons, without reducing the complexity, richness, and ambiguity of narratives. Narrative arguments enable us to simultaneously glimpse at future possibilities, stay with the unknown and the ambiguous, and venture into the space of reasons in the justification mode (Mandich 2020). We ought to listen to stories and critically engage with the reasons they embody.

References

Banks, Sarah, Jackie Leach Scully, and Tom Shakespeare. "Ordinary Ethics: Lay People's Deliberations on Social Sex Selection." New Genetics and Society 25, no. 3 (2006): 289–303.

Bisht, Pupul. "Decolonizing Futures: Finding Voice, and Making Room for Non-Western Ways of Knowing, Being and Doing." In Knowledge Base of Futures Studies, 216–230. 2020.

Boylan, Michael. Fictive Narrative Philosophy: How Fiction Can Act as Philosophy. Routledge, 2018.

Bruner, Jerome S. Actual Minds, Possible Worlds. Harvard University Press, 2009.

Coliva, Annalisa, and Nikolaj J. L. L. Pedersen. Epistemic Pluralism. Cham: Palgrave Macmillan, 2017.

Ganeri, Jonardon. "Epistemic Pluralism: From Systems to Stances." Journal of the American Philosophical Association 5, no. 1 (2019): 1–21.

Mandich, Giuliana. "Modes of Engagement with the Future in Everyday Life." Time & Society 29, no. 3 (2020): 681–703.

Milojević, Ivana, and Sohail Inayatullah. "Narrative Foresight." Futures 73 (2015): 151–162.
Olmos, Paula, ed. Narration as Argument. Cham, Switzerland: Springer, 2017.

Olmos, Paula. "What Do We Mean by 'That's a Fallacious Narrative'?" Argumentation 37(2) (2023): 307–321.

Plumber, Gilbert. "Argument and Narrative." In The Routledge Handbook of Argumentation Theory, edited by Scott Aikin, John Casey, and Katharina Stevens. 2025.

Sand, Martin. "On 'Not Having a Future'." Futures 107 (2019): 98–106.

Tindale, Christopher W. The Anthropology of Argument: Cultural Foundations of Rhetoric and Reason. New York: Routledge, 2021.

Walton, Douglas N., Chris Reed, and Fabrizio Macagno. Argumentation Schemes. Cambridge: Cambridge University Press, 2008.

From Design Fiction to Design Theatre: Embodied Provotyping as Anticipatory Practice

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Keywords: design fiction; design theatre; provocative prototype; embodied experience; anticipatory practices

This paper proposes a theoretical and methodological framework for the transition from design fiction to design theatre, with the aim of reconsidering how futures can be perceived, negotiated, and enacted under conditions of uncertainty (Bleecker, 2009; Dunne & Raby, 2013; Fu & Li, 2023). Design fiction has been widely used to explore socio-technical trajectories through speculative artifacts, narratives, and diegetic prototypes (Kirby, 2010). It helps make emerging futures visible and discussable. However, in many cases, it still remains at the level of representation, where audiences mainly interpret futures rather than actively take part in them. In response to this limitation, and informed by design futures, performance studies, and experiential futures, this paper develops the concept of design theatre as a performative, multi-actor, and multi-sensory anticipatory approach, through which futures can be staged, embodied, and discussed collectively (Candy & Dunagan, 2017; Schechner, 2013).

The discussion is developed in three parts. First, the paper revisits design fiction as an anticipatory practice. It traces its intellectual background in critical and speculative design, and also considers its strengths and limitations under postnormal conditions characterized by indeterminacy, paradox, and competing temporalities (Sardar, 2010). Design fiction has undoubtedly expanded the imaginative space of futures-oriented design. At the same time, it often keeps a relatively centralized authorship and a comparatively fixed narrative structure, which may limit participants' active negotiation of alternative futures in situated and plural contexts. Therefore, the key issue is not only how to imagine futures differently, but also how to create conditions in which futures can be rehearsed, contested, and reinterpreted together.

Second, the paper introduces provotyping as a conceptual and practical bridge between design fiction and design theatre. Based on earlier discussions in participatory design, this paper extends the idea in a futures-oriented direction and emphasizes the provocative and relational capacities of prototypes in generating interpretive tension and reflective engagement (Mogensen, 1992; Boer & Donovan, 2012). Compared with conventional prototypes, which are often assessed in terms of usability or functional improvement, provotypes are used here to expose latent assumptions, reveal exclusions, and activate alternative imaginaries through embodied encounters. In this sense, provotyping supports a movement from reading abstract futures to rehearsing tangible futures, and further opens possibilities for cross-disciplinary and more-than-human anticipatory learning (Li et al., 2025).

Third, the framework is illustrated through two long-term design research trajectories. The first is the New Space Narrative initiative. It started from world-building design fictions developed in graduate courses on product-service design and New Space Experience Design, in which students constructed speculative scenarios of everyday life on the Moon and Mars through storyboards, future diaries, and metaverse-based environments. Projects such as speculative off-planet professions, the New Space Art Museum, and Pixels of Love explored the emotional, cultural, and ethical dimensions of living beyond Earth. These fictional worlds were later translated into immersive

installations and public events, where visitors were invited to participate as passengers, curators, or future citizens through both scripted and improvised rituals. In this process, speculative artifacts were no longer only objects for viewing, but became provotypes within a design theatre, through which participants could engage the affective and ethical questions of future space cultures in an embodied way (Zhu & Fu, 2023). The second trajectory is Future Mobility Ritual Cabins, which investigates emotion-adaptive autonomous mobility as a form of near-future everyday infrastructure. It began with design fictions around a 2035 autonomous vehicle ecosystem. Different cabin modules were developed in relation to different mobility rituals, including solitude, therapeutic retreat, intimate interaction, and collaborative work, and these were expressed through scenario scripts, comics, and service blueprints (Fu & Zhu, 2020). Later, these ideas were further translated into walk-through experiences, role-play activities, and spatial mock-ups. Participants entered these settings with different personas and interacted with AI-mediated interfaces and responsive environments. Under such conditions, the cabins functioned as provotypes within a design theatre. They brought forward a series of tensions, such as efficiency versus care, autonomy versus dependency, and comfort versus exposure. These tensions were not treated as problems to be solved in advance, but as issues to be opened up through embodied enactment and shared interpretation. It is exactly at this point that design theatre goes beyond the representational capacity of design fiction.

Based on these two trajectories, this paper proposes four core components of design theatre: curated scripts, which translate design fictions into performable prompts while keeping interpretive openness; embodied enactment, through which bodies, spaces, and props turn speculative futures into lived situations; agentic assemblage, in which AI systems, interfaces, and human participants become co-performers in more-than-human anticipatory settings; and reflexive aftercare, which provides a structured moment for ethical reflection and situated meaning-making after rehearsal. Taken together, these components suggest that design theatre should not be understood simply as a theatrical metaphor. Rather, it can be seen as an anticipatory infrastructure for staging, sensing, and socially negotiating futures.

In this way, the paper contributes to Futuring by Designing by understanding design as a form of world-making through rehearsal. It also contributes to Embodying and Sensing Futures by highlighting affect, positionality, and bodily experience, and to Critical Capacities and Futures Literacy by proposing design theatre as a situated and collective mode of anticipatory learning. Overall, the transition from design fiction to design theatre, realized through provotyping, suggests that anticipation should not be treated as the production of coherent future visions alone, but as an ongoing practice of shared performance, care, and negotiation in the face of uncertain futures.

References

Bleecker, J. (2009). Design fiction: A short essay on design, science, fact and fiction. Near Future Laboratory.

Boer, L., & Donovan, J. (2012). Provotypes for participatory innovation. In Proceedings of the Designing Interactive Systems Conference (pp. 388–397). ACM. https://doi.org/10.1145/2317956.2318014

Candy, S., & Dunagan, J. (2017). Designing an experiential scenario: The people who vanished. Futures, 86, 136–153. https://doi.org/10.1016/j.futures.2016.05.006

Dunne, A., & Raby, F. (2013). Speculative everything: Design, fiction, and social dreaming. MIT Press.

Fu, Z., & Li, J. (2023). Design futurescaping: Interweaving storytelling and AI generation art in world-building. In P. L. P. Rau (Ed.), Cross-cultural design: HCII 2023 (pp. 194–207). Springer. https://doi.org/10.1007/978-3-031-35939-2_14

Fu, Z., & Zhu, L. (2020). Envisioning the future scenario through design fiction generating toolkits. In P. L. P. Rau (Ed.), Cross-cultural design: Applications in cultural heritage,

creativity and social development: HCII 2020 (pp. 46–59). Springer. https://doi.org/10.1007/978-3-030-49788-0_4
Kirby, D. A. (2010). The future is now: Diegetic prototypes and the role of popular films in generating real-world technological development. Social Studies of Science, 40(1), 41–70. https://doi.org/10.1177/0306312709338325
Li, J., Fu, Z., Wang, J., Zhu, L., & Qian, F. (2025). Integrating more-than-human perspectives in speculative prototyping based on actor-network theory. In Entertainment computing – ICEC 2024 (pp. 383–398). Springer. https://doi.org/10.1007/978-3-031-74353-5_33
Mogensen, P. (1992). Towards a provotyping approach in systems development. Scandinavian Journal of Information Systems, 4(1), 31–53.
Sardar, Z. (2010). Welcome to postnormal times. Futures, 42(5), 435–444. https://doi.org/10.1016/j.futures.2009.11.028
Schechner, R. (2013). Performance studies: An introduction (3rd ed.). Routledge.
Zhu, L., & Fu, Z. (2023). New space narrative: Responding to multiple futures with design perspective. In P. L. P. Rau (Ed.), Cross-cultural design: HCII 2023 (pp. 331–345). Springer. https://doi.org/10.1007/978-3-031-35939-2_24

Have you ever smelled the rain? Exploring Olfactory Anticipation in Participatory Design

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Keywords: weather; scents; participatory design

This paper explores how scent can support people in sensing and co-imagining climate futures. Building on our earlier work with climate observatories, scent materials and inspired by the book Becoming Weather (2024), we treat weather as relational and embodied, and weather-scents thus as entry points for attunement to changing weather and climates. Through experimental participatory workshops in Sweden, participants encountered curated weather-scents and used them to reflect on shifting conditions and to speculate on climate-altered futures. The workshops showed how diverse sensory perceptions can enrich collective futuring and open grounded, embodied, and relational ways of imagining change. We propose olfactory anticipation as a promising approach for participatory design and climate-oriented futures work.

In this paper, we introduce our ambition and initial activities to explore how smell might support people in sensing and co-imagining climate futures. Interest in this emerged through the Indigenous Climate Observatories project led by the main author (Reitsma et al. 2025), which aimed to understand climate change from a local perspective through tacit and traditional indicators. At one observatory site in Lesotho, conversations tended toward visual evidence—likely shaped by our facilitation—yet several references hinted at olfactory indicators, such as the smell from the valley that forecasts rain. These moments made us aware of sensory narrowing in facilitated discussions. In parallel, our own conversations turned to how we relate to weather through smell. The familiar smell of rain led us to become curious about a wider palette of atmospheric scents that shape how we inhabit environments and notice change.

The project introduced here stems from a wish to re-learn and re-connect to weather through the nose, opening space for sensory attunement as a way of thinking about climate change and the futures shaped by it. This resonates with our broader work on FUturing with the NoSE (FUSE), where smell acts as a catalyst for futures thinking and instruments, materials, and participants are treated as collaborators. Rather than seeking single correct interpretations, FUSE emphasises co-defining arenas of inquiry, pairing sensory instruments with lived experience, and creating speculative openings. While this paper does not use all aspects of FUSE, it shares its orientation: smell as both evidence and provocation, and olfactory engagement as a pathway into collaborative future-making.

In this initial work, we explore what happens when we invite smell into conversations about weather and atmospheric futures. How do scents shift with humidity, soil dryness, or the heaviness of air before rain? How might these cues shape how we live with weather now, and how might they influence how we imagine the futures we may inhabit? With this in focus, the project examines what happens when subtle sensory relations are brought into participatory design approaches aimed at understanding local change and its implications for how we live together. How might attention to weather-scents open grounded, embodied, and open-ended ways of imagining climate-changed futures?

Our work is informed by Becoming Weather (Wright, 2024), which approaches weather as something we live with and through. Weather, in this view, is relational, affective,

and material, shaping how bodies move, feel, and anticipate. This framing resonated with our experiences in design research, where sensory engagement is central to how people make sense of the world and where differences in perception are expected. Drawing on this understanding, we treated scent not as representation but as a way of entering into atmospheric relation—attuning to what might be shifting around us.

As an initial exploration—one possible way rather than the way—we developed a series of workshops in Sweden. Participants met for 1–2 hours to engage with the prompt: Have you ever smelled the rain? We began with a breathing exercise, followed by sharing memories of weather-related scents. Each participant received the same set of illustrated cards depicting small atmospheric "worlds." Participants then encountered curated scents: the onset of rain, soil after drought, humid forest soil, or the faint sharpness of smoke. Scents were introduced without explanation. Participants first noticed their own responses, then selected a card that resonated, or an empty card if none did. Cards were placed in the centre and grouped where patterns emerged. This led into shared reflections on memories, associations, bodily responses, and speculative thoughts. We emphasised that relating is personal and that there is no correct match. After several scents, we shifted toward imagining climate-changed futures: What might these atmospheres signal? How might societies living in such futures take shape?

The workshops are exploratory and evolving; we do not yet have final conclusions. What we can highlight is how differently participants connect to scents, and how these differences enrich dialogue. People built on each other's interpretations, negotiated differing perceptions, and co-created narratives around climate-changed atmospheres. Participatory design has long emphasised collaborative meaning-making, and in this project, scent acted as a shared material enabling participants to imagine together, even with divergent sensory experiences. The variability of smelling—its subjectivity and openness—became a resource rather than a limitation, offering rich potential for collaborative and speculative future-making.

We see this work as contributing to participatory design by foregrounding sensory attunement as a form of anticipatory inquiry. It also expands discussions on atmospheric and affective dimensions of anticipation by showing how smell can surface concerns and hopes that are not easily articulated otherwise. While the workshops did not engage Indigenous knowledge systems, the project aligns with efforts to de-centre dominant, technocratic forms of futuring. By attending to the atmospheric and the embodied, olfactory anticipation opens space for more situated and relational engagements with climate futures.

References

Wright, S. (2024). Becoming Weather: Weather, Embodiment and Affect. Routledge.

Reitsma, L., William, D. A., Dludlu, M. N., Sibandze, G. F., Taele, M. B., Tseole, C., & Zaman, T. (2025, July). (Un)-blanketing Indigenous Climate Change Indicators for Understanding Local Climate Change. In Proceedings of the 2025 ACM Designing Interactive Systems Conference (pp. 1502-1515).

Images of the Future among Finnish Youth: Reflections on Work Related Futures

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Keywords: images of the future; work; young people; used futures; decision making

This article examines how Finnish upper secondary students (aged 16–18) construct and reflect on their educational and work-related personal images of the future. Work is considered as one of the basic pillars of achieving a preferable future and the hopes, fears, uncertainties and assumptions surrounding career related decisions play a central role in young people's lives. Images of the future have a far greater influence in our lives than we often understand, and our images are full of values and motivating factors that influence our decision-making processes both consciously and unconsciously (Rubin & Linturi, 2001). The fundamental objective in studying images of the future is to understand the forces shaping them (Bell, 1997) and this has become even more important now when our decision-making models have been interrupted by a future that is increasingly hostile and uncontrollable (Leccardi et al., 2023). Therefore, it is essential to place these images under critical examination and try to shed light to hidden values, cultural traditions, social norms and outdated ways of thinking that are influencing our views about the future. The objective of this article is twofold: first, to identify the sources that transmit the ideas and assumptions shaping young people's images of the future; and second, to understand why some work-related images become dominant, while others are consciously or unconsciously suppressed, forgotten, or abandoned. The key aim is to liberate young people from external expectations and normative constraints thereby enabling them to create more meaningful and self-authored images of the future.

For data collection, this research utilized a workshop that consisted of various tasks, all aimed at understanding young people's perceptions about work and their reflections on career-related futures thinking. The data analyzed in this article consists of 108 personal writings, or memoirs written by Finnish upper secondary school students. Students were invited to write memory-based reflections about their past experiences that may have influenced how they think about their personal future, especially regarding their educational and occupational views. The purpose of the memoirs was to probe the hidden parts of young people's work-related images of the future and to surface their diverse narratives of the past, present and future in their own voices. The data is analyzed using Causal Layered Analysis (Inayatullah, 1998). CLA enables the identification of hidden assumptions, metaphors, deeply rooted cognitive patterns, and underlying worldviews embedded in our thinking (Inayatullah, 1998; Bussey, 2014). The four-layered approach of CLA is applied to delve deeper into the realms of images of the future as well as to identify and organize the different factors and actors influencing young people's futures thinking.

This article places an emphasis on 'used futures'. The term used future refers to an image or idea of the future that has been borrowed or adopted from others in the past. Used futures no longer serve the purpose of its holder and can become damaging and ineffective overtime. (Inayatullah 1998; Milojevic & Inayatullah 2015). This article also focuses on identifying the specific 'message sources' that have been shaping the images of the future of young people. The message sources identified from the images of the future were classified into three categories: 1. media, 2. other people and 3. personal experience (Ono, 2003). The memoirs written by the students turned out to be

highly diverse and they varied from coherent, well-structured narratives to more fragmented and free-flowing reflections of life. The preliminary, first-layer findings highlight the role of the family in shaping young people's images of the future in a way, that can be supportive but also constraining or even destructive. Some memoirs highlighted the role of money in career-related thinking when other memoirs mentioned a strong desire towards nurturing and helping others. Gender also emerged in some memoirs and seemed to influence which futures young people deemed as possible, acceptable or worth pursuing for themselves. Social media, books and tv-series had left a strong impression on young people especially when considering certain traditional professions. Perhaps unexpectedly, a truly constructive discussions with guidance counselors, other professionals or parents were notably missing from the memoirs. It seemed that the students had been left to drift on their own without proper guidance to help them navigate in the futures.

This study seeks to deepen the understanding of young people's thinking about work and career- related decision making by utilizing methods, tools, theories and frameworks from the field of futures research. The aim is to create novel connections between futures research, youth research, study- and career-related guidance and to develop new theoretical frameworks, tools and best practices to promote the well-being of young people by guiding them towards more sustainable, empowering and preferable occupational futures.

References

Bell, W. (1997). Foundations of futures studies: History, purposes, and knowledge (Vol. 1, 5th ed.). Transaction Publishers.

Bussey, M. (2014). CLA as process: Mapping the theory and practice of the multiple. Journal of Futures Studies, 18(4). https://jfsdigital.org/articles-and-essays/2014-2/vol-18-no-4-jun-2014/articles/cla-as-process-mapping-the-theory-and-practice-of-the-multiple/

Leccardi, C., Jedlowski, P., & Cavalli, A. (2023). Memory and future through the generations. In Exploring new temporal horizons: A conversation between memories and futures (pp. 80–112). Bristol University Press.

Milojević, I., & Inayatullah, S. (2015). Narrative foresight. Futures, 73, 151–162.

Ono, R. (2003). Learning from young people's images of the future: A case study in Taiwan and the US. Futures, 35(7), 737–758.

Rubin, A., & Linturi, H. (2001). Transition in the making: The images of the future in education and decision-making. Futures, 33, 267–305.

Manifesto-ing troubling feelings: Exploring the affective dimension of the ecological crisis

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Keywords: ecological transition; manifesto-writing; affective labour; design

The ecological crisis is not only transforming our physical world, but also reshaping how we relate to our environment, communities and imagined futures. As the effects of global warming become more tangible, so do the emotional responses they evoke. As Head (2016) points out, climate change is inextricably linked with grief. We are mourning our modern selves and the promises that were made to us for bright futures – futures that contained stability, progress and unlimited resources and wealth (Head, 2016). We are mourning the loss of systems, structures, places, and cultures we thought would be part of our lives but might not be anymore (Coops et al., 2024). As Head so beautifully describes, 'we are entangled in various ways and we will need to grieve those entanglements' (Head, 2016, p.31).

As we are increasingly confronted with overwhelming emotions in and around the ecological crisis it becomes clear that "we do not have the inter/personal competencies necessary for engaging with the intense combination of guilt and fear induced by this existential crisis" (Verlie, 2022). Current ways of researching and teaching often approach emotions as if we, as researchers, are not part of society or unfolding transformations. However, for our practice to stay responsive and to be able to contribute to ecologically just futures, we need to understand how our practice is affected by the changing world around us and the uncertainty that comes with it. This requires exploring other ways of reflexivity that hold space for the complexity of being simultaneously affected by, while being actors within, processes of ecological crisis. Practices that allow exploration into not only what we design or research, but also how our affective entanglements shape the questions we ask, the approaches we use and the futures we imagine - directly responding to the Anticipation conference's fourth theme: Embodying and Sensing Futures.

To explore this challenge, we propose reflective manifesto writing as a practice for engaging with the affective dimensions of the ecological crisis. Manifesto writing is increasingly being used within design research, and we recognize its value in capturing design practice in transition. As Søndergaard articulates:

"With its political form, the manifesto is a suitable form for positioning and disseminating design research programs in an open, unstable and response-able way." (Søndergaard, 2018, p. 158)

This understanding of manifesto writing enables us to 'free scholars from the burden of unemotional and impartial expression' (Hanna & Asby, 2022) and helps in expressing guidelines that are necessarily incomplete, evolving, and responsive to changing conditions – qualities essential for engaging with the urgency and uncertainty of future-making in our current times.

The contribution reflects on three workshops using reflective manifesto writing conducted between 2024 and 2025. These workshops brought together practitioners, researchers and designers across different contexts of ecological transitions, to collectively explore how feelings and affect shape (ecological) transition processes, how we as designers/ researchers/ practitioners see our role in engaging with and inviting others to engage with this, and how the affective shapes our design and research practices. Participants engaged in reflective exercises that moved between individual reflection, collective dialogue and collective manifesto building. The process involved identifying moments of affective dissonance (Hemmings, 2012), also referred to as 'personal troubles' in their work, and articulating the reminders/instructions/values that could orient their practice amid ecological uncertainty in the future.

What emerged through these workshops was not a singular manifesto but rather a diverse representation of voices grappling with similar challenges from different positions.

Participants explored tensions between feeling good and staying with the trouble, addressing positionality and acknowledging uncertainty, allowing vulnerability and being brave. We have come to articulate those as a "fluid manifesto" of affective future-making.

The reflective manifesto writing process revealed the extent to which affective dimensions of ecological crisis are already present in design and research practices, even when they remain unacknowledged or unexamined. By creating space to attend to these dimensions explicitly, we understood our participants beginning to develop the inter/personal competencies that Verlie suggests we currently lack – competencies for holding complexity, for staying with the trouble, and for working responsibly with affect.

The exploration we are presenting aims to contribute to the development of design and research practices that are genuinely response-able in the face of ecological crisis.This means practices that acknowledge affective entanglements, that engage with emotional complexity rather than seeking to transcend, or discard, it, and that can articulate clear commitments while remaining open to challenge and transformation. The form of a manifesto proves valuable precisely because it required us to take a stance, while acknowledging that 'the manifesto is confident and totalising, performing the authority it often does not yet possess – to bring imagined futures to life in the present. At the same time, there is a counter-tendency in manifesto writing that deploys irony and ambiguity to balance or even undermine its own authoritarian behaviour.' (Hanna & Asby, 2022). Coming together in dialogue around our practice allows us to render the invisible parts of our research and future-making practices, that is called for (Hamilton-Jones & Schröder, 2025).

We also recognise that reflective manifesto writing, with its declarative and authoritative form, may not always be the most appropriate form to engage with personal troubles and uncertain futures. The very assertiveness that makes manifestos powerful can also hinder the kind of open-ended inquiry that ecological crisis requires, especially when it comes to something as intimate as affect. Moving forward we are drawn to explore other forms of collective sense-making - practices such as tarot reading, séances and other approaches that create space for ambiguity, engaging with the unknown and 'new ways of feeling, sensing, imagining, understanding, and questioning' (Evers, 2024). These practices, though seemingly unconventional in research contexts, offer different epistemological opportunities.

Therefore, we see reflective manifesto writing not as an endpoint but as a starting node – experiments in an ongoing effort to develop practices that can engage meaningfully with the emotional, ethical and political complexities, which are pointing us towards tarot-making and tarot-reading as conversation formats for these affective conversations around future-making practices.

References

Evers, C. (2024). An ecological crisis of reason: using creative and arts-based research methods for exploring affective-emotional life and just transitions. Global Social Challenges Journal, 3(3), 360-381.

Hanna, J., & Ashby, S. (2022). Reflections on manifesto writing. Multimodality & Society, 2(1), 23-30. https://doi.org/10.1177/26349795211072444 (Original work published 2022)

Hamilton-Jones, D., & Schröder, A. M. (2025). Affect in more-than-human design practice: An anecdote-based exploration through dialogue. In Nordes 2025: Relational Design (pp. 592-600).

Hemmings, C. (2012). Affective solidarity: Feminist reflexivity and political transformation. Feminist Theory, 13(2), 147–161. https://doi.org/10.1177/1464700112442643

Head, L. (2016). Hope and grief in the Anthropocene: Re-conceptualising human–nature relations. Routledge.

Søndergaard, M. L. J. (2018). Staying with the Trouble through Design: Critical-feminist Design of Intimate Technology [Ph.D, Aarhus University]. https://doi.org/10.7146/aul.289.203

Verlie, B. (2019). “Climatic-affective atmospheres”: A conceptual tool for affective scholarship in a changing climate. Emotion, Space and Society, 33, 100623. https://doi.org/10.1016/j.emospa.2019.100623

Moving from ‘do’ to ‘dō’ with BeWeDō: ‘Where could this lead?’

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Keywords: BeWeDō; embodiment; emplacement; cooperative creativity; leadership

The changing context of cooperative creativity in the contemporary era demands perspectives that engage others in co-creating a leadership of possibility (Adler, 2006). The research shows that effective leadership development and co-creation depend not only on cognitive skills but also on relational presence, embodied awareness, and the ability to engage with unanticipated ideas as they emerge in conversation. This paper examines the BeWeDō® framework (2015, 2019) – an Aikidō-informed, movement-based, inclusive dialogic practice – as a way of understanding how groups can move from ‘do’ to ‘dō’ (a path or way of life): from treating collaboration as a process task to inhabiting it as an ongoing, generative practice. It offers a ‘way’ of understanding how people literally step into different relational and future possibilities, and how this embodied shift opens space for the shared question, ‘Where could this lead?’

Between 2015 and 2019, this longitudinal, practice-based, interdisciplinary research had three objectives: first, to conceptualise the transition from ‘do’ to ‘dō’ as an anticipatory shift in practice, highlighting BeWeDō as a mode of action in which bodies, intentions and futures are co-constituted; second, to explore how extending beyond embodiment to consider emplacement further informs our understanding of how we co-create cooperative possibilities through movement; and third, to contribute empirical insights into how participants experience, interpret and narrate these transitions during a ‘BeWeDō Kenkyukai’ (research seminar).

Methodologically, the analysis draws on autoethnography, visual ethnography, participant observation, concept mapping, and surveys conducted throughout the fieldwork. The empirical materials comprise: (i) 65 BeWeDō Kenkyukai; (ii) more than 600 participants across eight countries; and (iii) the iterative development and testing of 37 BeWeDō® framework prototypes. These cycles of design, enactment and reflexivity converged in a key sense-making moment during the ‘Aikidō, BeWeDō ja kommunikoinnin energia’* Kenkyukai at LUT University, Lahti, Finland, on 28 September 2019, where the findings were crystallised. That interactive experience involved moments where many previous research challenges and conceptual elements fell into place. The session made tangible how BeWeDō can keep the practitioner present while decentring mastery, as the ‘conversational circle’ itself was moved around the room, shifting designing from individual intent towards relational, emplaced co-creation. Moment-to-moment transitions were both validated and actively improvised, as participants adapted in the moment; a single step, turn, or shared shift in stance altered the perceived field of possibilities for action and dialogue. It also showed how emplacement – the sensuous interrelationship of body–mind–environment (Howes, 2005) – offers a powerful lens for understanding how possibilities are co-created through movement. “While taking part in the BeWeDō Kenkyukai I reflected that this approach opens space for alternative modes of engagement, moving beyond the dominance of competitive, cognitive reasoning rooted in neoliberal academic structures toward something more fluid, relational and open-ended. Within these spaces, we attune to one another and to the unfolding situation through embodied

practices such as movement, gesture and shared sensing. This shift repositions us from being a central agent of control to becoming a responsive participant within a dynamic field of relations. Rather than directing outcomes, we co-inhabit a process of emergence, where meaning and action arise cooperatively through interaction and surprise" (autoethnographic notes of Anne Pässilä).

The paper contributes to existing knowledge in two key ways. Conceptually, it extends anticipation studies by linking embodied micro-practices and emplacement with anticipatory sense-making. Methodologically, it advances BeWeDō as a rigorous, art-based approach that asks 'what if?' instead of 'what is,' demonstrating how futures are co-created, sensed, and negotiated through small movements, shifts in presence and shared spatial awareness. In doing so, it treats anticipation as a felt, emergent process enacted through emplaced relational movement, enabling a shared orientation towards 'what could be?' We suggest three interrelated dimensions that underpin this orientation: (1) Imagination: Seeing beyond current constraints and envisioning alternative futures; (2) Relationality: Engaging diverse voices in co-creation and fostering trust and serious playfulness; (3) Emergence: Allowing suggestions, emotions and ideas to arise through iterative, adaptive processes. These dimensions surfaced through embodied and emplaced experiences, where attunement to movement, gesture and shared sensing became central to navigating complexity.

Discussion

In dialogue with Adam and Groves' (2007, 2009) account of future matters as ethically charged present practices that cast ever longer shadows, BeWeDō is framed as a designing practice that re-orders relations between immediate action and longer-term trajectories. The Lahti Kenkyukai findings – slowing to notice, heightened awareness of "next acts," and side-by-side orientations that invite reciprocity – suggest that minimal protocols and micro-moves can thicken the present, making anticipatory sense-making tangible and cooperatively negotiated rather than abstract or purely cognitive. The paper also situates BeWeDō alongside Fry's (2007, 2009) notion of design as a redirective practice: a futuring mode that seeks to move from defuturing logics towards sustainment by reorienting practices, responsibilities and imaginaries. BeWeDō's shift from 'do' (task-focused collaboration) to 'dō' (a way of relational co-creation) resonates with this redirective agenda. Lahti participants' experiences of "deep-fast" reciprocity, fewer monologues, and designers acting as facilitators of cooperative infrastructures rather than authors of singular solutions exemplify how redirective practice can be enacted through emplaced, bodily attunement rather than discursive critique alone. Pässilä maintains that by bringing BeWeDō into organisations and communities as a praxis-oriented, 'bodied-going-with-interaction,' a leadership of possibility becomes a tangible practice: an inclusive way of working together that supports creative, participatory change. BeWeDō embraces uncertainty and co-creation, challenging the prevailing logic of efficiency and commodification. Through arts-based methods and dialogic processes, BeWeDō invites a rethinking of leadership and learning as lived, relational practices and opens possibilities for more democratic, inclusive and adaptive forms of knowledge production: an anticipatory design praxis that orients participants toward 'what could be?' while staying present to the uncertainties of 'what is?'

*Translation: 'Aikido, BeWeDō and energy in/on communication'

References

Adam, B., & Groves, C. (2007). Future matters: Action, knowledge, ethics. Brill.

Adler, N. J. (2006). The arts & leadership: Now that we can do anything, what will we do? Academy of Management Learning & Education, 5(4), 486–499. https://doi.org/10.5465/amle.2006.23473209
Bradford, M. (2015). BeWeDō®: Co-creating possibilities with movement [Doctoral dissertation, Massey University]. Massey Research Online. http://mro.massey.ac.nz/handle/10179/8273
Bradford, M. (2019). BeWeDō® Kenkyukai: Small moves can set big ideas in motion. In N. Nimkulrat, K. Kuusk, J. Valle Noronha, C. Groth, & O. Tomico (Eds.), Proceedings of EKSIG Conference 2019: Knowing Together — Experiential Knowledge and Collaboration (pp. 215–225). Estonia Academy of Arts. https://doi.org/10.21606/eksig2019.114
Fry, T. (2007). Redirective practice: An elaboration. Design Philosophy Papers, 5(1), 5–20. https://doi.org/10.2752/144871307X13966292017072
Fry, T. (2009). Design futuring: Sustainability, ethics and new practice. Berg.
Howes, D. (Ed.). (2005). Empire of the senses: The sensual culture reader. Berg.

Narrative structures as anticipatory design devices for early-stage innovation

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Keywords: narrative structures; design briefs; early-stage innovation

This paper investigates how the narrative structure of a design brief, beyond the information it conveys, orients the anticipatory capacities activated in the earliest phases of design and innovation. Design briefs play a foundational role in shaping how teams frame problems, generate insights, and envision possible futures; yet little empirical research has examined how their structure, rather than content alone, affects the cognitive, emotional, and imaginative dynamics underpinning generative design work. Rather than treating design briefs as operational artifacts, this study frames them as anticipatory infrastructures that shape how designers engage with uncertainty and emerging futures.

The study examines how various narrative structures embedded in design briefs can serve as anticipatory design devices, enabling designers to perceive, interpret, and construct futures through divergent frames of reference.

Building on narrative theory and design research, the study develops and empirically evaluates three narrative structures, Viewpoint, Historical, and Descriptive, each corresponding to a distinct mode of sensemaking and imaginative engagement. An experimental study involving 68 design and innovation professionals explored how these structures influence three generative dimensions: problem space identification, empathetic activation, and inspiration empowerment. Participants produced briefs addressing low financial literacy among young people through structured co-design sessions. From 68 briefs, 23 were selected through systematic coding as strong exemplars and evaluated through a conceptual framework using Likert-scale assessments by external experts.

Findings reveal differentiated anticipatory dynamics. Narrative structures play distinct anticipatory functions in early-stage design. Viewpoint narratives, which foreground subjective perspectives and emotional interiority, are particularly effective in activating empathy, a crucial dimension for design processes grounded in human experience (Carlgren et al., 2016). By presenting problems through situated voices, these briefs encourage designers to inhabit alternative perspectives and approach problem framing relationally. Descriptive narratives, rich in sensory and contextual detail, excel in inspiration empowerment, providing vivid elements that expand the potential solution space and stimulate imaginative exploration, in line with research on narrative and semantic repertoires (Erickson, 1996).

In contrast, historical narratives, structured around causality and temporal sequencing, are less generative overall, suggesting that linearity and explanatory logic may constrain divergent thinking in early design stages. These findings validate and extend perspectives on how ambiguity, indeterminacy, and richness of representation support generative design activity (Dorst & Cross, 2001). Narrative form thus emerges as an active device shaping how futures are sensed, interpreted, and made actionable in design processes. The study extends research across design theory, narratology, and

organizational studies. Design is understood as an interpretive and abductive practice (Schön, 1983; Dorst & Cross, 2001), while narratives support ideation and shared understanding (Erickson, 1996; Grimaldi et al., 2013; Lloyd & Oak, 2018).

Organizational perspectives frame narratives as sensemaking devices that reduce complexity and orient action (Rhodes & Brown, 2005; Bartel & Garud, 2009). Drawing on narratology distinctions (Brewer, 1984; Hillier et al., 2016) and studies on the cognitive and affective power of narratives (Brown et al., 2008), this research empirically studies how narrative structure shapes anticipatory cognition.

While prior studies have emphasized narrative as a tool for communicating visions or aligning stakeholders (Maclean et al., 2021; Bartel & Garud, 2009), this research shows that narrative structures, not only narrative content, fundamentally influence cognitive, emotional, and collaborative processes central to futuring by design. The design brief becomes a site of anticipatory intervention: a moment in which designers' imaginations are directed, expanded, or constrained, influencing what kinds of futures become thinkable and actionable.

By shaping perceptions of agency, responsibility, and possibility, narrative structures contribute to anticipatory capacity and futures literacy. The paper positions design briefs as strategic interventions in anticipatory practice, capable of orienting design processes toward more plural, situated, and generative engagements with the future.

References

Bartel, C. A., & Garud, R. (2009). The role of narratives in sustaining organizational innovation. Organization Science, 20(1), 107–117.

Beckman, S., & Barry, M. (2010). Design and innovation through storytelling. International Journal of Innovation Science, 1(4), 151–160.

Brewer, W. F. (1984). The story schema: Universal and culture-specific properties. Center for the Study of Reading.

Brown, A. D., Stacey, P., & Nandhakumar, J. (2008). Making sense of sensemaking narratives. Human Relations, 61(8), 1035–1062.

Carlgren, L., Rauth, I., & Elmquist, M. (2016). Framing design thinking. Creativity and Innovation Management, 25(1), 38–57.

Dorst, K., & Cross, N. (2001). Creativity in the design process. Design Studies, 22(5), 425–437.

Erickson, T. (1996). Design as storytelling. Interactions, 3(4), 30–35.

Grimaldi, S., Fokkinga, S., & Ocnarescu, I. (2013). Narratives in design. In Proceedings of DPPI (pp. 201–210).

Hillier, A., Kelly, R. P., & Klinger, T. (2016). Narrative style influences citation frequency. PLOS ONE, 11(12).

Lloyd, P., & Oak, A. (2018). Cracking open co-creation. Design Studies, 57, 93–111.

Maclean, M., Harvey, C., Golant, B. D., & Sillince, J. A. (2021). The role of innovation narratives in accomplishing organizational ambidexterity. Strategic Organization, 19(4), 693–721.

Parrish, P. (2006). Design as storytelling. TechTrends, 50(4), 72–82.

Rhodes, C., & Brown, A. D. (2005). Narrative, organizations and research. International Journal of Management Reviews, 7(3), 167–188.

Schön, D. A. (1983). The reflective practitioner. Routledge.

Play, the Virtual, and Care: Affective Openings Toward Reconstraining Designer Subjectivity

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Keywords: anticipatory design; designer subjectivity; reconstraining; playful care; affective attunement; design education; emergence and the virtual; feminist ethics of care; embodied anticipation; futures literacy

Design is increasingly invoked as a mode of anticipation: not as the practice of solving predefined problems (Marenko and Brassett, 2015), but as a way of working with indeterminacy, sensing trajectories as they form, and holding open the plurality of the not-yet (Escobar, 2018). Yet the anticipatory potential of design comes into tension with the subjectivities that contemporary design education continues to cultivate. Even as futures work calls for openness, relationality, and ethical care, designers' capacities for sensing and acting within emergent conditions remain constrained by inherited onto-epistemological habits shaped by Enlightenment legacies. Linearity, mastery, technocratic rationality, and the containment of affect continue to structure how design problems are framed and how futures are imagined. These epistemic infrastructures quietly delimit what designers perceive as possible, desirable, or even sayable.

Our research begins from this tension. We argue that one of the most pressing challenges for anticipatory design is not methodological but ontological (Willis, 2006): the formation of designer subjectivity. We understand subjectivity not as a stable identity but as an ongoing relational becoming, co-composed through materials, pedagogical structures, social relations, and affective dispositions. What designers can imagine, sense, or care about is shaped by constraints that are internal as well as external. To cultivate capacities suited to post-normal conditions, we must therefore rethink not only how designers work, but how designers are formed.

This insight draws inspiration from, but meaningfully extends, Auger & Hanna's Reconstrained Design (2019). Their work identifies the oblique, often invisible constraints, such as progress dogma, infrastructural legacies, and systemic worldviews, that shape what can be designed. We take up their logic of reconstraining but shift its focus inward. While these scholars have addressed the external, infrastructural constraints that delimit technological possibility (ibid.), we argue that equally influential constraints operate within designers themselves. These internal constraints include epistemic habits, affective patterns, inherited ideals of mastery, and pedagogical traditions that shape how designers perceive and engage with the world. Extending reconstraining thinking to the level of subjectivity opens a new theoretical and pedagogical terrain: the internal conditions that shape designerly becoming and, consequently, the futures designers' capability of anticipating and enacting.

Within this emerging theoretical development, this paper focuses on one internal reconstraining configuration we call Playful Care (Kinch et al, 2025). While our broader work on reconstraining designer subjectivity identifies multiple such configurations, playful care is presented here because of its central relevance to anticipatory design, particularly its ability to cultivate the dispositions required for navigating emergence. Playful Care brings together two forces typically treated separately in design research. First, we reconceptualize play not as a creativity technique or innovation mindset, but

as a destabilizing mode of becoming. Play produces subtle but consequential disruptions; awkwardness, stutters, that interfere with epistemic habits (Berlant, 2016). These micro-disruptions open perceptual and affective access to what Deleuze (1969/1994) calls the virtual: the real-but-not- yet-actualized field of potential that sits beneath the surface of the actual. Accessing the virtual is essential for anticipatory practice: it allows designers to sense emerging conditions before they crystallize into fixed forms (Marenko and Brassett, 2015). Second, we draw on feminist and posthuman theories of care (Tronto 1993/2020; Puig de la Bellacasa 2017; Haraway, 2016) to argue that care sustains the opening play creates. Care is understood here as labor, affect, and ethical–political commitment. Rather than smoothing uncertainty, care demands that designers remain with its textures—its discomforts, responsibilities, and relational entanglements (Husby, 2025). Care orients designers toward situated (Haraway, 1988), relational forms of action and prevents the premature closure of possibility (Solnit, 2020). It provides the stamina required to stay with emergence without reverting to mastery or retreating into solutionism.

Individually, play and care shift designer dispositions in meaningful ways. But we argue that their real power emerges when they are brought together as Playful Care: a reconstraining disposition that both opens and sustains designers' engagement with the emergent. Play defamiliarizes and destabilizes (Marenko and Brassett, 2015); care grounds and orients (Puig de la Bellacasa, 2017). Play loosens the grip of inherited epistemic habits (Halberstam, 2011); care deepens relational responsibility (Tronto, 1993/2020). Play activates the virtual (Deleuze, 1969/1994); care keeps designers in relation with what the virtual offers (Solnit, 2020, Puig de la Bellacasa, 2017). In this coupling, Playful Care becomes a mode of anticipatory attunement, expanding the affective and perceptual repertoire designers need to sense and act ethically within uncertain futures (Kinch et al, 2025). This concept builds on our own research in design pedagogy and experimental work with play, both of which reveal how internal constraints shape anticipatory capacity. Designers often struggled, not for lack of methods, but because their subjectivities had been disciplined into linearity, mastery, and closure. Playful Care expresses how pedagogical and affective practices can reconstrain these tendencies, cultivating instead dispositions of humility, relationality, openness, and response-ability (Haraway, 2016).

By developing Playful Care as an internal reconstraining mechanism, this paper contributes to multiple themes within Anticipation 2026, including Critical Capacities and Futures Literacy, Caring Futures, and Embodying and Sensing Futures. It responds directly to the call's invitation to resist closure, unsettle dominant foresight logics, hold paradox, and develop transdisciplinary approaches attuned to complexity, contradiction, and care. Crucially, it reframes anticipation not as a technical capacity but as a matter of subjectivity and a way of becoming responsive to the emergent. Ultimately, Playful Care offers a pathway for rethinking design education in ways that align with the demands of anticipatory practice. By reconstraining designer subjectivity at the level of internal constraints, Playful Care expands the possibilities for how designers might perceive, imagine, and inhabit uncertain futures. In doing so, it contributes to a broader theoretical trajectory that seeks to transform not only what designers do, but who designers are becoming as they engage with worlds in flux.

References

Auger, J., & Hanna, J. (2019). Reconstrained design: Theories and practices. Madeira Interactive
Technologies Institute.
Berlant, L. (2016). The commons: Infrastructures for troubling times. Environment and Planning D: Society and space, 34(3), 393-419.

Deleuze, G. (1994). Difference and Repetition (P. Patton, Trans.). Columbia University Press. (Original work published 1968)
Escobar, A. (2018). Designs for the Pluriverse: Radical Interdependence, Autonomy, and the Making of Worlds. Duke University Press.
Halberstam, J. (2021). The Queer Art of Failure. Multitudes, 82(1), 205-213.
Haraway, D. (1988). “Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective.” Feminist Studies, 14(3), 575–599.
Haraway, D. (2016). Staying with the Trouble: Making Kin in the Chthulucene. Duke University
Press. Husby, V. (2025). How to Care in Dance Education: Or How to Hold Each Other’s Sorrows. Journal of Dance Education, 1-12.
Kinch, S., Skriver, J. A., & Poulsen, M. (Accepteret/In press). Playful Care – fostering affirmative ethics in artistic design practices.
Marenco, A., & Brasset, M. (2015). “Introduction.” In B. Marenco & J. Brasset (Eds.), Deleuze and Design. Edinburgh University Press.
Puig de la Bellacasa, M. (2017). Matters of Care: Speculative Ethics in More Than Human Worlds. University of Minnesota Press.
Solnit, R. (2020). Hope in the dark: Untold histories, wild possibilities. Haymarket Books. Tronto, J. (1993/2020). Moral boundaries: A political argument for an ethic of care. Routledge.
Willis, A.-M. (2006). “Ontological Designing.” Design Philosophy Papers, 4(2), 69–92.

Pre-enacting Futures

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Keywords: political gaming, pre-enactements, experiential futures, critical emegring risks, cascading events, design for policy

‘Pre-enacting Futures’ is a crisis simulation method developed by the EU Policy Lab, which draws on wargaming, life-action role-playing, and tools from Theatre-making to rehearse possible futures. Participants are immersed in the scenario of a possible future disaster to develop responses in real life. The workshop steps out of conventional tabletop exercises and introduces a future where participants are put at the centre of how citizens may take an active role in disaster preparedness. The methods hence activate a Whole-of-Society approach (Niinistö, 2024) by introducing a future where the responses to disasters are no longer explored through the actions of governments, but are carried out by society. The project explores how enacting a probable scenario may inform anticipatory thinking and preparedness under pressure. By acting out a possible future in real life, its pitfalls and opportunities may be rehearsed and made comprehensible; blind spots in thought processes and policies while increasing the resilience of participants through collective intelligence. In this way, it foments futures literacy among policymakers, leading to better-informed decision-making. As a designer, I am interested in this matter in three ways: how the simulation of events may contribute to a wider imagination of possible futures; how the complexity and messiness of futures may be experienced in one-to-one scale environments and action research; and how fictioning may highlight social and political implications and inform policy-making and anticipatory governance.

Refrences

Niinistö, S. (2024). The Role of the EU in Global Security: Strategic Directions for 2040. European Union. Niinistö Report: Shifting from Crisis Response to Resilience | UCP Knowledge Network

Seizing the means of imagination: mobilizing imagination infrastructures in the video games industry

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Keywords: imagination infrastructures; video games industry; social practices; imaginaries

There has been an increase in interest in 'imagination infrastructures' - taking an infrastructural perspective on the ways societies support the imagining of the future. While this work has largely focused on creating new spaces for collective imagining, in this paper we argue that the notion of imagination infrastructure should be used to investigate mainstream media and how it shapes what futures can be imagined. Imagination infrastructures are key sites of power and contestation in major forms of media. We define imagination infrastructures as dualistic sets of (actual) resources and (symbolic) rules that support the social practices that shape collective imaginations. This means that imagination infrastructures are flexible – their symbolic dimensions can be altered to mobilize their actual resources toward more radical imaginings of the future.

We investigate this possibility of mobilizing imagination infrastructure by looking at the video games industry – an industry that has six times the annual revenue of either music of film. We discuss what social practices make up the video games industry; what imaginaries dominate; and then describe how the games industry can be understood in terms of imagination infrastructure. Games themselves can be considered imagination infrastructure; but at another level there are key industry-wide infrastructures such as game engines, distribution platforms, funding structures, and secondary social media.

We go on to analyze examples and possibilities for the appropriation of both games themselves and these industry-wide infrastructures, as well as attempts to stop the appropriation of these infrastructures by antidemocratic forces. We conclude that understanding industries like the video games industry as imagination infrastructure can help both policy makers and bottom-up groups interested in support more sustainable, democratic futures, by recognizing the value and potential of such infrastructures, and making conversations about their control more explicit and consequential.

This paper aligns with the conference theme Governance, Justice, and the Public, given its focus on the control of key imagination infrastructures and public imaginations.

The 8Es of Anticipation: Bodily Experience and Emotion-as-Value in Transformative Action

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Keywords: 4E cognition; cognitive science; anticipation; emotion; feeling

A poor understanding of physics can ruin a person's day. (See, for example, when I thought I could balance that milkshake on my knee while I was driving). But a poor understanding of metaphysics can ruin a lot of peoples' lives. (See, for example, the social and political upheavals surrounding the quest for AGI – Artificial General Intelligence – a quest that radically misunderstands the nature of human minds.)

In his (2007) piece, "Feeling William James's 'But'," philosopher Mark Johnson explores James's discussion of the "warmth and intimacy" that marks our cognitive processes, making them both our own, and also felt. In contrast to traditional cognitive theories about reasoning, in which reasoning is entirely divorced from feeling (or if not divorced from it, so much the worse for reasoning), Johnson, following James, discusses the key role that feeling holds for human rationality. We can see the traditional (problematic) theory of pure rationality highlighted globally right now, as governments and corporations hand complex cognitive tasks over from humans to AI under the mistaken assumption that a machine that cannot feel has a greater capacity for pure reasoning that we do. Instead, Johnson frames James's insight through his own work in embodied cognition, discussing the metaphor of how we traverse a pathway, metaphorically, during cognitive tasks. He says: "Thought moves from one temporary 'resting place' (one substantive image or idea) to another. In between, there is the feeling of the direction, rhythms, and pulses of our transition from one 'place' (stable image or idea) to another. What we feel are the patterns and qualities of this transitional flow of thought, even though most of the time we have lost the habit of noticing these feelings" (p. 95).

More than just a metaphor that cognition is movement from one place to another, Johnson (via James) reminds us that these cognitive states are not merely accompanied by feelings, but partly constituted by them. Consider the radical claim that abstract, symbolic logic itself is partly constituted by these feelings. Johnson, again: "If you start out with an if-thought, then a then-thought must soon follow, completing the passage from one place to another on the metaphorical path of your thinking. The if aspect of your thought (as in the previous sentence) creates a felt anticipation of something that follows, in a way that moves you to a new thought-location" (ibid).

Starting at the 4E cognitive framework (where the Es stand for Embodied, Embedded, Extended, and Enactive), we accept Johnson's revision to 7Es (adding Emotional, Evolutionary, and Exaptative) and add our own eighth E (Ecological). In this paper, we work across the disciplines of cognitive linguistics (Johnson 2007), early American Pragmatism (James 1911, Dewey 1938), contemporary neuroscience (Varela and Maturana 1980, Damasio 1994), and enactive cognitive science (Van Dijk and Rietveld 2021,) to expand this framework so that it encompasses a more robust sense of what anticipation studies is and could be, should we get clear on the metaphysics of anticipation itself. This approach takes seriously that the felt, embodied qualities of anticipation, along with the social-cultural, temporal, and technological embeddedness that informs those, must be centered to fully make sense of the nature of thinking the future. There is a reason our gut feelings do not often lead us astray, and that's

because they are somatic markers we've built up over a lifetime of living in a social world, making predictions, and encountering the consequences.

Previous work has failed to integrate this big picture of all 8 integrated approaches (8E), focusing instead on the embodied or the ecological-enactive aspects, in explorations of the situated/embodiment of anticipation (e.g. Van Dijk and Rietveld 2021). Ultimately, we conclude that understanding the embodied feelings that partly constitute good reasoning requires rethinking how we understand anticipation itself.

References

Damasio, A. (1994) Descartes' Error: Emotion, Reason, and the Human Brain. Putnam.

Dewey, J. (1938) Experience and Education. Collier Books.

James, W. (1916). Percept and Concepts and Their Practical Uses, in Some Problems of Philosophy. Longman, Green, and Co.

Johnson, M. (2007) Feeling William James's "But": The Aesthetics of Reasoning and Logic, in The Meaning of the Body: Aesthetics of Human Understanding. University of Chicago Press.

Van Dijk, L and Rietveld, E. (2021) Situated Anticipation. Synthese 198: 349-371

Varela, F. and Maturana H. (1980). Autopoiesis and Cognition: The Realization of the Living. Springer Dordrecht.

Unlearning Fashion: Design Postures and Digital Fabrication for Long-Term Sustainability Transitions.

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Keywords: transition design; unlearning; fashion systems; digital fabrication; design postures; situated practices

The ecological, social, and political crises that mark the present era constitute the cumulative outcomes of long-horizon socio-material processes. If these are structural rather than episodic conditions, design cannot confine itself to mitigation strategies; it must interrogate the epistemic and cultural assumptions that sustain its operative paradigms. This implies a shift in design culture posture: a transformation in how designers perceive collective responsibility. Contemporary fashion emerges in this discourse as critical observatoir through which the deeper dynamics of systemic change can be questioned. Organised around continual novelty, compressed cycles, and output-driven validation, fashion renders visible the deep entanglement between design practices and accelerative socio-technical regimes. As Rittel and Webber (1973) observe in relation to wicked problems, the fashion system is structurally constituted through relations of interdependence and thus exhibits a marked resistance to linear or sector-bounded remedies. What is at stake is not an isolated malfunction within the system, but a crisis of the paradigm itself.

Sustainability discourse has certainly intensified the engagement with environmental and social concerns, yet it has often left intact the disciplinary postures that reproduce extractive and accelerative logics within which the discipline continues to operate. Interventions oriented toward impact reduction or process optimisation frequently remain confined to horizons of damage control, leaving the structural grammar of extraction intact. This contribution aims to move the focus from how fashion design produces to how it authorises value, arguing that meaningful sustainability transitions in fashion require a process of disciplinary unlearning: an intentional and reflexive disalignment from transitions in fashion require a process of disciplinary unlearning.

Drawing on Transition Design (Irwin, 2015; Irwin & Kossoff, 2024; Kossoff, 2019), unlearning is approached as both a conceptual and embodied shift. It is not a rejection of expertise, but a suspension of its presumed centrality. Unlearning entails the suspension of criteria that have historically oriented design action, thereby enabling a space of indeterminacy in which new relations among project, temporality, and value may become thinkable. Unlearning is thus methodological: it requires fashion designers to question inherited criteria of success and involves humility in the face of complexity, patience with uncertainty, and a willingness to remain within unresolved tensions. Such qualities resonate with Haraway's (2016) insistence on "staying with the trouble" and recognising interdependence as a condition of action.

The analysis unfolds across three interrelated registers, temporal, epistemic, and relational, through which shifts in mindset and posture become visible within fashion-related digital fabrication practices. The temporal register concerns the destabilisation of accelerated project cycles. Fashion's organisation around anticipation and planned obsolescence generates a compressed temporality that constrains long-term orientation. As Barthes (1967) demonstrated, fashion functions as a cultural infrastructure regulating expectation, while Fletcher and Tham (2019) foreground its entanglement with systemic extraction. In the cases study examined, unlearning,

manifested as a slowing of project rhythms, the legitimisation of iterative experimentation, and the reframing of value away toward sustained trajectories of learning. The epistemic register addresses how knowledge is produced and evaluated. Fashion traditions have long separated design knowledge from material and situated forms of knowing (Payne, 2019). Pluriversal and post-anthropocentric perspectives (Escobar, 2018) destabilise this partition by positioning design as world co- production. Within digital fabrication environments, knowledge emerges through negotiation among designers, materials, machines, and collaborators. In line with Sennett's (2008) pragmatist account of craftsmanship, learning takes place through embodied engagement and iterative adjustment. Unlearning here entails tempering claims to epistemic control and cultivating reflexivity: recognising partiality, revising assumptions, and legitimising uncertainty as a generative condition. The relational register concerns the redistribution of agency and the reconfiguration of collaboration. Transition-oriented work requires moving beyond the bounded project and the figure of the singular author toward interdependent forms of practice. Within the observed contexts, educational laboratories, research collaborations, and community-based making environments, authorship was redistributed and value negotiated collectively. Such shifts required confronting institutional reward structures that privilege individual achievement and market validation.

References

Barthes, R. (1967). Système de la mode. Seuil.

Escobar, A. (2018). Designs for the pluriverse: Radical interdependence, autonomy, and the making of worlds. Duke University Press.

Fletcher, K., & Tham, M. (2019). Earth logic: Fashion action research plan. J.J. Charitable Trust. Gaziulusoy, A. I., & Öztekin, E. E. (2019). Design for sustainability transitions: Origins, attitudes and future directions. Sustainability, 11(13), 3601. https://doi.org/10.3390/su11133601

Haraway, D. J. (2016). Staying with the trouble: Making kin in the Chthulucene. Duke University Press. Irwin, T. (2015). Transition design: A proposal for a new area of design practice, study, and research.

Design and Culture, 7(2), 229–246. https://doi.org/10.1080/17547075.2015.1051829

Irwin, T., & Kossoff, G. (2024). Transition design. Routledge.

Kossoff, G. (2019). Holism and the reconstitution of everyday life: A framework for transition to a sustainable society (Doctoral dissertation, Carnegie Mellon University). ProQuest Dissertations Publishing.

Payne, A. (2019). Designing fashion's futures. Bloomsbury Visual Arts.

Rittel, H. W. J., & Webber, M. M. (1973). Dilemmas in a general theory of planning. Policy Sciences,

4(2), 155–169. https://doi.org/10.1007/BF01405730 Sennett, R. (2008). The craftsman. Yale University Press.

Visualizing the Future: The Role of Artistic Practice in Scenario Planning

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Keywords: ecological transition; manifesto-writing; affective labour; design

The ecological crisis is not only transforming our physical world, but also reshaping how we relate to our environment, communities and imagined futures. As the effects of global warming become more tangible, so do the emotional responses they evoke. As Head (2016) points out, climate change is inextricably linked with grief. We are mourning our modern selves and the promises that were made to us for bright futures – futures that contained stability, progress and unlimited resources and wealth (Head, 2016). We are mourning the loss of systems, structures, places, and cultures we thought would be part of our lives but might not be anymore (Coops et al., 2024). As Head so beautifully describes, 'we are entangled in various ways and we will need to grieve those entanglements' (Head, 2016, p.31).

As we are increasingly confronted with overwhelming emotions in and around the ecological crisis it becomes clear that "we do not have the inter/personal competencies necessary for engaging with the intense combination of guilt and fear induced by this existential crisis" (Verlie, 2022). Current ways of researching and teaching often approach emotions as if we, as researchers, are not part of society or unfolding transformations. However, for our practice to stay responsive and to be able to contribute to ecologically just futures, we need to understand how our practice is affected by the changing world around us and the uncertainty that comes with it. This requires exploring other ways of reflexivity that hold space for the complexity of being simultaneously affected by, while being actors within, processes of ecological crisis. Practices that allow exploration into not only what we design or research, but also how our affective entanglements shape the questions we ask, the approaches we use and the futures we imagine - directly responding to the Anticipation conference's fourth theme: Embodying and Sensing Futures.

To explore this challenge, we propose reflective manifesto writing as a practice for engaging with the affective dimensions of the ecological crisis. Manifesto writing is increasingly being used within design research, and we recognize its value in capturing design practice in transition. As Søndergaard articulates: "With its political form, the manifesto is a suitable form for positioning and disseminating design research programs in an open, unstable and response-able way." (Søndergaard, 2018, p. 158)

This understanding of manifesto writing enables us to 'free scholars from the burden of unemotional and impartial expression' (Hanna & Asby, 2022) and helps in expressing guidelines that are necessarily incomplete, evolving, and responsive to changing conditions – qualities essential for engaging with the urgency and uncertainty of future-making in our current times.

The contribution reflects on three workshops using reflective manifesto writing conducted between 2024 and 2025. These workshops brought together practitioners, researchers and designers across different contexts of ecological transitions, to collectively explore how feelings and affect shape (ecological) transition processes, how we as designers/researchers/practitioners see our role in engaging with and inviting others to engage with this, and how the affective shapes our design and research practices. Participants engaged in reflective exercises that moved between

individual reflection, collective dialogue and collective manifesto building. The process involved identifying moments of affective dissonance (Hemmings, 2012), also referred to as ‘personal troubles’ in their work, and articulating the reminders/instructions/values that could orient their practice amid ecological uncertainty in the future.

What emerged through these workshops was not a singular manifesto but rather a diverse representation of voices grappling with similar challenges from different positions.

Participants explored tensions between feeling good and staying with the trouble, addressing positionality and acknowledging uncertainty, allowing vulnerability and being brave. We have come to articulate those as a “fluid manifesto” of affective future-making.

The reflective manifesto writing process revealed the extent to which affective dimensions of ecological crisis are already present in design and research practices, even when they remain unacknowledged or unexamined. By creating space to attend to these dimensions explicitly, we understood our participants beginning to develop the inter/personal competencies that Verlie suggests we currently lack – competencies for holding complexity, for staying with the trouble, and for working responsibly with affect.

The exploration we are presenting aims to contribute to the development of design and research practices that are genuinely response-able in the face of ecological crisis.This means practices that acknowledge affective entanglements, that engage with emotional complexity rather than seeking to transcend, or discard, it, and that can articulate clear commitments while remaining open to challenge and transformation. The form of a manifesto proves valuable precisely because it required us to take a stance, while acknowledging that ‘the manifesto is confident and totalising, performing the authority it often does not yet possess – to bring imagined futures to life in the present. At the same time, there is a counter-tendency in manifesto writing that deploys irony and ambiguity to balance or even undermine its own authoritarian behaviour.’ (Hanna & Asby, 2022). Coming together in dialogue around our practice allows us to render the invisible parts of our research and future-making practices, that is called for (Hamilton-Jones & Schröder, 2025).

We also recognise that reflective manifesto writing, with its declarative and authoritative form, may not always be the most appropriate form to engage with personal troubles and uncertain futures. The very assertiveness that makes manifestos powerful can also hinder the kind of open-ended inquiry that ecological crisis requires, especially when it comes to something as intimate as affect. Moving forward we are drawn to explore other forms of collective sense-making - practices such as tarot reading, séances and other approaches that create space for ambiguity, engaging with the unknown and ‘new ways of feeling, sensing, imagining, understanding, and questioning’ (Evers, 2024). These practices, though seemingly unconventional in research contexts, offer different epistemological opportunities.

Therefore, we see reflective manifesto writing not as an endpoint but as a starting node – experiments in an ongoing effort to develop practices that can engage meaningfully with the emotional, ethical and political complexities, which are pointing us towards tarot-making and tarot-reading as conversation formats for these affective conversations around future-making practices.

References

Evers, C. (2024). An ecological crisis of reason: using creative and arts-based research methods for exploring affective-emotional life and just transitions. Global Social Challenges Journal, 3(3), 360-381.

Hanna, J., & Ashby, S. (2022). Reflections on manifesto writing. Multimodality & Society, 2(1), 23-30. https://doi.org/10.1177/26349795211072444 (Original work published 2022)
Hamilton-Jones, D., & Schröder, A. M. (2025). Affect in more-than-human design practice: An anecdote-based exploration through dialogue. In Nordes 2025: Relational Design (pp. 592-600).
Hemmings, C. (2012). Affective solidarity: Feminist reflexivity and political transformation. Feminist Theory, 13(2), 147–161. https://doi.org/10.1177/1464700112442643
Head, L. (2016). Hope and grief in the Anthropocene: Re-conceptualising human–nature relations. Routledge.
Søndergaard, M. L. J. (2018). Staying with the Trouble through Design: Critical-feminist Design of Intimate Technology [Ph.D, Aarhus University]. https://doi.org/10.7146/aul.289.203
Verlie, B. (2019). “Climatic-affective atmospheres”: A conceptual tool for affective scholarship in a changing climate. Emotion, Space and Society, 33, 100623. https://doi.org/10.1016/j.emospa.2019.100623

What future can we imagine if what we know holds us back? Desire, knowledge and situated imagination in Anticipatory Practice

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Keywords: collective desire; situated imagination; structured knowledge; anticipation, future literacy

Anticipating the future has become increasingly difficult in a world marked by systemic uncertainty, ecological disruptions and cascading crises. Scientific diagnoses, modelling and risk analyses constrain the horizon of perceived possibilities, while collective desires continue to orient toward continuity, comfort, growth, security or technological repair. This growing gap between what we know and what we desire constitutes a central paradox of contemporary anticipation.

This contribution addresses this paradox through a tripartite model integrating structured knowledge, collective desire and situated imagination. The model clarifies how anticipatory capacities emerge, how they become blocked, and how they may be reopened. The core argument is that reconciling desire and knowledge depends on the mediating role of situated imagination, understood as a space where meaning can be reopened, reframed and renegotiated.

From a philosophical perspective, desire has long been understood as constitutive of world-making. Spinoza conceives desire (conatus) as the impulse through which beings persist and expand their power to act. Rousseau treats collective desire as expressed through the general will. Deleuze conceptualizes desire as a productive force assembling new configurations of meaning, while Castoriadis shows how societies recreate themselves through “imaginary significations” rooted in shared desire. These perspectives converge in showing that desire is not irrational but a structural driver of collective orientation toward the future.

In futures studies, however, desire is often approached indirectly through affect, imagination or hope rather than as an explicit analytical category. Its generative role therefore remains under-theorized. Yet research on Anthropocene imaginaries shows that collective desires shape policies and narratives as powerfully as scientific knowledge. Desires for continuity, comfort or technological salvation structure public responses despite contradictory diagnoses. Climate politics research similarly demonstrates that hopes, fears and fantasies shape future-making processes. Collective desire thus operates both as a creative force (utopia, emancipation) and as a defensive posture (nostalgia, unrealistic projections, techno-solutionism). The challenge is to render it explicit and bring it into productive dialogue with knowledge.

Structured knowledge, although indispensable, reaches limits when applied to complex socio-ecological transitions. Its sophistication often hinders translation into action and, when detached from desire, can lead to paralysis or disengagement. Knowledge becomes actionable only when reconnected to affective and imaginative processes.

The tripartite model articulates three registers: structured knowledge, which defines plausible futures; collective desire, which expresses aspirations and normative horizons; and situated imagination, which mediates their interaction. Situated

imagination is not simply a third element but the mechanism enabling their reconciliation.

This concept resonates with sociotechnical imaginaries, showing how visions of the future are co-produced through narratives, institutions and technologies. Approaches such as speculative design or futures labs further demonstrate how imagination can be cultivated as a space of experimentation.

However, anticipation becomes fragile when desire and knowledge diverge sharply. The model identifies six defense mechanisms—denial, rationalization, technological projection, nostalgic utopia, fatalistic cynicism and temporal fragmentation—that emerge at fracture points between the three registers. While these mechanisms protect individuals and groups from overwhelming realities, they also block the mediating role of imagination, preventing alignment between desire and knowledge and obstructing transformative futures.

References

Bonneuil, C., & Fressoz, J.-B. (2013). L'événement Anthropocène : La Terre, l'histoire et nous. Seuil.

Castoriadis, C. (1975). L'institution imaginaire de la société. Seuil.

Deleuze, G., & Guattari, F. (1980). Mille plateaux. Minuit.

Hyyppä, I., Rasa, T., & Laherto, A. (2024). Fostering students' systems thinking through futures education. Frontline Learning Research, 12(2), 27–50. https://doi.org/10.14786/flr.v12i2.1301

Jasanoff, S., & Kim, S.-H. (Eds.). (2015). Dreamscapes of modernity: Sociotechnical imaginaries and the fabrication of power. University of Chicago Press.

Koch, M. J., Sools, A. M., Spaas, G. H. J., & Westerhof, G. J. (2025). Learning futures consciousness: An integrative review. Futures, 173, 103654. https://doi.org/10.1016/j.futures.2025.103654

Latour, B. (2017). Où atterrir ? Comment s'orienter en politique. La Découverte.

Leichenko, R., & O'Brien, K. (2024). Climate and society: Transforming the future (2nd ed.). Polity.

Milkoreit, M. (2017). Imaginary politics: Climate change and making the future. Elementa: Science of the Anthropocene, 5, 62. https://doi.org/10.1525/elementa.249

Myers, H. (2025). A journey to literacy in design futures: Revelations from the global south. The Design Journal, 28(1), 62–81. https://doi.org/10.1080/14606925.2024.2443700

Norgaard, K. M. (2011). Living in denial: Climate change, emotions, and everyday life. MIT Press.

Rousseau, J.-J. (1762/1971). Du contrat social. Garnier-Flammarion.

Sippl, C. (2025). The Futures Stories Lab: A tool for futures literacy pedagogy. R&E-Source, 12(4), 78–92. https://doi.org/10.53349/re-source.2025.i4.a1485

Spinoza, B. (1677/1994). Éthique. Seuil.

Worlding New Pedagogical Spaces: Potentials for Art and Design Practices to enable Poetic Learning across disciplines

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Keywords: interdisciplinary pedagogy; design futuring; speculative design; poiesis; lifeworld

Complex times disrupt and challenge aspects of Modernity that have long established relationships with our education systems in the West. Dominant paradigms of ‘knower’ and ‘knowee’ have left our systems vulnerable and incapable of supporting learners in the face of the escalating demands of polycrisis. Scholars have argued for a re-imagining of such systems (Biesta, 2010; Galea, 2022; Macy and Johnstone, 2022; Sterling, 2024; Barritt, 2024; Humphries, 2025) through engagement with new paradigms that cast light upon understanding how different relationships might offer more sustainable ways of world-making: supporting learners with ontological shifts, rather than solely epistemic ones. Posthumanists such as Haraway (2016) have called for ‘staying with the trouble’ to re-focus, re-shift, and re-establish our relational tenants to the present, in hope of worlding different futures. However, challenges have arisen as this has been enacted in teaching practice. Tensions have emerged through the uprooting of old ways of measurement, and knowledge-making, in light of acknowledging and engaging with new relational ways of co-becoming and knowledge-situating (Galea, 2022; Galea, & Rousell, 2022).

This paper explores these ideas, and proposes that a way forward might be to better understand and engage with 'poetic spaces' in learning and teaching. We consider poetic spaces with reference to our unfolding lived experiences and the embodied meanings that they give rise to: our 'lifeworld' (Uexküll, [1934] (2010)). Such spaces perpetuate how we navigate and understand our developing futures (Weber, 2023) and worlding capabilities. Using art and design practices (such as speculative 'counterfactual' (Dunne & Raby, 2014) workshopping), this paper explores routes into developing 'poetic learning spaces' where the making and re-making of meaning can be creatively engaged with and developed.

Due to the widespread industrialisation of curricula (a symptom of Modernity) poetic spaces have long been neglected in education as calculated thinking came to be understood as more valuable than poetic thinking (Weber, 2023; Galea, 2022). However, during the current polycrisis, poetic thinking and engagement are understood as vital components of changing habits, mindsets, and behaviours so that more ethical and responsible world-making can be imagined, developed and enacted. In this paper, art and design practices are interrogated pedagogically, as a tool to support the making and remaking of meaning, as they offer routes into liminal spaces where transitions are felt, interrogated, and shared. This is explored through a series of pedagogical case studies which aim to 'surface' how art and design might be used across disciplines as a pedagogical strategy to engage with, evolve, and anticipate new understandings of worlding in education.

References

Barritt, L. S., (2024). The Life Space of Learning: A Posthuman framework for teaching practice in Initial Teacher Education developed from Martha Muchow's Life Space Theory. Cardiff Metropolitan University. Thesis. https://doi.org/10.25401/cardiffmet.27089107.v1

Biesta, G. (2010). Good education in an age of measurement: Ethics, politics, democracy. Paradigm Publishers. Available from: https://doi.org/10.4324/9781315634319

Blaikie, F. (2020). 'Worlding Danny: Being, Becoming, and Belonging'. Studies in Art Education, 61(4), pp.330-348. Available from: https://doi.org/10.1080/00393541.2020.1820831

Dewey, J. [1934] (2005) Art as Experience. New York, USE: The Berkley Publishing Group, Penguin Group Inc.

Dunne, A. & Raby, F., (2014) Speculative Everything: Design, Fiction, and Social Dreaming. London, UK: MIT Press.

Galea, S. & Rousell, D. (2022) 'Rethinking teaching: alternative ontologies of educational praxis and thought', Discourse: Studies in the Cultural Politics of Education, 43:5, 659-665, Available from: 101080/01596306.2022.2117096

Galea, S. (2022) 'Poetic thinking and teaching'. STUDIES IN THE CULTURAL POLITICS OF EDUCATION, 2022, VOL. 43, NO.5, 723-736. Available from: https://doi.org/10.1080/01596306.2022.2026014

Haraway, D. (2016). Staying with the trouble. Durham, NC: Duke University Press.

Humphries, T., (2025). A Case for Humour-Centred Design: Malentanglement, and (Mis)Understanding Humour and Laughter as Responses to Design and Design Innovation. Cardiff Metropolitan University. Thesis. https://doi.org/10.25401/cardiffmet.28302338

Macy, J., and Johnstone, C. (2022) Active Hope: How to Face the Mess We're in with Unexpected Resilience and Creative Power. New World Library

Pokorny, H., and Warren, D., (2021) Enhancing teaching practice in higher education. Los Angeles; London; SAGE publications Ltd. Second edition; 2021. Available from: https://librarysearch.cardiff.ac.uk/permalink/44WHELF_CAR/c1t5b/alma991191706920 2420

Sterling, S. (2024), Learning and Sustainability in a Dangerous World, Newcastle: Agenda Publishing.

Uexküll, J. [1934] (2010). A Foray Into the Worlds of Animals and Humans With a Theory of Meaning. Translated by O'Neil J.D. London: University of Minnesota Press

Weber, A. (2023). 'Sustaining fecundity: artistic creation as care for life'. Australian Journal of Environmental Education. Available from: https://www.cambridge.org/core/journals/australian-journal-of-environmentaleducation/article/sustaining-fecundity-artistic-creation-as-care-forlife/54EEF8BDC40B399D29338D4ECC8FC4FA

5. Futuring by Design

A Strategic Study on Leading Global AI Future Agendas: Focusing on the Post-SDGs Era

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Keywords: AI agenda; post-SDGs; foresight; anticipatory governance

This study proposes a strategic framework for South Korea's response to post-2030 global science, technology, and innovation (STI) agendas in artificial intelligence under conditions of accelerating technological change and intensifying global polycrisis. Grounded in anticipatory governance and the coupling of foresight with policy, the study seeks to identify AI-related agenda candidates through a multi-stage qualitative–quantitative design (Guston, 2014; Cuhls, 2020). Focusing on the AI cluster, the study reviews 100 global AI outlook reports focused on publications from global multilateral organizations and derives 34 core AI issues. Expert evaluation based on strategic importance and signal characteristics then selects 17 priority issues, which are subsequently examined through cross-impact analysis to estimate systemic influence and interdependence (Weimer-Jehle, 2006). These results are cross-validated with South Korea's National Science & Technology Information Service (NTIS) data from 2021 to 2025, yielding a strategic matrix, and finally a post-2030 agenda structured around three domains, five fields, and ten core agenda candidates.

The findings highlight three strategic domains. First, the 'AI Climate Paradox' calls for reconciling AI-enabled environmental problem-solving with the rising energy and resource demands of AI infrastructures, thereby necessitating sustainable computing pathways. Second, the 'Systemic Disaster Risks' underscore the need for proactive responses to AI-enabled security threats, including autonomous weapons, cyber-physical disruption, and post-quantum vulnerabilities. Third, the 'Redefinition of Human Roles' points to a dual agenda of harnessing AI for precision medicine and care while building inclusive institutions capable of absorbing labor-market restructuring driven by AI agents and humanoid systems (Verdecchia et al., 2023; Dafoe, 2018; Frey & Osborne, 2013).

Finally, a four-quadrant matrix framework of 'globally leading issues based on domestic capabilities' was constructed, using systemic impact and global leadership impact as the two axes (Walsh et al., 2020). The four strategic domains—'hyper-gap drivers', 'moonshot missions', 'hidden champions', and 'smart followers'—do not exist independently. Rather, they form mutually reinforcing linkages between the leadership and the catch-up as well as strengths and weaknesses. For example, the sustainability of the 'hyper-gap driver' domain agenda (e.g., AI semiconductors) is critically dependent on the success of 'moonshot missions' (e.g., energy efficiency and post-quantum cryptography security).

Policy-wise, the study argues for a two-track strategy in which South Korea acts as a selective leader in domains of comparative advantage while remaining an active follower in fields where adaptive learning and risk dispersion are more effective (Tallberg et al., 2023). Ultimately, Rather than pursuing universal technological leadership, the framework advocates functionally differentiated leadership capable of enhancing national resilience, strategic flexibility, and agenda-setting capacity in global STI governance.

References

Cuhls, K. E. (2020). Horizon scanning in foresight–Why horizon scanning is only a part of the game. Futures & Foresight Science, 2(1), e23. https://doi.org/10.1002/ffo2.23

Dafoe, A. (2018). AI governance: A research agenda. Future of Humanity Institute, University of Oxford.

Frey, C. B., & Osborne, M. A. (2013). The future of employment: How susceptible are jobs to computerisation? Oxford Martin Programme on Technology and Employment.

Guston, D. H. (2014). Understanding 'anticipatory governance'. Social Studies of Science, 44(2), 218–242. https://doi.org/10.1177/0306312713514858

Tallberg, J., Erman, E., Furendal, M., Geith, J., Klamberg, M., & Lundgren, M. (2023). The global governance of artificial intelligence: Next steps for empirical and normative research. International Studies Review, 25(3), viad040. https://doi.org/10.1093/isr/viad040

Verdecchia, R., Sallou, J., & Cruz, L. (2023). A systematic review of Green AI. Wiley Interdisciplinary Reviews: Data Mining and Knowledge Discovery, 13(4), e1507. https://doi.org/10.1002/widm.1507

Walsh, P. P., Murphy, E., & Horan, D. (2020). The role of science, technology and innovation in the UN 2030 agenda. Technological Forecasting and Social Change, 154, 119957. https://doi.org/10.1016/j.techfore.2020.119957

Weimer-Jehle, W. (2006). Cross-impact balances: A system-theoretical approach to cross-impact analysis. Technological Forecasting and Social Change, 73(4), 334–361. https://doi.org/10.1016/j.techfore.2005.03.005

Accreditation of Foresight and Futures Research – Conditions, Standards and Process

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Keywords: accreditation; foresight; futures research; higher education; world futures studies federation

The Futures Field is changing. So, also the context in which futures studies, -research and foresight are embedded. Both evaluation, accreditation, and research on outcomes of futures-oriented projects must become subject for more attention and weight by futurists. To meet such challenges the World Futures Studies Federation have created a project to support and encourage high quality, innovative, formal foresight education throughout the world. The project is called “WFSF Accreditation Program” and encourages and supports the development, advancement and dissemination of futures research and foresight education, towards higher educational institutions. It provides standards for peer review of foresight education programs. The coming presentation and paper give the listener and reader a look into the details of the program.

The WFSF aims at developing a quality system that allows the Federation, it’s members and partners to a) continually improve its capabilities and learning associated with the learning and teaching of foresight programs, b) set standards for effective learning and teaching and achieving defined graduate attributes, and c) recognize high quality programs through specialized accreditation. Currently there is no established process or precedent for the accreditation of institutions that deliver foresight programs. Given the history and reputation of the Federation and being a peak body in futures research, the WFSF offers the accreditation of foresight education programs assuring their quality. The program, which was recently launched has already attracted several universities and organizations. These actors function now as an Accreditation Program Pilot.

The presentation and paper present more thoroughly the Pre-Conditions, Accreditation Standards, and Processual steps of the Program. In addition will the paper/presentation link to other evaluation efforts within the Futures Field. The Hypotheses followed in the paper/presentation is that this program is quite unique of its kind in the world today.

*The WFSF (WFSF) is an international non-profit and non-governmental organization, operating under international law. It was founded in 1973 to promote the development of futures studies as an academic discipline. It is acknowledged that numerous descriptions and nomenclatures have evolved to describe the futures studies in its very varied applications internationally. It is the intention of the institutional accreditation of the Federation to be as inclusive of these diverse applications as possible.

Alchemical Intelligence and the Métis Machine: Emergence-Algorithm–Guided Design Happenings and Aesthetic Experience

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Keywords: aesthetic intelligence; design happenings; emergence algorithm; wonder; more-than-human design

Alchemical Intelligence proposes an expanded approach to human knowledge and invention by reintegrating forms of learning that were diminished following the rise of the 17th-century Scientific Method. While the scientific revolution advanced measurement and repeatability, it also narrowed the range of experiences considered legitimate sources of understanding. Many early experimentalists expressed concern about this narrowing and introduced alternative processes intended to support more holistic forms of inquiry. Alchemical Intelligence draws from these neglected approaches to re-establish aesthetic invention as a meaningful component of contemporary knowledge production.

The Métis Machine is a natural complex system designed to reconnect the divergent modes of knowing produced during this period: the actual (tekhnē—art, craft, making) and the virtual (-logíā—study, conceptual knowledge). The system draws from alchemical practices that combined empirical and trans-empirical ways of knowing, recognizing that invention emerges through the interplay of perception, experience, and interpretation. The Métis Machine reintroduces this interplay into technological development by integrating natural aesthetic experiences and human social relations into the innovation process.

The system is supported by a phenomenological design-theoretical framework, which aligns methodological rigor with lived experience as a valid state of knowledge. A soft-systems structure provides an inductive logic model capable of accommodating the dynamics of human engagement, sensory interaction, and meaning formation. Together, these structures allow the Métis Machine to operate as an adaptive environment where aesthetic invention is an intentional outcome of the process.

Two operational components define the system: Design Happenings and the GABE Algorithm.

Design Happenings are structured, multisensory environments that invite participants into shared experiences capable of inducing the cognitive and visceral state of wonder. Wonder is significant because it opens perceptual and interpretive capacities that are often blocked by habitual modes of attention. Within each Design Happening, participants interact socially and experientially, generating forms of knowledge that are contextual, relational, and embodied. These events function as wicked action-research, where knowledge emerges through real-time engagement with complex conditions rather than through predefined hypotheses. The outcomes are directly observed shifts interaction and imaginative capability arising from the interaction between people and environment. We are investigating these outcomes through mobile EEG mapping.

Design Happenings illustrate how collective, situated processes support learning and unlearning. They provide environments where participants engage with uncertainty and develop the capacity to remain in ambiguous or transitional states opening agents to co-create new narratives. This form of learning is particularly relevant where traditional

predictive models are insufficient, and where relational and experiential intelligence become central.

The second component, GABE (a closed-loop Growth Algorithm for Biomimetic Emergence) operates as the system's organizing mechanism. GABE identifies and amplifies patterns, values, and conditions that support aesthetic invention within the Métis Machine. The algorithm tracks emergent properties within the system and guides the process by highlighting where growth, coherence, or divergence occur. In this way, GABE supports continuous development while maintaining the natural complexity that makes the system generative.

The Métis Machine contributes to current conversations in anticipatory research by offering a method for cultivating anticipatory capacities through embodied and aesthetic means. Rather than positioning anticipation as a cognitive or predictive skill, the system demonstrates that futures literacy also develops through sensory engagement, social interaction, and the interpretive shifts that occur in states such as wonder. This aligns with current work in anticipatory studies that examines how affect, emotion, and embodiment influence the way futures are sensed, learned, and reshaped.

The Métis Machine also extends current understandings of design as a mode of futuring. It does so by enabling participants to engage with the conditions through which invention emerges. In this sense, design becomes a way of examining the unknown through loosely mediated interactions that reveal how new meaning takes shape. The work resists technocratic approaches to innovation by foregrounding human experience as a core driver of development and by integrating aesthetic and affective dimensions into processes typically dominated by analytical reasoning.

Ultimately, the divergence of learning produced by the Scientific Revolution has limited the range of outcomes available within contemporary technological development. By reintegrating material, symbolic, and visceral forms of knowledge, the Métis Machine expands what can be generated through technological processes. This expanded capacity, referred to as Alchemical Intelligence, recognizes aesthetic invention as a legitimate and necessary dimension of human innovation. It offers a practical and theoretically grounded approach for advancing design, education, and technological development through embodied, relational, and experiential forms of inquiry.

References

Brennan, K., & Resnick, M. (2012, April). New frameworks for studying and assessing the development of computational thinking. Paper presented at the Annual Meeting of the American Educational Research Association, Vancouver, BC, Canada. https://web.media.mit.edu/~kbrennan/files/Brennan_Resnick_AERA2012_CT.pdf

Crosson, F. J., & Sayre, K. M. (Eds.). (1969). Philosophy and cybernetics: Essays delivered to the Philosophic Institute for Artificial Intelligence at the University of Notre Dame. Simon and Schuster.

Doebeli, M., Hauert, C., & Killingback, T. (2004). The evolutionary origin of cooperators and defectors. Science, 306(5697), 859–862. https://doi.org/10.1126/science.1101456

Easley, D., & Kleinberg, J. (2010). Networks, crowds, and markets: Reasoning about a highly connected world. Cambridge University Press. http://www.cs.cornell.edu/home/kleinber/networks-book/

Goldstein, J. (1999). Emergence as a construct: History and issues. Emergence, 1(1), 49–72. https://doi.org/10.1207/s15327000em0101_4

Izuhara, R. (2001). A study on the diagrams by Baien Miura and Sontoku Ninomiya. Forma, 16(3), 257–272. https://forma.katachi-jp.com/pdf/1603/16030257.pdf

Knorr Cetina, K. (2009). The synthetic situation: Interactionism for a global world. Symbolic Interaction, 32(1), 61–87. https://doi.org/10.1525/si.2009.32.1.61

Latour, B. (2005). Reassembling the social: An introduction to actor-network-theory. Oxford University Press.

Mead, G. H. (1932). The philosophy of the present (A. E. Murphy, Ed.). Open Court Company.
Nicenboim, I., Lindley, J., Zaga, C., Berger, A., Forlano, L., & Giaccardi, E. (2024). More-than-human design in practice. In C. Gray, E. Ciliotta Chehade, P. Hekkert, L. Forlano, P. Ciuccarelli, & P. Lloyd (Eds.), DRS2024: Boston, 23–28 June, Boston, USA. Design Research Society. https://doi.org/10.21606/drs.2024.114
Ransom, T. G., & Gallagher, S. (2020). Institutions and other things: Critical hermeneutics, postphenomenology and material engagement theory. AI & Society. https://doi.org/10.1007/s00146-020-00987-z
Rittel, H. W. J., & Webber, M. M. (1973). Dilemmas in a general theory of planning. Policy Sciences, 4(2), 155–169. https://doi.org/10.1007/BF01405730
Simonsen, J. (1994). Soft systems methodology: An introduction. Department of Computer Science, Roskilde University. http://jespersimonsen.dk/Downloads/SSM-IntroductionJS.pdf

Anticipatory Assumptions and the Epistemic Common Ground: Anticipating Democratic AI Futures Under Deep Uncertainty Using a Novel Protocol

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Keywords: anticipatory assumptions; epistemic common ground; democracy; generative AI; futures literacy; deep uncertainty

Background: The Challenge of a Fragmented Reality

One of the core capabilities of Generative AI is the automated production of immense volumes of hyper-personalised content at breakneck speed. This presents a subtle but fundamental risk: the incremental transformation, and potential erosion, of the epistemic common ground – the shared basis of knowledge and reality essential for a democratic public sphere. Investigating the futures that Generative AI may create for this common ground is therefore an urgent undertaking, yet it is one defined by deep uncertainty regarding both the ceiling of AI capabilities and the socio-political contexts in which they will evolve.

Advancing the Methodology: Surfacing Anticipatory Assumptions

Standard forecasting is ill-equipped for such deep uncertainty. To address this, our paper focuses on Anticipatory Assumptions (AAs) - the tacit expectations about the future that critically shape decision-making but remain conceptually and methodologically elusive. We contribute a framework that treats AAs as a formalisable construct. First, we establish clear definitional boundaries, arguing that for a belief to qualify as an AA, it must meet three necessary conditions. Grounded in cognitive science and a review of evidence regarding comparable elicitation techniques (e.g., schema violation), we then translate these insights into a novel six-phase elicitation protocol designed to reliably surface AAs. Crucially, this study also includes the evaluation of this protocol's effectiveness and reliability in surfacing AAs, aiming to establish its methodological rigour.

Operationalisation: Workshops and AI Prototyping

We operationalise this methodology through a dual approach. First, we apply the method in a series of deliberative, Futures Literacy-style workshops to generate rich, in-depth insights into participants' AAs regarding AI-driven transformation of the epistemic common ground. Second, we supplement this with an AI-enabled prototype of the elicitation protocol. This prototype allows for qualitative-at-scale data collection from a broader range of participants. By combining collective rich sense-making in workshops with individualised, AI-facilitated elicitation, we gain a robust, balanced understanding of the range of tacit expectations that underpin the future of the democratic public sphere.

Contribution

This study offers a twofold contribution to the field of Anticipation. Methodologically, it proposes protocol for surfacing and disrupting Anticipatory Assumptions (AAs). Empirically, by systematically challenging participants' existing AAs the work enables a future-literate exploration of deep uncertainty, ultimately generating insights into what the future may hold for the epistemic common ground in the age of AI. This work

directly aligns with the conference theme of Critical Capacities and Futures Literacy: offering a novel tool for learning and making futures accessible.

Between Automation and Collective Sense-Making: AI-Enabled Foresight Platforms and Their Implications for Participatory Futures

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Keywords: AI-enabled foresight; participatory foresight; collective sense-making; anticipatory governance; digital foresight platforms; epistemic uncertainty; human–AI collaboration

Digital foresight platforms—many increasingly powered by generative AI, large-scale data analytics, and automated sense-making pipelines—are rapidly transforming how individuals and organizations engage with futures. This contribute examines the epistemic implications, methodological shifts, and practical challenges introduced by these tools when they are used within participatory foresight processes. Building on a structured review of fourteen contemporary foresight platforms—including 4strat, Futurible's ScenaringTools, ITONICS, Shaping Tomorrow, Fibres, Quantumrun, ORION.AI, PreEmptLife and others—conducted between January and June 2025 , the contribution interrogates how AI-mediated automation affects the conditions under which futures are collectively imagined, problem framings negotiated, and sense-making socially constructed.

The analysis begins by distinguishing "desk foresight" from participatory foresight. Desk foresight, typically conducted by individuals or small expert teams, benefits significantly from the acceleration, breadth, and pattern-recognition capacities offered by AI systems. Platforms excel at automated scanning of large information streams, clustering weak signals, generating scenario skeletons, or recommending strategic pathways. In this domain, AI augments the analyst's ability to navigate complexity, reduce information noise, and rapidly produce artefacts that would be labor-intensive to craft manually.

However, participatory foresight—where anticipatory knowledge emerges through dialogue, contestation, and the mobilization of collective intelligence—creates a more paradoxical relationship with AI. We argue that sense-making, more than scanning or scenario prototyping, is the phase most sensitive to AI influence because it is socially negotiated, value-laden, and dependent on shared interpretation. Drawing from anticipatory theory (Poli 2017; Miller 2018) and critical design futures (Dunne & Raby 2013; Candy & Dunagan 2017), we think that the introduction of automated insights during early or mid-process stages can subtly reframe participants' cognitive maps, compress uncertainty prematurely, or elevate certain narratives as more plausible or authoritative due to their algorithmic provenance.

The review of platforms highlighted five recurrent gaps with implications for participatory processes:

1. Underdeveloped framing tools. Most platforms assume the problem or focal issue is already defined. Yet framing is a socially contested phase where assumptions are surfaced, boundaries negotiated, and "unknowns" made discussable. The absence of framing support risks reproducing narrow or implicit problem definitions.

2. Limited support for collective visioning and reflective dialogue. Although nearly all tools automate scanning, few offer structured environments for co-creation of desirable futures, normative exploration, or values-based deliberation—key features of democratic anticipation.

3. Opacity of AI reasoning. Many platforms lack transparency about how signals are selected, weighted, or interpreted, challenging explainability and undermining trust—especially in mixed-expertise groups.

4. Weak integration of systems thinking. Complex socio-technical issues require modelling interdependencies, feedback loops, and non-linear dynamics (Sterman 2000). Most platforms reduce complexity to linear trend repositories or unstructured lists of drivers.

5. Fragmentation across foresight phases. No platform offers holistic support for framing, scanning, futuring, visioning, strategy design, and adaptation as conceptualised by the APF Foresight Competency Model (Hines et al., 2017). Facilitators often must combine multiple tools, increasing cognitive load and risking the loss of narrative coherence.

These gaps are not merely technical; they reveal epistemic tensions tied to the conference theme of staying with the unknown. AI systems tend to favour closure, categorisation, and reduction of ambiguity, whereas anticipatory practice—particularly in participatory formats—thrives on ambiguity, the exploration of paradoxes, and the suspension of premature convergence. The unknown is not a space to be eliminated but a generative condition through which hope, creativity, and plural futures emerge.

The contribution aims at starting a discussion about an interpretive framework that identifies three points of friction between AI automation and participatory sense-making:

1. Epistemic compression. AI-generated clusters, summaries, or scenario templates may inadvertently structure the cognitive field before participants engage, biasing what is discussed and foreclosing alternative imaginaries.

2. Authority gradients. Participants often attribute epistemic weight to AI outputs—even when they are synthetic, unverified, or culturally biased—thus shifting power dynamics in group deliberation.

3. Cognitive load redistribution. Automation can free cognitive resources for deeper dialogue, but it can also overload participants with dense, unfamiliar information that reduces agency and engagement.

Through examples drawn from the reviewed platforms—for instance, how PreEmptLife's synthetic scenario engines guide narrative sense-making; how Shaping Tomorrow's AI agents generate prescriptive options; or how trend-radar tools in ITONICS and Fibres shape what counts as a "signal"—we reflect on how facilitators could mediate the influence of AI during key turning points of foresight workshops.

Rather than adopting a normative stance of rejection or uncritical embrace, the authors propose a middle-path approach: AI can enhance participatory foresight if facilitators actively design meta-processes that maintain openness, reflective distance, and epistemic plurality.

The contribution concludes by outlining a research and practice agenda for "critical AI-augmented participatory foresight", calling for (1) transparency standards for AI-supported futures tools; (2) hybrid facilitation methodologies that embed meta-cognition and bias-awareness; and (3) rigorous exploration of how algorithmic influence intersects with social learning, group creativity, and pluralistic hope. Rather than reducing uncertainty, AI can help communities learn to stay with the unknown—

provided its role is consciously mediated, ethically grounded, and oriented toward empowering human anticipatory capacities rather than substituting them.

References

Candy, S., & Dunagan, J. (2017). Designing an experiential scenario: The people who vanished. In A. Curry (Ed.), The future of futures (pp. 117–131). Association of Professional Futurists.

Dunne, A., & Raby, F. (2013). Speculative everything: Design, fiction, and social dreaming. MIT Press.

Hines, A.; Gary, J.; Daheim, C.; van der Laan, L. Building Foresight Capacity: Toward a Foresight Competency Model. World Futures Review 2017, 9, 123–141.

Miller, R. (2018). Transforming the future: Anticipation in the 21st century. Routledge / UNESCO.

Poli, R. (2017). Introduction to anticipatory systems: Humans and anticipation. Springer.

Ramos, J. (2017). Linking Foresight and Action: Toward a Futures Action Research. In: Rowell, L., Bruce, C., Shosh, J., Riel, M. (eds)

The Palgrave International Handbook of Action Research. Palgrave Macmillan, New York. https://doi.org/10.1057/978-1-137-40523-4_48

Sterman, J. D. (2000). Business dynamics: Systems thinking and modeling for a complex world (Vol. 19). McGraw-Hill.

Beyond the screen: Design principles for AI-enabled automotive interfaces

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Keywords: automotive HM; human factors; cognitive load; artificial intelligence; anticipatory design

The automotive industry faces a design juncture as manufacturers integrate AI into vehicle interfaces: perpetuate screen-centric paradigms that demand sustained visual attention, or restructure information delivery for safer human-automation collaboration. Automotive HMIs evolved from analogue instrumentation to screen-dominated cockpits through the maturation of microelectronics, declining display costs, and platform standardization. AI introduces a strategic choice: it can be layered onto existing interface architectures, reinforcing visual attention demands, or positioned as an infrastructural orchestrator capable of transforming how information is selected, timed, and delivered. In safety-critical environments, this distinction matters because cognitive load, distraction, and attention allocation directly affect driving performance and collision risk (Engström et al., 2017; Strayer et al., 2015). Accordingly, this investigation examines how historical design decisions created path dependencies that shape contemporary possibilities for AI integration in automotive HMIs, and how design can reposition AI from incremental enhancement to transformative infrastructure.

The research addresses three questions: first, how the analogue-to-screen transition created path dependencies that constrain or enable AI integration; second, how users adapt to screen-dominated infotainment systems and which disengagement patterns signal design failure; third, what design principles can position AI as infrastructural orchestrator rather than additive feature. The first question draws on path dependency theory, which shows how early design choices become locked in through increasing returns, network effects, and self-reinforcing mechanisms (David, 1985; Arthur, 1989). In the automotive domain, these dynamics help explain why interface evolution has privileged visual information density and display-based control logic, and why current AI integration risks reinforcing established patterns rather than transforming them. The second question examines user adaptation through HCI frameworks concerned with the relationship between user intentions, system actions, and comprehension, particularly where interaction friction increases the burden on attention management (Norman, 2013). This is especially relevant in automotive contexts, where drivers access climate, navigation, communication, and media functions while simultaneously managing the primary task of driving. Research on cognitive distraction and cognitive load demonstrates that manual-visual interaction with infotainment systems can degrade hazard detection, response capability, and overall driving performance (Engström et al., 2017; Strayer et al., 2015). Documenting adaptation strategies, friction points, and rejection patterns therefore provides empirical grounding for identifying where current designs fail to support appropriate human-machine collaboration.

The third question explores design principles that position AI as infrastructural orchestrator through human-in-the-loop approaches that preserve meaningful human

agency while leveraging computational capabilities for context-sensitive orchestration. Rather than adding further interface complexity, AI can dynamically adapt information modality, density, and timing according to contextual demands, supporting safer transitions between manual and automated driving modes. Anticipatory design is treated here not as a speculative exercise conducted within a single discipline, but as a multi-disciplinary practice that requires design, engineering, and implementation to operate in continuous exchange. In this sense, design becomes a projective and interventionist activity oriented toward shaping preferable futures through situated action, iterative experimentation, and critical engagement with sociotechnical systems (Deleuze et al., 2007; Maldonado, 1971). This position is also consistent with evidence-based design approaches that translate research findings into concrete communication and interaction strategies (Hellier et al., 2014).

Methodologically, the investigation combines discourse analysis, case studies, prototyping, and usability testing. The proof-of-concept developed in an initial computer science course constituted a first experimental iteration of these principles. That prototype is now being further refined and iterated as thesis work, building on the insights gathered from the first cycle with the support of the AXD Laboratory (Advanced eXperience Design) at Politecnico di Milano. To bridge the gap between development and production, the new proof-of-concept is being developed on a native low-level framework natively compatible with most modern vehicles, enabling a more realistic translation of design intent into deployable automotive interaction logic. This multi-disciplinary pipeline is central to the research contribution: it connects conceptual framing, interface design, technical implementation, and evaluation within a single anticipatory design process.

Theoretically, the study shows how path dependency clarifies adoption constraints in safety-critical environments by revealing how historical decisions continue to shape present-day interface possibilities. Practically, it argues that AI-enabled automotive interfaces can support safer human-machine collaboration not by augmenting screen-based paradigms, but by restructuring information delivery through contextual orchestration while maintaining human oversight. The resulting framework envisions a transition from static screen-centric interfaces toward systems that dynamically adapt information modality, density, and timing to contextual demands and driver state, offering actionable guidance for the design of future automotive HMIs.

References

Arthur, W. Brian. «Competing Technologies, Increasing Returns, and Lock-In by Historical Events». The Economic Journal, vol. 99, fasc. 394, marzo 1989, p. 116. DOI.org (Crossref), https://doi.org/10.2307/2234208.

David, P. A. (1985). Clio and the Economics of QWERTY. The American Economic Review, 75(2), 332–337. http://www.jstor.org/stable/1805621

Deleuze, Gilles, et al. A Thousand Plateaus: Capitalism and Schizophrenia. 12. print, Univ. of Minnesota Press, 2007.

Engström, Johan, et al. «Effects of Cognitive Load on Driving Performance: The Cognitive Control Hypothesis». Human Factors: The Journal of the Human Factors and Ergonomics Society, vol. 59, fasc. 5, agosto 2017, pp. 734–64. DOI.org (Crossref), https://doi.org/10.1177/0018720817690639.

Hellier, E., et al. «Evaluating the Application of Research-Based Guidance to the Design of an Emergency Preparedness Leaflet». Applied Ergonomics, vol. 45, fasc. 5, settembre 2014, pp. 1320–29. DOI.org (Crossref), https://doi.org/10.1016/j.apergo.2013.10.002.

Maldonado, Tomás, curatore. La speranza progettuale: ambiente e società. G. Einaudi, 1971. Nuovo politecnico, 35 Includes bibliographical references and index.

Norman, Donald A. The design of everyday things. MIT press, 2013.

Strayer, David L., et al. «Assessing Cognitive Distraction in the Automobile». Human Factors: The Journal of the Human Factors and Ergonomics Society, vol. 57, fasc. 8, dicembre 2015, pp. 1300–24. DOI.org (Crossref), https://doi.org/10.1177/0018720815575149.

Explorations on Participatory Design Interventions for Policy Change and Decision-Making design

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Keywords: participatory design; playful design methods; service design; co-design; system design

In this exploratory paper we consider research which illuminates aspects of the challenges and potentials when design is harnessed in relation to aspects of policy design. The paper draws on findings from two projects where participatory design approaches engage with the field of policy design. The first case described addresses the gap between a top-down policy and the conditions on the ground in health care. A participatory-design led prototype was used to improve the delivery of cancer-care services and challenge the prescribed policy for this. The second case is one which is policy-makers actively decided to involve citizens in the policy affecting them using playful design methods. We explore how participatory design approaches a) get past the general level unidirectional tendency in policy design with and without design approaches and b) how can design lead to more responsive policy that can adapt more fairly and quickly to the people it is supposed to serve using novel tools and approaches. Exploring local challenges identified by those affected by policy, amplifying their voices, and scaling up prototypes could lead to more responsive policy. We asked: 1) What does the work show in relation to [1]. 2) 'What specific methods can integrate design participants' voices? 3) Can we counteract the notion of design as idiosyncratic – see, for example, [11] . How to ensure the participatory deliberations are sustained after implementation, that is, designing continued participation?

These projects come at policy from different directions and make for an opportunity to explore implications in an exploratory way. We can see 2 projects gently challenge the framework of [1]. We see a broader set of relations between design and policy-making than the three in the matrix. The 4D Picture case illustrates implementing policy initiates design-decisions testing the policy and suggest signals need return to policy-source. The signal needs to get back to the policy-making upper level.

The 4D Picture project shows a broader spectrum of relationships between design and policy than the framework proposed by [1]. While Richardson et al. discuss three relationships – instrumental, improvisational, and generative – we consider this to be an insufficient diversity in the relationship between the 2 fields. Instead of starting with policy, the 4D Picture healthcare project begins with the observations of oncologists and other clinicians who have identified gaps in the distribution of supportive care services and places the experiences of patients and their families at the centre of a new solution. The project shows the friction between local prototypes and research on policy-relevant issues. Local prototypes must feedback to make the opportunity areas/learnings from local projects available for policy-making at regional and national level. With this in mind, we propose "feeding back" to policy-making as a possible further variant in the framework, illustrating how such relationships can operate fluidly between locally developed prototypes that inform policy and initiatives that engage policy stakeholders from the onset.

The projects about a large scale intervention of design in policy. They covered multiple sectors. It also put vulnerable participants into the process of designing a better implementation of a wished-for policy. We are using design and design methods to aid and support those normally affected by policy but who are often not asked about in the first place; amplifying those voices. Design is using people´s language, real quotes to keep lived experience uppermost. In 4D Picture people´s ambitions and hopes are kept material in the form of flyers and posters.

The project shows the friction between local prototypes and research on policy-relevant issues. Local prototypes must feedback to make the knowledge from local projects available for policy-making at regional and national level. With this in mind, we propose “feeding back” to policy-making as a possible further variant in the framework, illustrating how such relationships can operate fluidly between locally developed prototypes that inform policy and initiatives that engage policy.

References

Richardson, L., Durose, C., Kimbell, L., & Mazé, R. (2025). How do policy and design intersect? Three relationships. Policy & Politics, 1-21.

Bailey, J., & Lloyd, P. (2017). The introduction of design to policymaking: Policy Lab and the UK government. Annual Review of Policy Design, 5(1), 1-14.

Hermus, M., van Buuren, A., & Bekkers, V. (2020). Applying design in public administration: a literature review to explore the state of the art. Policy & Politics, 48(1), 21-48.

Ferro, E., Loukis, E.N., Charalabidis, Y. and Osella, M., (2013). Policy making 2.0: From theory to practice. Government Information Quarterly, 30(4), pp.359-368.

Knill, C. and Tosun, J., (2020). Policy-making. In Comparative politics (pp. 361-375). Oxford University Press.

Nogueira, A., & Schmidt, R. (2022). Participatory policy design: igniting systems change through prototyping. Policy Design and Practice, 5(1), 32-50.

Tromp, N., & Vial, S. (2023). Five components of social design: A unified framework to support research and practice. The Design Journal, 26(2), 210-228.

Herriott, R., Kremer, M., Dankl, K., Christiansen, L. G., & Akoglu, C. (2025, May). Using Design Approaches for Fine-Grained Policy Design. In Doing it again. Art Design Research Conference (AD-REC) 202. St. Etienne, France.

Pahl-Wostl, C., (2002). Participative and stakeholder-based policy design, evaluation and modeling processes. Integrated assessment, 3(1), pp.3-14.

Meijer, A. (2025). Design science in public administration: producing both situational interventions and generic knowledge. Perspectives on Public Management and Governance, 8(1), 1-11.

Considine, M. (2018). Thinking outside the box? Applying design theory to public policy. In Routledge Handbook of Policy Design (pp. 147-160). Routledge.

Kimbell, L. and Bailey, J., (2017). Prototyping and the new spirit of policy-making. CoDesign, 13(3), pp.214-226.

Lewis, J. M., McGann, M., & Blomkamp, E. (2020). When design meets power: Design thinking, public sector innovation and the politics of policymaking. Policy & Politics, 48(1), 111-130.

Howlett, M., Mukherjee, I. and Woo, J.J., (2015) From tools to toolkits in policy design studies: The new design orientation towards policy formulation research. Policy & Politics, 43(2), pp.291-311.

Foresight or Futuretainment? Questioning the use of generative AI in futuring

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Keywords: artificial intelligence; imagination; sensemaking; climate change; strategic foresight

The promise and availability of artificial intelligence (AI) has not been lost on communities engaged with futures thinking. Aside from addressing the futures of AI itself (see for instance Halal, Kolber & Davies, 2016; Makridakis, 2017), futures scholars and practitioners have pointed to the usefulness of AI-powered tools to collect and classify data, recognize patterns, and forecast trends (Bevolo & Amati, 2020; Brandtner & Mates, 2021; Ha, Yang & Hong, 2023; Hvitved & Holm Hansen, 2025). Voicing a particularly modernist desire for control, van Belkom (2020, p. 166) expects that "futures studies will be increasingly data driven" and foresees a time when "it should be possible to make an arithmetic model of our society on the basis of AI". It remains to be seen whether such a model would reduce uncertainty to the point where futuring itself becomes redundant, but in the meantime, AI image generators such as DALL-E, Midjourney, and Stable Diffusion already allow experts and, more significantly, non-experts to visualize futures with exceptional detail and richness.

Generative AI (GenAI) tools are already being used to illustrate Delphi-based scenarios (Di Zio, Calleo & Bolzan, 2023), to create, communicate, and compare alternative possibilities in urban planning (Papandreu, Feb.18, 2024), and to reduce barriers to creative expression in more open-ended futuring processes where they can inspire the imagination (Malakuczi et al., 2024). The Copenhagen Institute for Future Studies offers courses on the topic, and the engineering company Arup, long considered a thought leader in design futures, has also jumped into the fray.

The use of GenAI to imagine possible futures is especially compelling when considering what some have described as humanity's "crisis of imagination" (Ghosh, 2016; Mulgan, 2020). In short, at a moment when humanity's need for change has hit a critical juncture, humans seem to struggle to break free from the constraints of the present and imagine radical alternatives. The often perceived inevitability of the past and the present and, consequently, 'the future', play out as a society-wide pathology. Against this backdrop, it is not surprising that recent advances in GenAI appear as a possible antidote. While the jury is still out on whether GenAI tools offer distinct advantages when integrated into expert-driven futuring processes (Hvitved & Holm Hansen, 2025), the benefits for participatory futuring process seem obvious: a short interaction with visual GenAI tools provides vivid examples of how alternative futures may look like, giving tangible evidence to the plurality and malleability of possible futures (Malakuczi et al., 2024).

A similar conviction motivated our use of GenAI in the design and deployment of an interactive installation titled The Dream Sequencer. Funded by the Dutch 4TU Federation, the installation was meant to evoke thoughts about the relations between pasts, presents, and futures, using visual GenAI to make tangible users' past and future aspirations. The experience, however, was quite ambiguous. While those interacting with the installation found it compelling and enjoyable, it was unclear

whether the interaction led to anything meaningful – at least not in the sense we intended. Consequently we came to think of the installation as a form of 'futuretainment': an experience that captivates but operates at the level of spectacle rather than providing critical engagement with futures thinking. This led us to ask three sets of critical questions about the use of GenAI in futuring with the public: (1) when interacting with GenAI, who is doing the imagining? Would the experience lead to collective sensemaking or is it yet another form of cognitive offloading?; (2) what is the (ontological) status of the generated images? To what extent are they plausible, possible or radical?; and, most importantly, (3) given the stark social and environmental consequences of deploying GenAI (Luccioni, Jernite & Strubell, 2024), is using the technology for such tasks justifiable? Wouldn't such use constitute, ironically, a form of 'defuturing' (Fry, 2020)?

In the presentation we will introduce and describe the installation, contextualize and raise these critical questions, and chart a few initial answers intended as starting points to consider critically the benefits, challenges, and values implied in the use of GenAI in public-facing futuring.

References

Bevolo, M., & Amati, F. (2020). The potential role of AI in anticipating futures from a design process perspective: from the reflexive description of "design" to a discussion of influences by the inclusion of AI in the futures research process. World Futures Review, 12(2), 198-218.

Brandtner, P. P., & Mates, M. A. (2021). Artificial Intelligence in Strategic Foresight – Current Practices and Future Application Potentials: Current Practices and Future Application Potentials. In The 12th International Conference on E-business, Management and Economics (ICEME 2021), Beijing, China (pp. 75-81).

Di Zio, S., Calleo, Y., & Bolzan, M. (2023). Delphi-based visual scenarios: An innovative use of generative adversarial networks. Futures, 154, 103280. https://doi.org/10.1016/j.futures.2023.103280

Fry, T. (2020). Defuturing: A new design philosophy. Bloomsbury.

Ghosh, A. (2016). The great derangement: Climate change and the unthinkable. Chicago IL & London: The University of Chicago Press.

Ha, T., Yang, H., & Hong, S. (2023). Automated weak signal detection and prediction using keyword network clustering and graph convolutional network. Futures, 152, 103202. https://doi.org/10.1016/j.futures.2023.103202

Halal, W., Kolber, J., & Davies, O. (2016). Forecasts of AI and Future Jobs in 2030: Muddling Through Likely, with Two Alternative Scenarios. Journal of Futures Studies, 21(2), 83–96. https://10.6531/JFS.2016.21(2).R83

Hvitved, H. and Holm Hansen, B. (2025). 'Liquid Foresight in an AI-Mediated World'. In Using the Future. Copenhagen Institute for Futures Studies, pp.53-55.

Luccioni, S., Jernite, Y., & Strubell, E. (2024). Power hungry processing: Watts driving the cost of AI deployment? Proceedings of the 2024 ACM Conference on Fairness, Accountability, and Transparency (FACT), pp. 85–99.

Makridakis, S. (2017). The forthcoming Artificial Intelligence (AI) revolution: Its impact on society and firms. Futures, 90, 46-60.

Malakuczi, V., Ershova, M., Gentile, A., Gironi, C., Saviano, M., and Imbesi, L. (2024) Design in dialogue: AI as an aid of imagination for future scenarios, in Gray, C., Ciliotta Chehade, E., Hekkert, P., Forlano, L., Ciuccarelli, P., Lloyd, P. (eds.), DRS2024: Boston, 23–28 June, Boston, USA. https://doi.org/10.21606/drs.2024.1171

Mulgan, G. (2020). The Imaginary Crisis (and how we might quicken social and public imagination). Retrieved Apr. 4, 2025: https://demoshelsinki.fi/wp-content/uploads/2020/04/the-imaginary-crisis-web.pdf

Papandreou, T. (Feb.18, 2024). 'Generative Urban AI Is Here. Are Cities Ready?' Forbes. Retrieved Dec.5, 2025: https://www.forbes.com/sites/timothypapandreou/2024/02/18/generative-urban-ai-is-here-are-cities-ready

van Belkom, R. (2020). The Impact of Artificial Intelligence on the Activities of a Futurist. World Futures Review, 12(2), 156-168.

Images of AI as an anticipatory technology

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Keywords: AI images; imaginaries; electronic brains

Summary: This article examines emerging trends in the visual representation of AI. It relies on the premise that all technologies are inherently political and that visual representations shape collective imaginaries, thereby contributing to the stabilisation of specific visual discourses and anticipation of future technological developments.

Visual representations of AI represent a substantial subgroup of images on stock image databases such as Getty images, Shutterstock and Unsplash. My research is concerned with a strategic use of promised or imaginary futures to visually portray artificial intelligence (AI). I am specifically focused on the images of AI, rather than images generated by AI, although this boundary is becoming increasingly blurred (Romic, 2025). With this in mind, I am exploring the question: How is the idea of technological future communicated in a selection of stock images?

I consider that I'm operating with a slippery sample, which considers the instability of images of AI that are available to me upon browser image search of the words 'artificial intelligence'. I observed two hundred images of AI in total, across several browsers (Google, Yahoo!, Bing and Baidu) (Romic, 2025). Since I cannot review all AI-related images across every browser, I acknowledge that the images I encounter are shaped by algorithms linked to my browsing history. It is therefore reasonable to infer that the AI images analyzed in this paper are, to some extent, personalized (Benjamin, 2019).

I furthermore acknowledge that my knowledge is incomplete and partial, following situated methodologies (Haraway, 1998).

The analysis of the images heavily relied on two concepts.

Firstly, I find the concept of sociotechnical imaginaries by Sheila Jasanoff is useful. According to Jasanoff's definition, sociotechnical imaginaries are considered to be 'publicly performed versions of desirable futures' (p.4). Importantly, imaginaries present versions of future that are put forward, therefore become privileged within a given sociotechnical ecosystem. The imaginary tends to replicate itself in a recursive society (Beer, 2022) therefore obscuring less favoured approaches. The images that secure the highest number of downloads will also prompt creators to make many variations of those images (Romele & Severo, 2023), therefore solidifying the favoured visual approaches and indirectly contributing to consolidation of ideas about the artificial intelligence and emerging technologies.

The second approach relies of Bo Reimer's and Amanda Lagerkvist's analysis of AI as a memory device and anticipatory tool (2023). Images of AI, on the one hand, follow the same aesthetic principles as other hegemonic technologies: they are clean, polished, and formulaic (Rodado, as cited in Degoutin & Wagon, 2022, para. 15). These visuals often feature striking effects—blue glows, futuristic interfaces, and electronic brains. Within this cool, soothing world, a digital flâneur encounters vibrant images that promise an optimistic future. On the other hand, these representations also signal a future that is unified, standardised, and sanitised (Degoutin & Wagon, 2022, Romic, 2025).

References

Beer, D. (2022). The problem of researching recursive society: Algorithms, data coils and the looping of the social. Big Data & Society. July-December, 1-5.

Degoutin, S. & Wagon, G. (2022). Le blanchiment des images. In: AOC, 6 avril. https://aoc.media/opinion/2022/04/05/le-blanchiment-des-images/

Haraway, D. (1991) Situated Knowledges: The science question in feminism and the privilege of partial perspective. Feminist Studies.14(3), 575-599.

Jasanoff, S. (2015). Future imperfect: Science, technology, and the imaginations of modernity. In S. Jasanoff and S. Kim (Eds.) Dreamscapes of Modernity: Sociotechnical imaginaries and the Fabrication of Power (pp. 1-33). The University of Chicago Press.

Lagerkvist, A., & Reimer, B. (2023) Bothering the boundaries: unruly AI futures of hauntings and hope at the limit. In S. Lindgren (Ed.) Handbook of Critical Studies of Artificial Intelligence (pp. 199-208). Edward Edgar Publishing.

Romele, A., & Severo, M. (2023). Microstock images of artificial intelligence: How AI creates its own conditions of possibility. Convergence: The International Journal of Research into New Media Technologies.

Romic, B. (2025) AI imag(inari)es: Visual Representation of artificial intelligence. In Micalizzi, A. (ed.) Artificial Creativity. Springer. 73-86.

Problems in Prompting a Design Anticipatory AI: complex challenges and ontological relations between design, futures and LLMs

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Keywords: ontologies; Large Language Models; design anticipatory A.I.

Communicatively, prompting refers to an act of attemtpting to have another person say something, such as reminding a stage actor of a gap in their delivery of lines. In speech act theory terms, a prompt ushers in an illocutionary reminder as a move within an already learned performative sequence. Here anticipation is limited a matter of retrieval, of a predictive diegetic pathway. Prompting is now one of the key terms and actions in the burgeoning field of A.I. (Artificial Intelligence). Morris (2024) patterns prompting as having shifted from '… a test and debugging interface for machine-learning (ML) engineers into the de facto interaction paradigm for end users of large language models (LLMs) and their multimodal generative AI counterparts.' How might we conceive of a differently positioned apporach to anticipatory and design centred prompting and AI?

Prompting has immense illocutionary force as an act of uttering - stating, seeking, inquiring, posing or problematising – when humans or digital agents engage with a generative computational system. This seeming dialogue is problematic, however, as it poses an ontological directive and intentional act aimed to parse the AI system's corpora (language or mulimodal) and outputs. This becomes more complex when we approach such communicative acts in terms of anticipatory design and its ontologies of what Marenko (2025: Kindle) posts as a mode of 'not-knowing' as concerned with '.. the willingness to participate in the possible maybes that are brewing, ready to unfold into something, anything or nothing. This is what I have called the power of maybes." Accordingly, we see design futures ontologies as anticipatory in character and practice; they are not premised on directives or predictive teleological pathways or arrivals. The latter is promoted by much AI marketing and corporate ideological posturing where power in approaches and assumptions within views and promotion of ontological relations of Large Language Models (LLMs).

Marenko (2025: Kindle) reminds us that "Nurturing the power of maybes is to be done against the grain of the linear, incremental trajectory of task-oriented and risk-managed performativity, the orthodoxy of self-management, the reproducibility of neoliberal futures, their instrumental and deterministic normativity. This has never been as important as it is now, in the context of a planetary computation dominated by calculating machines of prediction."

In this paper we seek to try to remain with the nurturing power of maybes by problematising promoted and prevailing predictive stances on LLMs and attributions of agency, generativeness and intelligence. The paper conceptualises these through reference to key recent publication in a fast emerging and burgeoning field of inquiry. We refer to several philosophical, critical theoretical and cultural approaches to AI (e.g. Coeckelbergh, 2022; Lindgren, 2023; Yong Jin, 2021) together with ones that

specifically address thinking and learning with machines and AI (Bajohr, 2025; Weatherby, 2025).

We argue that prompting is a major ontological act in AI knowledge shaping and shaping knowledge, in teaching and learning and in research and creative practice. We see that ‘In a digital environment dominated by corporate AI systems, prompting, the act of shaping how generative AI systems produce content, has become both a practice of promise and compromise.’ (Encinas, 2025). In response, we propose an anticipatory design re-framing of AI within what Brassett and O’Reilly (2021) have elaborated in A Creative Philosophy of Anticipation. To do so is to engage in critical, creative acts of designing that are about making the digital matter and matter digital (Fazi, et al., 2025) and may be productively located n design anticipatory pedagogies that are relational (Gravett, 2023) and transformative (Grocott, 2022).

In research inquiry – as ontological designing (Willis, 2006) - we explore arguments by Weatherby (2025) on amplifying relations between cognition and culture through the elaboration of a theory of AI, language and communication, that advances a theory of meaning not intelligence, where poetics (and design) are central. Weatherby (2025: 2) writes that “This poetic language is not only computationally tractable but turns out to be the semiotic hinge on which emergent AI culture depends”. We follow his argument that what we oftern encounter in human sceince approaches to AI is a mode of ‘remainder humanism’ that ‘ignores the representational systems we have extensively deployed in our technologies’ (Idid.)

In calling for designerly semiology that blends pluriversal culture and situated cognition, we need to also position the prompt within both anticipatory and design framings of futures. Views on relations between futures and AI appear, e.g. Hautala & Ahlqvist (2024), such as in the journal Futures and in key publication on Anticipation Studies (Rovatsos, 2019). However, these do not engage with the substantive language capacities and complexities and complexities of modelling of LLMS. Nor do they address the design anticipatory demands and challenges of making meaning (Morrison & Celi 2017; Morrison, et al., 2021) out of the generated outcomes as mediated communication via software and platforms such as ChatCPT, DeepSeek and Claude. A an anticiaptroy design prompting seeks to activate theories and analyses of LLM outputs as mediated communication in which power, agency and positionality are surfaced and problematised.

Our presentation will illustrate this from recent pedagogy and research (e.g. Culén, et al., 2024; Encinas, 2025). We will activate and discuss this pragmatically via what we term reflexive ‘anticipatory design prompts’. Akin to work on ‘prompting for style as affordance actualization in visual generative media ’ (Laba, 2024) these are not not predictive or AI hallucinatory ones. Rather they are posed, provisionally, as subjunctive exploratory design anticipatory utterances in human-model interaction. This is to venture into ontologies of AI, anticipation and design in a mode of ‘transdisciplinary intensification’ (Marenko & Brassett, 2015). This we will frame as a design anticipatory AI that may reach beyond merely learning and applying AI skills and tools to focus on emergent reflexive and recursive non-mimetic, mediated meaning making for thinking with and through AI in communicative designing. We will do this in a dialogical research presentation, with exemplars, from our specific design-disciplinary expertise in media and design studies, interaction and informatics design and education.

Reassembling the future

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Keywords: theory; methodology; futures studies; sociology

Since the turn of the century, and particularly since the global coronavirus pandemic, there has been a proliferation of groups concerning themselves with the production of 'futures'. Activists, journalists, civil society groups, public policy foresight teams: there are actors across many social domains who describe their work as the production of 'alternative futures' or 'positive futures', or who are concerned with 'X futures' (transport futures, urban futures, tourism futures, farming futures, health futures...), or who describe themselves simply as 'doing futures'. In recent years, this has been mirrored within academic research beyond futures studies, with sociologists, anthropologists, geographers and others concerned with understanding 'education futures', 'algorithmic futures', 'heritage futures', 'digital futures', 'social futures', and so on. Often, this concern with 'futures' reflects a wider moral commitment to improving the world in addition to describing it, and this lies also behind the increasing connection between academics researching 'futures' and these other groups, aiming not just to describe existing futures but to bring about better ones.

But, in this paper, I want to suggest that this recent turn towards 'futures' as an object of social research is counter-productive, works against our achieving the ends we aim for in this work, and is counter to a longer tradition of research on the future in social science (e.g. Urry, 2016; Schulz, 2014; Adam, 2011; Brown et al., 2000; Bell and Mau, 1971). The paper argues that using 'futures' as an analytic concept reduces our capacity to describe the very thing we are interested in, for a number of reasons.

First, it conflates different senses of the future, collapsing aspects that might usefully be differentiated into a single term. For example, the circumstances that might result from someone's actions are, ontologically, distinct from the imagined circumstances that contributed to these actions, which themselves may be distinguished from the hopes or fears that also feature in this person's life, or the aspirations current amongst their peers to which they may or may not subscribe. Distinguishing between these different forms and modes of the future is a necessary task for any researcher trying to understand and describe how this person might flourish, or the barriers that prevent that flourishing. Yet, in current research, all these might be referred to as 'futures', in a way that makes it impossible to describe the way they relate to each other.

Second, describing the focus of study as 'futures' reifies (Gunderson, 2020) the future in ways that risk mischaracterising the relations and processes through which circumstances come to pass or are imagined. In seeking to describe 'futures', or when uncovering or producing 'alternative futures', researchers are introducing new objects into people's lives, giving these objects the power of causation insofar as they are described as enabling or foreclosing certain possibilities, or even treating them as ends in themselves: working towards (for example) 'just futures' or 'positive futures' can, for some researchers, involve simply being satisfied that these futures exist, rather than describing what they would consist of, or ensuring that they come to pass. And, third, the use of the concept 'futures' to organise research on futures is circular, seeking to explain the thing being researched in terms of itself.

This methodological challenge is analogous to that identified by Latour (2005, 1991/1993) within sociology: invoking 'the social' as an explanatory concept within accounts of social life presupposes the very thing researchers claim to be trying to describe. His response was to look for what he claimed was sociology's original object, the associations from which social life is constituted, in order to 're-assemble' the social in a way that allowed the possibility of description and explanation without relying on a pre-existing concept of 'the social'. This was all the more important, Latour suggested, when the object of study was unsettled or undergoing some change in formation. The paper suggests that researchers concerned with understanding and describing the place of the future in social life might respond in a similar way: not necessarily by adopting the language of actors and networks that Latour develops, but by resisting the temptation to make use of the concept of 'futures' while it is still possible to describe the different mechanisms, categories, temporalities, imaginations, desires, relations and possibilities through which future circumstances will come to pass. In the light of the changing nature of the world, and the concomitant changing nature of possibility and the future, it is important that as researchers we do not unduly limit our capacity to attend to, and describe, the new forms that the future may take.

References

Adam, B. (2011). Wendell Bell and the sociology of the future: Challenges past, present and future. Futures, 43(6), 590-595. https://www.sciencedirect.com/science/article/pii/S0016328711000851

Bell, W. and Mau, J. (1971). Images of the Future: Theories and Research Strategies. Russell Sage Foundation

Brown, N., Rappert, B., and Webster, A. (2000). Contested Futures: A Sociology of Prospective Techno-Science. Aldershot, UK: Ashgate.

Latour, B. (1993). We Have Never Been Modern (C. Porter, trans.). Harvard University Press. (Original work published 1991)

Latour, B. (2005). Reassembling the Social: An Introduction to Actor-Network-Theory. Oxford University Press.

Gunderson, R. (2020). Things Are the Way They Are: A Typology of Reification. Sociological Perspectives, 64(1), 127-150. https://doi.org/10.1177/0731121420921891

Schulz, M. S. (2014). Future moves: Forward-oriented studies of culture, society, and technology. Current Sociology, 63(2), 129-139. https://doi.org/10.1177/0011392114556573

Urry, J. (2016) What is the Future? Polity

Redeveloping the Hybrid Praxis of Design Futures: An Integrative Paradigm of Critique, Envision, and Implementation

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Keywords: design futures, competence framework, holistic methodology

As an emerging field, while the term 'design futures' is intrinsically compelling to a broad audience, a clear, intuitive, and broadly consensual understanding of its actual meaning remains elusive and is yet to be established. In essence, design futures is a convergent system: a confluence of numerous—perhaps unimaginably so—tributaries. Within this landscape, concepts that appear similar often denote different objects and subject matters. For example, Design Futuring (Fry, 2009), design discipline futures (Lloyd, 2019), the future of design, Designing Futures (Cerejo and Carvalhais, 2024; Ely, 2020), and Design Futures (Dalla Rosa and Paraboschi, 2016; Taylor, 2019).

This not only points to a necessity: in the face of these subtle yet diverse differences, one should attempt to synthesise these concepts from a more inclusive and fundamental perspective, rather than further subdividing the distinctions between them. Simultaneously, it raises a caveat: any attempt to establish a definitive definition of Design Futures within a singular theoretical framework risks oversimplification. How can a balance be struck between the demand for integration and the risk of narrow definitions? Furthermore, can a conceptual framework help stimulate (and contribute to) the exploration of developmental trajectories for praxis? The aforementioned reflections constitute the primary research motivation of this paper.

In response to these questions, this paper adopts the following research path: instead of seeking a prescriptive definition, it returns to an exploration of the three fundamental relationships between 'design' and 'the future'—namely 'design as critique', 'design as an act of anticipation', and 'design as future-making'—to grasp the core elements of DF. and establish a more comprehensive, fundamental, and accessible perspective. Based on these three perspectives, this paper attempts to construct a competence framework comprising three capabilities: Critique, Envision, and Implementation. This framework helps to categorise types of practice and, by extension, to identify and study the hybrid practices that emerge from the intersection of these capabilities, thereby grasping the dynamics of the discipline's development.

By further analysing the evidence of these three capabilities mutually supporting and intertwining within existing interdisciplinary practices (Critique + Envision, Critique + Implementation, Envision + Implementation), this paper ultimately calls for the development of a global methodology: redeveloping the praxis of Design Futures through "critique + envisioning + implementation". This research hopes that by consciously designing and fostering the iteration and translation among these three capabilities, it is possible to transcend the limitations of specific methods and cultivate a comprehensive literacy: namely, the ability to flexibly apply critical thinking to examine the present and the future, systematically conceptualise diverse possibilities, and responsibly translate visions into action.

References

Angheloiu, C., Sheldrick, L., & Tennant, M. (2020). Future tense: Exploring dissonance in young people's images of the future through design futures methods. Futures, 117, 102527.

Bhatti, Y., Kimbell, L., Ramirez, R., & Selin, C. (2014). The fourth OXFORD FUTURES FORUM report. Saıd Business School, Egrove Park, University of Oxford, Design & Scenarios.

Candy, S. (2009). The Sceptical Futuryst: The Unthinkable and the Unimaginable. The sceptical futuryst.

Cerejo, J., & Carvalhais, M. (2023, October). Anticipation as a Tool for Designing the Future. In International Conference on Design and Digital Communication (pp. 37-52). Cham: Springer Nature Switzerland.

Dalla Rosa, P., & Paraboschi, A. (2016). Design Futures: A New Discipline, Tool and Medium. DigitCult. Scientific Journal on Digital Cultures, 85〜94.

Dunne, A., & Raby, F. (2013). Speculative Everything: Design, Fiction and Social Dreaming. The MIT Press.

Ely, P. (2020). Designing Futures for an Age of Differentialism. Design and Culture, 12(3), 265〜288.

Fry, T. (2009). Design futuring. University of New South Wales Press, Sydney, 71〜77.

Lloyd, P. (2019). You make it and you try it out: Seeds of design discipline futures. Design Studies, 65, 167〜181.

Sterling, B. (2009). COVER STORY Design fiction. Interactions, 16(3), 20〜24.

Taylor, D. (2019). Design Futures. A Companion to Contemporary Design since 1945. John Wiley & Sons, Ltd.

Yelavich, S., & Adams, B. (2014). Design as future-making. Bloomsbury Publishing.

Setting the dials for a positive past: designing with nine dimensions of participatory speculation

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Keywords: participatory speculation; anticipatory practice; configuration; temporality; design

This paper reflects on six years of research and practice in participatory speculation, encompassing one ongoing major project and two smaller initiatives currently in development. By drawing on these activities and on relevant literature, I have identified nine conceptual dimensions – conceived as adjustable dials – along which participatory speculation activities can vary: Past–Future, Dystopia–Utopia, Probable–Preposterous, Partial–Comprehensive, Transition–End State, Single–Multiple, Generation–Enactment, Internal–Systemic and Spectator–Owner. These dimensions distinguish diverse participatory speculation approaches and give rise to highly variable participant experiences and speculative outcomes.

Crucially, the paper emphasises that these dimensions do not operate independently. Rather, it is the configuration and interaction of multiple dials that gives rise to distinct speculative dynamics, including divergence, convergence, imaginative expansion and imaginative closure. Furthermore, the dial metaphor draws attention to the fact that all participatory speculation activities – including those that appear conventional – are already configured in particular ways. The framework thus surfaces the often implicit design choices that shape participatory speculation activities. More experimental activities can be understood not as adding elements to an otherwise neutral process, but as reconfiguring conditions that are always already present.

Setting the dials to reflect the approaches to participatory speculation used in my own projects not only illustrates the dimensions; it has also prompted me to reflect on my design preferences. My desire to approach futures indirectly is apparent in methods that speculate into parallel presents rather than project forward, that encourage implausible, partial and fragmented visions, and that support the generation of a multiplicity of ideas rather than a singular consensus. The framework of the dials also prompts me to consider what happens if a dimension is varied within an activity – for example, shifting between generation and enactment. Stretching my own metaphor, I imagine what might happen if the function of a dial were broken to enable the both/and layering of different states, such as the generation of visions for transition within the enactment of a fictional system.

Conceived not as a toolkit or set of recommendations, the nine dimensions are proposed as an analytic as well as a generative device: a shared vocabulary for describing, comparing and interrogating how participatory speculation is designed and how it functions in practice. The framework is intended as a starting point for further empirical investigation into how participatory architectures open or close imaginative horizons, and how different configurations shape the conditions under which alternative futures become thinkable.

Link to existing research, literature and/or practice:

The dial metaphor complements accounts of participation in science and technology studies that describe workshops and related formats as experimental arrangements that configure particular forms of engagement, agency, and capacity (Lezaun, Marres & Tironi, 2017). The non-exhaustive list of nine dimensions is informed by research and practice, as outlined below:

• Past–Future: recognises the range of temporal modes that can be used for speculation, from fictional pasts to parallel presents and near or distant futures (Bendor et al., 2021).

• Dystopia–Utopia: draws on understandings of utopian and dystopian thinking (Gordin et al., 2010) as well as 'thrutopias'.

• Probable–Preposterous: references the range of possibilities (and impossibilities) represented in futures cones (Gall et al., 2022).

• Partial–Comprehensive: inspired by Garforth's (2017) discussions of partial and fragmented, rather than fully fleshed-out, visions.

• Transition–End state: informed by research that considers both visions of 'resolved' systems and the process of transition towards those visions (Yu, 2024).

• Single–Multiple: draws on the notion of the pluriverse (Escobar, 2018) as a contrast to singular future visions.

• Generation–Enactment: informed by experiential futures (Candy & Kornet, 2019) and immersive experiences, as well as diverse projects in which participants generate speculative visions (e.g. Light, 2021).

• Internal–Systemic: recognises the personal and emotional changes that will be involved in transitions to sustainable systems (Coops et al., 2024), as a complement to the systemic view (Grin et al., 2010).

• Spectator–Owner: recognises differing levels of participation in participatory speculation activities, from passive spectatorship through to active ownership (Farias et al., 2022).

Connection with conference themes:

This research resonates with the Critical Capacities and Futures Literacy and Futuring by Designing themes, as it is concerned with the design of activities that seek to foster anticipatory capacities in participant groups. The paper sits within a broader research agenda that asks what it means to design participatory speculation well, recognising a relationship between the characteristics of an activity or project and the experience of taking part. By articulating participatory speculation as a configurable architecture rather than a set of methods, it contributes to ongoing discussions of how anticipatory capacities are cultivated – and limited – by the sociomaterial, temporal, and relational arrangements of futuring practices.

References

Bendor, R., Eriksson, E., & Pargman, D. (2021). Looking backward to the future: On past-facing approaches to futuring, Futures 125, 102666. https://doi.org/10.1016/j.futures.2020.102666

Candy, S. & Kornet, K. (2019). Turning foresight inside out: An introduction to ethnographic experiential futures', Journal of Futures Studies 23:3, 3–22. DOI:10.6531/JFS.201903_23(3).0002

Coops, F., Bogner, K., & Hummels, C. (2024). Letting go in sustainability transitions: Designing spaces for the unavoidable companion of change. In Egenhoefer, R. B. (ed.), Routledge Handbook of Sustainable Design (2nd edition), Abingdon: Routledge.

Escobar, A. (2018), Designs for the Pluriverse: Radical Interdependence, Autonomy, and the Making of Worlds, Durham, NC: Duke University Press.
Farias, P. G., Bendor, R., & van Eekelen, B. F. (2022). Social dreaming together: A critical exploration of participatory speculative design. Proceedings of PDC '22: Participatory Design Conference 2022, Vol. 2, 147–154, Newcastle upon Tyne, United Kingdom August 19–September 1, 2022. https://doi.org/10.1145/3537797.3537826
Gall, T., Vallet, F. & Yannou, B. (2022). How to visualise futures studies concepts: Revision of the futures cone, Futures 143, 103024. https://doi.org/10.1016/j.futures.2022.103024
Garforth, L. (2017). Green Utopias: Environmental Hope Before and After Nature, Cambridge: Polity.
Gordin, M.D., Tilley, H. & Prakash, G. (eds) (2010). Utopia/Dystopia: Conditions of Historical Possibility, Princeton: Princeton University Press.
Grin, J., Rotmans, J. & Schot, J. (2010). Transitions to Sustainable Development: New Directions in the Study of Long Term Transformative Change, Abingdon: Routledge.
Lezaun, J., Marres, N., & Tironi, M. (2017). Experiments in participation. In U. Felt, R. Fouché, C. Miller, & L. Smith Doerr (Eds.), The Handbook of Science and Technology Studies (4th ed., pp. 195–222). MIT Press.
Light, A. (2021), 'Collaborative speculation: Anticipation, inclusion and designing counterfactual futures for appropriation', Futures 134. https://doi.org/10.1016/j.futures.2021.102855.
Yu, S. (2024). What kind of futuring is transition-oriented futuring? Conceptualising and expanding notions of futuring in transition design. In C. Gray, E. Ciliotta Chehade, P. Hekkert, L. Forlano, P. Ciuccarelli, & P. Lloyd (Eds.), DRS2024: Boston, 23–28 June, Boston, USA. https://doi.org/10.21606/drs.2024.328

Soft Futures: Situated Anticipatory Practice in Temporary Soft Interior Spaces (TSI)

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Keywords: situated anticipatory practice; practice-led research; interdisciplinary design; material epistemology; textile interior architecture

This paper examines Temporary Soft Interior (TSI) spaces—ephemeral textile-based environments such as stage sets, installations, pavilions, and urban regeneration sets—as sites where futures are sensed through material engagement rather than predicted through calculation. TSI spaces are inherently interwoven with uncertainty: their ambiguous disciplinary position, their temporality, and the unpredictable behaviour of textiles as their primary material. Paradoxically, it is within this web of uncertainties that their potentials reside. Drawing on interdisciplinary practice-led research involving full-scale prototyping and material experimentation, this paper proposes situated anticipatory practice as a framework for future-oriented design grounded in partial, embodied, material knowledge. The research demonstrates that textiles' capacity to drape and fold—typically suppressed in spatial design—can become a source of structural stability, transforming how futures are thought, sensed, and made through direct material dialogue.

Anticipation studies have established futures-thinking as central to design (Poli, 2017), yet interior textile spaces remain under-theorised; to date, no anticipatory design research has focused on textile-based interior environments. The literature continues to frame textiles as soft furnishings (Hoskyns, 2007) rather than as media through which futures are sensed and shaped. Poli's expanded conception of anticipation—as implicit, embodied, and materially distributed—resonates directly with TSI spaces, whose temporality and structural indeterminacy render anticipation an ongoing negotiation between designer, material, and environment rather than a prior act of calculation.

The 'material turn' provides essential grounding. Entwistle (2000) critiques representational approaches for displacing embodiment and lived experience, while an assemblage perspective recognises agency as distributed across human–material relations (Woodward and Fisher, 2014; Smelik, 2018; Ingold, 2007). If textiles actively participate in shaping spatial outcomes, anticipation cannot rely on prediction alone. Instead, futures must be sensed and constructed through situated, embodied engagement with materials. Haraway's (1988) concept of situated knowledges further anchors this shift, foregrounding partial, embodied, and positioned forms of knowing. This resonates with textile knowledge historically produced through hands, repetition, and craft traditions marginalised as 'feminine' and 'manual' (Garcia, 2007).

My research, Fashioning Space, is a completed interdisciplinary practice-led doctoral project combining prototyping, material experimentation, and analysis of contemporary TSI practices. Examining works by Aleksandra Kasuba, Zaha Hadid, and Petra Blaisse, I identified three dominant approaches—tensile structures, wrapped rigid frames, and suspended systems—all of which treat textile instability as a problem requiring control.

Garment design offers a counter-model. Fashion designers accumulate embodied knowledge through draping, cutting, and handling, treating textile behaviour as an expressive and structural resource. Serres' distinction between 'sack logic' and 'box

logic' captures this shift: where architectural thinking imposes rigid order, garment-making cultivates soft, responsive intelligence. Through iterative prototyping, I developed the Boned Draping method, which allows fabric to drape in controlled opposition so that structural stability emerges from instability itself.

Rather than forcing textiles to behave like rigid materials, this approach explores what textiles can uniquely do—respond, adapt, and register forces visibly. Anticipation is thus reframed as dialogue: a reciprocal exchange between designer and material, emerging through encounter rather than calculation.

Building on this framework, the research demonstrates how material practice produces fundamentally different ways of knowing futures. TSI spaces compress temporality dramatically. Where Attiwill (2018) describes interiors as 'temporary consistencies' stabilised over years, TSI achieves consistency for hours or days—foregrounding what is true of all spatial practice: interiors are always provisional, always anticipating their next configuration. TSI simply intensifies this condition, making visible the anticipatory labour that permanent interiors conceal.

This research reveals a tension between two anticipatory modes. Engineering-based approaches calculate probable outcomes, while situated approaches sense emergent possibilities through handling. Each prototyping iteration in Fashioning Space enacted the latter, revealing what the previous iteration could not predict. Poli's 'thick present'—where past experience, present sensation, and future possibility converge—captures this process and describes precisely the iterative handling and adjustment through which the Boned Draping method operates. Haraway's (1988) situated knowledges frame this epistemologically: in design as in science, embodied, partial knowing is not a limitation but a condition of genuine engagement with an unpredictable material world.

The Boned Draping method demonstrates how embodied knowledge enables anticipatory action. Garment-makers do not predict how fabric will fall; they know through accumulated touch. Transferring this into spatial design shows how craft expertise can ground futures-thinking in material reality. Rather than eliminating uncertainty, the method works with it—transforming unpredictability into a generative resource. Each iteration becomes a material conversation, where futures are sensed through encounter rather than predicted in advance.

TSI spaces also model anticipatory sustainability: their temporality enables testing without permanent commitment, and participatory making allows communities to enter human–material assemblages through which alternative spatial configurations are constructed rather than received.

This work challenges anticipation's dominant metaphors — prediction, forecasting, scenario-planning — which frame futures as objects seen from a distance. Situated anticipatory practice proposes instead that futures are felt through material encounter: working with soft materials cultivates soft thinking, responsive, adaptive, and comfortable with indeterminacy. TSI design emerges as a distinctive anticipatory system in which uncertainty is not an obstacle but the condition through which genuinely new spatial futures become possible. The contribution is both conceptual and methodological: situated anticipatory practice names a mode of futures-thinking grounded in embodied, partial knowledge, while Boned Draping demonstrates how craft expertise transferred across disciplines opens pathways to futures that remain genuinely unresolved — available for shaping through situated, material practice.

References

Attiwill, S. (2018). Speeds, slowness, temporary consistencies, and interior designing. In P. Sparke, A. Massey, T. Keeble, & B. Martin (Eds.), Flow: Interior, landscape and architecture in the era of liquid modernity (pp. 226-269). Bloomsbury Publishing.

Fallouh, S. (2021). Fashioning space : transforming the use of textiles and their inherent properties by integrating spatial and garment design practices in space design and fabrication. Doctoral dissertation, University of Edinburgh https://era.ed.ac.uk/items/2cdadb3f-e6d0-4c3b-b9e2-03e1d5d96736
Garcia, M. (2006). Prologue for a history and theory of architextiles. Architectural Design, 76(6), 12–20.
Entwistle, J. (2000). The fashioned body: Fashion, dress, and modern social theory. Polity Press.
Haraway, D. (1988). Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective. Feminist Studies, 14(3), 575–599. https://doi.org/10.2307/3178066
Hoskyns, T. (2007). Not cushions and curtains: Textiles, architecture and interiors. In E. Hollis, A. Milligan, A. Milton, D. Plunkett, J. Gigli, & F. Hay (Eds.), Thinking inside the box: A reader in interiors for the 21st century (pp. TBC). Middlesex University Press.
Ingold, T. (2007). Materials against materiality. Archaeological Dialogues, 14(1), 1–16. https://doi.org/10.1017/S1380203807002127
Poli, R. (2017). Introduction to anticipation studies. Springer.
Smelik, A. (2018). New materialism: A theoretical framework for fashion in the age of technological innovation. International Journal of Fashion Studies, 5(1), 33–54. https://doi.org/10.1386/infs.5.1.33_1
Serres, M. (2015). Rome : the first book of foundations / Michel Serres ; translated by Randolph Burks. Bloomsbury Academic.
Woodward, S., & Fisher, T. (2014). Fashioning through materials: Material culture, materiality and processes of materialization. Critical Studies in Fashion & Beauty, 5(1), 3–23.

Stakeholders' capacities to act in scenario design. A longitudinal analysis of three action research projects

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Keywords: action; capacity to act; engagement; scenario design; stakeholder

Research design: questioning capacities to act in scenarios

When viewed as processes of action, scenarios highlight the issue of tension between stakeholders' capacities and incapacities to act. More generally, they emphasise the development of capacities to act that underpin anticipatory practices (Poli, 2015, Bourgeois et al, 2017, Pouru-Mikkola and Wilenius, 2021, Roubelat and Marchais-Roubelat, 2025).

This paper discusses the contributions of three action research projects conducted in the early 2000s, 2010s and 2020s, respectively, to explore this tension from the perspective of scenario-design methodology. This longitudinal perspective (Pettigrew, 1990) presents three contrasting yet successive cases, each with their own particularities in terms of context, objectives, and methodological choices.

Background of the three polar action research projects

The first action research project focused on a foresight study by DATAR (the French Regional Development Agency), which was devoted to the collective management of local risks by 2020. This sparked an interest in the transitions between scenarios reflecting risk management methods, and consequently in the ability of stakeholders to take charge of this management.

The second study was conducted within the French Ministry of Defence as part of a project led by the Strategic Affairs Delegation, the General Delegation for Armament, and the various armed forces. The aim was to devise innovative strategic scenarios that combine a geostrategic dimension with operational action. As well as highlighting the consequences for the capabilities required by the armed forces to manage these operations, the scenarios emphasise the management issues for the stakeholders involved over time and the transformation of the rules of action.

The third action research project is linked to a foresight study by the French National Observatory on the effects of global warming on the commitment of economic sectors to climate change adaptation. Beyond the engagement scenarios for sectors and their companies and stakeholders, this action research aimed to identify the capacities required for this commitment to climate change adaptation.

Results and directions for further research: refining stakeholder engagement scenarios

DATAR's local risk management scenarios emphasise stakeholder capabilities and the modalities of scenario sequencing, despite the fact that the transitions between different scenarios showed that studying changes in stakeholder capabilities to act was possible. Military scenarios stress the ethical dimension of a stakeholder's decision to

acquire certain capacities for action while neglecting others. Scenarios for climate change adaptation engagement explore concrete ways of acquiring capacities for action from a strategic perspective, while considering their timeframes. With a view to building responsible futures (Arnaldi et al., 2020; Fuller et al., 2024), they open up avenues for researching bridges between scenarios and the development of relational and collaborative capacities among stakeholders, enabling the development of multiple engagement and action pathways over time.

References

Arnaldi S., Eidinow E., Siebers, J., Wangel J. (2020), Wisdom, Responsibility and Futures: Introduction to WiseFutures N.0, Futures, 118.

Bourgeois, R., E. Penunia, S. Bisht, D. Boruk (2017), Foresight for all: Co-elaborative scenario building and empowerment, Technological Forecasting and Social Change, 124, 178-188.

Fuller, T., Roubelat, F., Marchais-Roubelat, A., Heraclide, N., & Ward, A. K. (2024). Responsible Futures. In R. Poli (Ed.), The Handbook of Futures Studies. London: Edward Elgar.

Pettigrew, A. (1990), Longitudinal Field Research on Change: Theory and Practice, Organization Science, 1:2, 267-292.

Poli R. (2015), The implicit future orientation of the capability approach, Futures, 71, 105-113.

Pouru-Mikkola L., Wilenius M (2021), Building individual futures capacity through transformative futures learning, Futures, 132, 102804.

Roubelat, F., Marchais-Roubelat A. (2025), Designing scenarios from stakeholders' acts: Directions and lessons from extreme strategic action scenarios, in Crawford M. , Wright G. (Eds.), Improving and enhancing Scenario Planning. Futures thinking, London:Edward Elgar Publishing, 183-200.

Whose Futures Does AI Imagine? Decolonising Sustainability Scenarios in the Age of GenAI

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Keywords: AI futures; pedagogy; scenarios; circular economy

Generative Artificial Intelligence (GenAI) is reshaping higher education by transforming how knowledge, creativity, and anticipatory thinking are produced, shared, and evaluated (Su & Yang, 2023). While GenAI offers opportunities for adaptive learning, creative exploration, and enhanced efficiency (Mittal et al., 2024), it also raises concerns around the erosion of critical thinking (Wu, 2023), quality assurance (Michel-Villarreal et al., 2023), and issues of justice, equity, diversity, and inclusion (Giannakos et al., 2025). Scholars further show that AI systems are not culturally neutral; their training data and design logics are embedded within Global North epistemologies, potentially privileging Western norms and values (Azeez & Adeate, 2024; Ghosh et al., 2024). This presents challenges for decolonial pedagogies (De Lissovoy, 2010) and for sustainability education that must engage diverse cultural perspectives and local realities (Stephens et al., 2008), especially when addressing global issues such as climate change and inequality.

This project responds to these challenges through a pedagogical experiment with master's students at University College London (UCL). Students will generate and analyse future scenarios of a circular economy for textiles which is a sector emblematic of global consumption dynamics, environmental degradation, and social inequality (Mahanty et al., 2021; Mahanty & Domenech, 2024). These human-generated scenarios will be compared with GenAI-generated futures using a rubric that evaluates four dimensions: (1) critical reflection on assumptions and power relations, (2) contextual and cultural sensitivity, (3) creativity and coherence, and (4) ethical awareness relating to justice, equity, diversity, and inclusion.

This comparative analysis will illuminate how GenAI may homogenise sustainability imaginaries or erase cultural nuance, how students identify and critique AI's blind spots, and what pedagogical strategies support critical, reflexive, and decolonial uses of AI in sustainability education. By examining the interplay between culture, technology, and anticipatory practice, the project directly contributes to the Anticipation Conference's interest in diverse imaginaries and the politics of futures, while advancing more equitable and contextually grounded approaches to teaching sustainability in the age of AI.

References

Giannakos, M., Azevedo, R., Brusilovsky, P., Cukurova, M., Dimitriadis, Y., Hernandez-Leo, D., Järvelä, S., Mavrikis, M. and Rienties, B., 2025. The promise and challenges of generative AI in education. Behaviour & Information Technology, 44(11), pp.2518-2544.

Ng, D.T.K., Chan, E.K.C. and Lo, C.K., 2025. Opportunities, challenges and school strategies for integrating generative AI in education. Computers and Education: Artificial Intelligence, p.100373.

Michel-Villarreal, R. et al. (2023) 'Challenges and opportunities of generative AI for higher education as explained by ChatGPT', Education sciences, 13(9), p. 856.

Mahanty, S. and Domenech, T., 2024. Working along the value chain for circular economy transitions in fashion textiles: A participatory framework. Journal of Cleaner Production, 465, p.142627.

Mittal, U. et al. (2024) 'A comprehensive review on generative AI for education', Ieee Access, 12, pp. 142733–142759.

Su (苏嘉红), J. and Yang (杨伟鹏), W. (2023) 'Unlocking the Power of ChatGPT: A Framework for Applying Generative AI in Education', ECNU Review of Education, 6(3), pp. 355–366. Available at: https://doi.org/10.1177/20965311231168423.

Wu, Y. (2023) 'Integrating generative AI in education: how ChatGPT brings challenges for future learning and teaching', Journal of Advanced Research in Education, 2(4), pp. 6–10.

Mahanty, S., Boons, F., Handl, J. and Batista-Navarro, R., 2021. An investigation of academic perspectives on the 'circular economy'using text mining and a Delphi study. Journal of Cleaner Production, 319, p.128574.

De Lissovoy, N., 2010. Decolonial pedagogy and the ethics of the global. Discourse: Studies in the cultural Politics of Education, 31(3), pp.279-293.

Stephens, J.C., Hernandez, M.E., Román, M., Graham, A.C. and Scholz, R.W., 2008. Higher education as a change agent for sustainability in different cultures and contexts. International journal of sustainability in higher education, 9(3), pp.317-338.

6. Caring Futures

"Alexa+, are you the future of care?" Communicative AI as an anticipatory infrastructure of care futures

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Keywords: care; AI; ageing; future visions; anticipation studies

The future of care has attracted considerable interest, driven by a discourse around the so-called “care crisis” and advances in AI-driven technologies. In this context the “future of care” is being framed as a matter of sociopolitical and economic urgency based on demographic ageing and the associated challenges to social welfare and care systems like multimorbidity and polypharmacy, as well as a shortage of care professionals. As a response to these challenges a growing number of so-called AI-driven AgeTech innovations has emerged.

In this paper, we focus on communicative AI (ComAI) as technology that is presented by policy makers and tech developers as having huge potential to respond to the uncertainties of the “care crisis”. Driven by advances like machine listening, ComAI-systems are imagined to automate communication with relational, context-sensitive, and proactive capabilities. Frontier applications include ambient scribing products, medical companions and voice biomarker technologies.

Our presentation explores these ComAI-systems as anticipatory infrastructures of care futures. Based on data from website content of 80 ComAI providers, as well as interviews with innovation managers in care facilities, we map spatio-temporal care arrangements and provide a thematic analysis of future imaginaries and anticipatory practices. During the mapping of use cases, four themes emerged:

Better care through decentralisation and 24/7 accessibility with ComAI. In response to systemic crises in healthcare, such as staff shortages, overwhelmed institutions, and growing social isolation, healthcare technology companies offer ComAI products that promise “decentralised care and 24/7 accessiblility”. Slogans like “the caregiver assistant that never sleeps” and “the AI companion who cares-always here to listen and talk” reflect an imaginary of constant care support and availability. Within this frame, older adults are portrayed as individuals with persistent, monitorable needs. Care-related communication is envisioned to be extended or potentially fully “automated” by ComAI.

Better care through holistic care with ComAI. Building on the temporal and spatial reconfiguration of care, a second sociotechnical imaginary depicts ComAI as providing superior care through the integration of physical, psychological and social support. Companies such as Sensi AI and Eve promise multidimensional services under slogans such as “Coach, nurse, and friend, all rolled into one”. Here, care is not only always available but is also framed as seamlessly holistic and “intelligent”. This vision sees ComAI identifying and “fully automating” the emotional, therapeutic, medical and social needs of individuals.

Measurable and controllable care through ComAI. A third imaginary reframes care as a system of governance, in which efficiency, accountability, and continuous optimisation are paramount. ComAI tools such as those of Wysa and fabric act as digital gatekeepers: managing intake flows, triaging patients, and structuring care through so-called “digital front doors”. “Good care” is defined through metrics like “Reached

Patients: 85%" or "Scheduled Follow-Ups: 63%", embedding a logic of data-driven management into care.

"Less busywork, more human work" through ComAI. The fourth common imaginary presents ComAI not as a substitute but as an enabler of "good" (human) care. Companies like Laguna health and fabric highlight the burden of bureaucratic tasks-forms, documentation, scheduling and position ComAI as a silent infrastructure that restores time for relational caregiving. Slogans such as "Gain capacity to care" or "Less busywork, more human work" portray emotional labor as a valuable resource to be protected and strategically deployed.

Our analysis shows that even though ComAI providers develop strong future narratives about care futures as linked to ComAI, our interviews demonstrate how care professionals resist and challenge these anticipations. A recurring theme is that the work required to integrate, maintain, and support ComAI infrastructures often remains invisible or is actively invisibilized in the "futures of care" as presented by policy makers and tech developers alike. For example, the spatial, technical, acoustic and workflow requirements of ComAI often clash with established routines and infrastructures. We hence demonstrate the conflicting visions and anticipations of providing "better" care futures.

References

Cozza, M., Crevani, L., Hallin, A., & Schaeffer, J. (2019). Future ageing: Welfare technology practices for our future older selves. Futures, 109, 117–129. https://doi.org/10.1016/j.futures.2018.03.011

Hepp, A., Loosen, W., Dreyer, S., Jarke, J., Kannengießer, S., Katzenbach, C., Malaka, R., Pfadenhauer, M. P., Puschmann, C., & Schulz, W. (2023). ChatGPT, LaMDA, and the Hype Around Communicative AI: The Automation of Communication as a Field of Research in Media and Communication Studies. Human-Machine Communication, 6, 41–63. https://doi.org/10.30658/hmc.6.4

Jones, C. H., & Dolsten, M. (2024). Healthcare on the brink: Navigating the challenges of an aging society in the United States. Npj Aging, 10(1), 22. https://doi.org/10.1038/s41514-024-00148-2

Löw, M. (2021). Space. Urban, Rural, Territorial. In B. Hollstein, R. Greshoff, U. Schimank, & A. Weiß (Eds), Soziologie—Sociology in the German-Speaking World (pp. 499–514). De Gruyter. https://doi.org/10.1515/9783110627275-033

A Design-Oriented Framework for Building Future Scenarios with Manufacturing Companies towards Sustainable Transition

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Keywords: future scenario; strategic foresight; sustainable transition; design futures; manufacturing industries

Achieving the digital, green, and sustainable transition toward climate neutrality requires organizations to rethink norms, values, and operational models, while cultivating the knowledge, skills, and mindsets needed to navigate the complexity of sustainability transitions. Manufacturing companies face systemic challenges that demand forward-looking strategies capable of integrating technological innovation with behavioural and cultural change. In this context, enhancing anticipatory capacities and futures literacy becomes essential for enabling individuals and teams to critically interpret signals, imagine alternatives, and align present decisions with long-term sustainability goals.

Design theories and practices, especially those emerging at the intersection with futures studies, such as speculative design, design fiction, and design for transition, offer powerful tools to explore uncertainties and make futures tangible. Among these, scenario-building represents a particularly effective method for linking past and present trends to envision preferable futures ten years from now, facilitating shared understanding among diverse stakeholders, and fostering favourable conditions for innovation. Scenarios, conceived as stories of possible futures, support organizations in envisioning strategic opportunities, addressing interconnected socio-environmental challenges, and reinforcing a culture of responsibility and learning.

This article proposes a design-oriented, systemic framework for constructing future scenarios that help manufacturing companies anticipate sustainability-related opportunities and challenges. The framework builds on a narrative literature review interconnecting three domains: strategic foresight and scenario building, design approaches to future envisioning, and sustainability transitions in manufacturing industries. Through a systemic lens, the study identifies the key dimensions and elements that organizations need to consider when developing design-oriented scenarios to guide decision-making towards sustainable development. These dimensions and elements serve as the foundation for a structured process that supports companies in generating preferable future alternatives integrated with their strategic relevance, and eventually translating them into actionable pathways for innovation.

The research results show how design-oriented scenarios can strengthen organizational anticipatory capacities by making futures more accessible, discussable, and operationalizable. The proposed framework and process reflect on how scenario-building can serve as a strategic and educational tool to nurture sustainability competencies and support employees in learning, unlearning, and reframing assumptions about the future. In doing so, design-oriented scenarios contribute to cultivating futures literacy within organizational infrastructures and fostering a mindset oriented toward continuous adaptation and long-term sustainable innovation. Overall, the study highlights the transformative potential of integrating design-led futures

practices into organizational processes. By enabling manufacturing companies to both envision and act upon alternative future possibilities, the framework provides a structured approach to navigating complexity, advancing sustainable transition pathways, and reinforcing the capacity of organizations to engage with futures in a critical, proactive, and systemic way.

This research contributes to the fields of design, futures studies, and sustainability in three main ways. First, the framework adopts a systemic perspective to support companies' sustainability-related strategic planning. Second, the application of scenario building methods focuses not only on outcomes but also on the educational process, helping organizations understand the integration required to align sustainable development goals with business strategies. Third, the research demonstrates the contribution of design and design-oriented approaches in enabling this process.

References

Battistoni, C., Giraldo Nohra, C., & Barbero, S. (2019). A Systemic Design Method to Approach Future Complex Scenarios and Research Towards Sustainability: A Holistic Diagnosis Tool. Sustainability, vol 11, issue 16, pp. 4458. Available at: https://doi.org/10.3390/su11164458 [Accessed 14 January 2025].

Bishop, P., Hines, A. and Collins, T. (2007), "The current state of scenario development: an overview of techniques", Foresight, vol. 9, issue 1, pp. 5-25. Available at: https://doi.org/10.1108/14636680710727516 [Accessed 14 January 2025].

Buehring, J., & Bishop, P. C. (2020), "Foresight and design: New support for strategic decision making", She Ji: The Journal of Design, Economics, and Innovation, vol 6, issue 3, pp. 408-432. Available at: https://doi.org/10.1016/j.sheji.2020.07.002 [Accessed 14 January 2025].

Canina, M. R., Anselmi, L., Bruno, C., Parise, C., Minighin, D. (2021), "Blending Design Thinking and Design Futures: Facing the Complexity of Uncertain Futures", in Markopoulos E., Goonetilleke R.S., Ho A.G., Luximon Y. (eds) Advances in Creativity, Innovation, Entrepreneurship and Communication of Design. AHFE 2021. Lecture Notes in Networks and Systems, vol 276, Springer, Cham, pp. 24-30.

D'Ambrosio, S., Italia, M., & Maurer, D. (2023). Scenario building through a systemic lens: A new perspective on tools and methods to design for sustainability transitions, in K. Vaes & J. Verlinden (A c. Di), Connectivity and creativity in times of conflict. Academia Press, pp. 4-8

D'Itria, E., Pei, X., & Bertola, P. (2024). "Designing Sustainability Today: An Analytical Framework for a Design for Sustainability Model in European Fashion and Furniture Industries", Sustainability, 16(8), 3240. Available at: https://doi.org/10.3390/su16083240 [Accessed 14 January 2025].

Garcia, C. C. (2023), "Fashion Futuring: intertwining speculative design, foresight and material culture towards sustainable futures", Futures, vol 153, 103242. Available at: https://doi.org/10.1016/j.futures.2023.103242 [Accessed 14 January 2025].

Gaziulusoy, A. İ., Boyle, C., & McDowall, R. (2013), "System innovation for sustainability: A systemic double-flow scenario method for companies", Journal of Cleaner Production, vol 45, pp. 104–116. Available at: https://doi.org/10.1016/j.jclepro.2012.05.013 [Accessed 14 January 2025].

Kulsbjerg Løgager, C., Simeone, L., & Mejía, M. (2021), "A foresight-oriented service design approach to foster longer-term thinking and sustainable practices", in European Academy of Design Conference: Safe harbours for design research The European Academy of Design.

Manzini E., Jegou F. (2000). The Construction of Design-Orienting Scenarios. Final report, SusHouse Project. Faculty of Technology, Policy and Management. Delft University of Technology,The Netherland. [Online] Available at: https://www.strategicdesignscenarios.net/wp-content/uploads/2012/05/SUSTAINABLE-EVERYDAY_-Scenarios-of-urban-life.pdf

Neuhoff, R., Simeone, L., & Holst Laursen, L. (2022), "The potential of design-driven futuring to support strategising for sustainable futures", The Design Journal, vol 25, issue 6, pp

955-975. Available at: https://doi.org/10.1080/14606925.2022.2121057 [Accessed 14 January 2025].
Pace, L. A., Bruno, C., & Schwarz, J. O. (2025), “Personas in scenario building: Integrating human-centred design methods in foresight”, Futures, 103539. Available at: https://doi.org/10.1016/j.futures.2025.103539 [Accessed 14 January 2025].
Pei, X., Maurer, D., Sedini, C., & Zurlo, F. (2021), “A research through design practice to envision home scenarios in the post-Covid-19 future”, in Design as Common Good/Framing Design through Pluralism and Social Values Swiss Design Network Symposium 2021 Conference Proceedings, SUPSI, Swissdesignnetwork. pp. 820-833
Schwarz, J. O., Wach, B., & Rohrbeck, R. (2023), “How to anchor design thinking in the future: Empirical evidence on the usage of strategic foresight in design thinking projects”, Futures, vol 149, 103137. Availa

Adapting Futures Methods for Design: Adding Materiality and Story Layers to Design-Centered Causal Layered Analysis

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Keywords: design futures; design methods; futures signs; CLA; three horizons

Introduction

Designers imagine and shape futures. Stating the obvious, some design futures increase the likelihood of human extinction, while other futures may increase long-term resilience and flourishing. Problematic short-term extractive design, focused solely on company profit, often ignores long-term planetary-level consequences. Futures Studies allows broader design views that may inform planetary-level long-term flourishing. To ensure a positive long-term planetary impact, design education must shift from short-term extractive design approaches to exploring viable pathways to more sustainable, restorative, and regenerative design futures [2]. Yet, integrating futures thinking for a sustainability agenda into a design curriculum without such values is challenging.

Design Futures Education

Globally, university design programs offer design futures courses, such as design fiction [1], speculative design [6], and experiential futures [3]. We build on an experimental Dexign Futures approach [12] to mix futures and design thinking to align short-term actions with long-term sustainability goals. In this paper, we argue that designing for long-term futures requires moving beyond status quo assumptions and methods to explore six areas: (a) material culture (artifacts), (b) behaviors, (c) infrastructures (technology and social systems), (d) worldviews, (e) myths/metaphors, and (f) stories.

Case study

In the School of Design at Carnegie Mellon University, Futures is taught through the Design Studies curriculum in the first two years of the undergraduate design program. Futures is one of eight required Design Studies courses (i.e., Place, Histories, Futures, Experience, Cultures, Systems, Persuasion, Power). Unfortunately, limited integration between design studies theory courses and studio-making courses hinders learning sustainability-centered design.

In this paper, we describe an experimental fourth-year undergraduate Environments Design Studio course focused on Artificial Intelligence (AI) futures for site-specific, place-based, hybrid physical/digital spatial interactions. A traditional environments studio instructor and a futures course instructor co-taught the fourth-year studio course with an integrated futures/design approach. Students used futures signs [8], the three horizons framework [5], and Causal Layered Analysis (CLA) [9] in their applied design studio projects.

Futures Methods: Futures Signs, Three Horizons, and CLA

Students used Futures Signs [8] to observe signals, identify issues, and interpret the meanings for their target audiences. Student explorations of AI-related future signs

across short-, mid-, and long-term horizons were informed by The Institute for the Future (IFTF) report “Three Horizons of AI-Enabled Work and Workers” [10]. Our students used CLA’s four layers (e.g., behavior, systems/infrastructure, worldview, myths/metaphors) [9] as lenses to map present and future times. Previously, Zhuang et al. [14] adapted the four-layer version of CLA into a design research interview method.

Student insights into futures methods

Students used CLA’s four layers in three ways: analytically to describe the present state, generatively to explore AI futures, and to map the gaps between the present state and future times. They identified a roadmap of design opportunities through the four CLA levels (i.e., behavior, systems/infrastructure, worldview, myth/metaphor).

Students brainstormed a material layer with AI products, interfaces, touchpoints, and experiences in a physical space. From a design perspective, human behavior and experiences require both a material/artifact layer and a social/infrastructure/systems layer.

All students articulated stories to explain their AI-enhanced designed products for diverse audiences. The diverse range of students’ stories reinforces the plurality of narratives that can emerge through the complex interplay of emplotment in futures imaginaries [4].

Discussion

Some student explorations of CLA articulated five layers: (a) designed material, (b) behavior, (c) infrastructure, (d) worldview, (e) myth/metaphor, and story. The design material layer made previously implicit design details explicit and likely made CLA cross-layer connections more visible to designers.

Each design project tailored stories to specific audiences through scenarios, storyboards, and narratives. Cowart’s prior research describes the construction of futures narratives through: emplotment, archetypes, character, and narrative forms [4]. Future work might explore deeper layers of story beyond myth/metaphor.

The design students’ articulation of material and story layers has us wondering about the causality assumption embedded into CLA. First, according to the Product Ecology framework [7], designed products and services are relational systems that evoke social behavior within larger contexts of people, activities, and environments, without making hierarchical causal-layer claims. Second, in Actor-Network Theory [11], product networks comprise human and non-human actors (e.g., people, technologies, objects, ideas, institutions). As the students considered AI as a non-human actor, future work might explore agency and relationality between CLA layers.

Third, in Ontological Design [13], there is a recursive relationship between world and designer (e.g., we design the world; and the world designs us), similar to CLA claims in the current state vs. futures-centered applications. Does examining CLA through the relational perspectives of Product Ecology, Actor-Network Theory, and Ontological Design open other kinds of connections between CLA layers to support design explorations? For example, how might the artifacts layer and story layer recursively shift design explorations? More research is needed into design-centered CLA applications.

Summary

In this paper, we discuss how fourth-year undergraduate design studio students engaged with Futures Signs on a three-horizons framework report to ideate beyond available AI products/services, and the four CLA layers to inspire design roadmaps of possibilities beyond current times and typical places. CLA is typically used as an analytical tool in futures studies focused on organizational-level decision-making and personal futures. Design students instead used CLA to brainstorm ideas for their

futures-oriented projects and added a fifth layer based on the material design practices, artifacts, touchpoints, and interactions/services that designers shape to support behavior. The diverse product experience stories connected CLA myth/metaphor layer to design storytelling moves (e.g., user-experience scenarios, storyboards, movies).

Students combined CLA with material and story-based design processes. We argue that Futures Thinking methods can be integrated with traditional design methods and practices to better support sustainable, design-centered actions. More importantly, our novel futures/design methods integration requires mutual adaptation.

References

Bleecker J., Foster N., Girardin F., Nova N. 2023. “The Manual of Design Fiction: A Practical Guide to Exploring the Near Future.” Near Future Laboratory.

Boehnert, J.,and Dewberry, E.(2025) UG Design Education for Sustainability: Designing for Planet & for Life, in Clemente, V., Gomes, G., Reis, M., Félix, S., Ala, S., Jones, D. (eds.), Learn X Design 2025, 22-24 September 2025, Aveiro, Portugal. https://doi.org/10.21606/drslxd.2025.149

Candy, S. (2010). The futures of everyday life: Politics and the design of experiential scenarios (Doctoral dissertation, University of Hawai‘i at Mānoa).

Cowart, A. (2024). Between dreams: Futures storytelling in Transition Design (Doctoral dissertation, Carnegie Mellon University).

Curry, A., & Hodgson, A. (2008). Seeing in multiple horizons: Connecting futures to strategy. Journal of Futures Studies, 13(1), 1–20.

Dunne, A., & Raby, F. (2013). Speculative everything: Design, fiction, and social dreaming. The MIT Press.

Forlizzi, J. (2007). The product ecology: Understanding social product use and supporting design culture. International Journal of Design, 2(1), 11–20.

Hiltunen, E. (2008). The future sign and its three dimensions. Futures, 40(3), 247–260. https://doi.org/10.1016/j.futures.2007.08.021

Inayatullah, S. (1998). Causal layered analysis: Poststructuralism as method. Futures, 30(8), 815–829. https://doi.org/10.1016/S0016-3287(98)00086-X

Institute for the Future & NTT DATA Institute of Management Consulting. (2024). Three horizons of AI-enabled work and workers. Institute for the Future. https://www.iftf.org/projects/three-horizons-of-ai-enabled-work-and-workers/

Latour, B. (2005). Reassembling the social: An introduction to actor-network-theory. Oxford University Press.

Scupelli, P., Candy, S., & Brooks, J. (2019). Teaching futures: Trade-offs between flipped classroom and design studio course pedagogies. In IASDR 2019: Design Revolutions (pp. 1–23). International Association of Societies of Design Research.

Willis, A.-M. (2006). Ontological designing. Design Philosophy Papers, 4(2), 69–92. https://doi.org/10.2752/144871306X13966268131514

Zhuang, Z., Liu, Y., & Chen, Q. (2024). Integrating Causal Layered Analysis into design: Enhancing user research for deeper insights. Interdisciplinary Practice in Industrial Design, 144, 101–111. https://doi.org/10.54941/ahfe1005122

Advancing Peacebuilding through Futures and Anticipation in the San Diego-Tijuana Megaregion

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Keywords: conflict anticipation; participatory futures; experiential futures; peacebuilding; hope

In a time when national-level institutions are faltering in an uncertain and unstable political context, an opportunity arises for cities to take a greater role in mediating conflicts and facilitating processes to explore alternative futures. The proposed paper explores how futures and foresight methods have been utilized in San Diego, California and the larger San Diego Tijuana mega-region to anticipate challenges and anticipate social conflict. The paper outlines research on the following core questions: 1. How can participatory futures practice improve anticipation of conflict and risk? 2. What kind of practices are the non-profit sector, universities, businesses, and city government employing to create alternative visions of the future and anticipate shared risks in San Diego? Findings from participatory sensemaking and futures studies conducted by Us Against When will provide lessons learned for implementing futures-based peacebuilding methods. The paper discusses a place-based methodology for utilizing futures and sensemaking approaches for conflict anticipation in a municipal/regional context with the goal of providing actionable insights for sectoral alignment around more positive futures. This builds on an initial methodological synthesis of futures and sensemaking approaches in the peacebuilding context (Eggers, 2023).

References

Eggers, K. (2024). Us Against When: Futures and Complexity-Informed Conflict Transformation in the United States [PhD Thesis, George Mason University]. https://search.proquest.com/openview/0376cb9aa3ee87604250399431fc7ac1/1?pq-origsite=gscholar&cbl=18750&diss=y&casa_token=P1VKbXLvjuMAAAAA:7NwlkLwaKzbs7V3qKp0V5mky_jNsl5Zc8Jh_D-ZchqHqQoGqsfYa8dJIAY-bzQt_zFaTLhOvbaE

Flowers, B. S. (2025). Scenarios: Crafting and using stories of the future to change the present. BMI Publishing.

Miller, R., Poli, R., & Rossel, P. (2018). The discipline of anticipation: Foundations for futures literacy 1. In Transforming the future (pp. 51–65). Routledge.

Candy, S., & Kornet, K. (2019). Turning foresight inside out: An introduction to ethnographic experiential futures. Journal of Futures Studies, 23(3), 3–22.

Milojević, I., & Inayatullah, S. (2015). Narrative foresight. Futures, 73, 151–162.

Turner, J. R., Allen, J., Hawamdeh, S., & Mastanamma, G. (2023). The Multifaceted Sensemaking Theory: A Systematic Literature Review and Content Analysis on Sensemaking. Systems, 11(3), Article 3. https://doi.org/10.3390/systems11030145

Care-full anticipation: curating memories, emotion and uncertainty in transitions

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Keywords: more-than-human, curating, collectives, transition, futures

This paper contributes an “otherwise” curatorial practice that “care-fully co-curates” (Choi et al., 2023) contested emotions in participatory design transition projects, helping to anticipate more pluriversal sustainable futures. Here “otherwise” entails learning and practicing creating knowledge differently (Salazar & Huybrechts, 2020). Whilst curating is still dominated by discourses on stewardship, status quo aesthetics, institutions, and message clarity, curating otherwise requires openness and readiness to disrupt the coherence that makes stories of transition legible, posing a significant challenge to conventional narrative structures. We ask how we might rethink our reflexes in narrating stories of transition projects by framing curating otherwise as a speculative practice for staying with the unknown.

We do so through a case study of a place in transition where our curatorial approach often resulted in simplified emotions and stories. We reflect on the collective capabilities that design researchers need to cultivate to curate “otherwise”: holding contradictions, surfacing othered emotions, and narrating beyond the human. We argue that curating otherwise becomes a collective anticipatory practice that enables collectives (as in Huybrechts et al, 2025) to sense futures through affect and aesthetics that do not prematurely close and cohere ongoing transition processes.

Context

Our work is situated at the ongoing transformation of De Pastorie, an old clergy house in the Belgian village of Helchteren, impacted by a major regional development of an international road. Entangled in multiple agendas for the future, the building and its surrounding landscape have become a site where memories, emotions, and political and regional agendas accumulate. Since 2019, a volunteer-led collective is driving The Pastorie’s restoration, aiming to repurpose it into a community hub that reignites the village’s cultural and ecological life. The project and recent demographic changes (a new refugee centre in the area) introduce uncertainty both in residents and governmental agencies. Building on our work in narrating this project otherwise (Fears et al, 2026), here we present two instances of curating - a mini exhibition entered in a design award contest, and an exhibition project with students.

Design Award Expo

Our first example of curating De Pastorie was for a renowned Belgian Design competition, where we submitted to the Design Research category. For this, we narrated the project through thematic chapters of The Pastorie’s transformation, showcased in 7 exhibition boxes.

The materials we worked with were gathered during participatory work and were a variety of different aesthetic registers and scales (from personal photos of circular design processes, historical photos, drawings, to architectural renders and regional masterplans). Our design practice had shifted to working with more-than-human (MtH) actors and we approached the curation through the eyes of the building to include

multiple dimensions of collective effort. This approach made tangible the project's collective contradictions, whilst we had to navigate reflexes to force narrative coherence. However, this was an uncommon perspective for the "reader"of the exhibition, used to looking with a human, design expert gaze, assessing expertise, skill and inventiveness. As the curators of this exhibition, we were also inexperienced with MtH storytelling, which led to romanticising images and texts and downplaying the othered experiences attached to the transition process depicted.

Emotional Materials Expo

The second curatorial instance was a Live Project, a 14-day design sprint, in which master's students in architecture documented memories and emotions tied to De Pastorie's urban harvesting initiatives.

They then presented the site's narrative in 'material passports', accounting for both the different materials harvested in the transition process, and the emotional dynamics embedded in De Pastorie.

The students' process of curating was influenced by the political and complex process of harvesting materials from expropriated houses along the road development project - the bricks, tools, the rules and regulations governing their reuse in De Pastorie. The students also had to account for how a variety of emotions of frustration, discomfort and insecurity influenced different stakeholders' decision making. However, the framework of the Live Project and its evaluation urged students to curate a coherent whole. The result was aesthetically impressive, but it downplayed those who did not become meaningfully involved despite repeated attempts (the nearby refugee centre) and overlooked fears that the collective repurposing would be a one-off, insufficiently documented to inform future construction practices.

Anticipating with curation

Our discussion contributes to the conference's theme of embodying and sensing futures by exploring the affect and aesthetics of the in-between present and past, and by translating lessons from these examples into a vision for curating otherwise. We engage with design and curatorial research, framing curation as a field of relations and questions that partakes in epistemic and cultural production (Rito, 2025; Rogoff, 2006; Zohar et al, 2024).

To curate otherwise is to produce a different culture, where uncertainty is staged and speculated with, without confusing readers, or simplifying messages, whilst drawing attention to MtH actors. We need curating capabilities that we are still learning to work with - how do we curate contradictions and "othered" emotions of MtH collectives made of clouds, bricks, etc. Such capabilities remain unevenly developed - often individualised in artists and curators - yet transition projects demand them at a collective level. We must turn to disciplines with more expertise in addressing this in order to build the collective skills for curating otherwise, without collapsing the MtH actors and othered emotions into metaphors or science communication.

Western narrative traditions push us toward curating coherent arcs and hopeful closure structures, prioritising the human. But long-term transition stories do not fit these structures. The futures of transitions remain unfinished, punctuated by episodes rather than resolutions. Curating otherwise challenges the existing structures by creating spaces where uncertainty, discomfort, and contradiction can be collectively negotiated as part of an embodied future-making. This paper is an invitation to further investigate and create these spaces, based on sharing our experiences in two attempts of curating otherwise.

References

Choi, J. H., Braybrooke, K., & Forlano, L. (2023). Care-full co-curation: Critical urban placemaking for more-than-human futures. City, 27(1–2), 15–38. https://doi.org/10.1080/13604813.2022.2149945

Huybrechts, L., Teli, M., Saad-Sulonen, J., & Sciannamblo, M. (2025). Collectives and Participatory Design. In Routledge International Handbook of Contemporary Participatory Design. Routledge.

Rito, C. (2025, February). The Curatorial: From Epistemic Capacities to Curatorial Research. The Curatorial. https://www.thecuratorial.net/index/critical-curating/the-curatorial-rito

Rogoff, I. (2006). Smuggling' – An Embodied Criticality. Transversal - EIPCP Web Journal, (8).

Salazar, P. C., & Huybrechts, L. (2020). PD otherwise will be pluriversal (or it won't be). Proceedings of the 16th Participatory Design Conference 2020 - Participation(s) Otherwise - Volume 1, PDC '20, 107–115. https://doi.org/10.1145/3385010.3385027

Zohar, H., Simeone, L., de Götzen, A., & Morelli, N. (2024). When we talk about time, we mean many different things: Employing visual mapping to think through more-than-human temporalities in participatory design. Frontiers in Communication, 9. https://doi.org/10.3389/fcomm.2024.1440257

Co-constructing Goddess Fiction: Designing Feminist Future Beliefs via Collective Auto-ethnography and Design Fiction

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Keywords: participatory design goddess fiction (PDGF); feminist speculative design; collective autoethnography (CoAE); self-combing women; design fiction

Design fiction (DF) is a significant genre in contemporary design research and practice, valued for its potential to stimulate critical reflection, pioneer future imaginings, and articulate the discourses and worlds behind design projects (Dunne & Raby, 2013; Tharp & Tharp, 2018). Through fictional scenarios and artefacts, DF renders abstract issues tangible while challenging existing social contexts and cultural assumptions. However, existing DF practices are undermined by a critical paradox. The mainstream development field of DF in speculative design remains largely confined to Western, elite spaces and is dominated by white male perspectives, thereby reproducing exclusion and narrative elitism (Galloway & Caudwell, 2018; Luiza, 2014). This limitation results in the absence of narratives from women and marginalised groups within DF. In other words, the design fiction practice lacks women's anticipatory narratives more broadly.

This paper explores this crucial gap by extending DF as an ethically situated, feminist practice for democratisation. It draws on the historical experience of Chinese marriage-resistant women (the self-combing women). These women constructed identities and mutual-aid communities through co-believing in goddess stories and creating goddesses to prompt new goddess beliefs (Li et al., 2026). Believing in goddess stories was a participatory practice deeply intertwined with the identity and beliefs central to their marriage-resistant practice. Their experience is an example of design fiction as their speculative practice enabled the manifestation of alternative social realities.

We use this example to propose the novel concept and methodology of "Participatory Design Goddess Fiction (PDGF)". This is a framework that translates the historical strategies of self-combing women into a contemporary participatory design practice. In this framework, women's collective and discursive belief-building practices function as a powerful form of anticipatory design for the democratisation of future women's identity imaginaries. By framing goddess stories as a form of "belief-based narrative context in design fiction," this framework transforms historically silenced women's co-narratives into a collective belief of a new identity, enabling participants to actively co-design alternative belief futures beyond inherent discourses.

Methodologically, this paper introduces Collective Autoethnography (CoAE) to achieve the collectivisation and democratisation of women's narratives, thereby establishing the "Participatory Design Goddess Fiction (PDGF)" framework. In PDGF, goddess stories are framed as a design-fiction-oriented storytelling practice. This practice involves co-constructing women's identities, beliefs, and future visions through speculative and discursive belief-building centred on the goddess. Within this framework, design goddess fiction becomes a participatory practice for materialising beliefs concerning

women's identity and collective imagination. The study comprises four main components:

- Developing a new feminist participatory design framework by integrating Design Fiction and Collective Autoethnography (CoAE), utilising goddess stories as a central narrative medium.
- Establishing the theoretical concept and methodology of “Participatory Design Goddess Fiction” (PDGF).
- Evaluating the framework through a pilot “Goddess Stories” re-narrative workshop to test the efficacy and ethical applicability of the CoAE-PDGF approach.
- Translating these theoretical concepts into design practice, grounded in the aforementioned framework and pilot study, to expand collective feminist future beliefs through the participants.

This research highlights how women’s collective goddess narratives break through established discursive silences by integrating collective autoethnography and design fiction. In doing so, it expands the democratic boundaries of design fiction and demonstrates its transformative potential in envisioning collective feminist futures.

References

Dunne, A., & Raby, F. (2013). Speculative Everything: Design, Fiction, and Social Dreaming. The MIT Press. https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=nlebk&AN=672907&site=ehost-live&custid=s5491658.

Galloway, A., & Caudwell, C. (2018). Speculative design as research method. In G. Coombs, A. McNamara, & G. Sade (Eds), Undesign (1st edn, pp. 85–96). Routledge. https://doi.org/10.4324/9781315526379-8.

Li, L., Caudwell, C., & Scott, R. (2026). Disrupting and reimagining women’s identities: A performative design methodology inspired by self-combing women’s ‘goddess fictual’ practice. https://doi.org/10.21606/drs.2026.2940.

Luiza, P. de O. M. (2014). Privilege and Oppression: Towards a Feminist Speculative Design.

Tharp, B. M., & Tharp, S. M. (2018). Discursive design: Critical, speculative, and alternative things. The MIT Press.

Design Meets Psychology: Towards a Diachronic-Chrono-topic Framework for Human-Centered Sacred Architecture.

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Keywords: design thinking, sacred architecture, spatial psychology, diachronic analysis, human-centered design

This paper investigates how sacred architecture can be reframed as a structured spatial–psychological system capable of informing contemporary human-centered design. While existing scholarship extensively documents the historical and symbolic dimensions of sacred spaces, it remains largely descriptive and lacks operational frameworks that translate these insights into design methodology. Addressing this gap, the study proposes a Qualitative Comparative Spatial Coding Model (QCSCM) grounded in diachronic and chronotopic analysis.

The research examines a curated corpus of sacred monuments spanning Ancient, Classical, Medieval, and Modern periods. Rather than treating these precedents as historical narratives, they are analyzed as datasets composed of spatial–sensory variables, including spatial orientation, light modulation, material logic, acoustic configuration, symbolic density, and corresponding psychological modes. Through comparative coding, the study identifies recurring relationships between spatial configurations and experiential outcomes.

The diachronic dimension traces transformations in spatial strategies across time, revealing shifts from vertical monumentality and collective transcendence toward subtractive spatiality and introspective experience. The chronotopic dimension situates these transformations within their cultural and temporal contexts, interpreting architecture as an expression of evolving modes of spiritual consciousness.

Findings reveal six dominant cross-temporal patterns linking architectural variables to psychological orientations, including transcendence, ontological unity, introspection, and communal synchronization. These patterns demonstrate that sacred architecture consistently operates through calibrated manipulation of sensory parameters rather than stylistic form alone.

The study's primary contribution is twofold. Methodologically, it introduces a structured analytical model that transforms architectural history into a comparative spatial–psychological dataset. Practically, it translates these findings into a human-centered

design framework grounded in Design Thinking principles, enabling architects to align spatial strategies with intended experiential outcomes.

By integrating phenomenology, environmental psychology, and design methodology, the research positions sacred architecture as an adaptive, experience-driven system. The proposed framework offers a transferable approach for designing emotionally resonant environments, extending beyond sacred contexts to broader applications in contemporary architectural practice.

The proposed framework reconceptualizes sacred architecture as an iterative process centered on human experience rather than formal typology. At its core, Design Thinking operates as the integrative mechanism linking psychological intention with spatial–sensory configuration. Through phases of empathizing, defining, ideating, prototyping, and testing, designers can translate abstract spiritual and emotional needs into tangible spatial strategies.

The framework is structured across three interrelated layers: psychological orientation, spatial–sensory variables, and chronotopic context. This layered model enables designers to calibrate architectural elements such as light, materiality, and acoustics in response to specific experiential goals, whether collective elevation, contemplative stillness, or existential reflection.

By reframing historical precedents as repositories of spatial intelligence, the study moves beyond imitation of form toward the strategic application of underlying principles. This shift allows sacred architecture to remain culturally responsive while adapting to contemporary social, environmental, and emotional conditions.

From a research perspective, the study contributes to the advancement of qualitative design methodologies by demonstrating how comparative coding and cross-temporal analysis can produce rigorous yet adaptable frameworks. It also bridges a critical gap between phenomenological theory and practical design application, offering a replicable model for integrating experiential knowledge into architectural processes.

The findings are particularly relevant in the context of contemporary design challenges, where increasing attention is placed on well-being, emotional engagement, and human-centered environments. The framework provides designers with a structured yet flexible tool for addressing these demands, positioning sacred architecture as a living methodological field rather than a fixed historical category.

Ultimately, this research argues that the future of sacred design lies not in preserving formal traditions, but in understanding and reinterpreting the spatial mechanisms that shape human experience across time.

References

ArchDaily. (2010). AD classics: Church of the Light / Tadao Ando Architect & Associates.
Bachelard, G. (2005). The poetics of space. Beacon Press.
Brown, T. (2009). Change by design. Harvard Business Press.
Cohen, M. (2015). The Sainte-Chapelle and the construction of sacral monarchy. Cambridge University Press.

Gür, B. F. (2017). Sancaklar Mosque: Displacing the familiar. International Journal of Islamic Architecture, 6(1), 165–193.
Hurwit, J. M. (2004). The Acropolis in the age of Pericles. Cambridge University Press.
Lancaster, L. C. (2005). Concrete vaulted construction in imperial Rome. Cambridge University Press.
Liedtka, J., & Ogilvie, T. (2011). Designing for growth. Columbia University Press.
Norberg-Schulz, C. (1980). Genius loci. Rizzoli.
Pallasmaa, J. (2012). The eyes of the skin (3rd ed.). Wiley.
Plattner, H., Meinel, C., & Leifer, L. (2009). Design thinking. Springer.
Salam, M. (2020). Psychological impacts of architectural design. Journal of Art, Architecture and Built Environment, 3(2), 31–41.
Valenzuela, J., Díaz-Andreu, M., & Escera, C. (2020). Psychoarchaeoacoustics. Frontiers in Psychology, 11.
Zumthor, P. (2006). Thinking architecture. Birkhäuser.

Exploring the Impossibilities of Artificial Intelligence in Creative Practices

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Keywords: genAI; impossibility; futures; creative practices

Speculative design, following Henchey's (1978) categorization, considers four types of futures: probable, possible, plausible, and preferable. Recently, Dunne and Raby (2025) brought to the fore the importance of "impossibilities" as a new avenue for speculation. The ambiguity of this term raises the question of whether impossibilities might be relevant when discussing possibilities. This perspective invites us to have a critical gaze on the darker side of the "future cone" (Voros, 2003) to see whether exploring impossibilities can facilitate reflections on unconscious desires, fears, neglects, and rejections. Cooper (2005) states that impossibility can "show(s) us how the world cannot be" and simultaneously "how the world must be." Following this line of thinking, we engage in an exploratory study that investigates the impossibilities of Artificial Intelligence (AI) in creative practices with a focus on Generative AI (gen AI).

Generative AI (genAI) are AI tools that create content such as text, images, and videos based on user-provided prompts. As genAI becomes increasingly influential across various creative fields, social imaginaries of its capabilities and appropriate applications have become a productive force in academic and practitioner contexts. Funding schemes echo, and produce, this interest calling for work related to AI, design, and the arts. From an academic perspective, an increasing corpus of work investigates the opportunities and benefits of genAI is as a collaborative partner (e.g., Tsao et al., 2025; Palani & Ramos, 2024; Garcia, 2025), while questioning ethical issues such as authorship (Bomba et al., 2024; El Moussaoui, 2025), ownership (Watiktinnakorn et al., 2023), or its impact on labour conditions (Trades Union Congress, 2025). The possibilities of genAI for creative practices appear to be unlimited, despite critical voices on its impact on, e.g., the future of creative work, power relationships, and the environment.

In this exploratory study, we outline a methodological and empirical contribution. We propose an unconventional approach to envisioning the future by questioning which kind of (im)possible futures creative practitioners anticipate about genAI in their profession. We investigate what creative professionals believe genAI cannot do in the present, what it will not be able to achieve in five years, and what it should not be able to do. In this abstract, we present the preliminary results of an on-going questionnaire in which we gathered responses from 20 professionals in diverse creative fields. The results point to interesting insights on the tensions between the envisioned possibilities and what should be deemed impossible.

All respondents actively work in the creative fields. Most of them work in design (e.g., graphic, textile, web, interaction, product design) and some work in fields such as architecture, visual arts, and media creation. More than 60% have been working for

over ten years in the field and ca. 80% currently use genAI in their work. When asked about their feelings regarding the use of genAI in their work, 42% felt optimistic or very optimistic; 37% felt pessimistic or very pessimistic, and 21% felt neutral.

The most common reason for feeling optimistic was increased productivity for time-demanding and boring tasks; however, respondents' reasons for feeling pessimistic were varied. A repeated concern regarded the impact on the quality of creative work (e.g., “everything feels "dead" and surreal”, “sloppification of mainstream content”, “everything will become more flat”). Some replies pointed to the impact on the nature of work, e.g., power distributions between designers and genAI (“If not used in a proper way, the tool takes control”), acceleration of outputs generation (“how can I teach students the importance of doing the basics if they can chose the AI shortcut”), and re-legitimising design approaches that had been previously questioned

(“in the past decades designers have questioned the purely solution oriented design. Right now, I think genAI is too solution oriented”). Respondents expressed concerns about ethical issues on the future of creative work (e.g., “Big companies not wanting to pay creatives for their work = less job opportunities”).

When asked what genAI cannot do in the present, the respondents pointed out tasks and processes that required creativity, intuition, and vision. Their replies did not elaborate as much on the “what” but rather on the “how”. For example, one respondent wrote that genAI cannot “envision curatorial concepts that are conceptually rigorous, situated and transdisciplinary at the same time”. When asked what genAI won’t be able to do in the next five years, their replies further elaborated on the impossibility of doing creative work in certain ways since "AI can only reproduce and elaborate", and some respondents predicted a turn towards non-digital futures (AI cannot “create something meaningful for humans that makes us less dependent on technology” or “create work that's analog. I would not be surprised seeing a trend again towards things that feel more handmade, more human.”).

Replies to the question of what AI should not be able to do in the future are rich and reveal tensions between what respondents envision will be impossible and what should be limited. Interestingly, some respondents believed that AI will have "no limits" in the next five years, which reinforces the importance of imagining impossibilities. The most common answer points to decision-making activities as "the final say should always not come from an AI". Still, some answers outline interesting directions on how the future of AI in creative practices could be proactively shaped (e.g., "AI should not take away the importance of learning to live and work with constraints (time, resources, energy, ...).", " AI should not be allowed to plunder the intellectual output of humans"). Some dissonant voices predicted that there won't be, and there should not be, space for impossibilities (" I think it should do everything, why not? It does what we do, even from an ethical point of view, as using the data available (we humans do the same) but in our case it is more obscure.")

These preliminary results outline a methodological and empirical contribution of imagining (im)possibilities of genAI in creative practices, which contributes to discussions on the conference theme on “Futuring by Designing Making worlds as a mode of thinking”. Focusing solely on AI's capabilities can promote dystopian and technocratic narratives that disempower individuals. In contrast, emphasising the aspects that should remain human can encourage discussions about setting boundaries for the future use of AI, shaping concrete proposals for doing so in emancipatory and hopeful ways.

References

Dunne, A., & Raby, F. (2025). Not here, not now: Speculative thought, impossibility, and the design of imagination. The MIT Press.

Bomba, F., Menéndez-Blanco, M., Grigis, P., Cremaschi, M., & De Angeli, A. (2024). The choreographer–performer continuum: A diffraction tool to illuminate authorship in more-than-human co-performances. ACM Transactions on Computer-Human Interaction, 31(6), 1–23.

Cooper, R. (2005). Thought experiments. Metaphilosophy, 36(3), 328–347.

El Moussaoui, M. (2025). Redefining authorship in architecture in the age of AI. In AI in society (Oxford Intersections). Oxford University Press.

Garcia, M. B. (2025). The paradox of artificial creativity: Challenges and opportunities of generative AI artistry. Creativity Research Journal, 37(4), 755–768.

Henchey, N. (1978). Making sense of futures studies. Alternatives, 7(2), 24–28.

Palani, S., & Ramos, G. (2024). Evolving roles and workflows of creative practitioners in the age of generative AI. In Proceedings of the 16th Conference on Creativity & Cognition (pp. 170–184).

Trades Union Congress. (2025). AI for creative workers: A TUC manifesto. https://www.tuc.org.uk/sites/default/files/2025-02/AI_Manifesto_Creative_Workers_2025_AW.pdf

Tsao, J., Liang, C. X., Nogues, C., & Wong, A. (2025). Perceptions and integration of generative artificial intelligence in creative practices and industries: A scoping review and conceptual model. AI & Society, 1–20.

Voros, J. (2003). A generic foresight process framework. Foresight, 5(3), 10–21. https://doi.org/10.1108/14636680310698379

Watiktinnakorn, C., Seesai, J., & Kerdvibulvech, C. (2023). Blurring the lines: How AI is redefining artistic ownership and copyright. Discover Artificial Intelligence, 3(1), 37.

Mapping Values vs. Enacting Them: Two Approaches to Increasing Optimistic Exploration in Personal Futures Courses

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Keywords: personal futures; design pedagogy; motivation; engagement; project-based learning

Many college students dread thinking about their futures. They grew up in a confusing, rapidly changing time marked by forces outside of their personal control—climate change, artificial intelligence, politics. The conflict between caring about big problems and not having the means to solve them leads many students to disengage.

From machine learning theory, it is well known that without a built-in bias towards optimism in the face of uncertainty, agents will under-explore the available choices and learn to take greedy actions that minimize costs. Our students do the same: they act greedily, favoring safe, short-term choices over transformative exploration. To one day help students stay with the difficulty of tackling complex sustainable design challenges, we need to start by finding a way to bias them toward optimistic exploration.

Building on a Spring 2025 pilot suggesting that personally-centered futures work could serve as an accessible entry point into responsible, sustainable design, we developed "Personal Design Futures": two half-semester elective courses, open to graduate and undergraduate students of all majors, taught in Fall 2025. Each course met weekly for 110 minutes and was anchored in discussions about personal values and iterative cycles of design, execution, and reflection.

Course #1 introduced personal futures thinking as a tool for anticipating problems and building solutions around personal values, and used forces of change and life domains as starting points. Homework drew from Wheelwright's (2010, 2012) It's Your Future Make it a Good One! and The Personal Futures Workbook, and Paul and Elder's (2004) critical thinking guides, and included value visualization activities and taking stock of forces of change across different life domains.

Course #2 was built around four weekly design-execute-reflect cycles, scaling from personal to collective impact. Reflection guides following Hatton and Smith's (1995) levels of reflection and Schön's (1983) reflection-on-action framework, combined with readings in behavior change theory, learning science, value-based design, and motivational theory gave students tools to design and test hypotheses.

Method.

Analyzing reflections from Course #1 (11 students) and Course #2 (8 students), we found striking differences in how students related to others and understood the impact of their designs. We coded each social interaction mentioned in the reflections as extractive (using others as resources) versus beneficial (designing mutual exchange), and design thinking as trade-off (time and energy as zero-sum) versus transformative (strategies that transfer and increase time and energy across life domains).

Findings.

While most students in Course #1 aspired to have positive impacts on a broad community of people, yet in their own plans, they related to people almost exclusively as sources of knowledge or opportunity. In the values-based plans they made for class, all eleven students only reached out to people to extract knowledge and career opportunities. In their reflections seven students reported discomfort towards the social situations their plans forced them into, often not following through with their social plans, or adding steps and “willpower” to overcome social apprehension. No students realized they could re-design the social interaction itself to be more mutually beneficial.

At the start of Course #2, students also planned extractive social interactions. But as the course progressed, all eight students used the motivational theories to reframe their goals and justify re-designing interactions to be sustainable and mutually beneficial. For example, adding reflection to their study groups, designing structures to share power and give feedback on leadership, or sharing joy and knowledge with others.

In Course #1, students experienced strict delineations between life domains (e.g., academics vs. health vs. fun), and their strategies to make progress in one domain often relied on protecting time from another domain, or on generating energy from one domain to use up in another. Two students described general planning insights that could transfer to other domains.

Where Course #1 students treated time as scarce, Course #2 students learned to reframe the problem; several students realized that their plans could increase their overall energy and speed up work across domains. Two of these students later described a "piling on" effect: a personal mindset shift helped them design interactions to inspire others to re-connect with their agency, and set off ripples of mutually beneficial interactions.

To measure whether the course changed students’ self-efficacy beliefs, we surveyed students on their views of the world's future and their own ability to improve it in the first and last week of class. In both courses, most students felt the same or more capable by the end (5 of 11 in Course #1; 5 of 8 in Course #2). All students who started feeling incapable (2 in each course) reported feeling capable of improving the future of the world by the end.

Discussion

These courses contrast two approaches to values-based design for the future. Course #2's enacted approach did more to help students become genuine designers of sustainable, responsible systems.

Course #1 gave students tools to take stock of their values and map them across life domains, expecting that rich, integrated strategies would emerge from the process. For many students, they didn't. Rather than discovering new ways to think about their goals, students often stayed anchored to the categories they were given at the start, defaulting to time and energy allocation as their primary design lever.

Course #2 gave students motivational theories as active design tools, which opened up the design space considerably. Students realized they could redesign their goals to have more intrinsic motivation, restructure group dynamics, and build better feedback mechanisms. We also believe the course structure itself played a role: by explicitly using Self-Determination Theory to explain our own design decisions — giving students agency over how they reflected, choice in which communities they worked with, and progressively challenging design prompts — we modeled the values-grounded design we were asking them to practice. Many of those elements showed up in students' own plans by the end of the course.

Our findings align with research on near-futures utility-value interventions, which have increased engagement and interest among low-confidence low-interest learners in

STEM. We argue that similar mechanisms are at play in sustainable futures education. The findings suggest that giving students motivational theories as design frameworks may be a path toward generating optimism for sustainable design futures.

References

Hatton, N., & Smith, D. (1995). Reflection in teacher education: Towards definition and implementation. Teaching and Teacher Education, 11(1), 33–49. https://doi.org/10.1016/0742-051X(94)00012-U

Elder, L., & Paul, R. (2004). Critical Thinking... and the Art of Close Reading (Part II). Journal of Developmental Education, 27(3), 36-37.

Schön, D. A. (1983). The reflective practitioner: How professionals think in action. Basic Books.

Wheelwright, V. (2012). It's your future...: Make it a good one! Personal Futures Network.

Wheelwright, V. (2010). The Personal Futures Workbook. Personal Futures Network.

Materialising Futures in Ageing and Care: Speculative Artefacts for Sensemaking and Consensus in C-Suite Contexts

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Keywords: strategic foresight; speculative design; boundary objects; sensemaking; consensus

Organizations increasingly face the challenge of engaging with uncertain and ambiguous futures, particularly in domains such as ageing and care. While strategic foresight offers analytical tools to explore possible futures, less is understood about how such futures are collectively interpreted, negotiated, and rendered actionable in executive decision-making contexts; especially when multiple, potentially conflicting interpretations coexist. This is particularly problematic given well-documented rigidities of imagination in foresight processes (Burt & Nair, 2020) and the inherently social and processual nature of sensemaking (Weick, 1995).

This research addresses this gap by investigating how speculative design artefacts can function as boundary objects (Star & Griesemer, 1989) that enable frame shifts and support collective sensemaking among C-level actors. Positioned at the intersection of strategic foresight, speculative design, and constructive design research, the study conceptualises artefacts not as representations of futures, but as epistemic devices that make alternative futures tangible, discussable, and contestable. In line with speculative design approaches, these artefacts deliberately balance ambiguity and plausibility to provoke reflection while remaining interpretable (Dunne & Raby, 2013; Auger, 2013; Bleecker, 2009).

Empirically, the research is structured around intervention-based “Futures Labs” with executive participants. These labs introduce deliberately ambiguous, materialised future artefacts that act as shared reference points for interpretation and negotiation. The intervention follows a staged process: initial individual “hot reactions” capture pre-reflexive responses; these are subsequently translated into explicit implications and underlying assumptions through structured exploration; and finally, collectively negotiated into shared tensions and strategic questions.

This process enables the reconstruction of evolving individual frames and the emergence of shared orientations and preliminary forms of consensus without enforcing agreement, thereby offering a novel lens on anticipatory sensemaking in executive contexts.

The contribution is presented as a work-in-progress and focuses on the research design, methodological approach, and emerging analytical insights from ongoing empirical work.

Conceptually, the study builds on boundary object theory (Star & Griesemer, 1989), sensemaking (Weick, 1995), and speculative design, extending these perspectives through a design research lens. In particular, it examines how artefacts can serve as shared yet interpretively flexible anchors that externalise implicit assumptions and enable their negotiation.

Methodologically, the research follows a constructive design research approach (Koskinen et al., 2013) combined with constructivist grounded theory (Charmaz, 2014). The study is structured iteratively: an initial pilot Futures Lab conducted in an academic setting served to test and refine the dramaturgy, artefacts, and data collection methods, before being adapted for application in an organisational C-suite context. A second Futures Lab in a care-proximate organisational setting is planned to further probe the transferability of the approach.

A process-oriented data triangulation captures multiple layers of meaning-making across time, including pre-intervention frames, pre-reflexive reactions during the intervention, structured group-based exploration, and post-intervention reflections. This enables a reconstruction of how interpretations evolve, stabilise, and are negotiated both individually and collectively.

Initial observations suggest that speculative artefacts can trigger productive ambivalence and emotional engagement, and shift discussions from technology-centric interpretations toward broader systemic considerations. Furthermore, the structured sensemaking process appears to support the emergence of shared strategic questions, even in the absence of explicit consensus or decision-making pressure.

The paper contributes by proposing a design-led approach centred on speculative artefacts as catalysts for facilitating future-oriented sensemaking in organisational settings, and by offering a methodological framework to analyse how futures are collectively constructed, contested, and stabilised, and how they give rise to shared orientations and negotiated forms of consensus in C-suite contexts.

References

Auger, J. (2013). Speculative design: Crafting the speculation. Digital Creativity, 24(1), 11–35. https://doi.org/10.1080/14626268.2013.767276

Bleecker, J. (2009). Design fiction: A short essay on design, science, fact and fiction. Near Future Laboratory.

Burt, G., & Nair, A. K. (2020). Rigidities of imagination in scenario planning: Strategic foresight through ‘unlearning’. Technological Forecasting and Social Change, 153, 119927. https://doi.org/10.1016/j.techfore.2020.119927

Charmaz, K. (2014). Constructing grounded theory (2nd ed.). Sage.

Dunne, A., & Raby, F. (2013). Speculative everything: Design, fiction, and social dreaming. MIT Press.

Koskinen, I., Zimmerman, J., Binder, T., Redström, J., & Wensveen, S. (2013). Design research through practice: From the lab, field, and showroom. Morgan Kaufmann.

Star, S. L., & Griesemer, J. R. (1989). Institutional ecology, ‘translations’ and boundary objects: Amateurs and professionals in Berkeley’s Museum of Vertebrate Zoology, 1907–39. Social Studies of Science, 19(3), 387–420. https://doi.org/10.1177/030631289019003001

Weick, K. E. (1995). Sensemaking in organizations. Sage.

Reflecting on conditions for safe and brave experiential futures: learning from the person-centred approach

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Keywords: futures thinking; person-centred approach; research cultures; prospection; experiential futures

Academic research cultures are often constrained by short-term thinking, competitive pressures, and a focus on immediate outputs (Wellcome Trust, 2020). These challenges stifle creativity, limit interdisciplinary collaboration, and leave staff at all levels ill-equipped to navigate uncertain futures.

In this paper we will report on one aspect of a 12-month project funded by the Wellcome foundation in the UK to examine the conditions for imaginative research futures, CoGIF (Creating the Generative Conditions for Imaginative Research Futures). CoGIF sought to contribute by exploring the conditions that support future-oriented imagination in research cultures through a series of four 3-hour futures thinking workshops for academic research and research-enabling staff at the University of Edinburgh between September and December 2025, iterating these between January and April 2026. The CoGIF project was part of a wider programme of transformation of academic culture at the University of Edinburgh alongside the Universities of St Andrews and Glasgow as one of several projects funded through the InFrame initiative.

The term ‘conditions’ in our project title was informed by project leads’ (the authors’) experience of contexts designed for care and personal development both within academic and practice. Shipp (an applied psychologist) and Kettley (a participatory design researcher) are motivated to examine futures thinking through the lens of Person-Centred and Experiential (PCE) praxes, as a means of situating ethical and relational practice. PCE practitioners typically work one-to-one or in small groups with clients in a therapeutic setting, but as a wider approach, it has a significant presence in relational approaches to conflict resolution, education and organisational consultancy (Rogers 1957). There are crossovers particularly in arts-based methods for public and patient engagement in health futures (Fannon 2021), and in the Person-Centred Creative Arts (Iossifides 2014). The 2025 European PCE Symposium held in Glasgow was titled Growing in Difficult and Challenging Places (PCE Europe 2025). With this in mind, we took a 90-minute futures thinking workshop to the symposium, inviting reflections on the experience of taking part in a “The Thing from the Future” activity (Cuttica and Candy 2022).

For this paper, we will focus on the first of the necessary conditions of the Person-Centred Approach for growth and change, psychological contact (Sanders 2007, Warner 2007), and compare our understandings of this with the psychological conditions conducive to prospection (Gilbert and Wilson, 2007) and episodic future thinking (Atance and O'Neill 2001) as a means of engaging with possible futures. Our dataset comprises the transcripts from the first four futures thinking workshops run at the University of Edinburgh, plus our own debrief notes from the workshop delivered at the PCE symposium. Through qualitative analysis of this data, and a discussion of it in light of the PCE psychological contact literature, we expect to be able to offer practical insights to inform the framing, instructional, and attitudinal dimensions of futures thinking workshops.

References

Atance, C., & O'Neill, D. K. (2001). Episodic future thinking. Trends in Cognitive Sciences, 5(12), 533–539. https://doi.org/10.1016/S1364-6613(00)01804-0

Cuttica, F. & Candy, S. (2022). The Futures Bazaar: A Public Imagination Toolkit. London: British Broadcasting Corporation & Situation Lab.

Fannon, L. (2021). Warp and Weft: psycho-emotional health, politics and experiences. Active Distribution.

Gilbert, D. T., & Wilson, T. D. (2007). Prospection: Experiencing the future. Science, 317(5843) 1351–1354. https://doi.org/10.1126/science.1144161

Iossifides, M. (2014). Thoughts on the Greek Crisis and Person-centred Counselling: Crisis, Congruence and Questions Asked. Self & Society, 41(2), 45–48. https://doi.org/10.1080/03060497.2014.11084343

Merry, T. (2002). Learning and Being in Person-Centred Counselling. Ross-on-Wye: PCCS Books.

PCE Europe (2025). Growing in Difficult and Challenging Places: PCE Europe Symposium Glasgow 2025. https://www.strath.ac.uk/humanities/psychologicalscienceshealth/counsellingunit/cpd/pceeuropesymposiumglasgow2025/

Sanders, P. (Ed.) (2007). The Contact Work Primer. PCCS Books.

Warner, M. (2002). Psychological Contact, Meaningful Process and Human Nature. A Reformulation of Person-Centered Theory. In G. Wyatt and P. Sanders (Eds.) Contact and Perception. Rogers' Therapeutic Conditions: Evolution, Theory and Practice Vol. 4. pp76-95.

Wellcome Trust. (2020). What researchers think about the culture they work in. https://wellcome.org/insights/reports/what-researchers-think-about-research-culture

Retrospective Anticipation: Mobilizing Singapore's Wartime Prison Camps as "Anticipatory Infrastructure" for Autarkic Urbanism

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Keywords: anticipatory infrastructure; urban foresight; history

Autarkic self-sufficiency is increasingly envisioned to be an integral planning ideal for future cities. Seeking to prepare cities for a whole range of potentially devastating crises ranging from pandemics to global sea level rise, planners are starting to design cities for the highly probable future scenario in which they might have to continue functioning despite being almost entirely cut off from their external environs. This trend is especially evident across urban Asia. Since the 2010s, successive plans for future cities in Asia have ambitiously proposed building within a short timeframe of decades novel forms of dense ecologically autonomous settlements that are almost-entirely self-sufficient in terms of food, freshwater, energy, and other natural resources. These include Mars Science City in the deserts of Dubai, Busan Oceanix off the coasts of South Korea, the lockdown ready residential blocks of China's up-and-coming megacity Xiong'an, as well as NEOM, a 170-kilometer-long linear mega-city in the Kingdom of Saudi Arabia that has been touted to be the "world's most self-sufficient city".

If successfully implemented, these planned self-sufficient cities in Asia have the potential to serve as pioneering models of an alternative sustainable urban planning paradigm for future cities. Notwithstanding, the long-term viability and even desirability of autarkic urbanism is still very much uncertain. While there is no shortage of scientific and engineering studies demonstrating the feasibility of self-contained human living, we have little or no idea how things would play out in the real world when implemented in the form of large-scale urban settlements. How would a self-contained city be experienced by its inhabitants? Will they accept the many potentially inconvenient adjustments in their lifestyles and practices that come as part of living in such a city? Would the infrastructure facilitating resource circularity in these cities work as intended? Such questions are often overlooked by existing plans for future self-sufficient cities in Asia. Being derivative forms of techno-utopian sustainability imaginaries, these plans tend to be based upon the unrealistically optimistic assumptions of perfect technology, resource abundance, as well as the absence of societal conflict.

The manifold uncertainties surrounding the implementation of autarkic urbanism suggests the need for a fundamental rethink of the "anticipatory infrastructure" underpinning this future city paradigm (Pink 2025). Being largely unproven works-in-progress, planned self-sufficient cities in Asia cannot be the sole normative "anticipatory infrastructure" for generating visions and imaginaries of autarkic urban futures. They also need to be supplemented by case studies of other examples of self-sufficient human settlements across time and space like Findhorn Ecovillage in Scotland, as well as the many Prison-of-War and civilian internment camps established during the course of the 19th and 20th centuries. Though oftentimes not directly comparable to the technologically sophisticated greenfield developments that are currently being planned across Asia, engaging with a wider range of autarkic

urbanisms would open up our anticipatory horizons to alternative urban futures that are potentially more equitable and livable.

In this paper, I will look back retrospectively to past examples of self-sufficient human settlements in order to excavate alternative “anticipatory infrastructures” for generating autarkic urban imaginaries. Employing as my case study the Prisoner-of-War and civilian internment camps of wartime Singapore (1942-1945), I mobilize these historical sites as “anticipatory infrastructures” for imagining the future of autarkic urbanism in two ways. Firstly, by reconstructing the histories of the various infrastructures like allotment gardens which enable these densely populated sites to continue functioning despite limited resource inputs, I show how Singapore’s wartime prison camps can be mobilized as urban models and sources of ‘best practices’ for other present-day cities. Secondly, by emplotting my histories as fine-grained microhistories that draw attention to the varied lived experiences of urban autarky, I show how these sites generate alternative dystopian futures that are able to temper existing overly optimistic dominant techno-utopian imaginaries of self-sufficient cities such as NEOM with a much-needed dose of “anticipatory realism” (Pink et al 2025).

Apart from expanding the range of possible autarkic urban future imaginaries available to urban planners, this exercise in retrospective anticipation also promises to bridge the long-standing methodological gap between history and futurology. While historians and futurists both generally agree that prognostications of the future are best grounded in a firm understanding of the past (e.g. Bendor et al 2021; Hobsbawm 1981), attempts to actually to do so are few and far between. On one hand, while many noteworthy attempts have been made by futurists to propose possible approaches for employing the past in prognostications of the future, such methods are largely confined to macro-scale global trends and rely primarily upon secondary literature rather than archival sources (e.g. Galtung and Inayatullah 1997; Daffara 2004). On the other hand, academic historians tend to have a considerably more circumspect engagement with the future due to the widespread perception that forecasting the future represents a dangerous transgression of the sacrosanct disciplinary norm of historicism (e.g. Stearns 1983; Berridge 2016; Staley 2002). By providing a versatile method for systematically translating archival research conducted by professional historians into empirically grounded urban futures knowledge, this paper hopes to serve as a useful starting point for practitioners from either discipline.

References

Bendor, R., Eriksson, E., Pargman, D. (2021). Looking backward to the future: On past-facing approaches to futuring. Futures 125, 102666. DOI:10.1016/j.futures.2020.102666

Daffara, P. (2004). Macrohistory and city futures. Journal of Futures Studies, 9(1), 13-30.

Galtung, J., & Inayatullah, S. (Eds.) (1997). Macrohistory and Macrohistorians - Perspectives on Individual, Social and Civilisational Change. London: Praeger

Hobsbawm, Eric. (1981). Looking forward: History and the future. New Left Review 125, 3-20.

Pink, S. (2025). Artificial Intelligence and the Futures Turn: An Anticipatory Infrastructure for Qualitative Methods. Qualitative Research in Psychology, OnlineFirst, 1–20. DOI:10.1080/14780887.2025.2570167

Pink, S., Korsmeyer, H., & Lyall, B. (2025). Generative AI and Broken Futures. Qualitative Inquiry, OnlineFirst, 1-14. DOI:10.1177/10778004251358070 Staley, David J. (2002). ‘A history of the future’. History and Theory 41/4: 72-89.

Stearns, Peter N. (1983). Forecasting the future Historical analogies and technological determinism. The Public Historian, 5(3), 30-54.

Sensing ‘Haunting Participants’: Creative-based Methods for Participatory Futures Practice

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Keywords: participatory futures; design futures; haunting; creative-based methods; pluriversal futures

Participatory futuring is increasingly relevant to anticipation and design practices, often framed as a mode of co-creation, situated imagination and collective worldmaking. However, this paper argues that these practices are also shaped by what remains unspoken, unrepresented or unresolved. I introduce the concept of ‘haunting participants’ (HP) to describe these presences that linger within participatory futuring processes and shape their outcomes. It suggests that futures practitioners may benefit from developing an awareness to these hauntings and that creative-based methods may enable these presences to surface in ways that more conventional approaches cannot, while also recognising that they can never be fully resolved.

The concept of HP builds on and extends existing approaches within anticipation and design practices. Approaches such as Candy and Kornet’s Ethnographic Experiential Futures (EXF, 2019) highlight how communities can map their images of the future, translate them into artefacts and experiences and then explore these possibilities through embodied encounters. The EXF Cycle draws on earlier ethnographic futures research which situates anticipation within lived contexts. Parallel contributions in participatory scenarios (Vervoort et al., 2015), futures literacy (Miller, 2018), and Causal Layered Analysis (Inayatullah, 2004) similarly foreground plurality, reflexivity and the interrogation of deeper cultural narratives. However, by bringing attention to what exceeds articulation within these processes, this paper contributes a critical lens to participatory futuring which seeks to account for the absences and exclusions that shape how futures are imagined and enacted.

My use of HP aims to recognise that participation is never total and that every method leaves someone or something outside its grasp. All encounters are shaped by what is visible or measurable as by what remains invisible, unspoken or untranslatable. Often cited in this context, Haraway’s (2016) invitation to stay with the trouble captures this necessity to remain with what exceeds our capture. Escobar (2018) similarly reminds us that many ontologies are untranslatable within current epistemic frames. In participatory futuring contexts, these untranslatables haunt the edges of our methods, signalling the limits of representation.

Within participatory design research, haunting has been identified as a way of interrupting design’s progress-oriented narratives (Gatehouse, 2020; Lindström et al., 2024), as design is always accompanied by the ghosts of what has been, what was lost and what might have been. Drawing on work in spectral theory (Gordon, 1997; Fisher, 2014), settler colonial analyses of futurity (Palmer, Walsh and Batorowicz, 2022) and discussions of haunting within participatory design and participatory speculation (Gatehouse, 2020; Lindström et al., 2024), this paper demonstrates that haunting is a condition of practice that participatory futuring cannot easily engage without careful consideration.

The concept of HP can be understood through two intertwined modes. The first concerns the unrepresentable: participants whose worldviews, ecologies or ontologies exceed the formats through which participation is invited. These may include more-than-human actors, communities or forms of knowledge that resist articulation within the method. The second concerns the unresolved. These are past events or unrealised futures that linger in the present and shape what participants imagine as possible. In anticipatory practice this may appear when histories of displacement, infrastructural or institutional failure shape the atmosphere of futuring even when they are not explicitly named. These modes of haunting both reveal the partiality of all participation and the need to attend to affective and atmospheric dimensions of futures practice.

To explore how creative-based methods may help practitioners sense what cannot be fully articulated and how participatory futuring unfolds in relation to absence as well as presence, the paper draws on two futures-oriented creative workshops from my doctoral research. A collage based participatory futuring workshop conducted within a joint institutional and community project and a participatory movement workshop facilitated with an informal group on institutional grounds. These cases show how haunting carries a quiet influence on futures work that becomes perceptible through material traces and embodied encounters, influences that cannot be made explicit through direct speech.

The collage workshop forms the primary case study. It was situated within a broader research project that sought to understand community perspectives and foster a sense of collective voice amidst significant infrastructural change in a neighborhood in Naarm/Melbourne (RMIT PlaceLab, 2023). Much of the broader project relied on verbal and written methods, which produced their own forms of absence. Collage was introduced as a way to explore what haunted the edges, particularly the unspoken contributions of participants and groups who could not be consulted and to make their relationships to their neighbourhood more tangible. It was selected for its capacity to work with fragments and layers that evoke memory, feeling, complex relations and identities, creating space for plural worldviews without requiring consensus. The second case study explores a movement-based workshop presented as part of Melbourne Design Week 2024 (WIP Club, 2024), which invited participants to explore embodied ways of sensing and responding to institutional space. Activities included walking, running, lying, leaning, stretching, carrying and using the space in varied ways. These movements generated tacit forms of understanding that were difficult to articulate verbally. Haunting surfaced through the bodily residue of prior encounters with institutions, as well as through the atmosphere created by moving slowly and relationally within a setting typically governed by productivity and structure. These experiences became tangible through the shared embodied encounter in the room and were further expressed through group discussion and the creation of artefacts at the close of the workshop.

The workshops highlighted how haunting operates as an inherent condition of participatory futuring, presenting how the unrepresentable and the unresolved shape what participants can express and how creative-based methods might surface these dynamics. This paper contributes to anticipatory practice by positioning haunting as both a diagnostic and generative lens for participatory futuring. While developing awareness may shape impact, it also invites practitioners to design for HP by incorporating creative-based methods that engage ambiguity and surface absences, making space for what cannot be easily articulated and enabling the exploration of futures in more nuanced and situated ways.

References

Candy, S. & Kornet Weber, K. (2019). Turning foresight inside out: an introduction to ethnographic experiential futures, Journal of Futures Studies, 23(3), 3–22. https://doi.org/10.6531/JFS.201903_23(3).0002

Escobar, A. (2018). Designs for the Pluriverse: Radical interdependence, autonomy, and the making of worlds. Duke University Press.

Gatehouse, C. (2020). A Hauntology of Participatory Speculation, In Proceedings of the 16th Participatory Design Conference 2020—Participation(s) Otherwise—Volume 1 (PDC '20) (pp.116-125). Association for Computing Machinery. https://doi.org/10.1145/3385010.3385024

Gordon, A. (2008). Ghostly Matters: Haunting and the Sociological Imagination (2nd ed.). University of Minnesota Press.

Haraway, D.J. (2016). Staying with the Trouble: Making Kin in the Chthulucene. Duke University Press.

Inayatullah, S. (2004). Causal layered analysis: theory, historical context, and case studies. In The causal layered analysis reader: Theory and case studies of an integrative and transformative methodology (pp. 1–52).

Lindström, J., Jönsson, L., Ståhl, Å., Göransdotter, M. & Laurien, T. (2024). Design haunted by progress: Untying knots. In Proceedings of the Participatory Design Conference 2024: Exploratory Papers and Workshops - Volume 2 (PDC '24), Vol. 2 (pp. 211-214). Association for Computing Machinery. https://doi.org/10.1145/3661455.3669895

Miller, R. (2018). Transforming the Future: Anticipation in the 21st Century. Routledge.

Palmer, J., Walsh, A. & Batorowicz, B. (2022). Parallel futures? Indigenous resurgence and the haunting of the settler, Futures, 141, 102969. https://doi.org/10.1016/j.futures.2022.102969

RMIT PlaceLab. (2023). Collage Brunswick' Community Workshop. PlaceLab. https://placelab.rmit.edu.au/project-post/collage-brunswick-community-workshop-recap/

Vervoort, J., Kok, K., van Lammeren, R. & Veldkamp, T. (2010). Stepping into futures: Exploring the potential of interactive media for participatory scenarios on social-ecological systems, Futures, 42(6), 604–616. https://doi.org/10.1016/j.futures.2010.04.031

WIP Club. (2024). Distabling Bodies in Space: Rethinking Movement and Power. WIP Club. https://wipclub.cargo.site/georgie-nolan-kel-glaister_distabling

Speculative Perspectives on Wellbeing: New Materialities and Pluriversal Design for Sustainable Societies

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Keywords: futures societies; material wellbeing; pluriversal design; new materialism; speculative design

The rapid industrialisation granted our modern societies a conception of wellbeing that doesn't easily agree with sustainability. Industrialised societies, at the receiving end, have been enjoying lifestyles afforded by products—societies of "well-having," borrowing here an expression by Hopwood et al. (2005). The growing need for a sustainable approach to human organising on this planet, however, is introducing limits to this "well-having" (see also Tonkinwise 2015, Spangenberg et al. 2018). Limits to what materials are used and how, limits to the means and distances we travel, limits to designs—from cities to the smallest of products, and limits to lifestyles contemporary generations (primarily in the northern hemisphere) have been accustomed to. These limits also mark the end of what Manzini (2007) calls product-based wellbeing, understood here as the fruit of industrialisation.

The era we have quietly and gradually entered is no longer an era heralded by products delivering wellbeing, but rather by the production-consumption economy itself as the key to human organisation and, hence, to the attainment of wellbeing. Participation in the production-consumption economy is now the normative format for human transactions. This means that the transactions for whatever is required for good life-qualities are institutional transactions, which are ultra-efficient in the way they are grouped, optimised, and their execution splintered around the globe. Examples of such transactions are subscription services, car and home appliance leases, medical technologies, finance and investment services, insurance, and all that today is purchased through corporate or public networks and not as a transaction between individuals. Reciprocity in these institutional transactions is absent by design, and alternative formats of human transactions have been regarded merely as delayed stages of progress (as in Indigenous peoples' practices), or clusters of playful experimentations (as in self-sufficient communities' practices).

The efficiency of the institutional transactions enabled in the production-consumption economy, it is argued here, gives rise to the idea that wellbeing can be attained by everyone in a sustainable way if environment (as the life-supporting system), society (as human organisation), and economy (as homogeneous means to human organisation) are balanced. The present-day sustainable transition and post-growth propositions often signal a universal outcome: a global paradigm shift leading to a 'wellbeing society', a good-life standard within planetary boundaries (Costanza et al., 2018; O'Neill et al., 2018; Raworth, 2017; Spangenberg et al., 2018). In these propositions, society is equitably supported by an economy characterised by sufficiency and decoupling from environmental degradation, and wellbeing is treated as a notion relative to this tripartite alignment. However, the propositions account for fairly narrow notions of wellbeing, interpreted firstly from the standpoint of notably westernised, industrialised societies, and secondly through a utilitarian lens as something attainable through satisfaction of needs. Common steps toward satisfying

these needs, identified in these propositions, focus on redistribution practices (i.e., flattening global resource use in manufacturing and closing gaps in the geographical placements of consumption) and increased social bonds (i.e., emphasising community-based life qualities).

This paper challenges the assumptions embedded in visions of future wellbeing as a benchmark of needs conceptually triangulated between environment, society, and economy. It suggests that sustainability transitions must account for diverse ways of knowing and making the world, that is, its multiple ontologies (Escobar, 2018). It posits that there are multiple contemporary human realities, shaped by sharp variations in economic development, geographic concentrations of extractivism and consumerism, and uneven developments in human-technology relationships. It furthermore contests visions of sustainable societies as predominantly reproduced iterations of the past, which reflect what has historically worked best for the majority of the global population, while tagging the industrial economy, its colonial legacies, and its 'sociology of absences' (Santos, 2014). The paper points toward economic and epistemic decolonisation.

The paper asserts that linking future wellbeing strictly to historical or present-day needs is insufficient to support claims of homogeneous wellbeing in future sustainable societies. It discusses possible new materialities of wellbeing attainable through justice and reciprocal recognition (Honneth, 2012; Hoevel, 2013). Finally, the speculative design perspective is positioned as a way to anticipate, articulate, and begin to build these possible worlds of human flourishing.

References

Costanza, R., Caniglia, B., Fioramonti, L., Kubiszewski, I., Lewis, H., Lovins, H., McGlade, J., Mortensen, L. F., Pickett, K. E., Ragnarsdottir, K. V., Roberts, D., De Vogli, R., & Wilkinson, R. (2018). Toward a sustainable wellbeing economy. Solutions, 9(2), Article 5.

Escobar, A. (2018). Designs for the pluriverse: Radical interdependence, autonomy, and the making of worlds. Duke University Press.

Hoevel, C. (2013). The economy of recognition: Person, market and society in Antonio Rosmini. Springer Science+Business Media.

Honneth, A. (2012). The I in we: Studies in the theory of recognition. Polity Press.

Hopwood, B., Mellor, M., & O'Brien, G. (2005). Sustainable development: Mapping different approaches. Sustainable Development, 13(1), 38–52. https://doi.org/10.1002/sd.244

Manzini, E. (2007). Ways of living: Product-based and context-based well-being Unpublished manuscript. Politecnico di Milano.

O'Neill, D. W., Fanning, A. L., Lamb, W. F., & Steinberger, J. K. (2018). A good life for all within planetary boundaries. Nature Sustainability, 1(2), 88–95. https://doi.org/10.1038/s41893-018-0021-4

Raworth, K. (2017). Doughnut economics: Seven ways to think like a 21st-century economist. Chelsea Green Publishing.

Richardson, K., Steffen, W., Lucht, W., Bendtsen, J., Cornell, S. E., Donges, J. F., Drüke, M., Fetzer, I., Bala, G., von Bloh, W., Feulner, G., Fiedler, S., Gerten, D., Gleeson, T., Hofmann, M., Huiskamp, W., Kummu, M., Mohan, C., Nogués-Bravo, D., . . . Rockström, J. (2023). Earth beyond six of nine planetary boundaries. Science Advances, 9(37), Article eadh2458. https://doi.org/10.1126/sciadv.adh2458

Santos, B. de S. (2014). Epistemologies of the South: Justice against epistemicide. Routledge. https://doi.org/10.4324/9781315634876

Spangenberg, J. (2018). Sufficiency: A pragmatic, radical visionary approach. In Spangenberg, J. & Alcott, B. & Kiss, V. & Coote, A. & Reichel, A. & Lorek, S. & Mathai, M. & Mastini, R. & Rijnhout, L. Sufficiency: Moving Beyond the Gospel of Eco-Efficiency. Report by Friends of the Earth Europe. 10.13140 RG.2.2.15070.87369

Tonkinwise, C. (2015). Radical sustainable innovation. In P. Stebbing & U. Tischner (Eds.), Changing paradigms: Designing for a sustainable future (pp. 284–295). Aalto University School of Arts, Design and Architecture

Step into the Dark : letting go of dominant futures

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Keywords: designing for transformative experience; liminality; care

The presentation looks at how speculative experiential world building may have a critical role to play in helping break our “addiction to growth” and the hegemony of capitalism. It explores how creating safe containers within which key audiences can experience a range of possible futures, including collapse, or “bottoming out” to use the language of addiction and recovery, may help create a sense of community and hope even in the absence of concrete solutions.

“How can the present be welded to the future, so that while satisfying the urgent necessities of the one we may work effectively to create and ‘anticipate’ the other?” (Gramsci 1977:65)

Prefigurative politics have always played a key role in the counter-hegemonic, yet the potential role of speculative experiential futures in challenging the hegemony of capitalism and growth at all costs is less well explored.

Speculative world building is fundamentally prefigurative in nature, and is based on the ‘composition’ (Goodman, 2013) of possible, probable and more importantly preferable worlds where new relational frameworks are ‘weighted’ and ‘ordered’. When realised in the form of experiential futures (Candy, 2010; Candy and Potter, 2019), the embodied, enacted, and extended nature of such speculative worlds can make them both more memorable in the moment, and more meaningful over time (Bastiaansen et al., 2019; Bastiaansen and Duerden, 2025), increasing their potential impact in terms of transformation. This paper presentation argues that in order to unsettle the dominant futures as they are perceived by certain audiences (business leaders, policy makers, institutional actors), such speculative worlds need to go beyond being merely memorable, to challenge and ultimately confront.

Experiential futures offer liminal spaces (Van Gennep et al., 2001; Thomassen, 2009; Turner, 2011; Horvath, Thomassen and Wydra, 2015) in which social norms and status cues are removed, allowing the implications and consequences of the maladaptive practices on which dominant futures are based to be surfaced and experienced phenomenologically. Additionally the presentation explores how in making such experiences collective, a sense of communitas may be created that can impart hope even in the absence of immediate solutions, providing an alternative version of what it means to fear well (McQueen, 2021)

Despite continued global heating, dominant futures largely remain predicated on anthropocentric functionalism. Within administration after administration the language of green growth has been replaced by that of growth plain and simple as the ruling relations of capitalism refuse to relinquish their grip on what they see as the future.

Economic growth and the consumerism that fuels it are so strongly interwoven into our lives that some have likened our relationship with them to an addiction (Illich, 2009; Costanza, 2023). Whilst analogies of addiction have been used to frame these maladaptive behaviours since the 1970s, little work has been done to explore what other lessons we might learn from established programs of recovery when designing worlds intended to unsettle dominant future.

The paper asks whether the key principles of Alcoholics Anonymous: acceptance, personal responsibility, group unity, fellowship, service and a readiness to change, might be used as scaffolding for the integration and assimilation of experiential futures that force audiences to confront the implications of a >2℃ world.

Challenging the overwhelming positive mainstream narrative of the last decade (green growth and sustainability through substitution), the presentation explores how experiential futures may offer a safe container within which key audiences (business leaders and policy makers) can experience the phenomenological impact of “bottoming out” as a result of climate related ecological collapse.

The presentation Integrates insights and learnings from the authors’ first hand experience of working with an award winning Four Futures* based immersive experience on a global basis. Launched at COP28 by the professional services company EY “the Four Futures” is a hosted immersive experience targeting business leaders and decision makers. Based on Dator’s Four Futures, the experience backcasts stories of Collapse, Constrain, Business as Usual and Transform from 30 years in the future, using meta-humans created using the Unreal engine. Three of these four stories are highly confrontational in nature and deal with the loss of billions of lives and millions of species. Over the last 2 years over 10,00 people have been through the experience with versions running in over 20 countries.

This experience was previously referenced by the author in both his poster presentation at Lancaster in 2024, and as part of the Affective Prefiguration session led by Professor Ann Light. The paper builds subsequent research by the author and uses the analogy of addiction to explore how the Communitas (Turner, 2008, 2012) emerging out of collective experience of such challenging and confrontational futures may be key to unsettling dominant futures within key audience groups despite the absence of immediate solutions.

This paper presentation brings together insights and research from professional, personal and academic practices with the author bringing over 30 years of experience design learnings to the discussion. Fundamentally transdisciplinary in nature the paper presentation is informed by work relating to transformative experience design (Duerden, Ward and Freeman, 2015), theories of care (Tronto and Fisher, 1990; Tronto, 2009; Shotwell, 2016), liminality (Szakolczai, 2009; Szakolczai and Thomassen, 2019) and affective prefiguration (Light, 2021, 2023) , along with ongoing original field work.

Sticky Signals: The Effect of Pre-Printed Sticky Notes on Engagement in Participatory Design Futuring Workshops

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Keywords: design futuring, futures literacy, participatory design, signals, sticky notes, workshop method

Problem Framing

Design futuring, foresight, and strategy workshops often require participants to address complex, abstract questions, such as those related to climate adaptation or technological disruption. These activities are intended to foster creativity and critical thinking. However, initial engagement with “deep futures” can be uneven, particularly among interdisciplinary or non-expert participants. Cognitive and experiential barriers, including anticipation, disorientation, uncertainty, and lack of expertise, can limit openness and inclusivity in futuring processes. Drawing on collective futuring activities where futures literacy (Miller, 2018) is central to participatory design (Ehn, 2008) and supported by speculative design (Dunne & Raby, 2013), this paper examines the role of material artefacts in facilitating early-stage engagement. Specifically, it investigates structured sticky notes as a material interface for anticipation.

Method and Empirical Grounding

This study introduces pre-printed sticky notes containing “signals”, which are concise references to emerging social, technological, economic, environmental, and political developments, organized according to the STEEP horizon-scanning taxonomy (Aguilar, 1967). Each note features a headline, image, and source citation. At the outset of each futuring session, participants browsed, selected, annotated, and repositioned these signals on a large collaborative canvas (see Figure 5, Kellhammer et al., 2026). This interactive exercise encouraged the formation of clusters and the identification of emerging themes or tensions. Participants utilized the signals as catalysts for scenario ideation and for defining the problem space.

The method was implemented in 24 workshops (n = 395 participants), each situated within a distinct context: industry innovation, public sector development, civic participation, or academic seminars. Participants represented a wide range of professional backgrounds and hierarchical levels, including laypeople. Across all groups, prior experience with futuring was minimal. The degree of personal investment varied, from high in change processes and civic formats to exploratory in seminars and industry sessions. Workshop topics included urban mobility, media publishing, healthcare, urban greening, new work, cybersecurity and artificial intelligence. This diversity provided a robust cross-contextual assessment of the method's applicability.

Data collection methods included facilitator observations, participant reflections, and photographic documentation of artefacts and their spatial arrangements. The analysis focused on three dimensions: participant engagement, signal curation (the ratio of pre-

printed to ad hoc signals), and spatial placement (distribution across categories on STEEP canvas).

Theoretical Background

Participatory futuring depends on onboarding strategies that enable diverse groups to engage with complex futures. Structured entry points such as cards, objects, and provocations make uncertainty tangible and accessible. Toolkits including The Futures Bazaar (Cuttica & Candy, 2022), the Extrapolation Factory Operator's Manual (Montgomery & Woebken, 2016), and guides by Balagtas (2024) and Smith & Ashby (2020) exemplify this approach.

Within applied design research, sticky notes have been extensively studied as a collaborative material. They support shared attention and turn-taking (Ball et al., 2021). Their spatial placement across shared surfaces encodes conceptual relationships; proximity visually proxies associative strength (Christensen & Abildgaard, 2021). Sticky notes also perform social actions such as marking ownership and shaping the conceptual geography of a workspace (Matthews et al., 2021). Their low-tech, intuitive nature enables non-designers to contribute on equal footing (Ball et al., 2021).

This equalising effect has been theorised through Actor-Network Theory. Rakova & Fedorenko (2021) show that sticky notes act as nonhuman agents that redistribute social hierarchies. They silence dominant voices and amplify others. As obligatory passage points (Callon, 1986, as cited in Rakova & Fedorenko, 2021), sticky notes steer participants with divergent interests toward collective action.

Findings

Across all workshops, analysis of facilitator observations, participant reflections, and photographic documentation revealed consistent patterns along three dimensions: participant engagement, signal curation, and spatial arrangements on the canvas.

Facilitator observations and selected participant reflections indicate consistent engagement across sessions. Participants readily used the pre-printed signals as entry points into complex future scenarios, with the open-ended format supporting articulation of intuitions and connection of abstract trends to lived experience. Several participants reported feeling “oriented” and “inspired” regardless of prior topical expertise. Facilitators consistently noted active rather than passive engagement from the outset, with participants developing visible ownership over specific signals and clusters, making individual perspectives legible to the wider group and contributing to the co-construction of shared understandings.

Signal curation was consistently active: participants selectively retained resonant signals, set others aside, and introduced handwritten ad hoc notes at ratios that varied across groups and topics. Pre-printed signals populated all STEEP categories across sessions, while ad hoc additions, and in several sessions, entirely new emergent categories, demonstrated that the pre-structured material stimulated rather than constrained original thinking.

Spatial analysis indicated that the distribution of signals across the STEEP canvas varied significantly by group, exposing thematic blind spots with limited coverage.

Certain STEEP categories consistently exhibited dense clustering, while others remained sparse, reflecting the professional backgrounds, lived experiences, and cognitive biases of each group. This uneven distribution made each group's collective knowledge base visible and open to reflection, enabling facilitators and participants to identify gaps and intentionally broaden their scanning before scenario development.

Conclusion

This paper contends that printing complexity onto sticky notes lowers entry barriers and enhances engagement in futuring. The sticky note serves as a mediating artefact, functioning as a physical and manipulable object. It materializes uncertainty and encourages distributed ownership of futures discourse. By rendering anticipation tangible, this design intervention cultivates futures literacy through practice rather than solely through instruction.

References

Aguilar, F. J. (1967). Scanning the business environment. Macmillan.

Balagtas, P. (2024). Making futures work: Integrating futures thinking for design, innovation, and strategy. O'Reilly Media, Inc.

Ball, L. J., Christensen, B. T., & Halskov, K. (2021). Sticky notes as a kind of design material: How sticky notes support design cognition and design collaboration. Design Studies, 76, 101034. https://doi.org/10.1016/j.destud.2021.101034

Christensen, B. T., & Abildgaard, S. J. J. (2021). Kinds of 'moving' in designing with sticky notes. Design Studies, 76, 101036. https://doi.org/10.1016/j.destud.2021.101036

Christensen, B. T., & Halskov, K. (2021). Editorial: Sticky notes in design: Properties in practice. Design Studies, 76, 101047. https://doi.org/10.1016/j.destud.2021.101047

Cuttica, F., & Candy, S. (2022). The Futures Bazaar: A Public Imagination Toolkit. London: BBC / Situation Lab. https://thefuturesbazaar.com/

Dunne, A., & Raby, F. (2013). Speculative everything: Design, fiction, and social dreaming. The MIT Press.

Ehn, P. (2008). Participation in design things. Proceedings of the Tenth Anniversary Conference on Participatory Design 2008, PDC '08, 92–101.

Kellhammer, M., Ruf, S., & Mandir, E. (2025). Negotiating Urban Mobility Futures: Collaborative design futuring with residents in two Munich neighbourhoods. Contexts - The Systemic Design Journal, 3. https://doi.org/10.58279/v3003

Matthews, B., Khan, A. H., Snow, S., Schlosser, P., Salisbury, I., & Matthews, S. (2021). How to do things with notes: The embodied socio-material performativity of sticky notes. Design Studies, 76, 101035. https://doi.org/10.1016/j.destud.2021.101035

Miller, R. (2018). Transforming the future: Anticipation in the 21st century. UNESCO Publishing.

Montgomery, E. P., & Woebken, C. (2016). Extrapolation Factory: Operator's Manual.

Rakova, O., & Fedorenko, O. (2021). Sticky notes against corporate hierarchies in South Korea: An ethnography of workplace collaboration and design co-creation. Design Studies, 76, 101033. https://doi.org/10.1016/j.destud.2021.101033

Smith, S., & Ashby, M. (2020). How to future: Leading and sense-making in an age of hyperchange. Kogan Page Inspire.

Strategic Design capabilities for navigating complexity: Making sense, driving change

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Keywords: strategic design; organizational capabilities; sensemaking; futures thinking; complexity management

Organizations today operate within increasingly complex and turbulent socio-technical environments, marked by interdependence, institutional fragmentation, and accelerating transitions in technology, regulation, and societal expectations. These conditions put pressure on traditional strategy and innovation approaches, which often rely on linear planning, analytical prediction, and functionally siloed perspectives. In response, strategic design has gained relevance as a distinct capability system that equips organizations and individuals to make sense of complexity, anticipate emerging futures, and translate high-level visions into coherent, actionable, and governable forms.

This contribution proposes to examine the core capabilities that define the contemporary role of the strategic designer, arguing that these capabilities constitute an essential form of organizational intelligence. Rather than focusing on processes or tools, the paper conceptualizes strategic design as a set of interconnected competencies that enable designers to operate across systemic, temporal, and organizational boundaries. These include capabilities for systemic sensemaking, anticipatory imagination, and translational governance, each of which supports organizations confronting ambiguity, multi-actor coordination challenges, and strategic incoherence. The paper advances a central claim: strategic designers act as boundary-spanning agents who integrate foresight, systemic framing, and organizational navigation to help institutions maintain strategic coherence while engaging with uncertain futures. This capability-based view emphasizes the designer's contribution to collective sensemaking, shared horizon-building, and the prevention of strategic "drift" as visions travel across actors, departments, institutional layers, and governance systems.

The proposed contribution is situated within two main strands of existing literature. Foundational design literature (Buchanan, 1992; Boland & Collopy, 2004; Verganti, 2009) positions design as a logic for sensemaking, reframing, and decision-making, while more recent studies explore how design contributes to organizational capabilities, culture, and governance (Elsbach & Stigliani, 2018; Liedtka, 2019). Some research converges on the idea that strategic designers possess configurational capability sets, rather than discrete skills. Studies in design management and strategic innovation (Calabretta, Gemser, & Karpen, 2016; Zurlo, 2010) highlight competencies in framing, stakeholder orchestration, and envisioning, while research in systemic design emphasizes multi-level analysis, boundary critique, and the construction of system maps that support collective understanding. At the same time, organizational studies contribute insights into the designer's role as a boundary spanner capable of integrating meaning-making, narrative construction, and sensegiving (Weick, 1995; Gioia & Chittipeddi, 1991). Yet, despite this emerging recognition, the literature still lacks an integrated framework that explains how these capabilities combine and how they operate collectively to support organizational anticipation, strategic coherence, and transformation. By connecting systemic design (Jones, 2014), design futures

(Candy & Dunagan, 2017), and organizational cognition (Weick, 2005), this paper contributes to a more robust understanding of strategic design as an integrated capability framework.

In parallel, management and organizational studies have increasingly recognized the limitations of predictive planning in volatile environments (Mintzberg, 1994; Snowden & Boone, 2007), leading to a growing emphasis on futures thinking, anticipatory governance, and sensemaking as key components of strategic action. However, these perspectives often lack the design dimension, namely the tangible, participatory, visual, and abductive mechanisms through which futures become discussable, shareable, and actionable.

The central argument is that strategic designers bring a configurational set of capabilities that allow organizations to connect imagination and execution, acting across boundaries, scales, and institutional constraints. These capabilities can be articulated into three interdependent domains. First, systemic sensemaking and multidisciplinary framing enable designers to synthesize fragmented information, map interdependencies, and frame strategic challenges across multiple stakeholders and system layers (organizational, societal, technological, regulatory). This capability moves beyond problem definition, allowing organizations to understand themselves as part of broader ecosystems rather than isolated units, and is essential in contexts where linear planning or siloed expertise fail to capture the dynamics of change. Second, anticipatory imagination and future-oriented problem setting integrate horizon scanning, weak signal interpretation, speculative prototyping, and abductive reasoning to co-create preferred futures and illuminate emerging opportunities. Unlike traditional foresight, this capability is grounded in experiential, participatory, and visual approaches that make futures thinkable and discussable across diverse stakeholders, equipping organizations with a shared horizon that informs strategic direction and reduces the paralysis typically associated with uncertainty. Third, translational governance and innovation enabling refer to the ability to translate visions into organizational pathways through artifacts, frameworks, protocols, value networks, and governance arrangements. This capability connects future imaginaries with operational realities, reducing the gap between strategy and execution and supporting organizations in taking tangible steps toward transformation. Drawing on literature on strategy implementation, the paper argues that strategic designers play a crucial role as navigators who align interests, mediate constraints, and build shared ownership over change.

This contribution directly aligns with key debates on organizational transformation, governance of complexity, and the future of decision-making. It frames strategic design as a capability system enabling organizations to navigate transitions, restructure governance mechanisms, and align actors around shared futures; it examines strategic design capabilities within complex ecosystems such as public institutions, EU-funded consortia, and entrepreneurial networks; and it positions strategic design as an anticipatory cognitive resource that complements and expands traditional decision-making models. Overall, the paper offers a theoretically grounded capability framework defining the core competencies of strategic designers operating in complex organizational environments and proposes a capability-based model that integrates systemic design, design futures, and organizational sensemaking, clarifying how strategic designers enable organizations to navigate uncertainty while preserving strategic coherence.

References

Boland, R. J., & Collopy, F. (2004). Managing as designing. Stanford University Press.

Buchanan, R. (1992). Wicked problems in design thinking. Design Issues, 8(2), 5–21. https://doi.org/10.2307/1511637
Calabretta, G., Gemser, G., & Karpen, I. (2016). Strategic design: Eight essential practices every strategic designer must master. BIS Publishers.
Candy, S., & Dunagan, J. (2017). Designing an experiential scenario: The people who vanished. Futures, 86, 136–153. https://doi.org/10.1016/j.futures.2016.05.006
Elsbach, K. D., & Stigliani, I. (2018). Design thinking and organizational culture: A review and framework for future research. Journal of Management, 44(6), 2274–2306. https://doi.org/10.1177/0149206317744252
Gioia, D. A., & Chittipeddi, K. (1991). Sensemaking and sensegiving in strategic change initiation. Strategic Management Journal, 12(6), 433–448. https://doi.org/10.1002/smj.4250120604
Jones, P. H. (2014). Systemic design principles for complex social systems. In G. S. Metcalf (Ed.), Social systems and design (pp. 91–128). Springer. https://doi.org/10.1007/978-4-431-54478-4_4
Liedtka, J. (2018). Why design thinking works. Harvard Business Review, 97(5), 72–79.
Mintzberg, H. (1994). Rise and fall of strategic planning. Free Press.
Snowden, D. J., & Boone, M. E. (2007). A leader's framework for decision making. Harvard Business Review, 85(11), 68–76.
Verganti, R. (2009). Design-driven innovation: changing the rules of competition by radically innovating what things mean. Harvard Business Press.
Weick, K. E. (1995). Sensemaking in organizations. Sage.
Weick, K. E. et al. (2005). Organizing and the process of sensemaking. Organization Science, 16(4), 409–421. https://doi.org/10.1287/orsc.1050.0133

Sustainable Sudan, futuring under duress

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Keywords: future workshopping; duress; climate change; sudan

Sudan is on the frontline of climate change and is currently the largest humanitarian crisis in modern history. In December 2025, a workshop at Paris 8 brought together Sudanese professionals, environmentalists and researchers in exile to think through pathways to a sustainable future in postwar Sudan, in particular climate futures. What would a postwar sustainable Sudan look like? Is there any hope for the country now it is the scene of an unimaginable crisis?

The Paris event was the final networking workshop following a collaboration between Paris 8 university and Malmö University Sweden and an overall study on climate change resilience in urban Sudan applying future workshopping that started in 2020. This paper focuses on what it means to conduct future workshopping under duress.

After an initially successful revolution that started in 2019, the country eventually spiralled into a full civil war since April 2023. Over 26 million people are on the verge of famine. In a country of 47 million people, as of December 2025, 30 million are in dire need of humanitarian assistance. An estimated 11.5 million people are forcibly displaced, which includes 2.7 million displaced prior to April 2023, when the war broke out. Sudan is currently the largest internal displacement crisis in the world. Children make up well over half of the displaced population. A total of 24 million children have had their lives upended of which 17 million are now out of school (UN-OCHA, 2025).

Besides the current humanitarian crisis, Sudan is located at the frontlines of climate change. Since the early 2000s climate change has been palpable in its impacts throughout the country. Climate challenges include temperatures that are predicted to rise by over 3 degrees Celsius by 2060. The country faces major challenges such as erratic rainfall, droughts, floods, dust storms and heat waves. Since 1977, there has been a growing movement of environmentalists in Sudan, including academics and activists. In 2019, they joined the Sudanese revolution and even after being displaced by war, Sudanese environmentalists remain active internationally.

This paper assesses future workshopping under duress, addressing transformative interventions in the ongoing ontological turn from anthropocentric extractivism to life-sustaining and more-than-human perspectives for a sustainable future in Sudan despite the current apocalyptic outlook. It describes a co-creative methodology that brought together surface grassroots perspectives on human-environment relations and sustainable futures to better understand how these perspectives help to the undoing of simplistic apocalyptic or utopian narratives even when the current situation seems hopeless.

The Canvas of Tomorrow: How Generative AI Facilitates the visual and verbal expressions of hope and anxiety

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Keywords: uncertainty; hope; anxiety; generative AI visualization; sketching

The Canvas of Tomorrow: How Generative AI Facilitates the visual and verbal expressions of hope and anxiety

Uncertainty is a fundamental part of everyday experience, influencing how people make choices, form expectations, and regulate their emotions. It is frequently viewed as an undesirable state connected to confusion, anxiety, or a perceived loss of control [4]. In comparison to the negative parts of uncertainty, it can spark curiosity, giving a space for people to think about other possibilities.

Uncertainty is inevitable, but people differ in how well they tolerate it. Intolerance of Uncertainty (IU) is a stable trait marked by fear of the unknown and the belief that uncertainty is unacceptable. Individuals high in IU tend to view uncertain situations negatively, feel unable to cope, and experience greater emotional distress and anxiety.

Importantly, anxiety is closely bound to experiences of uncertainty. Anxiety is characterized as an emotional state in which hope and fear both coexist and shift in prominence. Because anxiety emerges when it is impossible to know whether a threat will materialize, the mind alternates between anticipating a negative outcome and imagining a positive one. In this sense, the phenomenology of anxiety reflects this inner tension, a continuous negotiation between hoping things will work out like the person desires and the fear that they may not. When considering potential future events and the directions our lives may take, our expectations are naturally shaped by a mixture of hope and anxiety, which together influence how we perceive and respond to what lies ahead.

Most prior research on uncertainty has relied on self-report measures to assess whether it is perceived positively or negatively. There is a notable gap in studies examining how uncertainty is experienced and reflected upon using alternative methods, especially those supported by technology. To address this, we used a real-time generative AI sketching tool (FreePik) to enable participants to externalize experiences of personal uncertainty, focusing on its emotional duality (anxiety and hope) and how AI visualization can reshape these experiences.

Methodology: Co-Creation and Multimodal Expression

The study was conducted with 30 participants. Eight participants were selected based on the presence of a noticeable visual transformation in their generated imagery when representing anxiety compared to hope, indicating a shift in how these emotional states were visually expressed.

The study used a generative AI system to convert multimodal inputs into visual imagery, externalizing uncertainty and supporting the reinterpretation of future-oriented perceptions.

A multimodal, three-phase design was employed. Participants were guided through stages intended to externalize their feelings about a specific personal uncertainty.

1.Phase 1: Visual Expression (Drawing): Participants put their feelings and thoughts on uncertainty by writing a prompt for the AI.

2.Phase 2: Verbal Expression (Writing): Participants put their feelings and thoughts into uncertainty by sketching for the AI.

3.Phase 3: Mixed-Modality Expression: Participants integrated both their sketches and written prompts, combining visual and verbal inputs.

Results

Duality of Hope and Anxiety

The visuals were examined under the category of duality of hope and anxiety, and how it was represented under three categories: composition, color progression, and perspective. These categories support each other in the visuals; all of them form the representation of the feelings altogether.

1. Composition

AI-generated visual outputs revealed certain changes in the name of the composition. One of the changes was the interaction of human figures with their surroundings. This change came from the general setting of the visual; for example, in some of the visual outputs, the human figures were surrounded by empty space, giving the impression of loneliness. In comparison to that, when the setting changes towards hope and the participant is taking control of the uncertainty and focusing on the positive opportunities, the visual outputs are depicted as more crowded outputs with various objects and abstractions. The uncertainty was not always depicted through human figures; in some cases, the feeling of uncertainty was depicted with abstract figures. For instance, as the representation of hope, curly shiny lines were drawn in a dark setting that also represented anxiety.

2. Color Progression

The most prominent evidence of the shift toward hope was the visual progression in the color palette. The usage of grey was dominant, especially at the beginning of the study. The participants emphasized that the color gray gave the feeling of uncertainty and how it gives the impression of being in-between. The usage of the color has changed throughout the phases. Especially in the last two phases of the study, there was a transformation in the usage of the colors, shifting from more pale, grayish, and blueish colors to warmer colors like yellow or orange, which were used to indicate the feeling of hope.

3. Perspective

The perspective of the figures implemented how the person perceives uncertainty, either negatively or positively. This change came from the placement of the human figure. For instance, when the person representing the participant is in the middle, it gives the impression of loneliness, equally surrounded by two sides of the image. In contrast to this, when the person is in the off-center looking in a certain direction, it gives the impression of seeing the other positive possibilities. This contrast in perspective showed that the perspective of uncertainty depends on the participant. Uncertainty sometimes encapsulates the person by creating the feeling of anxiety, and at other times, it is perceived as hopeful because it gives space to positive possibilities. This switch can be observed from the change in the perspective of the person in the visual.

Conclusion and Contribution

In the structure of uncertainty, anxiety and hope were observed as interchanged emotions. In this study, we observed that sticking to the feeling of anxiety does not

have to be the case; with an appropriate approach, people can see that it can have positive features and be hopeful about their personal uncertain situations.

The critical function of AI-mediated creative practice is an externalizing mechanism. By translating the abstract apprehension of problematic uncertainty into concrete, navigable visual forms, the Generative AI system enabled participants to move beyond passive representation of their anxiety. Instead, they were empowered to construct and visualize the feeling of hope as an alternative perspective to uncertainty.

References

Buhr, K., & Dugas, M. J. (2002). The intolerance of uncertainty scale: Psychometric properties of the English version. *Behaviour research and therapy*, *40*(8), 931-945.

Carleton, R. N., Mulvogue, M. K., Thibodeau, M. A., McCabe, R. E., Antony, M. M., & Asmundson, G. J. (2012). Increasingly certain about uncertainty: Intolerance of uncertainty across anxiety and depression. Journal of anxiety disorders, 26(3), 468-479.

Dugas, M. J., Gosselin, P., & Ladouceur, R. (2001). Intolerance of uncertainty and worry: Investigating specificity in a nonclinical sample. *Cognitive Therapy and Research*, *25*(5), 551–558.

Grupe, D. W., & Nitschke, J. B. (2013). Uncertainty and anticipation in anxiety: An integrated neurobiological and psychological perspective. *Nature Reviews Neuroscience*, *14*(7), 488–501.

Ladouceur, R., Talbot, F., & Dugas, M. J. (1997). Behavioral expressions of intolerance of uncertainty in worry: Experimental findings. *Behavior Modification*, *21*(3), 355–371.

Miceli, M., & Castelfranchi, C. (2015). *Expectancy and emotion*. Oxford University Press.

Rassin, E., & Muris, P. (2005). Indecisiveness and the interpretation of ambiguous situations. *Personality and Individual Differences*, *39*(7), 1285–1291.

Vazard, J. (2024). Feeling the unknown: emotions of uncertainty and their valence. *Erkenntnis*, *89*(4), 1275-1294.

Whitecross, W. M., & Smithson, M. (2023). Open or opposed to unknowns: How do curious people think and feel about uncertainty? *Personality and Individual Differences*, *209*, 112210.

Zedelius, C. M., Gross, M. E., & Schooler, J. W. (2022). Inquisitive but not discerning: Deprivation curiosity is associated with excessive openness to inaccurate information. *Journal of Research in Personality*, *98*, 104227.

The Latin American Design Studio as an Active Space to Dispute 'Western' Common Sense: Speculative Narratives as a form of Anticipation

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Keywords: pluriversal design studio; speculative design narratives; school as real world

Through this paper, we wish to reflect on our experience teaching a studio course between 2017 and 2024 within the Industrial Design degree at the Jorge Tadeo Lozano University in Bogotá, Colombia. The course, called Critical Dynamics, emerged in contraposition to the dominant pedagogical currents shaping design education in the region—largely aligned with productivist, market-oriented, and affirmative values. Rather than reproducing these hegemonic frameworks, we decided to frame the studio as a space for epistemic friction (Sher, 2016), where students could confront the political and social implications of design and its role in shaping everyday life (for better or for worse).

This orientation stemmed from a pedagogical and ethico-political stance: that design education does not operate in a vacuum, nor is it a neutral preparation ground for the so-called "real world." Instead, we assumed the studio classroom to be the real world, a space that is not removed from the structures of power that design both serves and contests, but it is embedded within them. This has been later reflected upon by Martis (2020) and Lorusso (2022), who warned of the dangers of assuming the school as separated from the real world, considering that students, faculty and staff are subject to as real material conditions as anyone else (high rents, low wages, unpaid internships, etc.). Consequently, the studio became a space where speculation was seen as a means for engaging with the present as a contested terrain—where normative social scripts were rehearsed, reproduced, and, potentially, redesigned.

We invited students to identify, systematically problematize and eventually intervene in what we called "hegemonic social fictions"—narratives that sustain structural inequalities and naturalize dominant orders—through the construction of speculative scenarios, narrative artefacts, and performative interventions. Student projects included, among others: a wearable device that monitors and chemically regulates emotional responses in romantic partnerships, designed to reflect the medicalization of gendered affect; a workplace manual for women, filled with disciplinary protocols and behavioral guidelines, that visualized the feminization of care in corporate environments; and a spatial installation metaphorizing the bureaucratic labyrinth faced by survivors of sexual violence seeking justice. By giving form to certain speculative narratives, these projects created fictional provocations but, moreover, they aimed at producing targeted disruptions to existing common sense (Crehan, 2016, referring to Gramsci)—allowing the cracks within the hegemonic narratives to become visible.

Drawing on traditions of critical design, design fiction (Bleecker, 2009), and speculative design (Dunne & Raby, 2013), Critical Dynamics consumed and adapted methodologies stemming from the Global North. Yet rather than simply reproducing them, the studio metabolized them within a different epistemic and social landscape. In this sense, the course operated as what Van Amstel and Gonzatto (2020) describe as an anthropophagic studio—borrowing from the modernist Brazilian tradition of "cultural

cannibalism", through which foreign forms are ingested, digested, and transformed. The result was a pedagogical and design practice that was recognizably speculative, but reframed through Latin American lenses of conflict, informality, affect, and resistance.

However, our intention went beyond challenging the conventional outputs of student work in design, attempting instead to reconfigure the pedagogical structure itself. We reflect therefore on Critical Dynamics as a form of "pedagogy otherwise" (Abdulla, 2025) –that is, a pluriversal design studio (Gray, 2022) that created room for multiple epistemologies and ontologies to coexist, collide, and critique one another. This implied that students were actively encouraged to attend not only to what was taught, but to how, where, and why it was taught. The studio also distanced itself from conventional design processes and deliverable-driven models in favor of alternative formats for making things public (Latour, 2005), like designing posters and pasting them in public space, making memes that disturb dominant narratives or producing a series of radionovelas (sort of 'radio theater') and audiovisual narratives as a final design studio output. In doing so, we invited students to inhabit design not as a means of problem-solving (kin to affirmative design perspectives), but as a practice of sensing, questioning, and disputing reality.

This mode of pedagogy is inseparable from the conditions (social, cultural, political, environmental, etc.) of its context: in Colombia, as in most of Latin America, design is inextricably linked to modernization projects, developmentalist agendas, and elite institutions. Critical Dynamics attempted to break from this lineage by engaging with the everyday complexities of social life and acknowledging design's entanglement in the reproduction of inequality, oppression & injustice. This also meant reckoning with the position of the university as an institution (both academia in general and the actual university, which is a private institution): a site shaped by extractivist logics, class stratification, and epistemic hierarchies. Within this landscape, the studio became a micro-political space—limited, of course, but nonetheless capable of enabling students to imagine and enact counter-hegemonic narratives.

Instead of presenting this course as a model to replicate, we would like to reflect on it as a situated experiment in what anticipatory design education might look like when it is grounded in critical pedagogy, southern epistemologies, and the refusal to treat design as neutral. By framing futuring not as a predictive exercise, but as a situated reconfiguration of the present, the course fostered what Haraway (2016) might call "staying with the trouble": a commitment to working within, rather than abstracting from, the mess of contemporary life —something that seemed at odds in a context of job precarity for lower and middle-class students.

We argue that experiments like Critical Dynamics are vital to educating designers—not just as professionals or technicians, but as citizens who understand themselves as social agents capable of negotiating complexity, acknowledging complicity, and contributing to the making of other worlds (Freire, 2003). In times marked by crisis, polarization, and epistemic violence, design education must do more than teach tools or methods. It must make room for dissent, discomfort, and the reimagining of what design—and school—can be.

Time and the Future in War and Peace

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Keywords: anticipation; conflict; peace; future imaginaries; conflict temporality

Despite the near-general consensus that violence is not the ideal way to address conflict issues, violent conflict abounds. Conflict is about different temporalities and often conflict parties stress grievances about what happened 'before'. However, conflict is also about how to negotiate the future, and how to integrate the experiences of the past and present into that future. What do we know about how future-oriented ideas shape conflict behaviour and outcomes? This paper, based in part on doctoral research, highlights the content, creation, and communication of imagined futures in two conflict cases. Descriptions of future imaginaries were drawn from largely extant, primary sources spanning Northern Ireland and South Africa's respective conflicts from polarisation through to the modern day's period of developing new, less-violent norms. The sources drew from different social sectors, ranging from political texts to song lyrics to legal documents and more, and original, semi-structured interviews were conducted as complementary data. In total 307 sources were reviewed from different social sectors, ranging from political texts to song lyrics to legal documents and more. The analytic approach taken was narrative analysis with stories about different futures as narrative. This paper frames the change dynamics of conflict and peace through the prism of future imaginaries and time. It concludes that approaching conflict resolution through this prism could reveal insights about the complex change dynamics of conflict that might have otherwise gone unnoticed, potentially contributing towards the pursuit of more peaceful futures.

Visual Politics of Anticipation: Decoding Visuality for Just Futures

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Keywords: visuality; futures literacy; visual literacy; culture; change

This presentation describes how collective visuality – the culturally conditioned process of seeing, making sense, and imagining – serves as a non-conscious regulator of public anticipation, consequently shaping governance and future imaginaries. It will argue that, individually and collectively, we need to consciously create new 'stages' for the present and the future and will pose a critical question involving our perceptions of culture.

Culture and heritage shape our mind, choices and futures. In an era of intense challenges, imagining what can we become outside our cultural biases, stereotypes and assumptions is an urgent necessity.

The last years there is much rightful discussion on the need to take culture into account if we intend to effectively address global issues we face. Nevertheless, we need to face a major question: How do we intend to embrace conditions of uncertainty and unknowing; how can we learn to accept change as a fundamental parameter of possibility and opportunity; and anticipate through innovative lenses, if, at the same time, we deem culture and heritage as precious and sacred? This attitude implies a fear of loss along with a static perception of our past and is relevant because culture frames our identity.

Collectively and individually, we need to face the dissonance that statements such as "culture is memory", "culture is who we are", "my culture is my identity" – to mention only a few among those expressed during MONDIACULT 2025 – generate. There is a direct contradiction between how each one and all perceive our identity – usually as something that "is", not something in the "becoming" – and the need to change social and other systems of thought, action and governance for just and sustainable futures. How can we change the outcome when core ingredients remain the same?

This presentation draws attention to the need to examine our deeply ingrained social understandings, stereotypes, values, roles, and assumptions, largely inherited from the very arts and narratives our ancestors leveraged for social cohesion and political power. It emphasises that, for the sake of collective prosperity, we must critically question our inherited visuality that regulates our reality. This is essential to cultivate empathy for the 'other', break free from limiting assumptions and tacit emotional scripts, and decolonize our imaginations by recognizing the origins of our anticipatory assumptions.

References

Bruner, J. (1991). The narrative construction of reality. Critical Inquiry, 18(1), 1–21. http://www.jstor.org/stable/1343711

Chun, M. M., & Jiang, Y. (1998). Contextual cueing: Implicit learning and memory of visual context guides spatial attention. Cognitive Psychology, 36, 28–71. https://doi.org/10.1006/cogp.1998.0681

Damasio, A. R. (1995). Descartes' error. Emotion. reason, and the human brain. Vintage.

Dillon, D. G., Ritchey, M., Johnson, B. D., & LaBar, K. (2007). Dissociable effects of conscious emotion regulation strategies on explicit and implicit memory. Emotion, 7(2), 354–365. https://doi.org/10.1037/1528-3542.7.2.354
Gilbert, D. T. & Wilson, T. D. (2007). Prospection: Experiencing the Future. Science, 317(5843), 1351-1354. DOI: 10.1126/science.1144161
Hausmann, L. R. M., Levine, J. M., & Higgins, E. T. (2008). Communication and group perception: Extending the 'saying is believing' effect. Group Process & Intergroup Relations, 11(4), 539–554. https://doi.org/10.1177/1368430208095405
Higgins, E.T., & Rholes, W. S. (1978). 'Saying I Believing': Effect of Message Modification on Memory and Liking for the Person Described. Journal of Experimental Social Psychology, 14(4), 363-378. https://doi.org/10.1016/0022-1031(78)90032-X
Karaiskou, V. (2025). Visual Literacy as a tool for personal and social transformation. In N. Braber, K. Králová, V. Krasniqi, M. La Haije &L. Oates-Indruchova (Eds.), special issue, Slow Memory Studies. Journal of Memory Studies. Currently published online at https://journals.sagepub.com/doi/10.1177/17506980251388322
Kristjansson, A., & Campana, G. (2010). Where perception meets memory: A review of repetition priming in visual search tasks. Attention, Perception & Psychophysics, 72(1), 5–18. DOI: 10.3758/APP.72.1.5
Maxfield, L. (1997). Attention and semantic priming: A review of prime task effects. Consciousness and Cognition, 6, 204–218. https://doi.org/10.1006/ ccog.1997.0311
Zajonc, R. B. (1980). Feeling and thinking. Preferences need no inferences. American Psychologist, 35(2), 151–175. https://doi.org/10.1037/0003-066X.35.2.151

Winding Futures: Doll-Making as an Intercultural and Embodied Anticipatory Practice

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Keywords: anticipation; anticipatory art practice; micro-anticipation; material culture; participatory art

In contemporary societies, dolls are primarily understood as children's toys. Historically, however, handmade figurines have served broader cultural, ritual, and symbolic roles, embedding protective intentions and affective orientations toward uncertain futures. As such, they have mediated relationships between individuals, communities, and imagined futures. In this context, the paper argues that anticipation is not only cognitive or representational but also an embodied and material practice enacted through making.

Across diverse cultural contexts, from Central American worry dolls and Slavic motanka figures and other ritual figurines, dolls function as material expressions of uncertainty while also embodying hope, care, and continuity. They operate across temporal registers: be it intimate, social or cosmological. They hold together memory, intention, and projection within small, crafted forms.

This paper examines doll-making as an intercultural and embodied anticipatory practice, situated within relational and non-linear temporalities. It argues that dolls can be understood not only as artefacts of material culture but also as devices through which individuals and communities articulate expectations, negotiate uncertainty, and materialise visions of possible futures. Attention is given to the gestures, materials, and symbolic logics embedded in these practices, through which temporal orientations and aspirational narratives are encoded.

As such, the paper addresses the following questions:

1. How do doll-making traditions function as material practices of anticipation?

2. What forms of temporal imagination, such as cyclical, linear, or regenerative, are embedded within different doll-making traditions?

3. How can examining doll-making practices contribute to broader discussions within futures studies and material culture research?

4. How can participatory doll-making practices function as sites of care, repair, and collective anticipation in work with displaced and underrepresented communities?

The modern conception of dolls as children's toys emerged at larger scale in eighteenth-century Europe. In earlier contexts, figurines were closely connected with ritual practices, healing, protection, and transitional life events. Anthropological and archaeological research demonstrates that such objects often mediated relationships

between humans and spiritual or cosmological realms (Insoll 2011; Morris 2011). They were understood to hold intention, embody ancestral presence, and channel protective forces, functioning as intermediaries between lived experience and imagined futures (Gell, 1998).

The paper situates these practices within contemporary discussions in futures studies, drawing on anthropology, material culture, and socially engaged art. Futures literacy describes the capacity to engage consciously with anticipation and to understand how expectations shape present action (Miller, 2018). The analysis engages with experiential futures, which emphasise how artefacts render future possibilities tangible and affectively meaningful (Candy & Dunagan, 2017). In this context, objects function as mediators or provocations; doll-making extends this by foregrounding embodied, intentional, and often collective processes of production.

Building on these insights, the paper advances the concept of Anticipatory Art Practice (AAP) (Doherty, forthcoming), developed within the collaborative research context of this study, as an emerging methodological framework that understands artistic making as a form of anticipatory knowledge production grounded in embodiment, relationality, and process. In this sense, these practices can be understood as forms of situated anticipatory practice (Bishop 2013; Poli, 2017).

Within this framework, anticipation is approached as an embodied, material, and relational practice enacted through making. These processes unfold at a small scale. They are situated, iterative, often collective.

The paper, therefore, introduces the concept of micro-anticipation to describe small-scale, embodied acts through which futures are incrementally rehearsed and brought into material form. Methodologically, it adopts a comparative material culture approach to intercultural doll-making and artistic practices, informed by practice-based inquiry, including participatory workshops with displaced and refugee communities, where making operates as a collective form of anticipatory practice.

The comparative approach focuses on how different material practices encode distinct temporal orientations and anticipatory logics across contexts. The analysis draws on a range of traditions, including, but not limited to, Slavic motanka and Martinica dolls, Central American worry dolls, Japanese daruma figures, Egyptian ushabti figurines, Irish Brídeóg figures, and selected modern artistic practices such as the assemblage works of Hannah Höch, as indicative cases through which different temporal orientations and anticipatory logics can be examined.

Each example reveals the relationship between material process and temporal imagination. For example, Motanka dolls, constructed through wrapping and binding, emphasise continuity and cyclical time. Worry dolls absorb anxiety, enabling the externalisation of uncertainty, while Irish Brídeóg figures foreground the use of natural materials and place-based seasonal temporalities.

Participatory contexts, including workshops with displaced and refugee communities, show how doll-making externalises uncertainty and articulates future-oriented

narratives. Gestures such as knotting and binding materialise intention as embodied anticipation, enabling engagement with uncertain futures. This aligns with Ingold's (2013) "thinking through making" and Appadurai's (2013) conception of imagination as a social practice. Drawing on Quijano's (2000) coloniality of power, these practices redistribute authorship, amplify marginalised voices, and reactivate cultural memory, positioning craft as relational world-making and care (Escobar, 2018; Puig de la Bellacasa, 2017).

Overall, the paper makes three key contributions. First, it foregrounds anticipation as an embodied and material practice, extending anticipation studies toward everyday, craft-based, and relational forms of engagement (Miller, 2018; Candy & Dunagan, 2017). Second, it advances Anticipatory Art Practice (AAP) as an emerging framework for understanding artistic making as an anticipatory knowledge production. Third, it introduces micro-anticipation to account for how small-scale, collective acts of making function as situated processes through which futures are rehearsed and negotiated.

These contributions position doll-making as a site of anticipation through which futures are not only imagined or designed but also materially enacted through embodied, collective practices of making.

References

Appadurai, A. (2013). The Future as Cultural Fact: Essays on the Global Condition. http://bvbr.bibbvb.de:8991/F?func=service&doc_library=BVB01&local_base=BVB01&doc_number=025917503&sequence=000002&line_number=0001&func_code=DB_RECORDS&service_type=MEDIA

Bishop, C. (2013). Artificial hells: participatory art and the politics of spectatorship. Choice Reviews Online, 50(08), 50–4224. https://doi.org/10.5860/choice.50-4224

Candy, S., & Dunagan, J. (2016). Designing an experiential scenario: The People Who Vanished. Futures, 86, 136–153. https://doi.org/10.1016/j.futures.2016.05.006

Ingold, T. (2013). Making: Anthropology, archaeology, art and architecture. http://digitool.hbz-nrw.de:1801/webclient/DeliveryManager?pid=5079466&custom_att_2=simple_viewer

Insoll, T. (2011). The Oxford Handbook of the Archaeology of Ritual and Religion. In Oxford University Press eBooks. https://doi.org/10.1093/oxfordhb/9780199232444.001.0001

Jamieson, M., & Gell, A. (1999). Art and Agency: An Anthropological Theory. Journal of the Royal Anthropological Institute, 5(4), 672. https://doi.org/10.2307/2661201

Kambic, K. (2019). Designs for the pluriverse: radical interdependence, autonomy, and the making of worlds. Journal of Landscape Architecture, 14(1), 98–99. https://doi.org/10.1080/18626033.2019.1623556

Merleau-Ponty, M., & Smith, C. T. (1966). Phenomenology of perception / by M. Merleau-Ponty ; translated from the French by Colin Smith. In Routledge eBooks. http://repository.fue.edu.eg/xmlui/handle/123456789/3346

Miller, R. (2019). Transforming the Future: Anticipation in the 21st Century (1st ed.). Routledge. https://www.amazon.com

Pettersen, T. (2018). Matters of care: Speculative ethics in more than human worlds. International Journal of Care and Caring, 2(3), 445–448. https://doi.org/10.1332/239788218x15357295366217

Poli, R. (2017). Introduction to anticipation studies. In Anticipation Science. https://doi.org/10.1007/978-3-319-63023-6

Quijano, A. (2000). Coloniality of power and eurocentrism in Latin America. International Sociology, 15(2), 215–232. https://doi.org/10.1177/0268580900015002005

Religion and anthropology: a critical introduction. (2006). Choice Reviews Online, 43(11), 43–6473. https://doi.org/10.5860/choice.43-6473

7. Planetary Ecologies of anticipation

Against scalar inevitabilities

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Keywords: scalar imaginaries; regeneration; regenerative design; entrepreneurship; politics of scale

Many contemporary narratives of scale within entrepreneurial and commercial settings start with a base assumption that bigger and quicker is better. Within dominant tech and venture-capital narratives, scale appears as commonsensical and unquestioned aspiration. This sentiment is clearly articulated by Peter Thiel in his manifesto 'Zero to One' where he claims that "Every single company in a good venture portfolio must have the potential to succeed at vast scale…[and the] most successful companies make the core progression – to first dominate a specific niche and then scale to adjacent markets – a part of their founding narrative" (Thiel, 2014; cited in Lempert & Carr 2016). Here, scale emerges as a prerogative and desires for it assumed and justified.

Against the inevitability implied by dominant tech narratives, we ask whether scaling is always desirable, whether it is appropriate, and how practices of scaling-deep, scaling-laterally, or even refusing scale altogether might offer more responsible, situated, and ecologically attuned pathways forward. Drawing on ongoing research with entrepreneurs working with regenerative intent as part of the UKRI-funded Becoming Regenerative (B-Regen) project, we are interested in how people in diverse organizational, design, and regenerative contexts project different scalar futures; how these anticipations shape present practices; how counterfactual imaginaries (of non-scaling, scaling deep, or scaling otherwise) open or foreclose possible worlds; and what these anticipations reveal about underlying epistemologies, politics, and positionalities.

Building on anthropological and STS scholarship (Tsing 2012; Gal 2016; Lempert & Carr 2016; Strathern 2004) that conceptualise scale as perspectival, ideological, political, and semiotic, we understand that imaginaries of scale involve horizon-setting as people assessing which futures which plausible, desirable, or dangerous within particular frames. Anticipations of scale embed assumptions about rate and pace of change, thresholds and limits, and about what kinds of futures should be desired. In turn, they are suffused with value systems and moral understandings of what good or appropriate scale might be. Disagreements about scale, we suggest, are fundamentally disagreements about the shape of future worlds which in turn generate scalar responsibilities and provoke specific organizational forms, governance practices, and technical architectures in the present.

Empirically, the entrepreneurs we have engaged with in B-Regen often hold conflicting and competing understandings of what scale will do - to them, to their projects, to social and ecological worlds. While some participants refuse to scale and struggle to articulate their impact strategies to partners or state bodies that assume replicability as a default metric of success, others pursue venture capital funding and grapple with the tensions between growth logics and regenerative intent. Across divergent approaches, actors navigate competing scalar imaginaries that discipline their choices: imaginaries of risk and loss, of promise and potential, of overwhelm, extraction, dilution, or

transformation. These anticipations make scale not a neutral metric or inevitable step but as an highly anticipated, unfolding, and negotiated process.

Thinking alongside and through the 75 ventures that we have engaged with in B-Regen, from 13 countries, across fashion, textiles, the built environment, packaging, furniture, ecosystem services and restoration, we consider how force, inevitability, or risk are attributed to future imagined scales; how practices of scale-making or scale-refusal are enacted in everyday governance and design; and how negative anticipations and scalar refusals reshape organizational trajectories. By tracing these anticipatory practices, we illuminate how entrepreneurs with regenerative intent craft distinct senses of adequacy, appropriateness, and fit: notions of scale that may be deep, local, contextual, or otherwise resistant to the accelerative imperatives of mainstream innovation and finance cultures.

`Ultimately, we argue that anticipations of scale are central to imagining regenerative futures. They shape how actors reconcile ambitions for systemic change with commitments to place-based responsiveness, ecological limits, and socio-cultural specificity. Attending to these anticipations (particularly those that refuse inevitability) reveals alternative scalar politics that may be essential for cultivating regenerative futures. In the second half of B-Regen, we intend to explore how alternative scalar anticipations within design practices and economic systems may foster more regenerative hopes and futures aligned to natural scalar limits.

Anticipatory Ethics: Professional Skepticism as Duty of Care

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Keywords: anticipatory ethics, professional skeptism, foresight, institutional theory, contrarian thinking

Professional skepticism is the unique and little-recognized hallmark of what it means to be "professional." It enables contrarian thinking - in fact, it is a requirement to attain the balance necessary to execute sound professional judgment. Yet the foresight profession operates largely without established principles of professional skepticism. As hope, optimism, and positivity have become the aspirational sentiments in contemporary thinking - from the positive psychology movement launched by Seligman and Csikszentmihalyi (2000) to widespread optimism bias in organizational culture (Sharot, 2011) - futurists remain trapped within their own zones of experience, influence, and naivety. Without guiding principles to sense-check judgments, they become encumbered by biases that produce unbalanced imagery of the future.

This represents a breach of duty of care to future generations whose lives will be shaped by decisions informed by foresight work today. In established professions like auditing and law, breaching duty of care means accountability - even litigation. Yet foresight practitioners, perhaps due to the ephemeral and somewhat esoteric nature of their field, seem to feel untouchable from such societal checks and balances. For a profession to be a profession, it must be grounded in objectivity and independence, both enabled through professional skepticism and judgment.

The Problem of Narrative Colonization

Current foresight practice suffers from narrative colonization - practitioners are heavily tied to their own perspectives and views, which cloud imagery of the future. The designers make it about aesthetics, the military about conquest, the sci-fi enthusiasts about gadgets and fantasy, the liberal arts and social science scholars miss real-world ties, the social and environmental advocates make it about SDGs, the globalists focus on technocracy. Yet none of these vocations have established rules of professional skepticism, nor are they required to render professional judgments.

When one declares "we all accept the Club of Rome perspective," this is narrative control that renders foresight impotent through bias and closing off of divergent opinions. Such consensus-seeking violates a core principle: not everyone wants the same thing, even when we say we do. Our motivations and values vary - short-term versus long-term, individual versus collective. Institutional theory explains this dynamic: organizations adopt formal structures for legitimacy rather than technical efficiency, creating systematic gaps between stated commitments and actual practices - what Meyer and Rowan (1977) termed "decoupling." Professional skepticism surfaces this heterogeneity rather than suppressing it through premature convergence.

What Professional Skepticism Demands

To be skeptical means recognizing uncertainty and testing underlying assumptions about such uncertainties. It requires specific questioning about opposites and extreme views; it is fundamentally uncomfortable with simply accepting and validating narratives. Professional skepticism must be applied in a twofold manner: first, the data analyzed and inputs assessed need to be explored down past the myth and metaphor level to the level of the ephemeral, the esoteric, the spiritual - what people would call the matrix or even conspiracy. When you read the word "conspiracy" - weaponized by the CIA in 1967 to discredit Warren Commission critics (deHaven-Smith, 2013) on the JFK assassination - it's important to understand that perhaps within those so-called conspiracies there's actually something to see: ConspiraSEE. The emergence of fact-checkers when strongly opposing opinions, facts, and interpretations surface—without fact-checking transparency - is again evidence of narrative colonization, patronizing the intellectual capacity of the masses.

Practitioners must be skeptical of stakeholder assertions - their validity, completeness, verifiability, freedom from agenda. They must question models shaping current and future states, the nature of underlying data, the expertise and biases of modelers themselves, the "telephone line problem" of distance from original information sources. Most critically, they must question anything labeled "evidence-based" - much so-called evidence is not grounded in verifiable fact but rather contention. When you leverage Inayatullah's Causal Layered Analysis and seek below the surface evidence, you may uncover what motivates certain narratives: starting at the institutional level and its dogmas, down to hidden motivations, personal beliefs, ideologies, and deeper worldviews.

Without professional skepticism, foresight practitioners commit predictable errors:

1.Parroting other people's views and narratives

2.Not poking the pink elephant

3.Deference to Authorities, Experts or People of Influence - 'they know better'

4.Being nihilistic

5.Being unreasonable in assessing inputs or future states

6.Not taking contrary views into mind prior to exercising professional judgment

These errors create uninteresting images of the future - one-dimensional narratives so divorced from contextual realities that they require coercion, nudging, behavioral insights to make them marginally palatable to the masses. Research confirms this pattern. Rose et al. (2024) found that auditors engaging in counterfactual thinking - asking "how could this have turned out differently?" - demonstrate enhanced professional skepticism. Foresight similarly requires not just "what might happen?" but "what are we being told is happening, and how might that differ from reality?" When we situate 'what might happen' in different contexts, with different stakeholder groups, one begins to comprehend consequences and impact differently.

The Materiality Concept and Principal-Centered Futures

The professionally skeptical futurist assesses whether information is important - to what extent it may or may not change the future. This is called the materiality concept: does it really matter or doesn't it? These are highly important questions when there are divergent opinions about what futures should look like for ourselves and our unknown

great-great-grandchildren. Do they still wish to have freedom of speech, inalienable rights, informed consent - or have they given that up in the future, and why?

The professional skeptic can uncover in advance, using contrarian perspectives, those key elements - those that we consider principal-centered - that are components of all future scenarios. These are the must-haves. Too many futurists are interested in parroting narratives that create imagery of the future in which many principal-centered components are conspicuously absent, virtuous intention wrapped around hidden agendas, or replaced with inferior solutions or excuses such as convenience or trade-offs.

Independence, Objectivity, and the Reasonable Person

Objectivity means looking at a given situation with balance, clarity, and diligence, asking questions and uncovering information to support arguments on both sides. The reasonable person concept is important here: judgments have to be made in imperfect circumstances where academics may say "that's a place for further research," but a true professional realizes that answer could lead to a breach of duty.

Independence means a professional must be able to make their own decision, free of undue influence. The professionally skeptical futurist needs to account for conventions like tyranny of democracy. Simply saying that 80 or 90 percent of people will accept something does not create equity for those in the outlier categories. The futurist needs to raise concerns and speak for minority interest voices, as opposed to taking ideological or experience-based, heavily biased views of the future, parroting narratives, and resulting in uninteresting images of the future.

Conclusion

Professional skepticism is not optional enhancement - it is the foundation of professional judgment through balanced assessment, the mechanism by which practitioners discharge their duty of care to future generations. Without it, foresight becomes what it too often is today: narrative parroting by ideologically colonized practitioners producing one-dimensional images requiring coercion for acceptance - what's good for the goose is good for the gander.

As we confront climate crisis, technological transformation, and social fragmentation, we need foresight work that can see through institutional fog, surface the heterogeneous intentions shaping futures, and interrogate the rules determining what futures are possible. The question is whether the foresight field will embrace these resources or continue operating in the professionally unskeptical mode that has produced so many uninteresting, colonized, and ultimately unserviceable images of what lies ahead.

References

deHaven-Smith, L., & Witt, M. T. (2013). Conspiracy theory reconsidered: Responding to mass suspicions of political criminality in high office. *Administration & Society*, 45(3), 267-295.

Dela Cruz, A. L., Patel, C., Ying, S., & Pan, P. (2020). The relevance of professional skepticism to finance professionals' socially responsible investing decisions. *Journal of Behavioral and Experimental Finance*, 26, 100299.

DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48(2), 147-160.

Inayatullah, S. (2004). The causal layered analysis (CLA) reader. *Theory and case studies of an integrative and transformative methodology*, 1, 1-52.

Kelly, M., & Larres, P. (2025). Enhancing the auditor's mindset: A framework for nurturing professional skepticism. *Journal of Accounting Literature*, 47(1), 222-243.
Klakurka, J. A. C., & Irwin, B. (2015). Consulting by academics: Many forms, many opinions. Conference presentation.
Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: Formal structures as myth and ceremony. *American journal of sociology*, *83*(2), 340-363.
North, D. C. (1990). *Institutions, institutional change and economic performance*. Cambridge University Press.
Rose, A. M., Rose, J. M., Rotaru, K., Suh, I., Thibodeau, J., & Schulz, A. (2024). Can thinking about alternative explanations promote professional skepticism? *Accounting Horizons*, 38(4), 191-206.
Seligman, M. E., & Csikszentmihalyi, M. (2014). Positive psychology: An introduction. In *Flow and the foundations of positive psychology: The collected works of Mihaly Csikszentmihalyi* (pp. 279-298). Springer Netherlands.
Sharot, T. (2011). The optimism bias. *Current Biology*, 21(23), R941-R945.
Xu, G., Yang, C., & Fukofuka, S. (2023). Professional skepticism as sensemaking. *Current Issues in Auditing*, 19(1), P10-P15.

Bio-Circular Materials in Regenerative Design: design's role in ecological and societal transitions

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Keywords: regenerative design, biocircular materials, tangible futures

Today's social, political, and environmental emergencies require specific efforts in terms of thinking and acting in design. Regenerative design becomes a way to think and act beyond the human-centred boundaries, adapting to more-than-human knowledge and ways of being in the world. Bio-circularity provides a critical framework that can contribute to society and be utilised by policymakers, authorities, industry, NGOs, and academia. When designing for bio-circularity, several key principles and criteria should be considered and integrated into the design process. Designing out waste and pollution is an overarching principle that can be identified in most frameworks or guidelines in the literature (Ellen MacArthur Foundation, 2024), and substitute non-renewable materials with biological alternatives (Holden et al., 2023; Marshall et al., 2023). The primary feedstock should be of sustainable biological origin, and it is important to ensure that it is not extracted from a carbon sink, such as coal or peat (Holden et al., 2023). Prioritising local feedstocks contributes to achieving industrial symbiosis and the possibility of designing for closed-loop systems. In the bioeconomy, renewable biological resources are converted into food, feed, bio-based products, and/ or bioenergy via innovative, efficient technologies (bioeconomyalliance.eu, n.d.). In bio-circular design, materials are selected for their sensorial qualities, technical performance and ability to return to nature as nutrition.

The conversion to a circular bio-based economy means a transition from an economy that, to a large extent, has been based on fossil fuels and growth at all costs to a resource-efficient economy based on renewable raw materials that are produced through the sustainable use of ecosystem services from land and water (FORMAS, 2012). A thriving bioeconomy is centred around people and the natural environment, and it is crucial to move beyond fossil-feedstock dependence and toward a circular, carbon-neutral economy. Strategies for fostering more species-rich systems in agriculture, aquaculture, and forestry, as well as protecting large contiguous biodiverse systems to prevent species extinction and the erosion of biodiversity, becomes important (Palahí et al., 2020). Managing the land sector (agriculture, forestry, wetlands, and bioenergy) sustainably and holistically could contribute up to 30% of the global climate mitigation effort, while simultaneously addressing urgent health challenges. In the transition towards a circular bioeconomy, a conflict of interest often arises when the primary crop or nutritious byproducts from the food industry are primarily used for the energy sector, even if they have the potential to be utilised for other purposes, such as feedstock, biochemicals, and pharmaceuticals. However, the Renewable Carbon Initiative (2025) states that this dual use ensures that the critical nutritional components, such as proteins, are supplied to the food system, while carbohydrates and oils are directed towards industrial uses. The circular bioeconomy represents a crucial step towards transforming our land, food, health, and industrial systems. A circular bioeconomy requires change across multiple sectors, and engagement across these sectors will be the key to success. The UN reports that 20 out of 143 countries

have both circular and bioeconomy strategies, but only Estonia and the Netherlands have integrated them so far (UNCTAD, 2025). Approaches need to be situated and designed for the local context, as it is connected to the sustainable use of ecosystem services. The Global North and Global South face different challenges that the circular bioeconomy needs to address. The bio-circular economy can provide the framework for a just transition to regenerative systems, as it holds the potential to transform the economic and social fabric of communities and regions. The ability to shift crops between the food, feed, and industrial markets enables farmers and industry sectors to respond swiftly to changes in demand and mitigate the risks associated with climate change (Renewable Carbon Initiative, 2025).

A pilot study was conducted to generate knowledge as a first step toward developing a process to guide regional actors toward becoming bio-circular. The study is situated within a regional food system, and the participants included a design researcher, design students, companies from a regional organisation, a circular development hub, and local government. Five companies were selected, all members of the regional food industry organisation, and had participated in different regional network activities aimed at stimulating a circular transition. One company was a start-up from academia, two companies were family-owned SMEs, and the last two were larger companies. The next step was to identify by-products that were considered waste at the time. During the selection process, a new criterion was added because some by-products could be used for food production if novel food-technology methods were available. The start-up from academia, The Plant Protein Factory (*The Plant Protein Factory,* 2025) has developed a process to extract green proteins and other nutrients from green mass for use in food and feedstock. For the project, residues from the extraction of kale, originating from the local food industry, consisting of cut-offs, stems, and discarded leaves, as well as sugar beet tops, were selected. The other by-products originated from local small-scale chocolate manufacturing, industrial hemp processing, brewer's spent grain from a beer brewery, and residues from pressing linseed and rapeseed oil. Data was, in some cases, available for the chemical composition and nutrients. In the other cases, a literature study was conducted to find the information. The by-products were introduced to the students, and they also visited the production facilities to gain a deeper understanding of the processes. During a five-week course in Material-Driven Design (Mau, 2020), the B.A. students tinkered, developed material samples, and conducted tests to identify the technical properties and sensorial characteristics of the materials. The only additives available during the experiments were bicarbonate, vinegar (24%), rapeseed oil, and glycerol. Students were encouraged to use as little water and energy as possible. Finally, they developed prototypes that conveyed the material's qualities and potential areas of application. The results were presented to the participants in an exhibition. The material samples and prototypes facilitate ongoing discussion, serving as tangible examples of bio-circular potential in local by-products and of how they can be identified as feedstocks at an early stage.

Kale is a traditional crop grown in fields in the region of Scania and Halland, in Sweden. Kale, like its cabbage relatives, is a crop that requires minimal land and is climate-resilient in northern Europe, as it can withstand frost and snow. Kale contributes to lowering the climate impact of the food system, and it is mainly consumed locally. After The Plant Protein Factory extracts the proteins, fibres composed of cellulose remain that can be utilised in materials. The teams focused on different potentials of the components in the kale residue and applied two different strategies: (1) the coarse fibres and how they could be turned into fibreboards, (2) the potential of cellulose in the green mass, and investigated its application in papermaking. The first strategy resulted in a lightweight fibreboard that could be moulded into 3D shapes. The final concept was a screen divider for offices, as the material has a pleasant hay-like scent and potentially offers acoustic properties. The second strategy yielded a paper with textile properties: a smooth, flexible material that

is difficult to tear and can be stitched, with a logo that can be embossed into the material. These materials serve as tangible examples of how the food system can be connected to the manufacturing of situated biocircular materials. Before developing these materials, there was an exploratory conversation with the regional packaging industry on how excess cellulose from the food system could be utilised as materials. When introducing physical material samples for the packaging industry, the conversation shifted from '*being an interesting idea'* to '*we need to explore this possibility'*. Facilitating conversation through physical, tangible samples, biocircular materials and regenerative design offers lenses through which industry can explore and imagine possible futures. Practices of making and imagining can engage actors and encourage them to navigate uncertain times and unforeseen challenges.

References

Ellen MacArthur Foundation. (2024, August 21). Circular economy principles [NGO]. *Circular Economy Principles*. https://www.ellenmacarthurfoundation.org/circular-economy-principles

FORMAS. (2012). *Swedish research and innovation strategy for a bio-based economy*. Forskningsrådet för miljö, areella näringar och samhällsbyggande, Formas.

Holden, N. M., Neill, A. M., Stout, J. C., O'Brien, D., & Morris, M. A. (2023). Biocircularity: A Framework to Define Sustainable, Circular Bioeconomy. *Circular Economy and Sustainability*, *3*(1), 77–91. https://doi.org/10.1007/s43615-022-00180-y

Marshall, D., O'Dochartaigh, A., Prothero, A., Reynolds, O., & Secchi, E. (2023). Are you ready for the sustainable, biocircular economy? *Business Horizons*, *66*(6), 805–816. https://doi.org/10.1016/j.bushor.2023.05.002

Mau, M. university. (2020, November 11). Material Driven Design. *Malmö University*. https://mau.se/en/study-education/courses/PD179A/K3812-20261

Palahí, M., Pantsar, M., Constanza, R., & Kubiszewski, I. (with European Forest Institute). (2020). *Investing in Nature as the true engine of our economy: A 10-point Action Plan for a Circular Bioeconomy of Wellbeing*. EFI.

The Plant Protein Factory. (2025, May 5). [Webbpage]. Swedish University of Agricultural Sciences. https://www.slu.se/en/about-slu/organisation/faculties/faculty-of-landscape-architecture-horticulture-and-crop-production-sciences/resurser/vaxtproteinfabriken-en/

UNCTAD, U. T. and D. (2025, May 28). *Circular bioeconomy: What it means and how to get there*. https://unctad.org/news/circular-bioeconomy-what-it-means-and-how-get-there

Design and Planetarity: Staying with the Unknowable

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Keywords: planetarity; translation; humanities; ethics

My paper argues for the significance of the notion of "planetarity" for thinking about design and futures in general. This particular idea of "planetarity" comes to us from the literary humanities where it is understood as an "untranslatable" i.e. a concept that resists “smooth translation" into a synonym or another equivalent notion, in this case, for either apolitical climate discourse (including the Anthropocene) or a ‘better’ version of capitalist globalization (Spivak, 2015). The planetary, in this conception, is emphatically not another name for the global; instead, it belongs to an order whose otherness is not derived from us. I attempt to show that this unknowable, ungraspable quality of "planetarity" is figured as an ethical experience, as a limit of knowing encountered most often in works of art and fiction (Ganguly, 2019). In fact, it is in its refusal to be reduced to any ‘program’ or ‘method’, in its refusal to be instrumentalized that planetarity, thought in this way, holds the promise of offering us a way of imagining and living with futures that can never be fully determined or known, arrivals that remain unanticipated. The close reading of fiction, I argue, offers a generative site for the cultivation of this mindset; so along the way, I also hope to offer new ways of thinking about design within a transdisciplinary framework with the humanities.

References

Spivak, G. C. (2015). “Planetarity” (Box 4, WELT). Paragraph, 38(2), 290–292. http://www.jstor.org/stable/44016381

Ganguly, A. (2019). Border Ethics: Translation and Planetarity in Spivak. Intermédialités / Intermediality, (34). https://doi.org/10.7202/1070871ar

Designing Dissonant Imaginaries – Making Moving Coastlines Sense-able through Time-travel Walks

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Keywords: more-than-human futures; affective walkshops; human-ocean interconnectedness; post-anthropocentrism; more-than-human design

In times of ecological collapse and environmental degradation, learning to coexist with profound transformations and disruptions becomes an urgency. In the Anthropocene, many “living arrangements” formed over the course of millions of years are being rapidly undone by human-induced alterations of the biosphere (Tsing et al., 2017, p.G1). In this scenario, the Harawayan call for “staying with the trouble” insists that we confront the crises of the Anthropocene directly, problematizing their structural causes, and creating alternative narratives capable of inspiring more balanced ways of coexisting with the more-than-human world (Haraway, 2016). Similarly, Verlie (2019) argues for “learning to live-with” climate change, a practice that entails first acknowledging our entanglement and co-becoming with climatic processes, then adjusting affectively according to the demands of these entanglements. Ultimately, she calls for engaging in the difficult process of bearing worlds (p. 752), namely attuning to our interdependencies, grieving their rupture, acting with them to foster more promising futures, and allowing ourselves to be transformed in the process. In other words, we must learn to co-transform with the changing landscapes around us, to move with the transforming coastlines between erosion and land reclamation, and to embody change. We could begin by acknowledging our belonging to them, recognizing our dependence on them, and cultivating our lost, unseen or forgotten relations with them. As Abram (1996) emphasizes, humans have historically engaged in dynamic and continuous relationships with the sensuous surroundings, participating in reciprocal exchanges with the more-than-human world across all forms of life. Yet, in modern, capitalist, Western society it seems that we have forgotten about our embeddedness within the ecosystem and that we no longer feel involved in these relationships. Our interactions are now largely limited to other humans or mediated by human-made technologies, which has contributed to our increased sense of detachment from “nature” (Abram, 1996).

How might we perceive our belonging to the world around us and our entanglements with other beings? How can we begin to notice their often-unnoticed presence and their power to affect us and be affected by our presence? In this paper presentation, we introduce our practical approach of nurturing relations with the more-than-human world through amplifying dissonances between past, present and future imaginaries. We describe a series of affective ‘walkshops’ organized between spring and fall 2025 that we designed to guide people in the practice of attuning to the ‘invisible’ (Akama & Light, 2018) and navigating a transformative journey of rediscovering their connection with the sea. Inspired by more-than-human pedagogical methods (Poikolainen Rosén et al., 2024) and posthuman pedagogies of attunement (Sidebottom & Mycroft, 2024), we employed walking as a means of imagined time-travel. We focused our work on the shorelines of Swedish Malmö - a city whose inhabitants once relied deeply on the gifts of the sea, its flora, and its fauna and whose connection to the marine environment has

vanished with the depleting ecology in the Baltic Sea. There, participants were invited to imaginatively embody the coastline as it is moving and has moved over time, along with the city of Malmö being built into the sea. To further deepen the experience, a guiding audio narration was included to activate imagination and support focus on this fictional passage through time. Three scenarios were narrated, each set in a different location within the same Malmö neighborhood and in a different historical moment: 1580, 2025, and 2100.

Each scenario ended with an invitation for participants to jot down any feelings, bodily sensations, reflections, or thoughts the imaginative exploration had elicited on postcards depicting geographical coastlines maps. These postcards served as a metaphorical device through which participants could “write to themselves”, capturing whatever the time-travel experience had shaken. During the embodied walk, elements of randomness, serendipity, and facilitated dissonance were intentionally incorporated, proving to be particularly powerful in enhancing participants’ transformative experiences.

The paper presentation retraces the four iterations of the workshop, highlighting key themes from surveyed participant experiences, as well as our reflections on the approach of designing with moving coastlines, affective dissonances, and embodied learning from a post-anthropocentric perspective. We report from our design process of thickening invisible coastlines through iteratively amplifying dissonances and allowing contextual chaos into the designed experience, so that they become sense-able. Through layering walking, narrating, imagining, and reflecting into one experience, we could trace an embodied sense of the historical transformation to the place among participants. We see a clear fit of this contribution with the track Embodying and Sensing Futures, as it proposes a method for narrating, feeling, and embodying transitions. It presents and reflects on experimental approaches that can help people reconnect affectively and sensorially with the surrounding more-than-human world, using imaginative and anticipatory capacities to explore alternative future-presents.

References

Tsing, A. L. (Ed.). (2017). Arts of living on a damaged planet. University of Minnesota Press.

Haraway, D. J. (2016). Staying with the trouble: Making kin in the Chthulucene. Duke University Press.

Abram, D. (1996). The spell of the sensuous: Perception and language in a more-than-human world. Pantheon books.

Verlie, B. (2019). Bearing worlds: Learning to live-with climate change. Environmental Education Research, 25(5), 751–766. https://doi.org/10.1080/13504622.2019.1637823

Akama, Y., & Light, A. (2018). Practices of readiness: Punctuation, poise and the contingencies of participatory design. Proceedings of the 15th Participatory Design Conference: Full Papers - Volume 1, 1–12. https://doi.org/10.1145/3210586.3210594

Poikolainen Rosén, A., Salovaara, A., Botero, A., & Søndergaard, M. L. J. (Eds). (2024). More-Than-Human Design in Practice (1st ed). Taylor & Francis Group.

Sidebottom, K., & Mycroft, L. (2024). [Birdsong]: Pedagogies of Attunement and Surrender with More-than-Human Teachers. Australian Journal of Environmental Education, 40(2), 143–156. https://doi.org/10.1017/aee.2024.15

Designing More-Than-Human Futures: Applying the DFA Method to a Mycelium–Robot–Human Ecosystem

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Keywords: design futures; art-technology collaboration; more-than-human futures; living material ecosystems; speculative design; anticipatory design; multispecies design

Design has increasingly been positioned not merely as a mode of problem solving but as a speculative and anticipatory practice capable of engaging with the uncertainties, contingencies, and indeterminacies of emerging socio-technical futures. Recent scholarship in design futures (Dunne & Raby, 2013; Auger, 2013), transition design (Irwin, 2015), and more-than-human design (Tsing, 2015; Escobar, 2018) emphasises the need for approaches that foreground relationality, situatedness, and world-making over prediction or linear forecasting. Within this conceptual landscape, this paper examines how a structured art-technology collaboration, the Design Futures Art-Driven (DFA) methodology developed within the EU-funded MUSAE project, can function as a mode of exploration into the unknown and as a practice of imagining and materially exploring alternative futures, answering through future-oriented concepts. It argues that anticipatory design, when grounded in speculative, participatory, and multispecies perspectives, can unsettle dominant technological narratives and open pathways toward regenerative, counter-hegemonic imaginaries.

The DFA methodology integrates four interrelated phases: horizon scanning, visioning, ideation, and prototyping, constituting an iterative framework for interdisciplinary exploration. Drawing on design futures scholarship, the methodology positions design as a form of world-making (Canina et al., 2021; Escobar, 2018) in which the creation of artefacts, scenarios, and prototypes serves to question existing socio-technical conditions and articulate alternative ways of living. Rather than treating futures as external objects to be predicted, DFA invites participants to co-construct futures through embodied, imaginative, and materially grounded practices. This shift reflects Dunne and Raby's proposition that speculative design is less about forecasting than about provoking reflection and reconfiguring collective imaginaries. At the same time, DFA aligns with Irwin's vision of transition design, which emphasises systemic thinking, long-term temporal horizons, and the capacity of design to navigate across scales, from everyday practices to planetary systems.

Within this broader methodological and theoretical framework, the paper presents a case study, Growing Futures (Amandolese et al., 2025), developed within the MUSAE residency program. This speculative design concept and prototype envisions a mycelium–robot–human ecosystem for biodegradable and adaptive habitats. The project arises in response to the accelerating depletion of natural resources and the urgent need for regenerative, circular approaches to material production. It investigates mycelium-based materials, the root-like structure of fungi, which has gained increasing attention within both artistic and scientific communities as a living, biodegradable, and locally sourced material capable of transforming organic waste into structurally robust composites. When combined with advances in robotics and sensing technologies, mycelium's responsive material qualities invite imaginaries of hybrid ecosystems in

which autonomous agents collaborate with biological processes to cultivate new spatial and material forms.

The design concept is situated within theoretical conversations about more-than-human world-making. Haraway (2016) famously argues for “sympoiesis”, the idea that worlds are made through ongoing, mutual, entwined processes of becoming across species and technologies. Similarly, Tsing (2015) foregrounds the ecological and cultural significance of multispecies assemblages in the Anthropocene. By envisioning a speculative environment in which robots and mycelial organisms co-produce habitats alongside human actors, the project engages with these theoretical approaches, exploring how design can facilitate forms of collaboration that decenter human agency and resist extractive logics of control and domination.

The concept evolved through the four core phases of the DFA method to explore speculative, multispecies futures. Challenge exploration identified environmental and technological tensions while critiquing dominant innovation narratives, drawing on Escobar’s pluriversal design. Inspirational research combined precedents in mycelium, robotics, and living materials with interdisciplinary exchanges, highlighting knowledge translation issues central to decolonial design. Idea generation produced speculative scenarios and probes that examined possibilities and frictions across scales. Finally, iterative prototyping involved experiments that included unconstrained mycelium growth (attuning designers to biological autonomy), controlled casting (negotiating between predictability and emergence), robotic nutrient dispensing (activating symbiotic and non-anthropocentric modes of making), and integrated ecosystem settings where biological and mechanical agents co-evolved. Each phase generated new questions rather than linear outcomes, illustrating the anticipatory nature of the DFA method, which treats prototypes not as final solutions but as epistemic artefacts that reveal latent possibilities, constraints, and relational configurations, thereby exploring new forms of co-creation between living organisms and autonomous machines.

By integrating biological intelligence, robotics, and material science, the project illustrates how anticipatory design can foreground situated, embodied, and more-than-human futures. It proposes a shift away from dominant technological imaginaries rooted in control, extraction, and universality toward regenerative, relational modes of making. The paper argues that art-technology collaborations such as DFA expand the methodological repertoire of design futures by combining critical, speculative, and hands-on experimentation.

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Ultimately, the study positions design as a powerful medium for anticipatory world-making. Through speculative experimentation, iterative prototyping, and multispecies collaboration, design can expose systemic constraints, challenge hegemonic narratives, and open space for plural, ecologically attuned futures. By tracing the development of a Growing Futures ecosystem through the DFA methodology, the paper demonstrates how design futures can operate not simply as a site of conceptual exploration but as a generative practice capable of shaping how futures are collectively imagined, negotiated, and brought into being.

By applying the DFA methodology to the speculative development of a mycelium–robot–human ecosystem, this paper directly engages with the conference theme

“Futuring by Designing”, positioning design as an embodied and relational practice of anticipatory world-making rather than a predictive tool. Instead of seeking to stabilise uncertainty, the research works through it, using multispecies experimentation to make visible the tensions, dependencies, and value systems embedded in emerging futures. In doing so, the study highlights how design can function as a situated practice for negotiating futures as they are enacted, revealing what becomes possible and what is put at risk when visions are translated into material and systemic configurations.

Energy Modeling in Sustainability Education to Navigate Social Conflicts and Shape Desirable Decarbonisation Pathways

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Keywords: future-oriented science education; social conflicts over the energy transition; modelling to generate alternatives

We present an interdisciplinary investigation bridging physics and anthropology, aimed at addressing the social challenges of the energy transition within science education for sustainability through the educational adaptation of an MGA (Modelling to Generate Alternatives) energy-system model.

This research is grounded in Future-Oriented Science Education (FOSE), a sustainability approach that aims to integrate perspectives, conceptual frameworks, and tools from futures studies into science education (Laherto et al., 2023). In this way, it is possible to refine a theoretical framework for a form of science education designed to help young people address the challenges of a complex and rapidly changing society, particularly climate change. FOSE seeks to implement the European framework for sustainability education, as described in GreenComp, the main European guideline document for sustainability education published in 2022 by the Joint Research Centre under a mandate from the European Commission (Bianchi et al., 2022).

European transition policies are currently encountering widespread social opposition (Sovacool et al., 2022), despite a solid scientific literature demonstrating the urgency of decarbonisation. In particular, this study focuses on social opposition to the energy transition in Sardinia as a case study. Sardinia is widely regarded as a particularly suitable region for the development of renewable energy, due to extensive rural areas with low population density and favourable wind resources and solar radiation. For these reasons, it plays a significant role in Italy's national decarbonisation commitments. Yet, especially following the acceleration of the EU's decarbonisation agenda, social opposition has intensified, with high levels of contention (Apostoli Cappello, 2024). This opposition not only slows down decarbonisation, but also weakens trust between science and the public, as the social costs of decarbonisation erode confidence in institutions whose epistemic authority has underpinned the ecological transition.

Our research investigates whether sustainability education – if it equips students with specific tools for modelling the energy transition – can foster student participation in public debate around infrastructure projects, with the aim of strengthening local communities' involvement in decision-making processes and identifying decarbonisation pathways that are socially viable and supported by broad consensus. The study is structured in three phases. The first phase, completed after nearly a year, consisted of ethnographic fieldwork. In the second phase, we will model Sardinia's energy system following the Modelling to Generate Alternatives approach. In the third and final phase, which will take place during the next academic year, we will build on the outcomes of the research to design an interdisciplinary educational project on the energy transition.

The field investigation – now completed – was conducted using standard ethnographic methods: participant observation and qualitative interviews with activists from local committees, climate activists, citizens outside the movement, teachers, local administrators, and journalists. This work examined the opposition movement and how it resonates within schools.

The movement has limited youth participation but broad social support, and it is driven by a strong demand for self-determination. It largely identifies with the call for a “fair and just transition”, that is, a critique directed not at the energy transition as such, but at the specific decarbonisation policies pursued in Sardinia. The criticism focuses on landscape impacts, changes in land ownership, and energy exports to the national grid. Against this backdrop, the energy transition is perceived and described as the latest manifestation of a long history of extractivism.

We suggest that social opposition to the energy transition in Sardinia can be interpreted as an expression of a “reproduction crisis” arising from a “scale conflict” between global infrastructures and local communities, which unfolds across physical, social, and cognitive levels (Eriksen, 2017). When exogenous transformations become so intense that they exceed the possibilities of adaptation, individuals or groups may face such a reproduction crisis, understood as the threat of losing existential identity in the process of change. Sardinia has experienced several similar crises, including the crisis of the traditional agricultural world and of an industrial modernity project that has left a significant legacy of failed development and environmental impacts. Today, the prospect of a new exogenous transformation driven by decarbonisation policies is perceived as the risk of yet another reproduction crisis.

At the same time, communities have lacked the spaces, time, and tools to imagine new futures and to recover collective agency, eroded by the exclusion of local communities from decision-making processes. To restore such agency, it is necessary to provide tools that allow students and their communities to evaluate alternative pathways for the ecological transition, to take part in public debate on the energy transition, and to influence decision-making processes. Our research therefore aims to develop a dedicated energy-system model designed for educational use.

Planning a decarbonised energy system entails complex choices, due to the multiplicity of technological options and sociopolitical constraints. Energy-system design commonly relies on cost-optimal models, which may overlook configurations that are economically comparable but more socially acceptable. The Modelling to Generate Alternatives (MGA) approach, rather than identifying a single cost-optimal solution, explores the near-optimal solution space to generate multiple alternative system configurations, thereby restoring a deliberative space for policymakers (Lombardi et al., 2025). These tools may also be offered to local communities, enabling their involvement in decision-making processes.

Our goal is to adapt these tools for educational use so that, by engaging in the design of an energy plan, students acquire a scientific understanding of the problem. Such understanding may inform debate among peers, within families, and within communities. In the teaching activities, conflicts triggered by the energy transition will be presented to students as objects of interdisciplinary inquiry, drawing on ethnographic research and on the MGA model. On this basis, students will be invited to develop sustainable future scenarios through which they may contribute to public debate on the energy transition within their own communities. We will then assess the extent to which this educational experience contributes to reshaping the ways in which scientific knowledge becomes embedded in the social life of a local community.

References

Apostoli Cappello, E. (2024). Ethnicism and (green) extractivism in contemporary Sulcis: A study through the lenses of citizenship and activism. Anuac, 13(2), 99–124.

Bianchi, G., Pisiotis, U., & Cabrera Giraldez, M. (2022). GreenComp: The European sustainability competence framework. Publications Office of the European Union.

Eriksen, T. H. (2017). Fuori controllo. Un'antropologia del cambiamento accelerato (trad. it.). Einaudi.

Laherto, A., Rasa, T., Miani, L., Levrini, O., & Erduran, S. (2023). Future-oriented science education building sustainability competences: An approach to the European GreenComp framework. In X. Fazio (Ed.), Science curriculum for the Anthropocene, volume 2: Curriculum models for our collective future (pp. 83–105). Palgrave Macmillan.

Lombardi, F., van Greevenbroek, K., Grochowicz, A., Lau, M., Neumann, F., Patankar, N., & Vågerö, O. (2025). Near-optimal energy planning strategies with modeling to generate alternatives to flexibly explore practically desirable options. Joule, 9(11), 102144.

Sovacool, B. K., Hess, D. J., Cantoni, R., Lee, D., Brisbois, M. C., Walnum, H. J., Dale, R. F., Rygg, B. J., Korsnes, M., Goswami, A., Kedia, S., & Goel, S. (2022). Conflicted transitions: Exploring the actors, tactics, and outcomes of social opposition against energy infrastructure. Global Environmental Change, 73, 102473.

Ethics of Circular Uncertainties: Exploring Contradictions in Just Food Transitions

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Keywords: circular economy; food systems; domestic food consumption; sustainable practices; just transitions

Anticipatory governance approaches futures as socially and culturally generated through human practices and imaginaries rather than as predetermined destinations (Poli, 2017). Yet this vision is overlooked in discourse on sustainable food transitions, where the focus remains on material flows, waste elimination, and closed-loop production cycles. Dominant circular economy models - such as the Ellen MacArthur Foundation's butterfly diagram and Cradle-to-Cradle frameworks - are promoted extensively by business and policymakers (Bækgaard et al., 2024) and mobilised in transition initiatives such as Farm to Fork (Jackson et al., 2021). These frameworks conceptualize food as a "commodity" and individuals as "consumers" embedded within an economic growth paradigm, treating food system transition as primarily a technical process. Under this approach, achieving sustainability depends on shifting consumer behaviours toward healthier and more sustainable food diets through awareness, informed purchasing decisions and general guidelines for sustainable food practices and waste reduction (Jackson et al., 2021). This vision risks becoming reductive and deterministic: framing food as a commodity implies framing just transitions into a universalist principle that determines only one possible future toward fair, healthy, and environmentally sustainable food systems (De Bruin et al., 2024). This framing ignores that food consumption sits at the intersection of culture, ecology, economy, politics, health and justice; in doing so, it abstracts away the cultural embeddedness of food practices: the ways food is entangled with identity, memory, relationality, and meaning-making (Corvellec et al., 2022; Shove et al., 2013; Lewis et al., 2013; Kaplan, 2012, Holt-Giménez, 2011). As a result, these dominant circular models lack the granularity to grasp what sits behind consumption choices. Such choices are shaped by cultural dimensions - individual, national, historical and contextual - and informed by individual backgrounds, socio-cultural contexts and living circumstances such as the nature of dwelling, household makeup, and local food access (MacKendrick, 2025; Parker, 2025; Warde, 2013).

Drawing from qualitative participatory design research conducted in the Barcelona Metropolitan Area, this paper explores the contradictions between the material understanding of food system circularization central to food transition governance discourse and how individuals understand food systems through their situated, intersectional positions. The central assumption is that making these tensions visible could inform anticipatory circular governance approaches to navigate such incommensurability toward just food transitions.

The method used to explore this inquiry is design research based on market-walks observations, which examined domestic consumption practices and the factors affecting those practices. The research sample consisted of participants with diverse cultural backgrounds and household compositions from an international professional community in Barcelona. All participants shared institutional positioning within an

organization explicitly committed to regenerative futures, orienting them toward sustainability values.

Research reveals that despite occupying positions of relative privilege - including stable employment, economic security, educational credentials, time flexibility and general sustainability awareness - participants continually negotiated everyday compromises among competing values such as traditions, family care, health priorities, cultural belonging, nostalgic attachments, personal interests and political commitments. These negotiations emerged from individual histories and memories, physical-spatial contexts, socio-cultural environments, and daily circumstances arising from these dimensions, with circularity as just one value among many shaping their food decisions.

These negotiations reveal core tensions between circularity as framed in prescriptive formal models and its lived reality in domestic food practices, where it manifests through incidental emergence in daily routines, contradictory frictions with conventional framing, and plural trajectories rooted in individuals' intersectional positions.

These findings challenge the dominant information-deficit model that assumes people make unsustainable choices due to knowledge deficits (Holz et al., 2026; Olstad et al., 2021). Rather, this research suggests that what constitutes a meaningful food choice depends largely on one's positioning within intersecting systems of cultural, economic, political and infrastructural constraints, and on living circumstances - independent of awareness.

This produces fundamentally incommensurable food realities across differently positioned individuals. These findings gain critical importance when extrapolated to populations without such privileges - facing precarious employment, economic insecurity, or social marginalization.

This paper frames dominant circular models for food systems as anticipatory governance frameworks that advance universal ‘best practices’ across heterogeneous stakeholders. The ‘best practices’ promoted by these frameworks clash with documented food practices, revealing a misalignment between their universal meta-propositions and the diverse ways in which people actually organise their food practices.

This misalignment has ethical implications: it fails to recognise alternative forms of circularity already embedded in some routines, risks individualising responsibility and guilt among those who do not comply with universal rules and presumes an equal distribution of circular agency.

Instead, by recognizing circularity as a fundamentally ambiguous and contested space, this research calls for re-orienting current anticipatory models toward more just approaches, shifting from universal 'consumer' prescriptions to valorising the complexities and diversities of human, cultural and contextual realities behind food consumption.

Future anticipatory governance of circular food systems might seek to rebalance relations between individuality and collectivity by shifting focus from the isolated consumer to individuals as members of communities situated in specific socio-cultural contexts. This may involve opening new spaces for critical discussion that navigate the ambiguity of circularity and question the structures and dynamics of industrial food systems from human and situated perspectives. In turn, such a shift could foster more context-sensitive forms of circularity by amplifying already existing, culturally embedded practices, enabling new ones to emerge and making visible and contestable the contextual and structural conditions that limit who can actually enact them, thereby supporting more situated, circular and just futures.

References

Bækgaard, A. S., Engberg, C., & Hasselbalch, J. A. (2024). The technocentric consensus: A discourse network analysis of the European circular economy debate. Journal of Environmental Policy & Planning, 26(2), 173–187. https://doi.org/10.1080/1523908X.2024.2317793

Corvellec, H., Stowell, A. F., & Johansson, N. (2022). Critiques of the circular economy. Journal of Industrial Ecology, 26(2), 421–432. https://doi.org/10.1111/jiec.13187

De Bruin, A., De Boer, I. J. M., Faber, N. R., De Jong, G., Termeer, K. J. A. M., & De Olde, E. M. (2024). Easier said than defined? Conceptualising justice in food system transitions. Agriculture and Human Values, 41(1), 345–362. https://doi.org/10.1007/s10460-023-10482-y

Holt-Giménez, E. (2011). Food Security, Food Justice, or Food Sovereignty?: Crises, Food Movements, and Regime Change. In A. H. Alkon & J. Agyeman (Eds.), Cultivating Food Justice (pp. 309–330). The MIT Press. https://doi.org/10.7551/mitpress/8922.003.0020

Holz, A., & Tuitjer, L. (2026). Approaching Climate Communication: A Narrative Literature Review. Geography Compass, 20(3), e70071. https://doi.org/10.1111/gec3.70071

Jackson, P., Rivera Ferre, M. G., Candel, J., Davies, A., Derani, C., De Vries, H., Dragović-Uzelac, V., Hoel, A. H., Holm, L., Mathijs, E., Morone, P., Penker, M., Śpiewak, R., Termeer, K., & Thøgersen, J. (2021). Food as a commodity, human right or common good. Nature Food, 2(3), 132–134. https://doi.org/10.1038/s43016-021-00245-5

Kaplan, D. M. (Ed.). (2012). The philosophy of food (1st ed.). University of California Press. http://www.jstor.org/stable/10.1525/j.ctt7zw2cx.

Lewis, T., & Potter, E. (Eds.). (2013). Ethical Consumption (0 ed.). Routledge. https://doi.org/10.4324/9780203867785

MacKendrick, N. (2025). Foodscapes. In L. Holloway, M. K. Goodman, D. Maye, M. Kneafsey, A. E. Sexton, & A. Moragues-Faus (Eds.), Elgar Encyclopedia of Food and Society (pp. 256–257). Edward Elgar Publishing. https://doi.org/10.4337/9781800887435.00069

Olstad, D. L., & Kirkpatrick, S. I. (2021). Planting seeds of change: Reconceptualizing what people eat as eating practices and patterns. International Journal of Behavioral Nutrition and Physical Activity, 18(1), 32. https://doi.org/10.1186/s12966-021-01102-1

Parker, B. (2025). Identity and food. In L. Holloway, M. K. Goodman, D. Maye, M. Kneafsey, A. E. Sexton, & A. Moragues-Faus (Eds.), Elgar Encyclopedia of Food and Society (pp. 309–313). Edward Elgar Publishing. https://doi.org/10.4337/9781800887435.00080

Poli, R. (2017). Applying Anticipation. In R. Poli, Introduction to Anticipation Studies (Vol. 1, pp. 239–257). Springer International Publishing. https://doi.org/10.1007/978-3-319-63023-6_14

Shove, E., & Spurling, N. (Eds.). (2013). Sustainable Practices: Social Theory and Climate Change (0 ed.). Routledge. https://doi.org/10.4324/9780203071052

Warde, A. (2013). What sort of practice is eating? In E. Shove & N. Spurling (Eds.), Sustainable practices: Social theory and climate change (pp. 17–30). Routledge.

Experiencing Multiple Futures: Reworlding as Process Cartography

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Keywords: urban play; posthuman methods; critical capacities; futures literacy; regenerative communities

Design futuring (Fry 2018) is often disconnected from context. Possible futures generated by strategic foresight are often grounded in existing knowledge systems—that are part of the problem. Countering the impacts of the climate emergency demands immediate action, yet social change is slow and complicated by multiple factors. Imaginative methods for rehearsing and experiencing crisis are needed to create radical shifts in social imaginaries, avoiding harmful dystopian narratives centred on human exceptionalism and futures limited by deterministic and rational thought. Being with uncertainty and complexity acknowledges the coexistence of diverse knowledge systems and ontologies, a pluriverse of multiple, co-existing worlds, realities, or ways of knowing, in contrast to a single, universal reality (Escobar 2018). Adopting this conceptual framework in urban environments is particularly challenging as cities are dominated by social imaginaries bounded by anthropocentric systems and values.

However, cities are in urgent need of redesign to be adaptive and responsive to impacts of climate change. Place-based methods for speculative world building together offer critical and imaginative ways of exploring alternate ways of living well together through polycrisis. Neighbourhoods can be living labs that invite participation and play in place-based experiential futures (Mang & Reed 2012). Over the past decade, play design (Feder & Gudiksen 2022) has emerged as an international movement that emphasises the application of design thinking to understand connections between play materials, play systems, and play practices. Play is dynamic and disruptive, yet it is also immersive and generative. While most play scholars agree that it is a distinct way of being in the world (Sicart 2014), this is expressed through a multiplicity of experiences. It can enhance individual and social well-being, serve as a catalyst in forming communities, and challenge existing processes and systems. For adults, a significant distinction lies in the capacity for critical play (Flanagan 2009), which entails reflection, analysis, and observation of a play experience.

To participate fully in play, unlearning existing patterns and assumptions on its role in urban life is necessary. Urban play explores intersectional, creative and participatory methods of ‘being with place’ through embodied and material practice, sensemaking technologies and digital systems, and connection and belonging, bringing affect, emotion, and desire to practices of futuring. It brings together urbanists and futurists, play designers and urban planners, activists and artists to offer ways of futuring together with the urgency of crisis and the anticipation of foresight. Through co-world design it holds people in a collective space of possibility charged with embodied sensemaking.

Reworlding is focused on nurturing and developing existing patterns in culture, the environment, and society; evolution over revolution. In cities, we are often working with

spatially constrained and challenging environments. Through urban play strategies such as tactical urbanism and creative placekeeping, existing spaces can be retrofitted for play. By staging and engaging temporary projects in prominent urban spaces, creating new conceptions of place as a communal, shared resource or 'urban commons'. It offers experiential futures that entangle past, present, future and people, place, material in complex sets of relations that challenge human-centred worldviews to technology, society, and environment–the materials of cities.

Living in uncertainty means that futuring is not a linear process, as may often be the case in approaches to design foresight that map paths to preferable and achievable futures. Rather than a map, what is needed is a cartography, a process for studying and remaking the map in relation to lived experience, changing conditions, new relations. Often, when we contemplate cities, we envision the built environment, the infrastructure, the tangible materials that appear resistant to change. However, beneath the surface are urban cultures that shape place, collective social imaginaries that are difficult to map using traditional methods.

Reworlding is grounded in materialist approaches (Braidotti 2019) focussed on relationality, non-linearity, memory, and imagination. It is transdisciplinary and critical, working with creative methods intersecting situated knowledge. While new to Western thought, it reflects Indigenous epistemologies and cosmologies, that are grounded in relation to place (Innocent & Briggs 2025). It is a playful and imaginative method to defamiliarise urban environments with people directly in relation to place working with the city as a material, disrupting and making tangible social imaginaries that shape place. Walking, playing, listening, making together generates a cartography that maps multiple spaces of possibility, multiple futures, rehearsing them together.

It is critical that this is a relational cartography, allowing players to hold multiple possible worlds in place at once. Urban play allows cities to be reimagined and for that to be an ongoing process, being content with never really reaching an end. It reframes apocalypse as a singular human-centred crisis to cascading and interconnected moments collapse, with each crisis also reframed as a window of opportunity into experiencing another world. Previously unrecognised knowledge systems or practices may become visible during disaster (Matthewman et al 2021), hybrid models of governance emerge during crisis (Newton & Rocco 2022), communities adapt regenerative design in creative placekeeping (Shannon et al 2023).

Learning from these events is critical in generating a more inclusive and expansive cartography of possible futures. Adaptation as a way of being is hard work. The certainty of a map, a master plan, a strategy is reassuring even if the world it maps is in a state of cascading collapse. Reworlding decentres the human subject allowing us to be with place in a relational, interconnected, multisensory way. It reframes maps not as static representations, but as dynamic, living palimpsests that capture the entangled relationships of matter, meaning, biology, and technology. Critical urban play enables access to this unique way of being, creating the conditions for playing future places together.

References

Braidoitt, R. (2019). Posthuman Knowledge. Polity Press.

Escobar, A. (2018). Designs for the pluriverse: Radical interdependence, autonomy, and the making of worlds. Duke University Press.

Feder, K., and Gudiksen, S. (2022) Understanding play — designing for emergence, in Lockton, D., Lenzi, S., Hekkert, P., Oak, A., Sádaba, J., Lloyd, P. (eds.), DRS2022: Bilbao, 25 June - 3 July, Bilbao, Spain.

Flanagan, M. (2009). Critical Play: Radical Game Design. MIT Press. Fry, T. (2018). Design futuring: Sustainability, ethics and new practice (English ed.). Bloomsbury Visual Arts.

Innocent, T., & Briggs, C. (2025). Reworlding: Posthuman Thinking/Urban Play/Technology/Place-Based Knowledges/Indigenous Cosmologies. In G. Klumbytė, E. Jones, R. Braidotti (Eds.), Posthuman Convergences: Transdisciplinary Methods and Practices, 45-69. Edinburgh University Press.
Mang, P., & Reed, B. (2012). Designing from place: A regenerative framework and methodology. Building Research & Information, 40(1), 23–38. Matthewman, S., Uekusa, S. Theorizing disaster communitas. (2021). Theory and Society 50, 965–984.
Newton, C. E. L., & Rocco, R. (2022). Actually Existing Commons: Using the Commons to Reclaim the City. Social Inclusion, 10(1), 91-102.
Shannon, B., Sloane, D. C., & Bray, A. (2023). Co-Creative Placekeeping in Los Angeles: Artists and Communities Working Together. Routledge. Sicart, M. (2014). Play Matters. MIT Press.

Flora Flat Share

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Keywords: more-than-human; critical design; posthumanism; speculative

Beginning with the initial prompt of “the living room”, I formed a speculative design future space which explores a human-non-human cohabitation. This explores more-than-human perspectives, but also utilises the speculative context to form a critical device. Set in 2060 Eindhoven, following a post-societal collapse where arable land is no longer available, humanity faces immense stress from severe environmental changes. In response, people begin integrating nature into their living spaces. To reflect this shift, I designed a critical device, Flora Flat Share, that embodies autonomy while preserving rituals of interaction. The focus moves away from utilitarianism, embracing the non-practical to provoke thought and challenge assumptions.

Introduction: As we look 35 years into the future, tracking current existing and emergent trends, we notice a concerning pattern of overconsumption and environmental despotism. Literature by Reon Brand on Co-Emerging Futures (Brand, 2019), highlights that, given the effects of globalisation and how it has taken effect across various cultures, and how they affect the ecosystems surrounding them, a global civilisation collapse does not seem improbable. This project responds to the question: how might humanity adapt to such a collapse? Drawing on insights from Brand’s work, reinforced with an extended interview with him, this report examines one potential aspect of such a future through various perspectives. Therefore, this study produces a critical device to investigate how humans might cohabit synchronously with nature within the context of their living room, how the image of the living room might change because of this, and how these critical, speculative, and more-than-human perspectives can inform this.

Material Exploration: Material selection for this project was guided by principles of sustainable design and context-based materiality, emphasising ecological compatibility and resilience. Materials were chosen to align with the Eindhoven context, prioritising local flora to avoid ecological disruption through invasive species. Additionally, the materials needed to be accessible for prototyping within the present and sufficiently resilient to remain until 2060. This aligns with future-oriented design frameworks, which emphasize resilience and adaptability over time. Through an iterative design process, I began with material experimentation to inform subsequent design decisions.

Embodied Exploration: I conducted an embodied material exploration from a first-person perspective in the Karpendonkse Park in Eindhoven to explore various materials through physical engagement, sensory experience, and bodily involvement. I generally avoid interacting with nature due to a fear of affecting a delicate balance, so this brought me up close with materials in a way I would not normally have done to provide me with valuable tactile experiences. Based on visuo-somatic insights, I chose birch bark as a preferred material, as I was drawn to the eyes of the tree, but also how it forms a bed for other cyan, such as mushrooms, ferns, and moss to grow on it.

Discussion with Oscar Tomico: After a meeting with Oscar Tomico, a reputed experiential researcher within MtH design, to better grasp how he perceives his MtH relationship with plants with which he co-habits. The way he views them, they are akin to housemates, having the expenses of another person, just in the form of lights and

water. He monitors them to see how they're doing, inspecting for bugs, new leaves, lights levels, soil fertilisation and composition, and temperature through applications and sensors. Oscar propogates them by giving them to those close to him for free, which eliminates viewing it as a commmodity.

Through construction of a Maslow's Hierarchy of Needs (McLeod, 2026) for myself, a human, and the mushrooms, a plant, I found commonalities between the two on basic levels.

Final Design: The final design involves having a roommate which moves around, following the sunlight, while you still partake in rituals with it, such as watering it, pruning it, and taking care of it. It also has a "room" which is its own, which you can enter whenever you want, but the space is not meant for you: it's not yours. The relationship established with it is not conflated to another or anthropomorphised. It builds on existing assumptions people have with other actors and thus ends up being quite reductive. The relationship I am trying to mould from this is entirely separate: one of a roommate which moves around the house and interacts with the user whilst moving autonomously e.g. following sunlight. Thus, I tried to redesign one of the sides of this sofa to accommodate a plant roommate.

Discussion: Inviting a non-human into our living spaces, how might this affect our understanding of "home"? Would it feel less like a home with a more-than-human roommate inhabiting alongside us humans? I believe not, as the home is tied strongly with our self-identity and self-definition. The physical space of the "home" becomes deeply intertwined with our memories, events that happened in our lives, and shapes our perception of ourselves. This roommate becomes a part of your home, welcoming, where you still indulge in inward activities such as watering plants, which would in turn benefits the critical device too. We already invite pets, plants, other people, to share this home with us, thus going through with the rituals, forming new experiences, and tying memories to this place would not challenge our preexisting notions of home. What is nature and how do we place ourselves within it? This explores nature through the entirely Eurocentric perspectives; this does not reflect humanity as a whole, as how different cultures talk about nature is divergent from the Eurocentric viewpoints. Firstly, regarding giving personhood to natural phenomena, this refers to Te Ao Māori (Ministry of Business, Innovation & Employment, n.d.), which refers to Māori practices, has been ingrained into their government, where laws exist such as Te Mana o te Wai (Ministry for the Environment, 2022), which refers to maintaining balance between water, the wider environment, and community, and thus focuses on access to and health of water and freshwater.

Conclusion: Flora Flat Share designs for the future of human-nature cohabitation through speculative design, challenging anthropocentric views and exploring MtH interactions within the living room context of 2060. By integrating material experimentation and rituals, it provokes reflection on sustainability, adaptive living, and relational design. While speculative, the project invites further exploration of post-human ideologies, highlighting design's role in questioning and remodelling human-nature relationships.

References

Brand, R. (2019). Co-Emerging Futures A model for reflecting on streams of future change. Philips Foresight and Strategic Innovation.

McLeod, S. (2026, February 6). Maslow's Hierarchy of Needs. https://www.simplypsychology.org/maslow.html. Accessed 23 March 2026.

Ministry for the Environment. (2022, July 29) Clause 1.3: The fundamental concept of Te Mana o te Wai and its use in the NOF. Guidance on the National Objectives Framework of the NPS-FM. https://environment.govt.nz/publications/guidance-on-the-national-objectives-framework-of-the-nps-fm/clause-1-3/

Ministry of Business, Innovation & Employment. (n.d.). Principles from te ao Māori the Māori worldview | He aronga Māori ki ngā mātāpono. https://www.mbie.govt.nz/business-and-employment/economic-growth/previous-economic-development-work/just-transition/just-transitions-guide/foundations/principles-from-te-ao-maori-the-maori-worldview

From Waste to Experience: Material-Driven Design with Coffee Grounds for Sustainability

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Keywords: material-driven design (MDD); sustainable materials; material experience; circular design; waste-based materials

In "post-normal" times, characterized by uncertainty, contradiction, and ecological fragility, design practices are forced to radically rethink traditional understandings of materials, temporalities, and modes of future-making. Waste materials identified as valueless residues or by-products in today's linear consumption economy hold immense latent potential for developing alternative social imaginaries and collective foresight capacities. Taking spent coffee grounds as a primary case study, this research examines their transformation into a new material not merely as a technical environmental intervention, but as a speculative, sensory, and relational design practice. The central argument of the project is to position waste as a "material for future-making," exploring how material experience, user sensibilities, and contextual service practices can open new ontological spaces for more responsible, caring, and embodied futures. In this context, the study asks: How can spent coffee grounds be reconceptualized as a material for future-making through material experience, and how does this transformation influence user perception?

The research is situated at the interdisciplinary intersection of Material-Driven Design (MDD), DIY (do-it-yourself) based material prototyping, and user-centered experience design. This academic trajectory aims to provide theoretical and empirical contributions to the design of a modular coffee service unit that functions as both a functional carrier and a spatial guide. Drawing on literature that defines sustainability not just as material replacement or efficiency gains, but as a socio-technical and behavioral transformation process, the study adopts "material experience" as the fundamental leverage point of this transformation. In this context, coffee grounds are reframed as a "foresight material," enabling users to feel, touch, and imagine circular futures through everyday interactions. The project raises critical questions about how design can destabilize dominant future narratives, radicalize "future literacy" through bodily learning, and make "more-than-human" material relationships visible.

As emphasized by researchers such as Lidman and Renström (2011), the environmental impact of products is largely concentrated during the use phase. This impact can be minimized not only through technical improvements like energy efficiency but through profound changes in user behavior. Han, Back, and Barrett (2019) highlight the decisive role of physical touchpoints in service environments on user perception. Synthesizing these two approaches, the study examines how a waste-based material triggers tactile, visual, and emotional responses. Based on the "material experience" framework of Karana et al. (2009), this research aims to transform sustainability from an abstract political ideal into a lived, touched, and sensorially negotiated reality. Particularly, the combination of MDD and DIY approaches makes the temporal tensions in sustainable transformations visible. The slow drying and stabilization processes of waste-based materials contrast with the speed of modern coffee culture, feeding the theme of "Temporalities in Tension."

The empirical phase of the research was conducted at Istanbul Technical University (Taşkışla Campus) to ground theoretical discussions in concrete user experience. This workshop-based study involving 66 participants aimed to analyze how users interpret waste-based materials through direct, bodily, and multi-sensory interaction. Coffee grounds were combined with organic binders such as cardboard fibers, water, starch, glycerin, agar-agar, and vinegar to develop various DIY formulations. Following the experiments, three primary material samples (A, B, and C), with sharply distinct structural and aesthetic characters, were selected.

Sample A is a clay-like composite consisting of coffee grounds, wood glue, and a starch-based mixture that hardens after heat treatment. Sample B is an agar-agar and glycerin-based bioplastic prepared using a casting technique, characterized by a flexible and smooth surface. Sample C is a fibrous structure produced by blending shredded used cardboard cup fibers with coffee grounds, resulting in a paper-pulp texture. Sample C, in particular, strengthened the project's circularity narrative by allowing participants to establish a direct cognitive link between their own consumption waste (cardboard cups) and the new form of the material. To maximize interaction, a specially designed portable A4-sized sensory evaluation board was developed, allowing samples to be tested in different spatial contexts (studios, canteen, courtyard). Participants evaluated the samples across seven polar dimensions: hard–soft, smooth–rough, transparent–opaque, heavy–light, sturdy–fragile, cold–warm, and matte–glossy, using a five-point semantic differential scale.

The 66 valid responses analyzed demonstrated how material composition radically differentiates user perception. The participant group, predominantly architecture and design students (95.5%), identified Sample A as the "sturdiest" and "coldest" material, while Sample C was associated with high roughness and a significant perception of weight. Sample B exhibited a more balanced, "warm" profile, converging toward central values. The evaluation process evolved from a standard survey into a gamified experience involving bodily actions such as touching the material, holding it to the light, and even tapping it on surfaces. This confirms that the material is not just a passive substance but an "active agent" prompting users to think and debate.

The findings indicate that materials derived from spent coffee grounds are not merely substitutes for conventional materials like plastic or wood; rather, they introduce a distinctive material experience that reshapes how users engage with waste. These insights served as primary input for a modular coffee service unit designed to guide user flows and reinforce collective responsibility. Ultimately, the study demonstrates that waste can operate as a speculative resource by enabling users to negotiate sustainable futures through tactile engagement, bridging everyday practices with alternative future imaginaries.

References

Han, H., Back, K., & Barrett, B. (2009). Influencing factors on restaurant customers' revisit intention: The roles of emotions and switching barriers. International Journal of Hospitality Management, 28(4), 563–572. https://doi.org/10.1016/j.ijhm.2009.03.005

Karana, E., Hekkert, P., & Kandachar, P. (2009). A tool for meaning-driven materials selection. Materials & Design (1980-2015), 31(6), 2932–2941.https://doi.org/10.1016/j.matdes.2009.12.021

Lidman, K., & Renström, S. (2011). How to design for sustainable behaviour? A review of design strategies & an empirical study of four product concepts (Master's thesis, Chalmers University of Technology, Sweden).

Living in a Bio-Digital Material World: Anticipating Regenerative Technological Futures Via Speculative Design Praxis

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Keywords: regenerative futures; bio-digital ecologies; anticipatory worldbuilding; material speculations; appropriate technologies

Instrumental in shaping the modern world, digital technologies will play a critical role in shaping our planet's future. Technologies are never neutral however, they actively embody the profit-driven, unsustainable accelerationism of their developers (Haraway, 1991). Further, society's unchecked and untampered digitalisation is a key driver of today's resource depletion, carbon emissions, conspicuous consumption and waste (Stead, 2023). With planetary boundaries ever closer to tipping point, how we design our technologies must fundamentally evolve. We must urgently design for the difficult, longer-term environmental implications (the risks, rebounds and defuturing (Fry, 1999) that digital technologies bring, rather than simply for their short-term, utilitarian benefits

Redesigning technological lifecycles to regeneratively embed material recovery, repair and reuse has potential to reduce obsolescence, scarcity, and emissions. Biomaterials that symbiotically integrate with digital technologies are promoted as a credible, creative substrate for this regenerative future (Karana et al., 2023). This paper explores how Research-through-Design (Epp et al., 2024) and Speculative Design (Wakkary et al., 2016) methods can be applied to help anticipate near-future bio-digital processes, products and interactions. Building upon a theoretical scaffold of Regenerative Design (Camrass, 2023), More-than-Human-Design (Ferreira et al., 2025) and New Materialism (Barad, 2003), the paper discusses how speculative interactive prototyping can serve as a conceptual frame through which to critically explore possible sustainable opportunities and unsustainable risks engendered by adoption of next-generation bio-digital innovation.

Through this reflective process, the paper outlines how designers can begin to better consider the entangled ecological, technological and societal interdependencies and tensions that a socio-technical paradigm, rooted upon a bio-digital materials, may herald. In outlining these new sensibilities and capabilities for design, the paper envisions how such regenerative stewardship can nurture deeper, more appropriate and meaningful kinship (Ingold, 2020) between humans, their technologies (e.g., devices, the Cloud, and GenAI) and non-humans (e.g., flora, fauna, and the planet).

The paper embodies this stance through the notion of Regenification, using this term to describe a transformative, future-facing design approach that challenges the hegemonic barbarity, 'enshittification' (Doctorow, 2024) and systemized obsolescence that characterize today's digital technologies as controlled by Big Tech – the so-called Magnificent Seven and BATX. Regenification seeks to go beyond what systems thinker Donella Meadows (1995) describes as ineffective 'mop-and-bucket' environmental solutions, like recycling and carbon offsetting, which merely sustain the capitalist, extractive status quo. Drawing upon cutting-edge concepts including perma-computing, organic electronics, and solarpunk ideals (Housley, 2025), Regenification instead offers a hopeful imaginary for next generation planetarity positive technologies, ones which are regrown from the compost of today's unsustainable and inequitable digital milieu.

Crucially, Regenification reflects Eagleton's (2015, p. 59) theory of 'hopeful proactive construction' – "hope is not simply an anticipation of the future but an active force in its constitution [as] confidence in a particular future may help to usher it in."

References

Barad, K. (2003). Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter. Signs: Journal of Women in Culture and Society, 28(3), 801-831. https://doi.org/10.1086/345321

Camrass, K. (2023). Regenerative Futures: Eight Principles for Thinking and Practice'. Journal of Futures Studies, 28(1): 89-99.

Doctorow, C. (2024). 'Enshittification' Is Coming for Absolutely Everything. Financial Times, UK. https://www.ft.com/content/6fb1602d-a08b-4a8c-bac0-047b7d64aba5

Eagleton, T. (2015). Hope Without Optimism. Yale University Press.

Epp, F.A., Poikolainen Rosén, A., Salovaara, A., & Sanchez, C. (2024). Uncertainties as Generative Resources in Research through Design: Three Dynamics for Moving in a Design Space. ACM Transactions of Computer Human Interaction, 31(6) Article 70: 31 pages. https://doi.org/10.1145/3689041

Ferreira, M., Galvão-Ferreira, P., Rossini, L., Cappello, M., Silva, M., Xu, Y., Gouin, M., Jardim Nunes, N., & Nisi, V. (2025). Designing Biotopia: A Transmedia Experience for Natureculture Heritage and More-than-Human Entanglements. Proceedings of the 2025 ACM Designing Interactive Systems Conference (DIS '25), 160-177. https://doi.org/10.1145/3715336.3735803

Fry, T. (1999). A New Design Philosophy: An Introduction to Defuturing. UNSW Press.

Haraway, D. (1991). Simians, Cyborgs, and Women: The Reinvention of Nature. English. Routledge.

Housley, S. (2025). Designing Hope: Visions to Shape Our Future. Indigo Press.

Ingold, T. (2020). Correspondences. Polity.

Meadows, D. (1995). Mop-and-Bucket Solutions Keep Us Forever Cleaning Up. The Sustainability Institute. https://donellameadows.org/archives/mop-and-bucket-solutions-keep-us-forever-cleaning-up/

Karana, E., McQuillan, H., Rognoli, V., & Giaccardi, E. (2023). Living Artefacts for Regenerative Ecologies. Research Directions: Biotechnology Design, 1, e16, https://doi.org/10.1017/btd.2023.10

Stead, M. (2023). Sustainability: Designing for a Technological Utopia or Dystopia? In N. Dunn, L. Cruickshank & G. Coupe (Eds.), Flourish By Design. Routledge.

Wakkary, R., Odom, W., Hauser, S., Hertz, G., & Lin, H. (2016). Material Speculation: Actual Artifacts for Critical Inquiry. 5th Decennial Aarhus Conference on Critical Alternatives August (AA 2015). Aarhus University, 97-108.

More-than-Human Anticipation: Food as Method for Reimagining Water–Society Futures

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Keywords: anticipatory capacities; speculation; design-led foresight; future-making; collective imaginaries; uncertainty; contested governance

Grey seals tearing open fishing nets. Bacterial blooms thickening in warming waters. Excrement settling on the seabed, feeding algal growth and benthic worms that burrow into the flesh of fish that are eaten in turn. These multispecies dynamics in the Gulf of Bothnia unsettle not only ecological balances but also the temporal, moral, and political imaginaries through which futures are made. In this region, anticipation is already a multispecies practice: seals anticipate the movements of fishers; microbes anticipate nutrient surges; fish anticipate predators both human and non-human. Yet governance frameworks—from EU regulations to national implementation—continue to treat anticipation as a human prerogative, obscuring the more-than-human agencies that co-produce possible futures.

This paper argues that Anticipation Studies must confront these entanglements directly. Focusing on water–society–food relations in the Gulf of Bothnia, we examine how proliferating seal populations, shifting benthic food webs, and microbial transformations are co-constitutive of human livelihoods, cultural traditions, and contested moral claims. The EU Seal Regime illustrates how moral arguments about animal protection reshape ecological relations: increased seal numbers drive changes in nutrient flows, intensify parasitic loads, and reorganise trophic dynamics in ways that reverberate across multispecies lives. These transformations challenge not only the viability of fishing practices but the legitimacy of whose morals govern shared waters, and which futures are being foreclosed or enabled.

In earlier work, our participatory experiments drew heavily on the concerns of human actors—professional fishers struggling with damaged nets, public authorities navigating regulatory contradictions, and communities grappling with cultural loss. Here, the design of food-based encounters primarily supported dialogue, recognition of the impacts on humans of regulatory pressures and ecosystemic responses, and negotiation of alternative futures among people. While valuable, these engagements also revealed the methodological limits of anthropocentric participation. Non-human agencies were present through representation—spoken about, interpreted, translated, eaten—yet not truly centred as forces shaping the anticipatory horizon. The work generated shared understanding, but it did not yet transform the anthropocentric lens through which futures were being imagined.

This realisation prompts a more radical methodological turn: how might food, as subject, object, and method, help human research participants to decentre themselves and (re)centre the seals, bacteria, worms, algae, microbes, fish, and benthic relations that condition their collective becoming? What forms of anticipatory practice emerge when we design encounters not for humans to speak about non-humans, but for humans to experience themselves as nodes within multispecies trophic, metabolic, and affective networks?

To explore these questions, we activate food as a multispecies anticipatory methodology. Drawing on an experimental workshop with fishers, chefs, scientists,

public authorities, and researchers, we treat the creation and sharing of multispecies-informed dishes as a design practice that makes ecological entanglements sensorially and ethically unavoidable. Dishes that incorporate microbial ferments, seal-influenced fish textures, worm-patterned fillets, or algal-infused broths dramatise the ecological consequences of policy decisions; they allow participants to ingest, literally, the entanglements they otherwise encounter only as abstractions. The meal becomes an encounter zone where non-human agencies speak through flavours, textures, absences, and discomforts, experienced equally in the kitchen, the board room and the field. These edible artefacts operate as sensory propositions—speculative gestures that invite participants to simultaneously inhabit more-than-human temporalities and deliberate futures that account for seal hunger, microbial flourishing, benthic adaptation, and human wellbeing.

In this methodological development, food is not a tool to facilitate conversation about ecology but a medium that repositions humans within it. We explore how sensory provocation can interrupt anthropocentric habits of attention: the sourness of microbial overgrowth; the gritty texture signalling benthic disruption; the fatty richness of seal-influenced fish. These embodied experiences destabilise the assumption that humans are the central authors of future-making. Instead, they reveal anticipation as an emergent condition shaped by multispecies metabolisms, climate dynamics, and trophic rearrangements.

By placing seals, bacteria, worms, and fish at the centre, rather than the periphery, of anticipatory practice, the paper challenges the anthropocentric orientation of many future-making frameworks. Anticipation here is not what humans do about ecosystems but what ecosystems do with humans. This work builds on Anticipation Studies' emphasis on navigating uncertainty to propose that such navigation requires attentiveness to the agencies and desires of other species whose actions already shape collective futures. We argue that food-based participation offers a means to rehearse such futures in embodied, relational, and contested ways—moving beyond scenario-building into sensory, affective, and ethical engagement.

The paper contributes four key interventions. First, it develops a multispecies theory of anticipation grounded in the material, metabolic, and trophic relations of the Gulf of Bothnia. Second, it demonstrates how design-led, food-based methods can surface more-than-human agencies and redistribute anticipatory capacities across species. Third, it proposes that centring non-human life in participatory infrastructures can generate more just, situated, and ecologically attuned future-making practices. Fourth, it evolves the concept of food as methodology for engaging gastroimaginaries—the sensory, symbolic, and speculative imaginaries activated through eating—to better account for multispecies complexity.

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Ultimately, the work shows that the futures of the Gulf of Bothnia are co-authored by seals, microbes, fish, worms, humans, policies, and planktonic flows, and argues that Anticipation Studies—and environmental governance—must make room for them.

Planting seeds for just biodiverse futures through knowledge infrastructures centred on reimagined public libraries

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Keywords: imagination; knowledge infrastructure; libraries; biodiversity justice

The loss of biodiversity has remained persistent despite decades of biodiversity governance and conservation efforts. Like climate change, addressing biodiversity loss requires transformative changes across economic, political, and cultural aspects of society that challenge the status quo and address the root causes of intersecting socio-ecological crises (IPBES 2019). Worldviews and values regarding nature are at the core of these root causes, perpetuating disconnections between humans and nature in imagination and practice (Pascual et al., 2023). The concept of climate justice has been receiving increasing attention through an emerging theoretical framework that acknowledges the acuteness of the climate crisis (EEA 2024). On the other hand, the concept of biodiversity justice remains underdeveloped, even though it offers a promising framework to rethink the transformative changes needed to address contemporary socio-ecological crises - something existing biodiversity policies and measures have failed to do (Turnhout 2024). The unfolding question is: How to catalyse just biodiverse futures that centre on care for a reconnected human and more-than-human world?

In this paper, we address processes of infrastructuring possibilities for just biodiverse futures that reclaim biodiversity as part of everyday life and embed biodiversity knowledge and stewardship in communities. We focus on the creation of knowledge infrastructures that can democratise biodiversity debates by including the needs of non-human inhabitants and the knowledge of human communities that may not typically have a voice. While inevitably generating frictions, this can help legitimise forms of knowledge and imaginaries that otherwise might remain marginalised from mainstream discourses, reclaiming “imagination infrastructures” (Robinson, 2023) for justice and transformation. Our approach reflects an ontological understanding of infrastructures as engines of change, involving a perpetual reconfiguring – or infrastructuring - of relationships between people, nature and technology (Karasti et al, 2018). From this perspective, how processes of infrastructuring are established may shift present worldviews and values around biodiversity and allow for building worlds in which humans and non-humans can coexist in a mutually enhancing manner (Escobar, 2018).

We link processes of infrastructuring imagination with attention to concrete spaces and practices that inspire new biodiversity imaginaries and ways of relating in situations of “everyday living” (van Balen & van Oorschot, 2025). Physical meeting spaces, such as libraries and community centres, can function as “democratic infrastructures” when they open space for imagination and expression on one’s own terms, linking informal practices with institutional governance (Koekoek, 2025). Such spaces could act as nodes within wider knowledge infrastructures where imagination and alternative relationships between humans, biodiversity and technology are fostered. Since their founding in the early 1900s, public libraries have functioned as democratic organisations for learning and as places for public debate, leisure and artistic

expression. In our research we open the meaning of public libraries to different cultural organisations that expand the notions of ‘public’ and ‘library’ by including practices of caring for and living with a multispecies world.

Specifically, we discuss an ongoing research project that brings together two Dutch cultural organisations (i.e. Tetem and Creative Coding Utrecht), surrounding public spaces, local communities and their biodiversity knowledge, and us as researchers, supported through collaborations with artists. The organisations have recently adopted the ‘Zoöp’ model, which helps organisations cyclically develop knowledge and practices that can benefit their local ecosystems. The project aims to initiate wider knowledge infrastructures through co-created participatory and arts-based methods, centred on the cultural organisations as reimagined ‘public libraries’ and materialised through living repositories of local biodiversity knowledge. We present a prototype of such a living repository, conceived as a seed/story library for biodiversity justice, and the co-creation process that has shaped it. Including ‘data walks’, digital experimentation and futuring activities, the process places an emphasis on experiential and embodied knowledge as a way of rebalancing power relations and redistributing value to other ways of knowing, seen as significant for imagination.

The prototype allows us to make several conceptual and methodological reflections that we articulate as ways of ‘planting seeds’ for caring and just biodiverse futures, specifically, points of attention in infrastructuring processes to support the democratic shaping of such futures: 1) conditions or preparing the soil; 2) types of knowledge or seeds; and 3) forms of care and conditions for supporting a multispecies ‘public’ and appropriate ‘libraries’ that situate biodiversity knowledge and futures in extended communities of human and non-human inhabitants.

References

van Balen, S., & van Oorschot, I. (2025). Composing climate change as a matter of everyday living. Environment and Planning C: Politics and Space.

EEA European Environment Agency. 2024. Delivering Justice in Sustainability Transitions.

Escobar, A (2018) Designs for the pluriverse: Radical interdependence, autonomy, and the making of worlds. Durham, NC: Duke University Press.

IPBES (2019). Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. IPBES secretariat, Bonn, Germany.

Karasti, H., Pipek, V. & Bowker, G.C. (2018). An Afterword to ‘Infrastructuring and Collaborative Design’. Computer Supported Coop Work.

Koekoek, C. (2025). Towards an architecture of democratic infrastructures [PhD thesis, Erasmus University Rotterdam].

Pascual, U., Balvanera, P., & Christie, M. (2023). Editorial overview: Leveraging the multiple values of nature for transformative change to just and sustainable futures—Insights from the IPBES Values Assessment. Current Opinion in Environmental Sustainability.

Robinson, C. (2023). Imagination Infrastructures at Anticipation Conference. Medium.

Turnhout, E. (2024). A better knowledge is possible: Transforming environmental science for justice and pluralism. Environmental Science & Policy.

Preparing for More-than-Human Futures. A Design Experiment to Explore Multispecies Coexistence through Collective Acts of Care

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Keywords: care, more-than-guman futures, post-anthropocentrism, post-human design, multispecies design, co-design

As humans, we are inextricably entangled with everything else that is around us. We are in constant relation and intra-action (Barad, 2007) with the surrounding more-than-human world (Abram, 1996), encompassing animals, plants, fungi, bacteria, viruses but also oceans, rivers, winds, deserts, forests. These animate and inanimate forces are vital to our ongoing process of becoming (Bridle, 2023). Their well-being and survival are a precondition for planetary life and if we continue to ignore that environmental crisis is endangering them, we risk compromising our own futures (Ferrando, 2016, p.160). Indeed, it is timely to acknowledge that anthropogenic transformations are altering the biosphere in unprecedented ways, causing irreversible damage and threatening life (Barnosky et al., 2012). In this context, posthuman feminist perspectives propose that, amidst the environmental crisis of the Anthropocene, care can serve as a “creative glue” able to sustain, strengthen, or renew bonds with the more-than-human world and its inhabitants (Harris & Holman-Jones, 2022). Framed as “a concrete work of maintenance, with ethical and affective implications, and as a vital politics in interdependent worlds” (Puig de la Bellacasa, 2017, p. 5), care emerges as a fundamental more-than-human sensibility, dedicated to preserving and repairing the life-sustaining web of relations that intertwines our bodies with the environment (Tronto, 2013). Everyone experiences care, as a giver or receiver, because it represents the invisible yet powerful fil rouge that weaves or unravels the relations we have with other species. Indigenous understandings of care frame it as a flowing force that springs in a relational web strengthened by reciprocal responsibilities (Kimmerer, 2014). This mutual and bi-directional conception of care destabilizes anthropocentric categories brought forth by Western philosophies that build upon ‘dualistic oppositions’, separating nature from culture (Braidotti, 2019a; 2019b; 2013). Indeed, this binary worldview has long blinded us from noticing that we are cared for by more-than-human kins and has hindered our capacity to appreciate “how care flows from, through, and to all living beings and the earth itself” (Barnett, 2023, p. 11). Care is multifaceted and subjective, it can be an affection or an attitude, it can be learned or practiced, but it can also be perceived as a burden or a moral obligation. Ambiguity and multiplicity reside in its ontology and make it an intriguing topic to be researched through experimentations in the wider framework of more-than-human design practice. In this paper, we present a collaborative design experiment (Sanders & Stappers, 2008) which was implemented during one of the major design events in Milan, Italy in 2025. The experiment aimed at highlighting our entanglements with the more-than-human world, uncovering the reciprocity and interdependencies that bind us. As part of a research through design approach (Stappers & Giaccardi, 2014), the experiment recalls Carl DiSalvo’s 'speculative interventions' (2020), namely exploratory projects that blend design and anthropology to understand culture through observation and interpretation. Inspired by Donna Haraway’s metaphor of ‘string figures’ (Haraway, 2016), the experiment encourages a collective reflection on the care we extend to the more-than-human world

- both biological and technological. To uncover the complexity of the notion of care, we propose to examine it through emotions like concern, love, attention, respect, and empathy. The experiment is represented by a visual map filled with the threads of different colors and icons of species from biological and technological worlds. By choosing a thread designated to represent each affective nuance, the audience makes their choice for how they care and whom they care about. This way, silently but powerfully people declare how they define care and weave their strings into an interactive map of life, representing the variety of species. With each interaction, the web thickens, revealing an ecosystem of affects and exclusions. The web of care that emerges from these affective interactions allows to materialize entanglements, visualizing the invisible interconnections that are essential for more-than-human futures. At the end of the experience, visitors were given a prompt based on “What if…?” provocations to stimulate in-depth reflection and speculation about visions of future multispecies coexistence. Throughout the week, we conducted ethnographic in-situ observations (Muratovski, 2016) of how participants engaged with the installation and afterwards applied thematic analysis (Braun & Clarke, 2006) and visual analysis to interpret emerging patterns. The findings are organized around three clusters - noticing, sensing, and anticipating - uncovering how participants navigated more-than-human relations. Across these clusters, four main insights emerged: a strong tactile and emotional engagement with the more-than-human; the dominance of cognitive reflection over affective attunement when sensing care; the persistence of an anthropocentric prism shaping what people notice and value; and a subtle yet significant shift in mindset - from imagining care to expressing an intention to act on it. The paper contributes to the Caring Futures track – in two ways. First, it addresses what feminist perspectives reveal about the politics of care, repair, and maintenance in futures work by offering a creative way to explore and disseminate the concept of more-than-human care to a broad public through the stimulation of imaginative and anticipatory capacities. And second, it proposes an alternative collaborative approach to futures grounded in relationality rather than technocratic paradigms. By repositioning care as situated, affective, and anticipatory, the experiment demonstrates how collaborative practices can cultivate more responsible imaginaries of planetary coexistence.

Supporting Posthuman Imagination in Museums: nurturing capacities for future literacies by shifting epistemologies

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Keywords: imagination; posthuman; museums; metacognition; agency

Imagination is essential in enabling vision beyond present conditions and opening up alternative futures. It is therefore crucial in addressing a 'posthuman convergence' (Braidotti, 2013) of structural injustice, environmental crisis and a shift in what it means to be human. Complex personal, local and global challenges require us to re-imagine ourselves and to use imagination to develop autonomy, empathy and the capacity to solve problems. Imagination enables us to 'invent visions of what might be in our deficient society' (Greene, 2000). The nurturing of imagination should be essential in education; however, some argue that this concern is not reflected in formal settings. Giroux (2014) describes schools as 'disimagination machines' which leave us ill-equipped in a challenging world; similarly, we have found little 'space for imagination' (Burns et. al., 2025) in schools. We suggest that a less formal starting point might be needed to attempt to shift imaginaries. For us, this starting point is the museum.

Possible futures can only emerge from the past and present. New, future trajectories depend on historical ones, as the basis to 'help latent futures unfold' (Smith and Wilson 2024). Museums present a treasure chest of material and conceptual possibilities from which to support the growth of more positive, future entanglements (Barad, 2007). By working outside of the norms of formal education settings, providing access to ideas embodied within material artefacts, we argue that museums can help shift existential beliefs towards a more relational, posthuman approach. Museums can enable a disruption of anthropocentric and humanist logic, by evidencing that the world hasn't always and won't always be like it is today, supporting expansions in awareness of the relational diversity of beings, things, times and places. Museum objects have their own agency, enabling meanings to emerge through mutually active relationships with humans, materials, places, technologies and animals (MacRae et. al. 2018). They can be used to decentre the human as the focus of analysis and instead, focus on the intra-activity of humans and non-humans (Kuby, 2017). This can enable the emergence of new, relational conceptions of ourselves and the world around us, unlocking the imaginative agency of learners towards the hopeful envisioning of positive change.

In this paper we present research into supporting future literacies by reframing and nurturing imaginative capacities, using art-based experiences, in education practice with the Grand Egyptian Museum (Cairo) and North East Museums (UK). Discussion is grounded in our ongoing research 'Supporting Posthuman Imagination in Museums' funded by a British Academy/Leverhulme small grant. By 'posthuman' (Braidotti, 2013), we mean firstly; a move away from 'humanism' as a philosophy which has led to social injustice, environmental crisis and privileging of the white male, secondly; a rejection of anthropocentric approaches which centralise and isolate human experience. By 'imagination', we refer to cognitive and metacognitive models of imagination developed by Burns (2022, 2024), which establish imagination as a fundamental aspect of our

thinking, required within most of our cognitive operations. Our definition of imagination continues to unfold, as our cognitive approach intra-acts with concepts of temporal imagination (e.g.; Facer) and radical ecology (Smith & Wilson 2024). The project supports museum educators to develop situated pedagogies which could change the 'social imaginaries' (Castoriadis) of the individuals and communities they engage with.

Our collaboration to develop pedagogies emphasises embodiment and immersion, drawing on the 'force of art' (Atkinson, 2017) and the potential of museum artefacts to open up temporalities, materialities and relationalities, as a means of disrupting existing and generating new imaginaries. The philosophical basis for this is made explicit to museum educator participants, who engage in theory-based dialogue and sensory activities which enable exploration of the concepts of the 'posthuman' (Braidotti, 2013) in relation to material objects in their museums. This 'time-out' to consider theory provides an opportunity for participants to transcend their daily practice, as does a further, crucial aspect of our current approach: opportunities to develop 'metacognition' (Burns, 2024) related to participant's self-development of what we have called 'posthuman imagination'. We are interested in the role that metacognition can play, through art-based intra-actions (Barad, 2007) within museum contexts, for conceptual disruption and world/future making. Essentially, we are asking: by understanding our posthuman imagination and how to develop it, can we increase our agency to contribute to more positive futures for ourselves and the planet?

As we become entangled in ideas of 'becoming' we increasingly understand research as generative and never complete. Originally inspired to research in museums as social institutions which influence the creation of imaginaries within Castoriadis's concepts of 'radical imagination' and 'the social imaginary' (1997), we find ourselves increasingly concerned with how imaginaries emerge through material intra-actions (Barad, 2007). This is a partial departure from Castoriadis's anthropocentric conception of humans as the constructors of their own social imaginaries towards the integration of Barad's 'agential realism' (2007). Currently, we are simultaneously accommodating ideas that imaginaries depend on agency conceptualised as autonomous, human, cognitive imagination while also accepting that agency emerges from material entanglements. Perhaps it is likely that we will reject the constructivist/critical realist approach which we have grown from as researchers, as we become more immersed in posthuman concepts and move towards a perspective in which human, cognitive imagination is situated within broader, agential entanglements. These epistemological shifts are the result of a research process which was originally anthropocentric but the pursuit of 'posthumanism' as a research topic has ruptured our conceptual boundaries as researchers and is feeding new 'research imaginaries'. This paper embraces these conceptual shifts as inducing an entanglement which has opened up latent futures for researchers as well as participants, which illustrates the concept of emergence (Osberg and Biesta, 2007) through a process of agential realism (Barad, 2007) within a theoretical and material immersion.

References

Atkinson, D. (2017) Without Criteria: Art and learning and the Adventure of Pedagogy, International Journal of Art and Design Education, 36:2

Barad, K. (2007). Meeting the Universe Halfway. Duke University Press

Braidotti, R. (2013) The Posthuman, Polity

Burns, H., Dick, S., Keay, C., Robb, A. and Woolner, P., (2025). Space for Imagination? Exploring the Challenges of Implementing Art-Based, Metacognitive Approaches for Supporting Imagination as a Route to Agency. International Journal of Art & Design Education, 44(2), pp.428-446.

Burns, H. (2024) Is Metacognition 'just' Imagination? Exploring the relationship with implications for agency and pedagogy, in Metacognition in Learning - New Perspectives, Tezer, M (ed.). Intech

Burns, H. (2022 [online], 2024) Imagining Imagination: towards cognitive and metacognitive models, Pedagogy, Culture and Society, 32:2
Castoriadis, C. (1987) The Imaginary Institution of Society, Polity Press
Giroux, H. (2014) When Schools Become Dead Zones of the Imagination: A Critical Pedagogy Manifesto, Policy futures in Education, 12:4
Greene, M. (2000) Releasing the Imagination: Essays on Education, the Arts, and Social Change, Jossey-Bass
Kuby, C. (2017) Why a paradigm shift of 'more than human ontologies' is needed: putting to work poststructural and posthuman theories in writers' studio, International Journal of Qualitative Studies in Education, 30:9
MacRae, C., Hackett, A., Holmes, R. & Jones, L. (2018) Vibrancy, repetition and movement: posthuman theories for reconceptualising young children in museums, Children's Geographies, 16:5
Osberg, D. and Biesta, G.J., 2007. Beyond presence: Epistemological and pedagogical implications of 'strong'emergence. Interchange, 38(1), pp.31-51.
Smith, J. A., & Wilson, A. (2024). Radical Ecology in the Face of the Anthropocene Extinction: A New and Urgent Philosophy for Complexity in the Social Sciences. London: Routledge.

The Ghosts of futures yet to come: Thinking with the Ocean and the No longer and Not yet

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Keywords: sensing futures; action; Arendt; topianism; ocean

In Organisational Studies, the discussion around futures is increasingly dominated by utopian and dystopian imaginaries (Dahlman et al., 2025; Gümüsay & Reinecke, 2024). Working in this field, and thinking with the Ocean, I find myself asking what it might mean to organise for futures that are not just better managed but altogether collectively re-imagined. This inevitably draws me into questions of idealism, hope, and of my own personal fairy tale of a perfect society—a place where everyone belongs, and life is a carnivalesque rhythm of making, doing, exploring, and simply being. As inspiring as this flow may be, I'm caught between these hopeful visions and a critical awareness of the desires that shape them. I find myself drawn not to methods or data, but to stories, as a way of lingering with complexity. Utopian/dystopian imaginaries operate as spectral forces: they haunt organisational discourse by insisting on fixed endpoints. This focus risks deferring justice and transformation to a distant future, turning the present into a "waiting room" for tomorrow. This closure limits how futures can be sensed, felt, and acted upon, raising the core questions: How might we sense and shape futures without succumbing to the anxiety of expectation or the closure of a fixed arrival? What if there are no ends? And all we have are means (Le Guin, 2012)? The answer, then, is that everything depends on how we live now.

This paper explores futures as unsettled, tidal, and relational, resisting the definitive closures of utopian and dystopian thought. Drawing on Hannah Arendt's (1996) concept of the "fearless now" and the terrain of the "no longer and not yet" (the threshold between past and future), I argue for orientations that embrace rupture and indeterminacy as openings to begin again. This is achieved by Thinking-with the Ocean, understood not merely as metaphor but as method and collaborator. The Ocean, with its fluidity, depth, opacity, and ceaseless movement, serves as an epistemic and affective force that reframes organising away from linear planning and control toward entanglement, emergence, and vulnerability.

Arendt's "no longer and not yet" defines the present as a precarious threshold of human freedom—a rupture that opens the possibility to begin anew (Arendt, 1996). The 'Now' is therefore not a waiting room for a predetermined event, but a radical site of intervention, where thinking rooted in lived experience can bear upon the world. The Ocean, much like Arendt's 'Now,' thrives in perpetual motion. It dissolves the 'no longer' and remakes it with each current, while the 'not yet' is a continuous becoming. Oceanic thinking thus encourages the "complete calm that can no longer be shaken by events expected of the future" (Arendt, 1996, p. 13), liberating action in the present.

The paper makes three interconnected arguments:

1.Futures are not destinations but ongoing movements, emergent and composed in dialogue with the world. Meaning arises not from rigid anticipation but from memory, the flowing engagement with experience, which gives unity and wholeness to existence. (Scott & Stark, 1996, p. 113)

2.Oceanic thinking resists the utopian failure Arendt (2018) identifies in The Human Condition, which stems from interpreting political action for making (poiesis) rather than action (praxis). Making seeks a predictable end-product; action, however, is bound to the plurality and unpredictability of life. Oceanic thinking resists this closure, keeping praxis open, relational, and situated. It privileges movement over endpoints and sensitivity over mastery, embracing the boundless and uncertain nature of human life.

3.The practices of noticing (Tsing & McGuirk, 2024) and storytelling are methods for inhabiting the "no longer and not yet" without resolving it. Noticing resists the spectral pull of perfected worlds by grounding attention in the thick present and its entangling relationalities with the other-than-human world. Storytelling weaves fragments into meaning, preventing futures from collapsing into mere expectation.

This paper offers a new conceptual orientation for Organisational Studies. By drawing on Tim Ingold's reflections on Kenneth Olwig's notion of topianism (Ingold, 2011), the study finds a final anchor. Ingold contrasts the straight line of modernity (utopian) with the fragmented line of postmodernity (dystopian), proposing instead a topianism grounded in wayfaring and dwelling. This aligns closely with oceanic thinking: both recognize that places, and futures, are created through movement, encounter, and relation rather than through the pursuit of perfected ends. This orientation privileges paths over endpoints and becoming over closure. To think-with the Ocean is to move, dwell, and story with the world, cultivating futures that are emergent and plural rather than predetermined. Ultimately, this work demands a radical presence and an ethical commitment to the means of living now.

References

Arendt, H. (1996). Love and Saint Augustine (J. V. Scott & J. C. Stark, Eds. 1 ed.). University of Chicago Press.

Arendt, H. (2018). The Human Condition (Second ed.). The Universtiy of Chicago Press.

Dahlman, S., Just, S. N., Plessis, E. M. d., & Husted, E. (2025). On the day after tomorrow: Activating the apocalyptic imaginary. ephemera: theory and politics in organization, 25(1), 1-16.

Gümüsay, A. A., & Reinecke, J. (2024). Imagining Desirable Futures: A call for prospective theorizing with speculative rigour. Organization Theory, 5(1), 1-22. https://doi.org/10.1177/26317877241235939

Le Guin, U. K. (2012). The left hand of darkness. Hachette UK.

Scott, J. V., & Stark, J. C. (1996). Rediscovering Hannah Arendt. In J. V. Scott & J. C. Stark (Eds.), Love and Saint Augustine (pp. 113-212). The University of Chicago Press.

Tsing, A., & McGuirk, J. (2024). 'Noticing is my way of opposing' Anna Tsing in conversation with Justin McGuirk. Future Observatory Journal(2). https://fojournal.org/interview/anna-tsing-noticing-is-my-way-of-opposing/

Thinking with Sentinel Species: Materialising More-than-Human Futures of Disaster

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Keywords: embodied futures; sentinels; sensing; more-than-human; early warning systems

In the 1850s inventor George Merryweather developed a device that harnessed the sensitivity of leaches to register shifts in atmospheric pressure. His resulting storm forecasting device, known as the 'tempest prognosticator' treated the invertebrates as components in a mechanical system designed to sound an alarm when storm conditions arose. Initially designed to be distributed to ports around the UK, the prognosticator offered little advantage over a barometer, and consequently faded into relative obscurity. Today there are numerous early warning systems that incorporate the sensory affordances of animals into their workings, from the now established use of sensor-equipped mollusks to measure water quality (Goldberg, 1986; Gramaglia and Sampaio da Silva, 2012) to a protype early warning system for earthquakes based on farm animal behavior (Wikelski et al, 2020).

Often described as environmental sensors (Gabrys, 2016) or sentinels (Keck and Lakoff, 2013) such species experience their environment through a broad range of bodily responses, contributing to what some have labelled a 'more-than-human sensorium for the Anthropocene' (Johnson, 2017: 278). This paper examines several recent projects such as ICARUS (International Cooperation for Animal Research Using Space) that seek to harness the sensory and anticipatory affordances of such species, paying particular attention to the ways in which their heterogenous modes of relating to the world are operationalized within human-centered systems. The breadth and diversity of embodied responses among sentinel species, this paper argues, is all too often reduced to a narrow bandwidth of that which can be digitized. Given the growing interest in more-than-human futures research (Granjou et al, 2017), a consideration of the ways in which the autonomous experience of sentinel species is filtered through human discourses of disaster and digitization has consequences both for the kinds of futures humans are able to anticipate, and the diverse sensory and affective life experiences that elude capture.

References

Gabrys, Jennifer. 2016. Program Earth: Environmental Sensing Technology and the Making of a Computational Planet. Minneapolis: University of Minnesota Press.

Goldberg, Edward D. 1986. "The Mussel Watch Concept." Environmental Monitoring and Assessment 7 (1): 91–103. https://doi.org/10.1007/BF00398031.

Gramaglia, Christelle, and Delaine Sampaio da Silva. 2012. "'Researching Water Quality with Non-Humans. An Actor Network Theory Account.'" In Agency without Actors? New Approaches to Collective Action, edited by Jan-Hendrik Passoth, Birgit Peuker, and Michael Schillmeier, 178–95. New York: Routledge.

Granjou, Celine, Walker, Jeremy and Salazar, Juan. 2017. "The politics of anticipation: On knowing and governing environmental futures," Futures, 92 (May),. 5–11. https://doi.org/10.1016/j.futures.2017.05.007.

Johnson, Elizabeth R. 2017. "At the Limits of Species Being: Sensing the Anthropocene." South Atlantic Quarterly 116 (2): 275–92. https://doi.org/10.1215/00382876-3829401

Keck, Frédéric, and Andrew Lakoff. 2013. “Preface: Sentinel Devices.” Limn, no. 3. https://limn.it/articles/preface-sentinel-devices-2/.
Wikelski M, Mueller U, Scocco P, et al. “Potential short-term earthquake forecasting by farm animal monitoring.” Ethology. 2020; 126: 931–941. https://doi.org/10.1111/eth.13078

Time-Lag as Method: Designing Cross-Time-Zone Dialogue for Climate-Resilient Futures in Design Education

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Keywords: time-lag as method; cross-time-zone dialogue; design fiction; climate-resilient futures; design education

In the context of responding to global climate change, design education faces a core challenge that is frequently discussed yet difficult to put into practice: how to enable the next generation of designers not only to understand situated climate issues, but also to build connections between knowledge and context across cultural and regional differences, thereby developing systems thinking and imagination for plural futures. In many mainstream cross-regional teaching models—whether online or in person—time-zone difference is treated as organizational friction and cost. Cross-regional dialogue is therefore compressed into synchronous meetings and task briefings. Pedagogically, however, we need a collaborative mode that can accommodate difference, delay, and reflection, so that understanding and negotiation can unfold over a longer temporal horizon and remain traceable and discussable.

Drawing on a three-year international teaching collaboration, this study proposes and implements a cross-regional workshop model framed as time-lag as method. We address two research questions: (1) How can time-zone difference be transformed from an organizational challenge into a designed dialogue mechanism—one that becomes a resource for cross-cultural understanding and co-creation of meaning, and that encourages students to develop less locally bounded readings of climate issues, so they can more directly recognize and name value conflicts and cultural tensions? (2) How can Design Fiction, as a speculative and narrative tool, guide students to make sense of “conflict” across different cultural and social contexts, construct future visions oriented toward climate resilience and carbon neutrality, and further support cross-cultural dialogue, questioning, and re-interpretation?

Empirically, we examine a speculative “zero-carbon futures” workshop conducted in parallel in Mexico City and Tianjin. Leveraging the 13-hour time difference between the two sites, we orchestrated the process into alternating “active windows” and “reflective windows,” turning time-lag into a deliberate space for cross-national teams to reflect and re-interpret. In terms of workflow, Mexican students first drew on situated experience to propose climate-related topics and contextual cues, producing problem framings and object-based solution directions. Chinese students then developed future scenarios and an initial proposal, articulated as artifacts “from the future.” Mexican students subsequently interrogated and revised the proposal, foregrounding overlooked value positions and potential cultural conflicts. Finally, informed by the dialogue across both groups, the two teams produced two complementary sets of designs: one oriented toward the present and local realities, and the other oriented toward imagined futures. Across iterative student work and classroom observations, we saw a gradual shift from “local experience statements” toward “cross-context interpretation.” Conflicts also evolved into discussable narrative resources and flowed back into the construction of future imaginaries. To support this cross-time-zone

questioning–reflection mechanism, we iteratively developed a discursive design toolkit on top of an existing baseline toolkit. Through actionable prompts and structured procedures, it facilitates dialogue, captures points of contention and key assumptions, and translates them into handover-ready intermediate outputs (e.g., contextual cues, future proposals, and revision notes), enabling teams to sustain and deepen co-creation through relay.

This study contributes in three ways. First, it advances the pedagogical design concept of time-lag as method, turning time-lag into an intentional window for cross-national teams to reflect and move collaboration forward, and providing an operational rhythm structure for cross-regional collaboration. Second, it leverages Design Fiction to support the co-creation of cross-cultural climate narratives, enabling students to more directly engage with value conflicts and cultural tensions in their artifacts and discussions, to understand “conflict” across cultural and social contexts, to build future visions oriented toward climate resilience and carbon neutrality, and to further conduct cross-cultural dialogue, questioning, and re-interpretation. Third, it develops a discursive design toolkit that has been piloted across multiple workshop rounds and is being continuously refined, offering reusable tools and case-based references for cross-regional and cross-time-zone collaborative practice in design education. The study suggests that, through intentional design of spatiotemporal structure and collaboration mechanisms, young designers from different backgrounds can engage in deeper cross-cultural dialogue and develop more open, more plural, and more thought-provoking responses to climate adaptation through co-creation.

Vernacu-Facturing for Anticipatory Making.

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Keywords: communities-of-knowledge; solidaric design; plant fibre resources; indigenous research models; progressive material narratives.

Overview

This paper explores “vernacu-facturing” as a radical approach to regenerative design, route to re-vitalising communities-of-knowledge and a reconfiguring of governance.

The practice-led study described positions design as an act of inquiry into the unknown, an anticipatory practice that challenges dominant foresight logics and fosters hope as a generative force for cultivating liveable futures. By foregrounding solidaric design, this work offers a pluriversal lens on collective sustainable making.

Drawn from a textiles and filmmaking practice that utilises the filamental nature of constructing artefacts in both crafts, the study focusses on plant fibre resources and solidaric design processes to conjure futures through knowledge-sharing, and experimental material narratives.

The framework is modelled around the values of Vernacular Industrialism - a do-it-yourself approach to industrial manufacturing in early twentieth century China that advocated local sourcing, tinkering with foreign processes, and knowledge-sharing (Lean, 2020).

Methodological Approach: Relational/Accountable

The methodology seeks to redress imbalances in researcher/participant positionality via indigenous research models which advocate relational, reciprocal, and accountable modes of practice (Wilson, 2008). This approach prioritises embodied methods, sensory explorations and economies of care to challenge dominant narratives of scalability and economic growth.

The Island of Ireland, with its history of colonisation, suppression of languages and cultural practices, holds an active share of socio-economic imbalance as fallout thus presenting an appropriate site within which to extend indigenous research values (Hechter, 1971).

Storytelling is a prime mode: with the recounting of experiences and adjacent reflections as a means of synthesising consensus and emergent know-how, countering a-plastic nodes of knowledge where entrenched power imbalances persist.

Wild Speculations: Communities of Know-How/New Materialities

Three case-studies demonstrate interdisciplinary collaborations empowering communities to conjure futures that challenge normalised notions of scalability and resource viability. Flax producers - Mallon Linen, the citizens of Rathlin Island – both Northern Ireland and ex-factory workers of McCarter's clothing factory, Buncrana in the Republic.

Historically commercial and social structures surrounding raw plant fibre materials have hindered opportunities for their exploration and development (Fletcher, 2024). Integral to this is the wholesale acceptance of models prioritising economic growth above cultural and social progress and the framing of alternatives as unviable. This raises questions as to how such structures have narrowed imagination and curiosity relating to material use. The demise of the linen industry across Ireland serves as an example.

In Northern Ireland Mallon Linen present the activating node of a network of mutual aid among engineers, farmers, artisans, and researchers to revive Irish Linen. As a model of solidaric design this 'confederation' draws on a plurality of knowledge and practical experience.

Central to this are engineer Tiernan Stuart's prototype electronic spinning 'wheels' suited to the long fibres of flax and a plurality of potential set-ups on farms across Ireland. In an embodied response to this work communities of Donegal and Rathlin worked a series of labs with Tiernan building spinner prototypes using basic software, electronics and ad-hoc components. Ex-workers of McCarter's drew on their 1980's experiences of realising a new vertical factory with integrated spinning set-up suited to Ireland's climate. As counterpoint Rathlin Islanders brought histories of 'silent design', intergenerational know-how and a deep sense of place to the task.

The embodied "vernacu-facturing" processes of the labs were documented with interviews to capture technical challenges and exchanges of know-how.

Philosophical Positioning: Re-Worlding/Pluriversality:

This study positions design perspectives agential to progressive, pluriversal material narratives and potential for making new worlds within the shared colonial histories of the UK and Ireland. From here it aims to challenge entrenched narratives.

The speculative fabulations of Donna Haraway and other re-worlding philosophies which conjure new stories have been drawn on (Haraway, 2016).

Re-Worlding as a socio/political pluriversal design concept encourages us to avert our gaze from predominant narratives of accumulation and scarcity and to see things differently. Arturo Escobar's advocacy for indigenous values, geographies, and collective biographies reframes design as agential to conjuring new worlds and to refusing a capitalist future that forecloses other possibilities and renders non-compliant worlds non-viable (Escobar et al., 2024). This study positions pluriversal design within the shared colonial histories of the UK and Ireland to highlight and challenge some of the entrenched narratives at play.

Stuart Walker's "progress design praxis" draws on location-specific, time-tested practices and the philosophical and spiritual traditions of one's culture; his emphasis on ad-hocism and improvised invention positions outsider approaches that meet needs sufficiently while decoupling progress from growth and reconfiguring it towards cooperation (Walker, 2023). Dunne and Raby's speculative design offers another take on manifesting futures —playing directly with materials to make artefactual prototypes that create think spaces rather than utilitarian objects, thus furnishing practical frames for handling materials, making, and testing within the scope of this research (Dunne & Raby, 2013).

Speculative design's focus on creating spaces for critical reflection and imagining alternative futures, complements anticipatory design by providing frameworks for exploring uncertainty and developing actionable strategies for navigating complex and paradoxical futures.

References

Dunne, A., & Raby, F. (2013). Speculative everything: Design, fiction, and social dreaming. MIT Press.

Escobar, A. (2018). Designs for the pluriverse: Radical interdependence, autonomy, and the making of worlds. Duke University Press.

Escobar, A., Osterweil, M. and Sharma, K. (2024). Relationality: An Emergent Politics of Life Beyond the Human. Bloomsbury Visual Arts.

Fletcher, H. (2024). Making beds in early modern England: Sleep, matter and environmental change. Historical Research: The Bulletin of the Institute of Historical Research, 97(277), 307–328. https://doi.org/10.1093/hisres/htae001

Hechter, M. (1971). Internal Colonialism: The Celtic Fringe in British National Development, 1536-1966. University of California Press.

Lean, E. (2020). Vernacular Industrialism in China – Local Innovation and Translated Technologies in the Making of a Cosmetics Empire, 1900 – 1940. Columbia University Press.

Walker, S. (2023) Design for Resilience: Making the Future We Leave Behind. The MIT Press.

Wilson, S. (2008). Research Is Ceremony: Indigenous Research Methods, Fernwood Publishing Co Ltd.

What counts as a Future? The politics of “Risk-Risk” in geoengineering research

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Keywords: anticipatory practices; sensemaking heuristics; anticipatory governance; climate futures

The “risk-risk” heuristic has become increasingly prominent in discussions of geoengineering futures: flattening considerations of uncertainty into the risk of deploying geogengineering technologies, or not (risk-risk). Yet how this dominant sensemaking heuristic shapes the way futures are imagined, judged, and governed remains largely under-examined. Often presented in risk-analysis literature as a rational tool for comparing the potential harms of geoengineering technologies with the risks of climate change (Felgenhauer et al., 2025), the heuristic also operates as a speculative device: it configures uncertain futures, establishes what counts as comparable, and frames the moral and political stakes of intervention. Critics have pointed to its conceptual and ethical limitations (McLaren, 2025), yet both supporters and detractors tend to treat “risk-risk” as an abstract framework rather than a situated practice. Drawing on more than thirty interviews with scientists and policymakers working across climate modeling, law, social science, and governance, this paper examines how “risk-risk” is mobilised, adapted, and resisted in geoengineering anticipatory work. The findings reveal that the heuristic does far more than compare uncertainties: it shapes the epistemologies of anticipation by foregrounding some futures while sidelining others, stabilising certain imaginaries of intervention, and rendering particular futures actionable. Across disciplinary and policy contexts, “risk-risk” operates as an anticipatory practice, one that organizes what is thinkable, permissible, and politically legible in debates over geoengineering’s possible futures. The paper discussion invites scholars and practitioners to re-examine how dominant heuristics and logics quietly delimit futures and how more plural, relational, and situated anticipatory practices might be cultivated instead.

Welcoming and responding to requests from Gaia: A Terrestrial approach to sustainability as a work of instauration

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Keywords: gaia; the terrestrial; instauration; stories; love of nature; love of the dead; love of animals

Inspired by a new perspective on life on Earth, Gaia, Bruno Latour suggested the Terrestrial as a new concept for humans to reorient themselves (Latour, 2018; Latour & Weibel, 2020). By attending to local ecological conditions, the Terrestrial holds potential for mobilizing stories of soil, water, air, flora, and fauna in organizing for sustainability (Jørgensen, 2024; Jørgensen et al., 2021). This article develops a conceptual framework in which the Terrestrial is seen as a metaphor for what we want to become. This entails engaging with sustainability as a work to be made from the outset of welcoming and responding to a request from Gaia. Plural modes of existence are seen as unique stories that invite us to complete their journeys, a process that Stengers & Latour call instauration (Stengers & Latour, 2009). From the outset of understanding stories as embodied, relational, and material, the paper discusses the implications of working with sustainability from the perspective of Gaia.

This entails a focus on placemaking from approaching the world as an aesthetics of experience (Noske, 2015). This involves understanding our relationship as one of love, which entails affirming otherness (Tasselli, 2019) and highlights the idea of understanding nature as composed of living beings and thus understanding of relations to nature as one of response-ability (Haraway, 2016). The paper discusses three story frames for designing and organizing sustainability work. “Love of place highlights the importance of mobilizing art and cultural institutions to give voice to and honor the multispecies nature of Gaia in placemaking. “Love of the dead” entails gratitude toward and a response-ability to the dead, making Gaia part of the spatiality and temporality of place (Despret, 2021). Finally, love of animals (Despret, 2016, 2022) entails a focus on imagining what animals can do if we relate them to them differently. These three story frames give depth to stories, creating a sense of permanence and eternity in situated becoming (Armstrong, 2005; Han, 2024)

Relation to existing literature

The Terrestrial entails de-territorializing organizing from its embeddedness in the economic system and instead seeing organizing as a matter of ecological sustainable concern (Bell, 2012; Ergene et al., 2018). Sustainability emerges in the complex and ambiguous becoming with plural modes of existence, where organizing and nature are in relations of response-ability to one another (Haraway, 2016). In contrast to criticisms that Latour is Eurocentric and continues an Enlightenment tradition (Banerjee & Arjaliès, 2021), and that his notion of politics is inadequate and mobilizes war-like metaphors (Swillens & Vlieghe, 2020), the paper argues that Latour makes a unique and loving contribution to organizing for sustainability that plays with the encounters between science, practice, and spirituality.

The paper emphasizes the ontological pluralism associated with the Terrestrial. This entails relationships of equality among modes of existence. An important implication is

the common interest shared by humans and the Earth, which can be mobilized in constructing spaces of mutuality and generosity, as well as in establishing rituals and spaces that commemorate local flora and fauna. Instauration implies constructing practices of organizing where the organization itself is seen as “a mode of existence”, which is defined as that “which tells an agent what to do next” (Latour, 2011, p. 309).

The connection to the conference theme

The paper is closely connected to the theme Embodying and Sensing Futures: Affect, Aesthetics, and Modes of Sensing the Not-Present Not-Past. It mobilizes art and aesthetics in working for sustainability, entailing a focus on spirituality and sensuality, rather than rationality. Using art and aesthetics to play with experience is important for creating permanence in history, understood as an eternal recurrence that transcends the dynamics of situated becoming.

References

Armstrong, K. (2005). A Short History of Myth. Canongate.

Banerjee, S. B., & Arjaliès, D.-L. (2021). Celebrating the End of Enlightenment: Organization Theory in the Age of the Anthropocene and Gaia (and why neither is the solution to our ecological crisis). Organization Theory, 2, 1–24.

Bell, V. (2012). Declining Performativity: Butler, Whitehead and Ecologies of Concern. Theory, Culture & Society, 29(2), 107–123. https://doi.org/10.1177/0263276412438413

Cozza, M., Carreri, A., & Poggio, B. (Eds.). (2025). Ethics of Engagement in Research Practices: Response-ability in Organization and Management. Routledge.

Despret, V. (2016). Wnat Would Animals Say If We Asked the Right Questions? (B. Buchanan, Trans.). University of Minnesota Press.

Despret, V. (2021). Our Grateful Dead—Stories of Those Left Behind (S. Muecke, Trans.). University of Minnesota Press.

Despret, V. (2022). Living as a Bird (H. Morrison, Trans.). Polity Press.

Ergene, S., Calás, M. B., & Smircich, L. (2018). Ecologies of Sustainable Concerns: Organization Theorizing for the Anthropocene. Gender, Work & Organization, 25(3), 222–245.

Han, B.-C. (2024). The Crisis of Narration. Polity Press.

Haraway, D. J. (2016). Staying with the Trouble: Making Kin in the Chthulucene. Duke University Press.

Jørgensen, K. M. (2024). The Ethics of Sustainability in Management—Storymaking in Organizations. Routledge.

Jørgensen, K. M., Strand, A. M. C., Hayden, J., Larsen, J., & Sparre, M. (2021). Down to earth: Gaia storytelling and the learning organization. The Learning Organization, 28(5), 464–477.

Latour, B. (2011). Reflections on Etienne Souriau’s Les différents modes d’existence. In L. Bryant, N. Srnicek, & G. Harman (Eds.), The Speculative Turn—Continental Materialism and Realism (pp. 304–333). Re.press.

Latour, B. (2018). Down to Earth: Politics in the New Climatic Regime. Polity.

Latour, B., & Weibel, P. (Eds.). (2020). Critical Zones—The Science and Politics of Landing on Earth. ZKM, Center for Art and Media.

Noske, C. (2015). Towards an Existential Pluralism: The Philosophy of Etienne Souriau. Cultural Studies Review, 21(1).

Stengers, I., & Latour, B. (2009). The sphinx of the work. In É. Soiriau, The Different Modes of Existence (pp. 11–94). Univocal.

Swillens, V., & Vlieghe, J. (2020). Finding Soil in an Age of Climate Trouble: Designing a New Compass for Education with Arendt and Latour. Journal of Philosophy of Education, 54(4), 1019–1031.

Tasselli, S. (2019). Love and Organization Studies: Moving beyond the Perspective of Avoidance. Organization Studies, 40(7), 1073–1088.

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A certain idea of the future: proposal from the IIF Manifesto

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Keywords: open future; technocracy; integral futures; science education; long-term thinking

Futures Studies has two main goals. The first is to broaden the time horizon within which contemporary human society is accustomed to thinking, encouraging reflection on the long- term consequences of decisions (or lack of decisions) made today. The second is to overcome the deterministic approach to the future, i.e. the image of a single, unilinear destiny that is universally valid. This approach, that was born from the idea of progress that developed in the West and was exported with enormous damage to the rest of the world, undermines the possibility of a pluralistic and open conception of the future.

Yet, both these objectives are seriously at risk today. The “presentism” that is rampant in contemporary societies is the consequence of processes of acceleration (primarily technological) already diagnosed decades ago by the pioneers of Future Studies: while our world is undergoing ever more rapid change, instead of increasing our long-term vision, humanity is entrapped in an ‘extended present’, in the belief that everything changes so that nothing changes: a way of exorcising our fear of the future, but also of taming it. As a result, even the organizations and institutions called upon to govern change take it for granted that the assumptions of the present will also dominate the world to come, thus freezing contemporary society in an eternal present that forgets the past and neutralizes the future.

In contrast, long-term thinking is now cultivated mainly by huge technological conglomerates and undemocratic political regimes, whose enormous economic and political power gives them the stability they need to think about how humanity will have to change in the coming centuries and millennia. The risk is that these actors will monopolize Futures Studies—and therefore the future itself.

As a result, the open futures that form the very basis of the Futures Studies paradigm risk being replaced by a closed and deterministic-linear conception.

Presumed laws of technological acceleration serve, in fact, to affirm that the future lies only in post-humanity, in the intersection with machines, in the transformation into a ‘multiplanetary species’; Politically, such teleological visions of history assert that democracies are destined to be supplanted by techno-feudal societies dominated by small oligarchies called upon to rebuild the world after the inevitable collapse of civilization. Behind the appearance of an ever-widening space for discussion and a universe of possibilities offered to contemporary human beings, there lies a potential limitation on the future capacity of human society, which produces, particularly in the younger generations, a phenomenon of ‘futuransia’, or anxiety about the future, perceived as a space removed from one's own will and determined by decisions taken elsewhere.

The panel is designed to explore, through various presentations by speakers, the themes addressed in the manifesto “What we are, what we want” published by the IIF-Italian Institute for the Future Foundation in October 2025, which defines the vision of the contribution that IIF intends to make to critical reflection and the practical application of Futures Studies at an international level. The speakers will discuss the thread of this panel through their own ongoing research in the field of Futures Studies and anticipation, namely:

- The rise of technocratic governments in Western societies and their approach to the future (Adriano Cozzolino)
- Toward an integral approach to the future: the case for embedded foresight (Laura De Vito)
- Integrating futures thinking into crisis management to overcome organizational ignorance and hidden vulnerabilities about future risks (Christophe Roux-Dufort)
- Embedding Futures Studies in Science Education (Olivia Levrini)

Institutional Uncertainty— Whither Philosophy in Designing Design Institutions?

Nocek, Adam[1]; Moran, Stacey[1]; Farfaix, Duncan[2]; Celi, Manuela[3]; Colombi, Chiara[3]; Marriott, Tom[2]; Rodriguez Schon, Victoria[3]; Guyot, Candela[4]

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Keywords: design; philosoph; university; institution; education; speculation

This curated session is devoted to interrogating the School of Materialist Research (SMR) as a site of institution design. Conceived in 2020 as a self-sustaining, para-academic institution operating at the intersection of European and American universities, SMR quickly emerged as a global hub for experimental and speculative research in materialist philosophy. The school offers year-round online courses by established and emerging scholars in philosophy, as well as summer schools in Olympiada, Greece. Not only is SMR a design project in its own right—a complex form of institution design—but it's also home to the SMR Design Institute: a space for philosophically-driven design education and research. The Institute, which consists of international faculty, students, and inaugural fellows, aims to unsettle the disciplinary and institutional hierarchies of both design and philosophy.

A school of philosophy that plays host to a design program doesn't just scramble well-worn assumptions about the relation between fields—e.g., where theory/philosophy fits within design and how philosophy proper understands design; but it answers an urgent call to reimagine what both design and philosophy might become in deeply uncertain times. The stakes for both design and philosophy couldn't be higher: their relevance for addressing global problems is often framed in terms of "What Design Can Do" and "What Philosophy Can Think." But too often, these formulations are in tension with one another—thinking versus doing—when these are precisely the oppositions that need to be overcome. Unfortunately, when attempts are made to subvert these divisions, they tend to be superficial transformations at best, still hamstrung by deeply ingrained institutional and discursive formations.

SMR's wager is that we can build a philosophical design practice or even a philosophy that designs, but it requires new institutional configurations. This is what SMR's Design Institute dares to imagine: the design of institutional spaces precipitates these conceptual and practical transformations. This session is

devoted to discussing, debating, and reimagining the possibility of such institutional and disciplinary reconfigurations. Using SMR's Design Institute as an anchor, the panelists reflect on (1) the viability of para-academic institutional design in deeply uncertain financial and political climates; (2) the urgency to do so, precisely because of these uncertainties (universities affected by austerity measures, geopolitical instability, etc.); and (3) how such spaces may or may not be fertile ground to remake design and philosophy in the long term. The session gathers panelists affiliated with the Institute, but it's in no way limited to it. The session is deliberately curated to be exploratory, enabling both critical and speculative thinking about higher-education design more generally in the 21st century.

Panelists:

- Adam Nocek is the co-founding executive director of the School of Materialist Research and co-director of SMR's Design Institute. He is speaking from the perspective of the philosophical and humanistic practices of design. Nocek is Associate Professor of Philosophy of Science and Technology at Arizona State University, where he is also the founding director of ASU's Center for Philosophical Technologies.
- Stacey Moran is co-director of SMR's Design Institute. She is speaking from the perspective of philosophical and humanistic practices of design. She is Assistant Professor of Media and Technology Studies at Arizona State University, where she also directs the Applied Theory Initiative at ASU's Humanities Institute.
- Duncan Fairfax is the Head of the School of Design at Goldsmiths, University of London. He is speaking from the perspective of someone with over 20 years of experience across the entire field of "Product, Service, System" design. From governmental policy and decision making to innovation management.
- Chiara Colombi is Full Professor of Design in the Department of Design at Politecnico di Milano. She is speaking from the perspective of a designer and researcher who brings decades of expertise in relation to the evolution of knowledge structures in the fashion industry, while being deeply committed to epistemic plurality. She is also a founding member of SMR's Design Institute.
- Matthew Ward is a Professor of Design at Goldsmiths University of London. He is speaking from the perspective of a seasoned design educator, with a particular interest in curriculum development and design pedagogy, as well as an established practice in speculative and critical design, who is also a founding member of SMR's Design Institute.
- Tom Marriott is the joint Programme Lead of the MA in Design Expanded Practice at Goldsmiths University of London, where he also heads the

Ecologies and Environments Studio. He is speaking from the perspective of design's wider "sociological" impacts, having jointly completed his PhD in design and sociology. He is also a founding member of SMR's Design Institute.

- Victoria Rodriguez Schon is a recent PhD in design from Politecnico di Milano. She works at the intersection of design, decoloniality, new materialisms, and future studies, and is speaking from the perspective of being an inaugural Fellow of SMR's Design Institute.
- Candela Guyot is an experienced designer who recently completed an MA in Comparative Studies in Literature, Art and Thought at Universitat Pompeu Fabra. She works at the intersection of continental philosophy and design, and is speaking from the perspective of being an inaugural Fellow of SMR's Design Institute.

Theory, methods, and evidence of anticipatory systems and processes (ASP) – a three session proposal for Anticipation 2026

Miller, Riel[1]; UNESCO Chairs
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Keywords: theory of anticipation, futures literacy, anticipatory systems and processes, futures literacy laboratories

Over the last year (2025) I have been encouraging researchers from around the world to prepare inputs for Anticipation 2026 around three ASP research topics. 1) The 'theory of anticipation': defining what constitutes 'evidence', with particular attention to the Futures Literacy Framework (FLF, Miller, 2018); 2) What methods are effective at revealing ASP: assessing techniques for generating 'evidence'; and 3) Which anticipatory assumptions (AA) and sets of ASP are being generated by research efforts aimed at revealing/surfacing ASP: describing the 'evidence'. 1)The 'theory of anticipation': defining what constitutes 'evidence' Presenters in this first session will explore the relationships linking the 'theory of anticipation' to categorical frameworks that arise from the theory (such as the FLF). By analysing the attributes and roles of the theory of anticipation this session will set the stage for the second session dedicated to presenting the processes (research methods) used to generate/gather observations of anticipatory assumptions and the sets of AA that define different ASP. 2)What methods are effective at revealing ASP: assessing techniques for generating evidence Presenters in this second session will focus on the techniques/processes that reveal people's AA. Since AA are not typically made explicit when people describe imaginary futures the question is what tools/methods are effective at rendering the 'invisible' visible. For instance, how do futures literacy laboratories succeed in making tacit knowledge explicit as well as cultivating a recognition and articulation of AA that would otherwise be invisible. This session will also explore other methods for collecting evidence of the attributes of AA and the diversity of ASP. 3)Which AA and sets of ASP are being revealed by research efforts aimed at revealing/surfacing ASP: describing the 'evidence' Presenters in this third session will provide descriptions of the different AA they are encountering in their research. The aim is to assess the extent to which actual 'data' – identified/labelled AA that make up different ASP – correspond to the AA/ASP categories laid out by the 'theory of anticipation'. Such assessments can cover a number of different ways of tagging AA, including tags that evaluate degrees of competency. In the lead up period to Anticipation 2026, winter/spring 2026, researchers – in particular, UNESCO Chairs in Anticipation/Futures Studies/Futures Literacy, plus potential candidate UNESCO Chairs – will be selected to be invited to present in one of these three sessions. In addition, during the period leading up to Anticipation 2026 the FL research community will be invited to engage in a deliberative process facilitated by a few background documents. Drafts of these documents have already been discussed at dedicated sessions at both the recent WFSF conference in Cape

Town and the Future Forum in Dubai. These sessions were coordinated by Riel Miller, who will continue to engage with a range of researchers in order to lay the ground work for the proposed sequence of sessions at Anticipation 2026.

Anticipating the Human Condition at Planetary Scale: Between Honest Brokering and Normative Horizons

Isaac, Manuel Gustavo[1]; Gilbert, Sophie[1]; Mueller, Martin[1];
[1] GESDA

Keywords: science anticipation; planetarised humanity; philosophy

How can anticipatory practice navigate between faithful mapping of scientific possibilities and the normative work of shaping flourishing futures? This session explores this productive tension through two interconnected initiatives at the Geneva Science and Diplomacy Anticipator (GESDA): the Science Breakthrough Radar—a systematic methodology for capturing anticipated scientific and technological breakthroughs across 5, 10, and 25-year horizons—and the Planetarised Humanity Initiative (PHI), which translates these anticipatory insights into conceptual frameworks and practical tools for addressing transformations in human identity, social coexistence, and planetary sustainability.

The session engages directly with the conference's core provocation to "resist closure" while operating within institutional contexts that demand actionable outputs. GESDA's approach raises critical questions at the intersection of several conference themes:

Temporalities in Tension

The Radar's structured time horizons (5-10-25 years) represent one methodological response to the challenge of working across temporal scales. Yet this periodisation itself embeds assumptions about how transformation unfolds. PHI's three guiding questions—Who are we, as humans? How can we live together, as societies? How can we ensure the sustainable future of our planet?—deliberately transcend temporal closure, treating these as perpetually open inquiries rather than problems to be solved within fixed timeframes. How do different temporal architectures enable or constrain anticipatory imagination? What is gained and lost when anticipation is institutionalised through structured horizon-scanning?

Critical Capacities and Futures Literacy

GESDA explicitly aims to build anticipatory capacity across four distinct communities: academic, diplomatic, impact (private sector and philanthropy), and citizen. PHI extends this through a three-tier framework—Global Sensorium (empirical detection), Philosophy Lab (conceptual synthesis), and Impact Hub

(sector-specific implementation)—designed to move insights from detection through understanding to action. This raises questions about how anticipatory literacies are cultivated differently across epistemic communities, and whether the goal of “translation” across communities might inadvertently flatten the productive friction between different ways of knowing futures.

Governance, Justice, and the Public

The “honest broker” principle at the heart of GESDA’s methodology—presenting scientific possibilities without normative prescription—represents a particular stance toward anticipation as socio-political practice. Yet the very selection of what to anticipate, and the framing of three fundamental questions about humanity, society, and planet, already performs significant normative work. The session will examine how anticipatory institutions navigate between claims to neutrality and the unavoidably normative dimensions of futures work and scientific research. Who is included in defining what counts as “transformative”? How do human and socio-political configurations of scientific production shape what enters the anticipatory horizon?

Futuring by Designing

PHI’s Impact Hub explicitly aims to produce “sector-specific knowledge tools” for implementing anticipatory insights—methodology guidebooks, training programmes, and decision-support frameworks. This represents anticipation as design practice, yet also raises questions about what happens when anticipatory intelligence is packaged for institutional uptake. Can designed futures tools resist the technocratic logics they might otherwise reproduce? How might participatory and counter-hegemonic approaches inform the translation of scientific anticipation into governance frameworks?

Session format

The session will critically examine GESDA’s approach not as a model to be adopted but as a site for interrogating the possibilities and limits of institutionalised anticipation at the science-society-diplomacy interface.

Opening Provocation

Brief presentation situating GESDA’s approach within the landscape of anticipatory practice, highlighting the productive tensions between honest brokering and normative horizon-setting.

Fishbowl Dialogue

Four chairs arranged in the centre, initially occupied by curators representing different perspectives (science anticipation methodology, philosophical frameworks, diplomatic translation, critical futures studies). One chair remains empty for audience members to join the conversation. Participants rotate through the empty chair to contribute questions, challenges, or alternative

framings. The dialogue explores: What assumptions about transformation are embedded in horizon-scanning methodologies? How do institutional contexts shape what can be anticipated? What forms of knowledge are privileged or marginalised in science-centric anticipation?

Breakout Provocations

Small group discussions responding to specific prompts drawn from PHI's three questions, reframed critically: What ways of being human are rendered invisible by current anticipatory frameworks? Whose forms of living together are centred in science diplomacy futures? Which planetary relations escape the Radar?

Collective Synthesis

Groups share key insights, tensions, and unresolved questions, with curators offering brief responses that resist premature closure.

Curator contributions

- Curator 1 - Dr. Manuel Gustavo Isaac: Brings expertise in conceptual engineering and philosophy of science applied to emerging technologies, with specific responsibility for developing PHI's philosophical frameworks. Contributes methodological perspective on how concepts like "human condition," "social coexistence," and "planetary sustainability" are constructed and contested in anticipatory practice.
- Curator(s) 2 - Dr. Sophie Gilbert & Dr. Martin Müller: Contributes expertise in science anticipation methodology, including the development and evolution of the Science Breakthrough Radar's horizon-scanning approach. Offers insider perspective on the practical challenges of institutionalising anticipation while maintaining scientific credibility and openness to uncertainty.
- Curator 3 - TBC: Brings background in science diplomacy and multilateral governance, contributing perspective on how anticipatory insights are translated (and transformed) as they move into diplomatic and policy contexts.
- Curator 4 – TBC: Contributes critical futures studies perspective, offering external examination of GESDA's approach in relation to decolonial, feminist, and participatory futures methodologies.

Underlying research and practice

The session draws on five years of institutional development of the GESDA Science Breakthrough Radar, including systematic engagement with over 2500 scientists across 40+ research fields, and the emerging Planetarised Humanity Initiative developed through interdisciplinary workshops with partners including the Kyoto Institute of Philosophy, MIT Global Humanities Initiative, Oxford Centre for Corporate Reputation, HKU AI&Humanity Lab/ConceptLab, and

Berggruen China Center among others. The curators bring combined expertise spanning philosophy of science and technology, science anticipation, science diplomacy, and critical futures research.

Lost Futures and Emerging Hopes: An Anticipation Conversation

Lockton, Dan[1]; Coops, Femke[2]; Light, Ann[3]; Chambers, Josie[4]; Bendor, Roy[5]; Dudani, Palak[6]; Juliani Pereira, Vinicius[7]; Cheilan, Laurène[8]; Kimbell, Lucy[9]; Mortati, Marzia[10]; Cutting, Kieran[11]; Chambers, Josephine[12]; Bates, Olivers[13]; Boehnert, Joanna[14]; Howland, Annabel[15]; Ortega Pallanez, Marysol[16]; Millen, Tamar[17]; Dobson, Nina[18]

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Keywords: lost futures; design; nostalgia; grief; transitions

When we imagine ‘the future’ we often focus mainly on new possibilities, practices, and configurations of everyday life. Even in work on transitions towards more just and sustainable worlds in an age of climate crisis, less attention is given to which futures we lose, and the societal effects of these losses. And yet we know the powerful cultural, emotional, and political impacts of memory, nostalgia, and histories. Our (imagined) pasts are ever-present, and an inherent part of 'imagining futures' is the recognition that some things won't be part of that future—and our lives—any more. Ideas of what is going away, or possible futures that have been lost—whether personal, or at a societal level—can haunt us, and be something we mourn, but also inspire and motivate new possibilities and hopes.

At the intersections of creative methods for engaging with futures, with climate, nature, landscapes, and lived experiences, we see an important area of work around developing ways for communities to imagine differently, and new hopes to emerge, while recognising the centrality of emotional literacy in helping make sense of change: part of literacy with futures is surely also literacy with the emotional dimensions of futures imagined and lost. In alignment especially with the Anticipation conference themes of 'Temporalities in Tension' and 'Caring Futures,' in this curated 90-minute session at Anticipation 2026, we're aiming to bring together a multidisciplinary group interested in these topics, with different kinds of practices and contexts. Our hope is that we can learn from each other's approaches and ideas, and develop a research agenda together. Our plan is for three "topic tables" facilitated by groups of curators, each exploring a particular dimension of lost futures—e.g. grief, nostalgia, and imagining otherwise—through creative activities designed to help participants together explore their own ideas and imagination around the topic, building on curators' research and methods under development. Participants will spend 20 minutes at each table, then move to the next.

In-person curators:

- Dan Lockton (Norwich University of the Arts) - Design researcher developing methods for collective imagination.
- Femke Coops (Norwich University of the Arts / Eindhoven University of Technology) – Design researcher exploring lost futures and emotional dynamics of letting go in sustainability transitions through physical spaces.
- Ann Light (Sussex/Malmö) - Exploring coastal futures with communities facing land loss over the next generation.
- Josie Chambers (Utrecht University) - Co-designs and researches critical and artistic approaches to foster radical imagination and societal transformation.
- Roy Bendor (TU Delft) - Creates speculative designs exploring flooding/drought in the Netherlands and nostalgia's role in climate adaptation.
- Palak Dudani (Independent/Norway) - Designer researcher exploring anticipatory climate futures in context of industrial energy infrastructures.
- Vinicius Juliani Pereira (UEA) - Uses co-design and deliberative mapping to trouble institutionalized energy and water futures for more just transitions.
- Laurène Cheilan (University of Bristol) - Researches sociodigital futures through queer/crip theory, examining how social trauma affects temporal perception and grief work.

- Lucy Kimbell (UAL) - Researches design practices in public policy; currently working with a Northern Ireland community on democratic design for sustainable futures.
- Marzia Mortati (Politecnico di Milano) - Researches AI and data in public services/policy design, building capacity with UNESCO and governments.

Our wider curation team has a variety of experience across design, futures, arts, social sciences, humanities, and technology. We initially came together around a small online symposium at Norwich University of the Arts, UK, on this topic, and are exploring how to develop it further.

Our aim with the session is to contribute to building a community of creative researchers and practitioners with an interest in the topics of 'lost futures' and 'emerging hopes,' and how these manifest across broader societal themes such as sustainability transitions, climate, landscape, imagination, mental health, emotions, and memory, and to explore some tentative ideas for a research agenda.

We are inspired by work from a number of perspectives from both inside and outside the 'futures' field — see some representative references below, and an extended list at https://v.gd/lostfutures — but we would love to learn more across other fields and practices from the Anticipation community. There is a set of contexts which also feed into our interests in the topic, from landscapes (e.g. alternative water communities in East of England, and the correlations between its low-lying coastal areas with the Netherlands—in which particular effects of climate change will be felt and experienced by communities in ways which foreground certain futures disappearing and appearing), to social change in formerly industrial communities working out what futures are possible, to more personal responses to change through questions of health, identity, and care. Could projects in these contexts be pilots, early explorations for new models of imagination and engagement?

Space needs: a room with tables arranged for group activities, and a screen or projector for presentations.

With thanks to Kieran Cutting, Oliver Bates, Joanna Boehnert, Annabel Howland, Marysol Ortega Pallanez, Tamar Millen, and Nina Dobson as part of the wider planning team.

References

Commander, M.D. (2022). Past/Present/Futures: Speculative Worlds and the Promises of Flight. In: The Metropolitan Museum of Art. Before Yesterday We Could Fly: An Afrofuturist Period Room. Special edition of The Metropolitan Museum of Art Bulletin

(Winter 2022). Retrieved 1 January 2026, from: https://www.metmuseum.org/met-publications/before-yesterday-we-could-fly-an-afrofuturist-period-room

Coops, F., van der Veen, R., van der Horst, S., Bogner, K., & Lockton, D. (2023). Designing Spaces for Letting Go in Sustainability Transitions. RSD12: Relating Systems Thinking and Design Symposium, Amsterdam. https://rsdsymposium.org/wp-content/uploads/2023/06/RSD12_Paper_221.pdf

Coops, F., Bogner, K., & Hummels, C. (2024). Letting go in sustainability transitions: designing spaces for the unavoidable companion of change. In Routledge Handbook of Sustainable Design (pp. 493–504). Routledge.

Cutting, K. & Blell, M. (2024). How can immersive experiences help people imagine and build new worlds? Fractals Co-op, Feb 20, 2024. Retrieved 1 January 2026 from: https://fractals.coop/our-work/museum-of-lost-futures/

Fisher, M. (2014). The Slow Cancellation of the Future. In: Ghosts Of My Life: Writings on Depression, Hauntology and Lost Futures (pp.13–35). Zero Books.

Hargreaves, T., & Pereira, V. J. (2023). Provocative ai: Beyond calm interactions. IEEE Pervasive Computing, 22(3), 58–61. https://doi.org/10.1109/MPRV.2023.3282819

Kosmina, B. (2020). Feminist temporalities: Memory, ghosts, and the collapse of time. Continuum, 34(6), 901–913. https://doi.org/10.1080/10304312.2020.1842126

Laurell Thorslund, M., Eriksson, E., Pargman, D., Hesselgren, M., Thiel, P., Hedberg, M., & Martling, A. (2025). Pastcasting: Engaging with seemingly unreachable futures. Futures, 171, 103609. https://doi.org/10.1016/j.futures.2025.103609

Light, A. (2021). Collaborative speculation: Anticipation, inclusion and designing counterfactual futures for appropriation. Futures, 134, 102855. https://doi.org/10.1016/j.futures.2021.102855

Lindström, K., Jönsson, L., & Hillgren, P.-A. (2021). Sketching hope and grief in transition: Situating anticipation in lived futures. Artifact, 8(1), 17.1-17.22. https://doi.org/10.1386/art_00017_1

Machado de Oliveira, V. (2021). Hospicing modernity: Facing humanity's wrongs and the implications for social activism. North Atlantic Books.

Muashekele, C., Rodil, K., Winschiers-Theophilus, H., & Kandjengo, S. (2024). Recovering lost futures of the past: Situating alternative futures within an indigenous Afrocentric orientation and past trajectory. Participatory Design Conference 2024, 28–40. https://doi.org/10.1145/3666094.3666101

Pereira, V. J. (2025). Imagining responsible and just smart home technologies: Troubling sociotechnical systems through co-design [Doctoral, University of East Anglia]. https://ueaeprints.uea.ac.uk/id/eprint/99452/

Verlie. B. (2023). Learning to Live with Climate Change: From Anxiety to Transformation. Routledge.

Experiencing futures: immersion and participation in sociodigital futures

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Keywords: sociodigital futures; participatory futures; immersive technologies; creative methods

In the process of generating, discussing and enacting possible futures, the value of physically experiencing and sensing possible imaginaries has been highlighted (Garduño García & Gaziulusoy, 2021; Kuzmanovic & Gaffney, 2017). Immersive technologies offer significant potential here. These technologies are undergoing intense developments (Lampropoulos, 2025) as well as a much wider incorporation into a range of sociodigital practices (Mohsen & Alangari, 2024; Partarakis & Zabulis, 2024; Wang et al., 2025). The use of these technologies in futuring practices therefore demands critical attention.

This curated session explores how cutting edge immersive technologies such as virtual reality, augmented reality, extended reality and mixed reality might support immersive futures making across a range of contexts, such as museums, local communities and public spaces. It draws on design-based, creative and experiential approaches that offer ways of engaging with and democratising futures based on embodied and affective experiences (Pykett et al., 2025; Spiers et al., 2022).

We ask: what is the potential for immersion, immersive experiences and related technologies for envisioning futures? What are their capacities for supporting a diversity of voices in the conversation about sociodigital futures, especially with alternatives to dominant, neoliberal, tech-led futures? What particular affordances of immersion and immersiveness are central in futuring approaches? What are possible risks and limitations to this type of work?

Cultivating futures imaginations through immersive tech in Brazilian museums

We explore how futures imagination is stimulated with immersiveness in two Brazilian museums: Museu das Favelas and Museu do Amanhã. We draw on curator interviews, visitor conversations, and collaborative autoethnography to explore the curatorial decisions and narratives that shape immersive experiences. Although each museum employs immersion differently, both frame futures imaginations as political acts of resistance to imposed futures. Museu das Favelas used sensory encounters with urban art to cultivate hope and belonging amid structural inequalities. Museu do Amanhã offered a high-tech permanent exhibition on the Anthropocene, contrasted with a localised, decolonial temporary exhibition on dreams, achieving immersion through soft lighting, sonic meditations and hammocks. Across museums, immersive experiences evoked felt experiences of imagined futures and temporalities. The most engaging immersions were not the high-tech ones, but those rooted in collective and thematic experimentation, that fostered agency for the future and represented desires and hopes for everyday life.

Sociodigital futures place-making with communities: agency, affect and experiences of immersion using digital tools

This paper combines interdisciplinary methods from HCI and critical futures studies to interrogate the co-creating of futures using immersive and GenAI tools in place-based community settings.

Exploring future imaginaries for the community, we used, in a first session, a bespoke workflow that combined two GenAI models: one for co-creating 2D visuals and another for translating these into explorable 3D scenes, which were then experienced in a VR headset.

This process highlighted a contrast between an initial co-creation process opening up space for affective and agentic engagement and a second session where the VR headset and 3D experience seemed to mediate a more passive experience, with restricted futures agency and imagination. We reflect on these tensions and interrogate the affordances of immersive and GenAI tools for shaping and/or constraining sociodigital imaginaries, in the context of experiential imagining with communities.

Inclusive digital innovation through community technology: futures-in-the-making with underserved communities

In our paper, we articulate insights and learning from our collaboration with Women Rise Up, a CIC based in Lancashire Northern England. In this project, we used immersive and embodied methods to consider identities with and through technologies in re-imagining futures with this group of BME women. We used participatory virtual reality (VR) experience ‘SOMA’ to offer a practice with

technology that centres care and relationality. The project achieved a culturally responsive approach, combined with the innovative use of VR that has enabled participants to explore their inner worlds, reclaim their narratives, and build resilience in ways that feel safe, affirming, and transformative.

Future Soundings: Experiencing Participatory Sociodigital Scenarios Through Immersive Sound

This paper presents a case study of a creative workshop and performance that uses speculative storytelling and immersive audio to materialise futures co-created with communities in situ. A mobile app guides participants on a walk through their local environment, inviting them to imagine and describe how their surroundings might look, feel and sound in the future. Their collective responses are gathered and transformed into a singular narration, performed live with an improvised spatial soundscape that allows possible future worlds to emerge around them. The entangled and relational practice of listening attunes us to ecologies and interdependencies, offering new ways of experiencing and co-creating plural imagined sociodigital futures. We argue for immersive sound as a medium for materialising, spatialising and sharing imagined scenarios, making them more tangible and experienceable for participants, so they can explore their embodied and affective responses. It offers community members a sensory understanding of how environmental, technological and social change could impact their place.

A manifesto for immersive public spaces

This paper will discuss a manifesto for the future development of immersive, speculative futures-making practice in museums and public spaces. It will reflect on the process of making the manifesto – which derived from a workshop bringing together 40 scholars from the fields of futures studies, museum studies, community education, activism, computing, immersive technologies and speculative design from around the world. The manifesto derived from discussions about how cultural workers can ‘take up space tomorrow’ and develop supportive translocal alliances to occupy and care for diverse future(s) in democratic, non-extractive and non-exhausting ways. This presentation will share the co-constructed manifesto developed in this symposium and consider the theoretical foundations and research agenda required to guide ethical research in this field. It will also reflect on the history and practice of ‘manifesto-making’ as itself a form of immersive, public speculative practice.

References

Garduño García, C., & Gaziulusoy, İ. (2021). Designing future experiences of the everyday: Pointers for methodical expansion of sustainability transitions research. Futures, 127, 102702.

Kuzmanovic, M., & Gaffney, N. (2017). Enacting futures in postnormal times. Futures, 86, 107–117.

Lampropoulos, G. (2025). Intelligent Virtual Reality and Augmented Reality Technologies: An Overview. Future Internet, 17(2), 58.

Mohsen, M. A., & Alangari, T. S. (2024). Analyzing two decades of immersive technology research in education: Trends, clusters, and future directions. Education and Information Technologies, 29(3), 3571–3587.

Partarakis, N., & Zabulis, X. (2024). A Review of Immersive Technologies, Knowledge Representation, and AI for Human-Centered Digital Experiences. Electronics, 13(2), 269. https://doi.org/10.3390/electronics13020269

Pykett, J., Facer, K., Valladares-Celis, C., & Williamson, B. (2025). Virtual Flying Carpets and Digital Disaster Rooms: Towards a critical analysis of immersive speculative environments in Museums of the Future.

Spiers, E., Slocombe, W., Maltby, J., Dedopulos, T., Stolze, G., Goodenough, P., Claridge, R., Mason, L., Biggs, J., & Norris, J. (2022). Estrangement, immersion, and the future: Designing the speculative environments of the virtual reality “Museum of the Future”. Futures, 138, 102922.

Wang, H., Dong, H., & El Saddik, A. (2025). Immersive Multimedia Communication: State-of-the-Art on Extended Reality Streaming. ACM Transactions on Multimedia Computing, Communications, and Applications, 21(7), 1–33.

Field-Stations for the future: community spaces for regenerative action and regenerative connection

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Keywords: regenerative futures; experimentation; innovation; civic infrastructure; new imaginaries

This session introduces an emerging international network and its foundation work towards connecting and strengthening existing, and creating new, places for transformative learning, innovation and action for regenerative futures. These places are described as Field-stations for the Future (FSF), positioned as a critical feature of a healthy civic commons.

Field-stations for the Future describe places that emerge, or are intentionally created, for the invention and testing of new models and new systems for regenerative futures. They are characterised by an openness to collaboration, generating the social energy and agency that can spring from collective experimentation, learning and creative production. Such sites may grow from grassroots responses to the deterioration of local ecosystems, from opportunities to restore degraded land or waterways, or from an entrepreneurial spirit of determination to (re)shape modes of production that do not contribute to the continued erosion of our more-than-human world. Some sites are small, protected from the mainstream economy; some grow to regional or national significance, as their stories and visions offer hope in a world of growing cynicism and anxiety about the prospects for planetary life-systems.

The FSF network currently represents design and related schools from approximately ten universities across multiple countries (including partners in Australia, Hong Kong, the Netherlands, the UK, Sweden and Spain). One long established FSF has also joined the new network.

The session

In this session some network members will present short position statements and case vignettes. Insights will be presented from CERES in Australia (see below) and a from an emerging rural site in southern Australia focused on regenerative tourism, with reflections on how their anticipatory practices inform the FSF model.

Session attendees will be allocated to tables to clarify, critique, and extend key elements of the FSF concept, and contribute to the development of the network and to planning for potential FSF's in their own regions.

Intended outcomes

By the end of the session, participants will (1) have contributed to a shared international map of potential FSF sites and regenerative niche projects; (2) have articulated key anticipatory practices that FSF field-stations could host; and (3) be invited to join an open FSF mailing list and follow-up workshop, ensuring that 'Anticipation 2026' becomes a catalyst for an expanded, globally distributed FSF network.

Field-stations for the Future (FSF): Background and Concept.

Overview

FSF are sites of civic infrastructure, established for place-based engagement and experimentation, bringing together multiple communities – most importantly: local citizens, universities, schools, environmental groups, regenerative entrepreneurs, and regional or city governments. They are designed to amplify agency, to re-imagine, remake and construct transformative pathways to regenerative futures.

FSF's have the capacity to catalyse the development and communication of new future imaginaries, to valorise speculative creativity and anticipatory practices, through grounded exploration of new social, technological and environmental relationships. They become sites for forms of embodied engagement that can generate hope at a time when evidence of the failure of sustainable development and the breakdown of critical life systems has become an inescapable background to the experience of daily life.

Field Stations for the Future position regeneration not as restoration of previous states but as the participatory design of new social, technological, and environmental relationships.

Regenerating agency and empowerment

An FSF is a civic investment in agency and hope - to re-imagine, (re)make and (re)construct transformative pathways to regenerative futures. Their catalytic

impact depends on breaking and redirecting ‘feedback loops of disempowerment’, where the evidence of planetary system breakdown becomes such a burden that it leads whole cohorts of citizens to anticipate ‘the inescapable end of nature’. Research has charted a worldwide emergence of mental states labelled variously as eco-anxiety, eco-cynicism, and (directionless) eco-rage. Together, these are signs of a resignation of social agency, of internalised ‘future-dissonance’ – where the futures that people desire appear to be diverging inexorably away from the futures they expect to encounter.

Locally specific and diverse

FSF’s are local places for building shared knowledge of our more-than-human planetary commons. Each is rooted in specific bioregions, communities, cultural and ecological contexts. This localisation isn't merely contextual—it's epistemological. Regenerative transformation emerges from situated knowledge, not universal blueprints.

Place-based observatories

FSF’s become a hub of local/regional knowledge, with active links to other emerging regional projects. Such projects (seeking to demonstrate new ways that humans and nature can thrive together) often occur as ‘niche’ experiments, protected from the mainstream. They can be obscured by their size, or novelty; they may focus on a specific area of regenerative action (land-use or wetlands; ocean and river systems; multi-species recovery; food production and agriculture; rewilding; natural carbon-sequestration; renewable energy; social networks; tourism; circular systems). FSF’s will map and connect to these niche activities, to amplify and support their viability. Knowledge from these protected niches can influence the work of the local FSF, the activities of the network, and its wider influence on research and education.

Regenerative social networks, action-research and knowledge

FSF’s aim to catalyse regenerative social networks. They call for embodied engagement, for collaboration and connection between people (and to other states of being in nature). From these sites, new educational, community, and organisational infrastructures will emerge, bringing universities into new situated and reciprocal modes of community engagement, for the generation and diffusion of shared knowledge– a necessary step towards wider systemic transformation.

Network Activity and Research

The foundation program of the network will be to:

- Identify potential sites for FSF’s.

- Map niche regenerative projects within the member's region.

Coordination

The FSF network is coordinated by RMIT University in Melbourne Australia/Europe) and TU Delft.

1. https://www.becoming-regenerative.org
2. https://ceres.org.au

Network membership: see www.fieldstationsforthefuture.com

References

Dobson, J., Stafford-Smith, M., Ryan, C., Auty, K. 2019. Sustainable Cities and Regions: 10 year strategy to enable urban systems transformation. Future Earth Australia, Australian Acdemy of Science. ISBN 978 0 85847 677 6

Gaziulusoy, I, Ryan C. Roles of design in sustainability transitions projects: A case study of Visions and Pathways 2040 project from Australia. Journal of Cleaner Production Volume 162, 20 September 2017, Pages 1297–1307

Pfeiffer, Katie., Seeing 'the Object as World-Maker' Etnofoor. Vol. 36, No. 2 (2024), pp. 91-108 (18 pages) Published By: Stichting Etnofoor

Ryan, Chris., Idil Gaziulusoy, Kes McCormick, Michael Trudgeon (2016) Virtual City Experimentation: A Critical Role for Design Visioning. Chapter, in The Experimental City, Evans, Karvonen and Raven. Routledge. April, UK.

Ryan, C. Eco-Acupuncture: designing and facilitating pathways for urban transformation, for a resilient low-carbon future. Journal of Cleaner Production, V50 (2013) 189-199.

Ryan C. EcoLab – A jump towards sustainability. (Part 1) Journal of Industrial Ecology Vol. 5, No 3 MIT Press 2002.

Ryan C. The Nature of Construction is the Re-Construction of Nature: Nature - Technology and Ideology in the Design of the Built Environment. in Dovey,K. , Downton,P. , Missingham,G. (eds) "Place and Placemaking" Conference, the third International Conference of the Association for People and the Physical Environment Research, Melbourne, Australia , June 1985. PAPER books, Melb. Australia 198

Probing anticipatory practices over time. Pasts, presents, futures

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Keywords: action; anticipatory practices; futures studies; responsibility

Since the 1960s and the emergence of three academic journals dedicated to anticipation and futures studies (Futures, Long Range Planning, Technological Forecasting & Social Change) that paved the way for new journals over the last decades (such as Foresight, World Futures Review, Journal of Futures Studies, European Journal of Futures Research, Futures and Foresight Sciences), futures research communities have explored and stimulated research on anticipatory practices from various perspectives to critical discussing underpinning theories, methods and processes. Indeed, anticipatory practices are about more than just methods and their applications. They also encompass everyday and more or less formal anticipatory processes and actions within organisations and institutions, whether political, strategic or operational. At an individual level, anticipatory practices include entrepreneurship, creativity, and community engagement.

The purpose of this curated session is to open a debate between participants and the session curators and speakers from the following from questions:

1. What is research on anticipatory practices?
2. What are anticipatory practices today?
3. Are our contemporary anticipatory practices more relevant than past ones?
4. Are AI driven anticipatory practices responsible?
5. How do you anticipate the futures of anticipatory practices?

Together with research fields based on practice such as strategy-as-practice (Whittington, 1996), practice-based study (Gherardi, 2026) or strategy-in-practice (MacKay et al, 2020), the session will explore all faces of research looking for anticipation in the doing.

Each question will be introduced by one of the speakers to stimulate discussion between speakers and the participants, the first one being introduced by the named curator. 15 minutes for each question (5 minutes maximum for the introduction of the question).

The session is an outcome of the Responsible Futures Global Network, initiated by the UNESCO Chairs of the Universities of Poitiers and Lincoln.

References

Fuller, T., Warren, L. (2006). Entrepreneurship as foresight: A complex social network perspective on organizational foresight, Futures, doi:10.1016/j.futures.2005.12.016.

Fuller, T., Roubelat, F., Marchais-Roubelat, A., Heraclide, N., & Ward, A. K. (Eds.). (2026). Towards Principles for Responsible Futures (forthcoming) (Vol. 1): Routledge.

Gherardi, S. (2026), How to Conduct a Practice-based Study: Problems and Methods, Edward Elgar Publishing, 3rd edition.

Gordon, A. V., Ramic, M., Rohrbeck, R., & Spaniol, M. J. (2020). 50 Years of corporate and organizational foresight : Looking back and going forward. Technological Forecasting and Social Change, 154, 119966. doi.org/10.1016/j.techfore.2020.119966

MacKay, B., Chia, R., & Nair, A. (2020). Strategy- in -Practices : A process philosophical approach to understanding strategy emergence and organizational outcomes. Human Relations, 74, 001872672092939. doi.org/10.1177/0018726720929397

Marchais-Roubelat, A., Roubelat F. (2011), The Delphi method as a ritual: Inquiring the Delphic Oracle, Technological Forecasting and Social Change, doi.org/10.1016/j.techfore.2011.04.012

Van der Duin, P. (2019). Toward “Responsible Foresight” : Developing Futures that Enable Matching Future Technologies with Societal Demands. World Futures Review, 11(1), 69-79. doi.org/10.1177/1946756718803721

Whittington, R. (1996). Strategy as practice. Long Range Planning, 29(5), 731-735. doi.org/10.1016/0024-6301(96)00068-4.

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A HACKMASTERS Future-Lab: Future of Trustasters

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Keywords: future of trust; scenario planning; speculative futures; workshop; 100% condition

This is an interactive workshop where participants will explore the theme of trust in the age of AI. Trust is the invisible glue that holds systems, institutions and relationships together. Trust in institutions, media and design (but to name a few) are on the decline. In this workshop we will use a HACKMASTERS technique for developing speculative techniques for generating scenarios called 100% condition. This technique ignores all the logic of today and assume a condition is 100% true in the future. In this workshop we will assume that in 10 years time the ongoing decline in trust has reached the zero (or near zero) point. When there is no more trust in media, government or even everyday designs that we take for granted. How will humans respond? What will they create, how will they collaborate. What will simple and profound trust mechanisms be replaced. What will people do, what will they create in 10 years time. More tribal, context specific transient trust measures for ensuring life goes on? In a world where human data have become un-recognisable after the AI snake has eaten its tail and human data is no longer driving any form of AI will the question in ten years time still be about if we can trust AI to design and communicate our living experiences ... or will it be about if we are still able to trust ourselves?

What is a HACKMASTERS Future Lab?

Is a scenario making session where diverse teams can explore and build speculative protopias around a fundamental human value or problem. Often anticipating future human problems and how future capabilities could resolve them. Our approach and methodology has been used at the highest levels of government in many critical sectors, defence, smart cities, mobility, media and tech industries.

What will the Future Lab achieve?

Through a mix of low-fidelity prototyping, group ideation, and mediated reflection, participants will engage with questions central to Anticipation 2026's themes — from "Futuring by Designing" to "Caring Futures." What does it mean to build technological systems that don't promise certainty but cultivate trust and creative collaborative responsiveness?

Rather than simply speculating futures, we aim to embody them: participants will sketch, code, model, or craft protopias. These are not dystopian or utopian artefacts but rather preferable examples of a future built on intent and values. They make the future palpable by grounding abstract hopes or anxieties in tangible, shareable forms. Together we will create proofs of a preferable future.

How will the Future Lab run?

This workshop unfolds in three phases:

1. Catapult participants into 10 years from now. Introduce the 100% condition. In ten years time trust has declined to zero and near zero levels. People don't trust: Each other, The government, The big tech monopolies, The 'AI', Education.

   We've reached the point of no return.

   It's almost impossible to build anything that looks like a trust based society.

   Yet life has to go on. How will people collaborate, design and develop alternative systems, communications, tools to carry on.
2. Building Protopias. In groups of small teams rapidly design, code or even use AI tools to build speculative systems solutions that build new forms of trust not reliant on traditional institutions or platforms. How will community care look like in that world? How will students engage with the creative industry when everything is deeply fake? How will we build anything that looks like a fair justice system when you can't trust the law?
3. Tear Down and Build Up. A structured creative tension confrontation. Each team will propose their protopia to the other teams. The audience will then tear down the assumptions challenges the values and thinking that led to that speculation. But they will then switch and build out that protopia leveraging the collective intelligence of the lab to build out and strengthen the underlying values demonstrated in the design.

By the end, participants will have not only produced speculative prototypes, but also a shared vocabulary and communal orientation for thinking of design, code, and collaboration as tools for anticipatory hope resisting closure and embracing multiplicity. We believe this format aligns strongly with the conference's call for radical, experimental, interdisciplinary contributions that challenge dominant foresight logics and reimagine what comes next.

Why HackMasters

HackMasters brings experience from innovation labs, foresight education, and participatory strategy work across public, private, and civic sectors. Our facilitation style prioritises experimentation, inclusion, and actionable insight,

aligning strongly with Anticipation’s commitment to plural futures and transformative practice.

Amplifying and prefiguring alternative economies through designing in thick presents

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Keywords: design; world making; future making; diverse economies; heterodox economies

This workshop turns to economics as the central dimension of interconnected climate change and social injustice. It asks how design can bring agency, imagination and anticipation to reconfiguring, decentralising, demystifying and diversifying economies. It presents four bodies of work which are in dialogue with macroeconomics. Each of them attempts to foreground local relationships between people, land and other species in order to support micro level touchpoints to governance: where and how do we make economy through design that can anticipate authentic needs rather than market desires?

Whereas there are uncertainties in how to tackle interconnected crises of human, more-than-human and planetary health and survival, science is clear that deep change is needed. Some have already had their livelihoods destroyed and thereby futures nullified, whereas for others it is happening as we write and yet others can pretend that they can avoid grave threats to continued flourishing.

One way for design researchers and practitioners to take the planetary calls for changed human imprint seriously, is to engage with how economy is understood and performed. Such endeavour seems to require a break with the progressivist understanding of linear development of stepping onto the next step in a ladder (Gan et al 2017) where futuring is oblivious of what has previously sustained ecosystems. It is particularly important when recognising that the economic link to continuously prolific design production, usage and littering has left devastating and toxic marks in the land that human and other species survival is hinging on.

This session gathers four design research projects into a conversation that focuses on design as world-making in thick presents (Jönsson et al 2021) through heterodox economies (Boehnert 2018). They turn away from the combination of design and dominant GDP-growth which materialize as the creation of desires for new designs to be sold on the market.

Rather, these four design research projects turn towards the world as one household (Gibson 2015) where economy and ecology are interdependent (Gibson-Graham and Miller 2015). The projects have three things in common: 1. They amplify existing diverse economies where it is already present, 2. they prefigure alternative economies where they are, as of now, not yet anchored and, 3. they do so by working in a thick present of ancestral wisdom and local transdisciplinary knowledge for liveable futures.

Contributions of each of the curators

The four projects gather around trying to answer questions of the world with the pursuit of contributing to flourishing livelihoods. Whereas many design projects answer within the economic paradigm of more and new, these try out methods and practices that ventures into transformative change, foregrounding home ecologics (Tham et al 2019), un/making (Lindström and Ståhl 2019), householding (Ståhl and Keune 2025), community economies in ecosystems (Elzenbaumer et al 2025), care (Lindström and Ståhl 2019, Jönsson et al 2019), repair, composting (Lindström and Ståhl 2020), and letting go (Coops et al 2023). These all relate to the common root of inseparable ecology and economy in oikos. This conversation thus ventures into practices where design research and projects usually do not explicitly operate with change-work: to economy.

In the Italian Alps, La Foresta works with keeping historical knowledge alive when it comes to commoning of land as well as in the centrally placed train station in Rovereto (Elzenbaumer and Mammana 2024). This is a practice of governance and ongoing negotiations of communal resources.

The Earth Logic Design Agency focuses on Earth logic cultural entrepreneurship (Ståhl and Tham 2026) that highlights agency through design and self-governance in various organizational forms.

Holding Surplus House focuses on feminist ecological economic models such as householding (Ståhl 2025), with a particular focus on participatory budgeting on municipal level where the public gathers around joint decision-making and governance for an investment in the local community (Olofsdotter Bergström and Ståhl forthcoming 2026).

Design after Progress (DaP) focuses on design circles related to the doughnut economics model in a rural municipality. This design research work builds on participatory design legacies of strengthening publics in being involved in decision-making. However, the decision-making in focus was not on immediate decisions in the local government, but on long-term capacity building to be involved in creating hopeful futures through noticing, imagining and practicing everyday hope (Jackson 2023). The circles invited both the members of the public and municipal employees - who met on a final occasion.

Format being proposed

The session will unfold as a patchworking across the core questions of governance, future- and world-making in the four projects and researchers, each offering a ‘patch’ of verbal and visual questions, dilemmas, and agencies on the floor. After this first round, the audience will be invited to add patches from their experience of working across design and heterodox economies.

In the rest of the workshop, we collaboratively make sense of the emerging patchwork: which stories does it tell, and which stories may be missing? The session will result in a thickening of an emergent area of design and economies, and the visual documentation of the patchwork.

The session requires seating (chairs/cushions) in a circle with floor space for the patchwork.

References

Coops, F., van der Veen, R., van der Horst, S., Bogner, K., & Lockton, D. (2023). Designing Spaces for Letting Go in Sustainability Transitions. In Proceedings of Relating Systems Thinking and Design RSD12 Symposium.

Elzenbaumer, B., Mammana, F. Gonzalez Miranda, C. & Manfrini, I. (2025). Infrastructuring for Caring Food Practices: Learnings from an Alpine Community Academy. In Local Environment 0 (0): 1–19. https://doi.org/10.1080/13549839.2025.2543303.

Elzenbaumer, B. & Mammana, F. (2024). Reclaiming Abandoned Railway Infrastructure for Post-Progress Times. Lo Squaderno: Explorations in Space and Society Station to Station: Railway stations in theory, practice, and dreams (69): 41–44.

Gan, E., Tsing, A., Swanson, H. & Bubandt, N. (2017). Haunted landscapes of the Anthropocene. In Arts of Living on a Damaged Planet. University of Minnesota Press.

Gibson, K. (2015). The World as One Household. In Bittner, R and Krasny, E. In Reserve: The Household! Historic Models and Contemporary Positions from the Bauhaus. Spector Books.

Gibson-Graham, J-K. and Miller E. (2015). Economy as ecological livelihood. In (Eds.) Gibson, K., Rose, D. B., and Fincher, R. Manifesto for Living in the Anthropocene. Punctum Books.

Jackson, S. (2023). Ordinary Hope. In Papadopoulos, D., Puig de la Bellacasa, M. & Tacchetti, M (Eds). Ecological Reparation. Repair, Remediation and Resurgence in Social and Environmental Conflict. Bristol University Press.

Jönsson, L., Lindström, K., & Ståhl, Å. (2021). The thickening of futures. Futures, 134, 102850.

Jönsson, L., Light, A., Lindström, K., Ståhl, Å., & Tham, M. (2019). How Can We Come to Care in and Through Design?. In The 8th Bi-Annual Nordic Design Research Society Conference-Who Cares? 2-4th of June 2019 Finland (pp. 1-8). Nordic Design Research.

Lindström, K., & Ståhl, Å. (2020, June). Un/making in the aftermath of design. In Proceedings of the 16th Participatory Design Conference 2020-Participation (s) Otherwise-Volume 1 (pp. 12-21).

Lindström, K., & Ståhl, Å.(2019) Caring Design Experiments in the Aftermath, in Mattelmäki, T., Mazé, R., Miettinen, S. (eds.), Nordes 2019: Who Cares?, 3 - 6 June, Aalto University, Espoo.

Olofsdotter Bergström, A. and Ståhl, Å. (forthcoming). Participatory budgeting process as relationship building. In (Eds.) Severson, P. and Ricknell, E. Everyday Democracy Building Resilience Against Polarization and Radicalization.

Ståhl, Å. & Tham, M. (2026). Intergenerational nature education - with design education and research. In (Eds.) Prochner & Nawrtozki Nature and Early Education: Global Perspectives on Outdoor Learning for Young Children. Routledge.

Ståhl, Å. (2025). Design and householding. In Seasonal Designing with the Holding Surplus House (1st ed., pp. 22–31). Linnaeus University Press.

Ståhl, Å., & Keune, S. (Eds.). (2025). Seasonal Designing with the Holding Surplus House. Linnaeus University Press. https://doi.org/10.15626/ID.2025

Tham, M., Ståhl, Å., & Hyltén-Cavallius, S. (Eds.). (2019). Oikology - Home Ecologics : a book about building and home making for permaculture and for making our home together on Earth. Linnaeus University Press.

Beyond the Diagram: A Textile Tasting Menu for Futures

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Keywords: new materialism; feminist futures; textile arts; methodology; futures thinking

What if futures thinking happened through fingertips rather than forecasts?

This workshop introduces Beyond the Diagram, a feminist new materialist approach to anticipation. This method replaces traditional analytic frameworks, like matrices, with materials, specifically textiles. Futures-thinking outputs become physical objects to take home and admire. Participants will try a 'tasting menu' of three textile-thinking techniques. Each technique focuses on care and collaboration between materials and humans to anticipate the future.

The 'base stitches' are sewn before arrival. Participants bring two fabric swatches: one gathered from home, and one from Milan in the margins of the Anticipation meeting.

Intellectual foundations

This workshop emerges from a practice-based research trajectory spanning diverse settings, including personal futures methodology work in New York and futures workshops with women and elementary school students in Dubai in 2025. Theoretical development for publication is also ongoing. Together, these efforts shape an evolving feminist new materialist futures methodology, one that is lived as much as designed.

Rather than resolving uncertainty through paper and PowerPoint, Beyond the Diagram thinks with ‘certain’ things: touch, texture, and material memory - to sense uncertain ones. Drawing on Jane Bennett's vital materialism (2010), nuanced notions of diffraction from Haraway (2004, 2020) and Barad (2007), and framed by Puig de la Bellacasa's matters of care (2017), it shows how cloth - enchanting, comforting, layerable, and repairable - is a uniquely appropriate medium for uncertain futures.

Why beyond the diagram?

Futures thinking, as we know it, feels anthropocentric. Humans scan, humans sense, humans explore human data, and humans decide. Materials, if present at all in the process, are typically used as aids to enhance human outputs. They are rarely invited in as actants.

Beyond the Diagram suggests a different structure. It uses key ideas from feminist new materialism (Alaimo & Hekman, 2008; Coole & Frost, 2010; Truman, 2020) and argues that futures thinking can emerge through the 'intra-action' (Barad, 2007) of humans, materials, places, spaces, and ideas. Cloth, touch, memory, and material origins help shape anticipatory practice; they are not decoration.

This matters because futures thinking engages with global issues involving conflicts of 'matter'. These include ecological collapse, resource scarcity, and geopolitical volatility. Methods that treat matter as passive are inadequate for such challenges. The chosen approach must match the issue's complexity.

Beyond the Diagram also proposes a different relationship with time, process, and outputs.

Dominant futuring methods treat time as sequential (Terry et al., 2024). In such methods, the past provides data, the present is a phase for detecting weak signals that may indicate future trends, and the output is often a timestamped document stored on SharePoint. In contrast, cloth invites an alternative logic. Here, the fabric from home carries a past that remains active - detectable through sensory traces like scent or a stray hair from a child or pet. An antique tablecloth, embroidered by hands living in the pre-digital age, can be upcycled into a garment to be worn in the future. Cloth can be torn, layered, repaired, carried, and worn. Unlike some conventional futures outputs, cloth moves forward into the future and continues to interact with the present, rather than simply reflecting a static vision conceived at a single point in time.

This isn’t mere theoretical decoration, however, or just an aesthetic ‘shareable’ workshop. It is a proposal that diffraction, intra-action, vital materialism, care ethics, and thinking with materials as an equal actant, together constitute a genuinely different epistemology of futures thinking.

One where materials have a seat at the table, where the future is not surveyed from a position of neutrality, but made, carefully and collectively, through the work of humans and cloth.

‘Our tactile experiences are elemental. If we reduce their range, as we do when we reduce the necessity to form things ourselves, we grow lopsided. We are apt today to overcharge our gray matter with words and pictures, that is, with material already transposed into a certain key, preformulated material, and to fall short in providing for a stimulus that may touch off our creative impulse, such as unformed material, material "in the rough."’ (Albers, 1974)

The Tasting Menu

Aperitivo: Origin Stories (20 minutes) In intimate paired exchanges, participants introduce themselves through their two fabrics. Following Haraway's

understanding of diffraction as 'the record of a passage' (2020), we ask of each fabric: what journey brought this piece of cloth into this room? What forces, encounters, and choices does it carry?

First Course: Diffraction (25 minutes) Participants now experience diffraction firsthand. Human hands, bodies, and four fabric swatches are brought together in an entangled ‘intra-action’ (Barad, 2007). Participants sew, tear, layer, knot, and fold - not to illustrate a future, but to create one. Rather than ask, 'What do these fabrics represent?' we consider: ‘What new insights about the future arise from this collaboration that could not have been achieved individually?’

Main Course: Collective Futures Cloth (35 minutes). In small groups, participants encounter the 'scrap pile.' This pile is a collection of new, old, storied, and international textiles. Each textile is labeled with its provenance. Groups use these materials to stitch or glue a joint future vision onto plain cotton. Four lenses guide the process: provenance (where things come from and what they carry into the future), care (our responsibilities to futures we create), repair (what needs mending in our ideas about the future), and anticipation after Anticipation (what we carry forward from here). There is one constraint: every person’s fabric must stay visible. Participants may only layer materials, not cover them completely, to preserve transparency.

Digestif: Gift Economy (10 minutes).To close, each participant cuts a piece from the collective cloth and gives it to another, experiencing the tradition of gift exchange described by Marcel Mauss. As he writes: ‘The thing received is not inactive. Even when it has been abandoned by the giver, it still possesses something of him.’ (Mauss, 1990) In this way, everyone carries a fragment of the shared future vision and a part of their teammates' essence to take home.

References

Alaimo, S., & Hekman, S. (2008). Material Feminisms. Indiana University Press.

Albers, A. (1974). On Weaving. London: Studio Vista.

Barad, K. (2007). Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning. Duke University Press.

Bennett, J. (2010). Vibrant Matter: A Political Economy of Things. Duke University Press.

Coole, D., & Frost, S. (2010). New Materialisms: Ontology, Agency and Politics. Duke University Press.

Haraway, D. (2004). The promises of monsters: A regenerative politics for inappropriate/d others. In D. Haraway, The Haraway Reader (pp. 63-112). New York: Routledge.

Haraway, D. J. (2000). Diffraction as Critical Consciousness. In How Like a Leaf: Donna J Haraway, an interview with Thyrza Nichols Goodeve (pp. 101-108). New York: Routledge.

Mauss, M. (1990). The Gift: The Form and Reason for Exchange in Archaic Societies. Routledge.

Puig de la Bellacasa, M. (2017). Matters of Care: Speculative Ethics in More Than Human Worlds. University of Minnesota Press.

Terry, N., et al. (2024). Inviting a decolonial praxis for future imaginaries of nature: Introducing the Entangled Time Tree. Environmental Science and Policy.

Bridging Anticipation and Possibility: A Shared Manifesto

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Keywords: future studies; possibility studies

This innovative co-produced workshop invites attendees to engage in a focused exploration of the overlaps, synergies, and tensions that exist across the fields of Possibility Studies and Future Studies. By bringing together scholars, practitioners, and interested participants from both disciplines, the session aims to foster dialogue and deepen understanding of how these complementary yet distinct approaches can inform one another.

The workshop will commence with brief opening addresses from two leading figures in their respective fields: Vlad Glăveanu, a pioneering voice in Possibility Studies, and Riel Miller, a prominent thinker in Future Studies and UNESCO's former Head of Foresight. These short addresses will set the conceptual stage for the session's activities, highlighting key themes and areas of productive inquiry. Miller will be speaking from Milan, Italy, whilst Glăveanu will join from Brighton, UK, where the Possibility Studies conference is taking place. This dual-location format embodies the workshop's commitment to bridging geographical and disciplinary boundaries.

Following the opening remarks, workshop participants in both locations will engage in facilitated guided reflections designed to encourage thinking about the relationship between the two disciplines. These reflections will explore questions such as: How do Possibility Studies and Future Studies conceptualise potential and imagination? Where do their approaches converge or diverge? What unique insights does each field offer?

Participants from Milan and Brighton will then reconvene to share their ideas and insights together via a virtual link. This collaborative exchange will create a dynamic space for collective sense-making, allowing diverse perspectives to emerge and enabling participants to co-construct new understandings of how these fields might evolve in dialogue with one another.

Co-creating the Fluid Future Feelings Deck: Manifesting More-than-Human Affective Practices Through Tarot

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Keywords: tarot; more-than-human; affective labour; ecological transition; design

As climate urgency deepens along with political turmoil, it becomes increasingly challenging to draw hopeful narratives of the future and build foundations for the realisation of such futures. Many makers of more-than-human futures have ultimately encountered the ecological crisis and its affective weight though their work. As diverse as practices are that support the transition towards less anthropocentric, less destructive and less extractivist futures, we notice a deviation from universal future-making and researching methods, and a move towards contextual practices, fitted to local ecosystems and their entanglement with the human community at place (Hamilton-Jones & Schröder 2025). Whereas that methodological diffusion allows rendering more diverse knowledges into research, it also means a loss of orientation in practical work. How do we grapple with the affective turmoil that we are confronted with when making more-than-human futures?

In this workshop, we therefore invite the Anticipation community to co-design a first version of a “fluid future feelings” card-deck, serving as a communication tool for the sometimes-hard-to-articulate affective layer of future-making practices around climate change and more-than-human futures. Building on previous experimentation with collective manifesto writing to capture the affective dimension of the ecological crisis among transition making practices (Coops et al., 2025) that have proven to be too rigid to hold affective practices as fluid as more-than-human future-making, this workshop explores more fluid ways to map such emerging practices, to make the often hidden affective labour within ecological transition making-practices graspable and discussable among future-making practitioners.

In the effort to manifest implicit practices of thinking-feeling with the ecological crisis, we aim to make them know-able; articulating open, unstable practices that respond to multicomplex contexts like the ecological crisis. Hereby, we rest on the double connotation of manifestation, as something appearing, becoming clear, on one side, but also as an imagination and visualisation of desired future scenarios in the belief of making them more likely to happen.

Within that realm, we lean towards Tarot, as a "dialogical practice unfolding through a deck of cards, often used for divination or occult purposes, as a valuable method for addressing the cognitive and affective messiness of climate crisis." (Murney, 2023, p. 243). Found initially as a card game since the fifteenth century, Tarot gained significant fascination in the esoteric realm through its assumed divinatory power – not prediction – so, gaining insight to unconscious knowledge (like tacit knowledge) through meaningful coincidences, or serendipitous synchronicities between the card material and the users lived experience. Tarot then developed into modern forms, and is under ongoing diverse development also outside the esotericism (Giles, 1992). In line with that, Tarot reading and interpretation as a form of dialogue can therefore be a bridge to share "emotional needs, vulnerabilities, uncertainties" within a community (Michelson et al., 2024, p. 644), and be a form of resistance towards dominant epistemologies within academia that leave personal and relational knowledges unrendered (Esling et al., 2020). Tarot has found its way into in the academic realm, where tarot-making and reading has e.g. been brought to conference settings before, "challenging patriarchal logic, reclaiming intuitive knowledge, and engaging with marginalised or “hidden” forms of understanding" (McDermott McNulty et al., 2025, p. 2). Murney has even framed Tarot as an "affective cartography" of the Anthropocene, which resonates strongly with the argument behind this workshop (Murney, 2023).

Adjoining tarot scholars and artists, we too see potential in Tarot to challenge "more conventional ways of knowing, sharing, reflecting and designing” (Michelson et al., 2024, p. 646), such as tacit and intuitive ways of knowing (McDermott McNulty et al., 2025, p. 12). So have the Superflux “Instant Archetypes” been designed as a toolkit “to open up possibilities, surface questions and untangle stubborn challenges” when imagining plural futures (Superflux 2018). Using "Tarot-as-inquiry", as framed by McDermott McNulty et al. (2025), we are curious about Tarot-making and Tarot-reading to engage with hidden practices and knowledges in affective practices of ecological transitions.

The workshop is consciously formed around an artistic approach of making tarot-like cards. While using a simple and accessible materiality as paper-based collaging, crafting the cards collectively allows a mode, that “may lead to new ways of feeling, sensing, imagining, understanding, and questioning" the invisible affective labour in ecological future-oriented practices, while giving agency to participants to express what is emerging through chosen means, and also blurring the hierarchies between researchers and participants (Evers, 2024). During 90min up to 25 participants will receive a short introduction to tarot, symbolism and meaning making, as well as more-than-human future feelings. After an introspective visualisation exercise to warm up to thinking-feeling-with the more-than-human world, we will collectively craft the card deck in collage-technique based on reflection prompts. The finished collective card

deck will then be used in card-reading sessions of fluid future feeling practices, before closing with a reflective podium discussion on affective futuring and tarot-reading.

Responding directly to conference themes 4 (Embodying and Sensing Futures) and 5 (Futuring by Designing) this workshop engages with uncertainty and fuzziness in our practices of researching and future-making, which is crucial to render and understand our affective more-than-human entanglements in the present and futures. We are curious to explore Tarot-making and Tarot-reading as a way of sensing such entanglements and amplify them in reflective dialogue with each other, surfacing affective and more-than-human future cosmologies.

References

Coops, F., Schröder, A., & Hamilton-Jones, D. (2025). Exploring affective dimensions of the ecological crisis in design: A reflective manifesto writing workshop. Nordes 2025: Relational Design. https://doi.org/10.21606/nordes.2025.76

Esling, N., Kimmel, A. J., Sharifi, A., & Warren, A. (2020). Diffracted Readings of the Future: Practices of 'Differentiation-Entanglement'. Performance Research, 25(5), 10–16. https://doi.org/10.1080/13528165.2020.1868832

Evers, C. (2024). An ecological crisis of reason: Using creative and arts-based research methods for exploring affective-emotional life and just transitions. Global Social Challenges Journal, 3(3), 360–381. https://doi.org/10.1332/27523349Y2024D000000019

Giles, C. E. (1992). The tarot: History, mystery, and lore. Paragon House.

Hamilton-Jones, D., & Schröder, A. M. (2025). Affect in more-than-human design practice: An anecdote-based exploration through dialogue. Nordes 2025: Relational Design. https://doi.org/10.21606/nordes.2025.49

McDermott McNulty, M., Barros, S., & Daspit, T. (2025). "Before the After Comes the Fire": Tarot Aesthetics as Feral Inquiry. International Review of Qualitative Research, 19408447251319421. https://doi.org/10.1177/19408447251319421

Michelson, R., Lustig, C., Rosner, D., Hoy, J., & Santos, D. R. (2024). Worlding with Tarot: Design, Divination, and the Technological Imagination. Designing Interactive Systems Conference, 638–652. https://doi.org/10.1145/3643834.3660735

Murney, A. (2023). Tarot as affective cartography in the uneven Anthropocene. Journal of Visual Culture, 22(2), 243–263. https://doi.org/10.1177/14704129231196365

Superflux. (2018, November 1). Instant Archetypes: A toolkit to imagine plural futures. Superflux; Research and Innovation. https://superflux.in/index.php/and-now-for-something-completely-different/

Collaborative Mapping of Stances and Rationales in Design Futuring with the Anticipation Prism

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Keywords: anticipation; futures literacy; integral futures; design; HCI

Design projects are often pressured to deliver rapid, technology-oriented solutions. However, the underlying assumptions that shape the futures these solutions embody might go unnoticed. The Anticipation Prism is a visual and practical tool for practitioners and researchers in design futuring to make explicit their stances toward the future and reflect on the rationales that shape those positions. Grounded in anticipation studies (Anderson, 2010; Poli, 2017; Miller, 2018) and integral futures (Voros, 2008), the Anticipation Prism renders positions about the future as overlapping colour spectra that can be plotted, compared and discussed. Built-in reflective prompts guide participants to examine temporal horizons, beneficiaries, unintended consequences and embedded values, addressing the common tendency in design to privilege feasibility, technocentrism and dominant imaginaries at the expense of plurality and long-term thinking (Mazé, 2019). In this workshop, participants will learn to use the Anticipatory Prism to enhance their reflexivity on how aims, stances, and method choices align across a project. Beyond the workshop, we plan to collect feedback to refine the Prism for its use in design and related practices.

The workshop will run as a highly interactive, artefact-driven session. After a brief introduction to the agenda and the Anticipation Prism, participants will be invited to propose cases from their practice to anchor the discussion. Participants will then individually map their current anticipatory stance(s) and rationales on printed Prism templates, guided by reflective prompts. Next, in small groups, they will compare their respective colour maps, identify divergences (preparatory vs novel stances; strategic vs exploratory rationales), and annotate misalignments between aims, temporal horizons, and method choices, as well as where plurality is constrained. A method-integration drill will follow, during which method-cards (experiential futures, design fiction, co-design, field trial, scenario development, prototyping) will be given to the groups to revisit their maps and discuss how method choices shift stances and rationales. The groups will document pitfalls (short-termism, technocentric discourse, narrow imaginaries) and, by revisiting the Anticipation Prism, propose countermoves (broaden stakeholder groups, extend time horizons, attend to plural epistemologies). The session will close with each group sharing a key alignment insight and an integration challenge, followed by structured

feedback on the tool's clarity, blind spots and applicability. Participants will be invited to an optional post-workshop memo and ongoing refinement process.

The workshop targets practice-based designers, futuring researchers, HCI practitioners and anyone interested in anticipation and futures literacy. Workshop participants will gain hands-on experience grounded in concrete cases. They will work in mixed groups and see contrasting anticipatory stances side by side. Each participant will create personal and group Prism visualisations. In addition, they will receive concise integration pointers that map aims–stances–rationales–methods. These artefacts can be taken home and applied directly to their own practice.

This workshop will foreground how participants "use the future" in their work, making futures-literacy observable even for those unfamiliar with anticipation theory. By visualising how the choice of methods (design fiction, participatory design, or scenario development) shifts anticipatory stances and underlying rationales, the tool adds a reflexive layer that complements existing design-futuring approaches. This reflexivity helps prevent the marginalisation of alternative futures and encourages a richer, more plural set of possibilities within design projects.

References

Anderson, B. (2010). Preemption, Precaution, Preparedness: Anticipatory Action and Future Geographies. Progress in Human Geography, 34(6), 777–798.

Mazé, R. (2019). Politics of Designing Visions of the Future. In S. Candy & C. Potter (Eds.), Design and futures (pp. 23–37). Tamkang University Press.

Miller, R. (2018). Sensing and Making-Sense of Futures Literacy: Towards a Futures Literacy Framework (FLF). In Transforming the Future (1st ed, pp. 15–50).

Poli, R. (2017). Introduction to Anticipation Studies.

Voros, J. (2008). Integral Futures: An Approach to Futures Inquiry. Futures, 40(2), 190–201

Design Beyond the Loop: Rethinking Circularity via a Speculative Workshop on Temporal and Relational Futures

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Keywords: pluriepistemic design, anticipation studies, provotyping, speculative design, circular futures, circular transition

Drawing on Riel Miller's (2018) concept of futures literacy, this workshop understands anticipation not as prediction but as a capability to recognise how images of the future shape actions in the present. Learning to "use the future" consciously empowers young designers to face complexity, ambiguity, and conflict as spaces of creativity and novelty. This workshop is designed to use critical and speculative thinking for the circular transition, reviewing the loop itself, its limitations and epistemic boundaries. It is designed to enable practitioners of circular change by examining how their design projects are entangled across epistemic, temporal, and relational dimensions. Drawing on theories such as posthumanism, temporal decoloniality, and critiques of technodeterminism, the session offers a hands-on experience with an online matrix tool designed to surface hidden relationality and temporality of design practices. Through guided prompts, participants map their work across three agency domains—Nature, Technology, and Information—and three temporal orientations—Emerged, Present, and Next. This mapping generates three interpretive indexes that serve as entry points for collective sensemaking: the Pluri-Relational Index (PRI), which highlights cross-domain entanglements; the Temporal Situatedness Index (TSI), which visualises pluritemporal awareness; and the Technodeterministic Futurism Index (TFI), which reveals implicit leanings toward optimisation and techno-centric choices.

The workshop mobilises this tool not as evaluative metrics, but as a provotype: speculative discussions that expose hands-on experiencing of epistemic, ontological, relational and temporal narratives embedded in design and research practices. Participants translate their scores into a visual diagram, making patterns, tensions, and absences collectively perceivable. The session creates a space for process-based, experimental engagement with anticipation and design futures studies as well as philosophy, encouraging participants to inhabit uncertainty via Rethinking circular futures, and to rehearse plural futures beyond linear progress or closed-loop sustainability models.

Facilitation and Materials

Facilitators: Paria Bagheri Moghaddam, assisted by one technical volunteer.

Duration: 60-90 minutes

Modality: In-person

Required materials: printed matrices, markers, post-its, laptops or smartphones (for QR matrix tool), projector and a screen, movable tables and chairs.

Participant Contribution Modalities

The workshop values diversity of background: designers, researchers, educators, policymakers, and community actors, recognising that different epistemic positions enrich collective narratives. No prior experience with futures studies or speculative design is required. The workshop is intentionally inclusive, encouraging participation from both academic and non-academic audiences. Participants' contributions — visual, verbal, or reflective — will be documented as part of a shared digital abridgement accessible to all attendees after the conference.

Structure

1. Matrix Engagement Mapping Entanglements (20 minutes)
   Participants access the online matrix tool via QR code. The matrix contains nine reflective prompts.
   The purpose here is exploratory: participants test the tool and observe what it reveals or obscures about the anticipatory assumptions within their project.
2. Visual Translation and Diagramming (30 minutes)
   Participants transfer their indexes onto a printed speculative diagram. This diagram does not function as a fixed evaluation, but as an interpretive surface through which relationships, tensions, contradictions, and absences become visible. The physicality of the diagramming process creates an embodied moment of interaction with the Loops: the emergent pattern reveals how each participant's epistemic and temporal assumptions produce particular orientations toward the Loops and well-being.
3. Collective Sensemaking (20 minutes)
   Participants gather around a collective mapping wall, where diagrams are placed side by side. This shared visual field functions as a speculative ecology; the moderator will also showcase the collective diagram of all the answers derived from the matrix of the workshop. (https://revolvingdesign.shinyapps.io/TemporalMatrix/)
   Clusters and outliers become noticeable. Patterns of technodeterministic reasoning surface

Tensions emerge between ecological, informational, and technological orientations.
Pluritemporal perspectives and temporal colonial and decolonial narratives can be mutually interpreted.
The facilitator prompts discussion on what becomes possible when these diagrams are read together rather than individually.
This stage emphasises the relational dimension of anticipation and illuminates differences in epistemic positionality.

4. Re-immagining the loop, Re-positioning the projects and Re-setting the epistemic singularity towards Rethinking the circular futures (10 minutes)
Participants select one insight from their reflection and articulate a small re-setting gesture: a reframing that opens alternative possibilities for their futures projects.

Examples include

Shifting from optimisation to care

Moving from techno-solutionism to alternatives

Recognising the temporalities of decay or maintenance

Reclaiming plurality where normative futures dominate

Participants briefly share these gestures, contributing to a plural repertoire of these practices.

References

Adam, B. (2004). Time. Polity Press.

Bedau, M. A. (2008). Is Weak Emergence Just in the Mind? In M. Bedau & P. Humphreys (Eds.), Emergence: Contemporary Readings in Philosophy and Science (pp. 155-170). MIT Press.

Celi, M., & Morrison, A. (2017). Anticipation and design inquiry. In Handbook of anticipation (pp. 1-25). Springer, Cham.

Deleuze, G. (1994). Difference and Repetition (P. Patton, Trans.). Columbia University Press. (Original work published 1968)

Dunne, A., & Raby, F. (2013). Speculative everything: Design, fiction, and social dreaming. MIT Press.

Ellen MacArthur Foundation. (2019). Completing the Picture: How the Circular Economy Tackles Climate Change. https://ellenmacarthurfoundation.org

Haraway, D. J. (2020). Staying with the Trouble: Making Kin in the Chthulucene. Duke University Press.

Humphreys, P. (2008). Synchronic and Diachronic Emergence. In M. Bedau & P. Humphreys (Eds.), Emergence: Contemporary Readings in Philosophy and Science (pp. 225–242). MIT Press.

Latour, B. (2014). Agency at the Time of the Anthropocene. New Literary History, 45(1), 1–18.

Miller, R. (2018). Transforming the future: Anticipation in the 21st century. Taylor & Francis.

Miller, R. (2019). Futures literacy: The capacity to diversify conscious human anticipation. In R. Poli (Ed.), Handbook of anticipation: Theoretical and applied aspects of the use of future in decision making (pp. 73–91). Springer.

Mitchell, M. (2009). Complexity: A Guided Tour. Oxford University Press.

Wolfe, C., & Nocek, A. J. (Eds.). (2020). Ontogenesis Beyond Complexity: Reframing Life in the 21st Century. Duke University Press.

Embodying Transitions: the tensions and opportunities of holding spaces for transformative futures

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Keywords: service design; future studies; socio-technical transitions; transformative futures

The connection between design and future studies has been explored extensively in various forms, among those, transition frameworks offer a robust description of how change happens across long temporal horizons. While effective at dealing with desired futures and systemic complexity, transition-oriented frameworks struggle in articulating how long-term shifts emerge and are sustained at the micro-level of everyday practice. This workshop aims to explore the site where such micro-level actions happen; this has been conceptualized as a “window of transformative futures”. These meta-spaces are created in every transformation process and coincide with the actions of opening new possibilities and sustaining multiple futures together. From this starting point, the workshop will critically unpack the operational tensions inherent in holding these windows open, particularly concerning issues of power, inclusion, temporality, and conflict navigation. In the session, participants will work in pairs to physically construct and populate their own windows through simple materials representing tensions, actors, and decisions shaping their change-making approach. The windows will come together into a building with many views, reflecting the collective landscape of how long-term change is being pursued across different fields and scales. The workshop is open to anyone who deals with long-term change processes from a design, management, or anticipatory perspective. We welcome anyone who wants to discuss and question their change-making activity, while indulging in a more granular perspective on the challenges and opportunities in strategizing present actions for long-term transitions.

References

Buchanan, R. (1992). Wicked Problems in Design Thinking. Design Issues, 8(2), 5–21.

Escobar, A., Osterweil, M., & Sharma, K. (2024). Relationality: An Emergent Politics of Life Beyond the Human.

Geels, F. W., & Schot, J. (2010). The dynamics of transitions: A socio-technical perspective.

hooks, b. (1994). Teaching to Transgress: Education as the Practice of Freedom. Routledge.

Irwin, T. (2018). Transition Design: A Proposal for a New Area of Design Practice, Study, and Research. Design and Culture, 10(1), 94–115.

Manzini, E. (2015). Design, When Everybody Designs: An Introduction to Design for Social Innovation. MIT Press.

Vink, J., Koskela-Huotari, K., Tronvoll, B., Edvardsson, B., & Wetter-Edman, K. (2021). Service Ecosystem Design: Propositions, Process Model, and Future Research Agenda. Journal of Service Research

INFUZE: Futuring Zero Carbon Mobilities

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Keywords: social futures, citizen assemblies, futuring, transport and mobility, deliberative hope

The world average number of registered cars per capita in 2025 is 200 cars per 1,000 people. San Marino, near the Adriatic Sea, has the highest number with 1,606, followed by the British territories of Guernsey, Gibraltar and Jersey with 1,389, 1,293, and 1,234, respectively. Italy has 753 cars registered per 1,000 of its inhabitants; Cuba has 67. Despite important differences within and between countries ,the trend is set to continue, not least because of the importance of cars for several national economies, both on the production side (China, Japan, USA, Germany, or South Korea) and in relation to their use and consumption which involves sales, repairs, maintenance, insurance, and much more. How can zero carbon mobility be achieved against a background of higher numbers of cars owned? In what ways might the insights of Anticipation and Social Futures methods and practices contribute to reframing this trend and explore critical creative solutions?

The five-year research programme INFUZE, Inspiring Futures for Zero Carbon Mobility (https://in-fuze.org.uk/), engages with these questions by combining a range of methods with live experiments embedded in communities and neighbourhoods in Leeds, UK. Using Leeds as a testbed, we seek to develop new techniques and approaches to envisioning and enacting future places and future journeys beyond car ownership.

Leeds drives 4 bn miles every year. By 2050, predictions tell us that between 100,000 and 150,000 cars will be added to Leeds District, increasing car traffic by 25 percent and congestion by 33 percent. The current planning framework is ill equipped both to cope with the scale of these predictions and to imagine things differently. Through sustained ongoing work with communities, INFUZE is unsettling the dominant future of car-oriented places and shaping alternatives with citizens. Inspired by systems thinking and the system-ness of mobilities (Meadows 2009; Urry 2009), the non-linearity of anticipatory practices (Poli 2018), the role of temporal imaginations in shaping possible worlds (Facer 2023; Facer and Hand 2025), and the process of unlearning and unthinking the thinkable (López Galviz and Spiers 2022), this workshop will ask participants to

practice with us the unknown and rehearse alternative, more hopeful, future zero carbon mobilities.

The workshop will consist of a 90’ session, which will introduce participants to three Acts and co-create a future mobility citizen assembly. The Acts explore our philosophies and values, and our feelings about the future to develop principles for change which, in turn, guide missions to enable better places and better transport for the communities where we live and work. The second part of the workshop will use our values, feelings and knowledge to explore roadmaps to the future through a game-like activity of snakes and ladders. Participants will be invited to reflect on their own experiences, work in groups, and share their feedback on our approach to futuring zero carbon mobilities.

Inventing method: “Had you considered the consequences?”

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Keywords: responsibility; responsible futures; responsible anticipation; ethics; proto-principles

Introduction

This workshop contributes to developments in practice, featuring a working discussion to explore how we develop more explicit approaches to making responsibility explicit in client-oriented foresight practices and embed them in applied methods.

Professional ethics for futurists, shaped by the Futures Studies community (e.g. World Futures Studies Federation and Association of Professional Futurists) are intended to guide responsible foresight consulting activities with clients. However, there are no explicit standards or methods employed on a community wide basis for exploring the responsibilities of the client and their stakeholders in the future contexts explored through foresight. What methods need to be invented to offer a critical stance to guide anticipatory practices? What aspects of our current methods include specific discussion and evaluation of responsibilities related to future-creating activities? How are tensions in the interpretation of responsibility addressed, if at all? Should they be?

Note that organisers will not supply the answers to these questions. The workshop is designed to share the organisers’ working knowledge on responsible futures, which includes frameworks through which the questions might be addressed. The workshop is a creative space for the development of practice.

The foundations for the workshop are a 5-year research project on “Responsible Futures”, initiated by the UNESCO Chairs of the universities of Lincoln (UK) et Poitiers (France), which has involved a global network of scholars and practitioners, meeting every two months to discuss issues related to responsible futures. These workshops accompanied the production of a multi-authored book (Fuller, Roubelat, Marchais-Roubelat, Heraclide, & Ward,

2026) and other contributions, e.g. (Fuller, Roubelat, Marchais-Roubelat, Heraclide, & Ward, 2024). Contributors have provided a range of examples and theories related to what might be called responsible anticipatory practices. The overall contribution of the work is a synthesis of categories of principles, which when applied in specific contexts, can be claimed to reflect responsibility. The categories of principles, known as proto-principles, are Relational, Temporal and Perspectival. The proto-principles can be used to frame the articulation of context-specific principles in use. That is, in use in the flows of actions of everyday future-creating (anticipatory) practices.

The research should be seen as work in progress, with much more to be done. One key task is to operationalise approaches to the reflective use of proto-principles in the practices of futurists. It is this task that the workshop is designed to address. That is, to construct methods for the embodiment and use of proto-principles in foresight practices, where responsibilities of the client and related stakeholders are revealed and considered.

The ideas have been workshopped with peers online and at the 2025 World Futures Day at UNESCO, with a number of UNESCO Chairs amongst others. A next stage activity is to develop the use of these ideas through applied methods.

Workshop agenda

1. Opening presentation of Responsible Futures and proto-principles for responsible anticipation
2. Exercise in groups constructing example principles for responsible anticipation in specific contexts
3. Plenary discussion on enacting such principles in the relationship with clients / stakeholders / students etc
4. Group work methods and conversations. For a chosen context and set of principles in use, give an example of a method(s) you would use to embed this in your foresight process, and script how you would describe this aspect to your client(s)?
5. Enacting example vignettes – groups enact “the conversation of responsibility” in action
6. Final discussion, collection of evidence and directions for future activity

Participant maximum 40 persons in room with tables for group-work of six groups of approx. six participants each. Flip chart or similar for each table.

Experience

The processes described above indicates that participants will be introduced to new concepts and take the role of explorers. We have some maps, but mainly these are not detailed. Explorers find paths and uncover new territory.

Explorations consist of applying concepts to actions in contexts that participants are familiar with. Explorations are, however, not simply spatial and temporal. Most importantly they are relational, and relationships require dialogue. Participants also need to be authors, scriptwriters and role-players to enact their invented methods.

Outcomes

The aim is develop and share ideas for methodological and method development in the domain of responsible anticipatory practice.

References

Fuller, T., Roubelat, F., Marchais-Roubelat, A., Heraclide, N., & Ward, A. K. (2024). Responsible Futures. In R. Poli (Ed.), The Handbook of Futures Studies. London: Edward Elgar.

Fuller, T., Roubelat, F., Marchais-Roubelat, A., Heraclide, N., & Ward, A. K. (Eds.). (2026). Towards Principles for Responsible Futures (forthcoming) (Vol. 1): Routledge.

Standing in the Futures

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Keywords: embodied futures; collective sensemaking; debate and divergence; provocations

“Everyone can act. Everyone can improvise. Anyone who wishes to can play in the theater and learn to become 'stage-worthy” – Viola Spolin

Standing in the Future is an exploratory futures tool and workshop designed to help participants think critically about the futures they are anticipating and provide a forum for idea exchange without the hostility of polarized debate. The title plays on multiple meanings of the word “standing”, asking participants to mentally take a stand and physically move to reflect that stance. And, in the process, participants might reflect on how their social standing could shift for each possible future.

This workshop has a capacity for approximately 35 participants and lasts 90 minutes. Facilitators will pose future provocations, or assertions about how the future might unfold in specific ways (e.g. By 2035, AI will mostly oversee air, water, and soil management instead of humans). After each provocation, participants will physically move to a spot on a spectrum from “strongly disagree” to “strongly agree”, gravitating toward the position that best aligns with their view of the world as it will be.

Facilitators then open the discussion, inviting participants to share their views and defend their stance with the insights that have informed their opinion. Participants may move along the spectrum if convinced to do so by the narratives others share about the future. Key to the success of this workshop is in the facilitation and creating the conditions for participants to engage openly and with a sense of safety. The facilitators drew inspiration from Priya Parker, taking care to model a level of openness for participants to match if they choose.

Applications and results

Previous versions of this workshop have been staged at a joint APF/OCAD University Futures of Creativity & Compassion event with a group of futurists and Autodesk’s Industry Futures strategy session within a team of non-futurists. Here’s what was heard from participants:

“A fully immersive experience that not only brings diverse ideas to life but also acts as a compelling social experiment. Throughout the session, you can see how different perspectives influence and reshape assumptions in real time. It

feels like watching an immersive heartbeat, revealing the rhythm and complexity of social dynamics as the topics unfold.” – Octavio Juarez, Creative Strategist

"I had the chance to attend Kelly and Desmond's workshop at the APF Conference in August 2025, and I really appreciated how intentionally they created a space where people felt safe to disagree. In a world that is growing in polarization, spaces like this are essential so we can practice holding difficult conversations with more care and nuance." – Fran Quintero Rawlings, Method Collective

“A brilliant mashup of "ice breaker" and productive "path-finding". Our team used it to bridge the gap between new and established team members, and explore scenarios for our work, which we feathered right into planning for the year ahead. Best of all it works in a mixed virtual/physical setting.” – Hilmar Koch, Industry Futures, Autodesk

In early uses of this emerging futures tool, we have found that it helps participants to quickly build camaraderie via shared perspectives and insights. This creates a sense of courage for participants to share their viewpoints without reservation. The tool also gives space for participants to grapple with multiple truths on a particular topic. It makes assumptions visible to encourage critical thinking and invite further research after the exercise.

Background

This exercise builds upon the work of pioneers within strategic foresight and draws from facilitation of expertise of other domains as well. The physical orientation and Q&A structure are loosely based on the “Spectrum” series from Jubilee Media, an organization that aims to “provoke understanding and create human connection” via video content featuring people of opposing viewpoints. For Standing in the Future, we invite participants to situate themselves along a curved line, inspired by the “horseshoe theory” phenomenon which suggests that on certain issues far-left and far-right ideologies converge. Compared to distance of the ideological ends on a straight line spectrum, the horseshoe layout encourages a sense of closeness even when opinions are polarized. Standing in the Future also draws from Stuart Candy and Peter Hayward’s Polak Game, a futures tool inspired by Frederik Polak's "The Image of the Future," that helps groups understand shared and differing visions of the future by inviting them to physically move around a space to convey their beliefs. Aligned to the thinking of these foresight visionaries, Standing in the Future builds on the intention of democratizing foresight by offering ways “for everybody to contribute.”

References

Parker, P. (2018). The Art of Gathering: How We Meet and Why it Matters. Portfolio/Penguin.

Spangler, T. (2024, November 3). Jubilee is making America debate again. Variety. Retrieved December 11, 2025, from https://variety.com/2024/tv/news/jubilee-debate-videos-pete-buttigieg-ben-shapiro-1236199829/

Vanderbilt Political Review. (2024). Horseshoe theory in American politics. Retrieved December 11, 2025, from https://vanderbiltpoliticalreview.com/12168/us/horseshoe-theory-in-american-politics/

Hayward, P. & Candy, S. (2017). The Polak Game, or: Where Do You Stand? Journal of Futures Studies.

The Future Is a Game. Reclaiming Epistemic Sovereignty Through Craft, Causality, and Foresight

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Keywords: epistemic sovereignty; futures literacy; causal understanding; embodied learning; human–AI interaction

In an AI-mediated environment, anticipation is no longer purely human. It becomes shaped by model outputs, often without us noticing. As a result, differentiation itself is at risk. When anticipation is outsourced, thinking converges. Without epistemic sovereignty, futures collapse into variations of the same expectation.

This session explores the renewal of human epistemic sovereignty as a precondition for futures literacy: the capacity to generate, test, and revise one's own causal models of possible futures. We address the Illusion of Explanatory Depth—the tendency to overestimate our understanding until we are forced to explain or enact it. The workshop combines manual precision, structured reflection, and anticipatory tools to create a living lab for epistemic mastery. Participants move from a shallow "Understanding & Mastery With" to a deep, causal "Understanding & Mastery Why." Many participants realise they can work with tools, models, and frameworks but struggle to explain why something works.

Conceptual and intellectual foundations

Modern societies are shifting from knowledge-based identities toward a "society of mastery." As generative AI increasingly outperforms humans in retrieving and recombining information, epistemic authority can no longer rely on stored knowledge. Sovereignty becomes a lived capacity grounded in cognitive clarity and the integration of embodied and craft-based forms of knowing.

A primary challenge is the "black box" nature of AI-mediated information, which often leaves users with a surface-level understanding without a true causal grasp. This erosion of sovereignty narrows the space of possible futures. When algorithms shape perception, anticipation risks collapsing into "borrowed expectations".The session reframes anticipation as an epistemic practice: the ability to construct, test, and revise one's own causal models of possible futures rather than relying on externally generated scenarios.

To support this shift, the workshop develops participants' ability to judge claims based on evidence, reasons, and standards rather than merely accepting external outputs.

Foresight and epistemic sovereignty are interdependent. While foresight tools can operate without sovereignty, the results are often mere imitations of dominant trends. Sovereignty provides the ability to judge whether information is reliable or misleading—necessary to imagine and shape pluralistic, self-authored futures.

Format and processes

The session alternates between hands-on craft and anticipatory reflection, utilising physical resistance to break through cognitive illusions.

The Craft Track: Building Stone Towers with the Beat-to-Beat Method. Participants build a freestanding stone tower, engaging with material resistance and uncertainty. This stage is designed as Productive Failure: the initial struggle with the material is not an error but a prerequisite for deep learning, as it surfaces the gap between perceived and actual understanding. After reflection, the second tower utilizes the Beat-to-Beat Method, where the first artifact serves as a reference for improvement. This iterative process materializes how sovereignty develops through the interplay of internal judgment and the externalization of tacit knowledge.

The Cognitive Track: The Driver Wheel of Sovereignty Participants construct a Driver Wheel as a mode of Knowledge Structure Externalization and anticipatory mapping of future consequences across multiple horizons. By externalizing their thinking, participants often discover contradictions, hidden dependencies, and assumptions they were not aware of. The wheel is structured across five dimensions:

4. Conditions: Factors shaping independent judgment.
5. Validation: Criteria used to assess credibility and truth (Epistemic Vigilance).
6. Dependencies: Infrastructures and algorithms influencing perception.
7. Tensions: Conflicts between autonomy and alignment (intuition vs. evidence).
8. Implications: Second- and third-order consequences of epistemic decisions. This facilitates Double-Loop Learning, allowing participants to question the governing assumptions and biases behind their decisions.

Participant experience

Participants move through four layers, each approx. 20 min.:

1. Embodiment (Practice): Working with wood activates sensory intelligence, requiring a deep causal grasp of material laws that cannot be bypassed by AI.
2. Interpretive Insight: The Driver Wheel reveals the "architecture of authority," helping participants recognize where they have outsourced their judgment.
3. Social Learning: The second bridge introduces "social epistemics," exploring how to integrate external techniques without losing directional clarity.
4. Integration: Participants combine cognitive and somatic modes to define personal micro-rituals that foster Epistemic Humility—the recognition of the limits and fallibility of their own knowledge.

Intended outcomes

Participants leave with a clearer sense of where their thinking is shallow or borrowed; the ability to rebuild causal understanding; a practical method to strengthen decision integrity in complex environments.

References

Arendt, H. (1958). The human condition. University of Chicago Press.

Inayatullah, S. (2008). Six pillars: Futures thinking for transforming. Foresight, 10(1), 4–21.

Miller, R. (2018). Transforming the future: Anticipation in the 21st century. Routledge.

Polanyi, M. (1966). The tacit dimension. Doubleday.

Rozenblit, L., & Keil, F. (2002). The misunderstood limits of folk science: An illusion of explanatory depth. Cognitive Science, 26(5), 521-562.

Schön, D. A. (1983). The reflective practitioner. Basic Books.

UN Futures Lab. (2023). UN Strategic Foresight Guide: Futures Wheel. United Nations.

Argyris, C., & Schön, D. A. (1978). Organizational learning: A theory of action perspective. Addison-Wesley.

Dewey, J. (1929). The quest for certainty: A study of the relation of knowledge and action. Minton, Balch & Company.

Fricker, M. (2007). Epistemic injustice: Power and the ethics of knowing. Oxford University Press.

Xu, K., Shen, Y., Yan, L., & Ren, Y. (2026). Cognitive agency surrender: Defending epistemic sovereignty via scaffolded AI friction.

Drábik, J. (2025, 15. April). An epistemic solution to do away with our illusion of AI objectivity. LSE Business Review.

Liu, J. (2026, 11. Januar). LERA: Reinstating judgment as a structural precondition for execution in automated systems

The Future of Making: Rehearsing futures to make the regenerative

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Keywords: regenerative design; speculative futures; biomaterial; doughnut economics; care

uilding on Arup's Future of Making programme, which sits at the intersection of academic thinking and industry-shaping practice, we propose a 90-minute experiential workshop to exemplify the making of worlds as a mode of thinking. Reimagining making as an ongoing, cared-for, situated relationship, and not a one-off act of production, the session intends to demonstrate how speculative design can transform worldviews, not ust systems (Inayatullah, 1998).

Immersing participants in a non-linear environment where they engage with speculative artefacts and cutting-edge prototypes, the workshop positions design as a mode of inquiry that enables participants to imagine, enact and crucially rehearse different futures that are not only sustainable but regenerative.

The session foregrounds questions around material properties (replicating what we know vs. embracing the inherent qualities and flaws of biomaterials), operational models of care, the skills for maintenance, as well as the aesthetics of regenerative design. In doing so, it opens questions of how regenerative business models might support and accelerate the transition to a fully sustainable economics.

Session Intent

uilding on cutting-edge prototypes and on speculative artefacts developed and iterated at the Dubai Future Forum, Singapore Design Week, London exhibitions and other events, we will run a 90-minute workshop. Conference participants will be able to further contribute to this collective exploration of the process of making and engaging with speculative artefacts can deepen collaboration between academia, industry, and the public to enact systemic change as we navigate our transition towards a regenerative future.

Immersed in a non-linear possible-future environment, participants will encounter multisensory prototypes that embody regenerative principles. Imagine a bio-battery toolkit, a set of tools and materials specially collected and developed by Milan's most sought-after 'G of Things', or a material scanner

that matches the qualities and properties of reclaimed materials with the needs of the community - like a material match-maker. These artefacts serve as provocations, prompting questions around current approaches to design, production, distribution systems as well as maintenance, care and collaboration. The speculative design, we challenge the very concepts of value, growth and waste.

The experience aims to be loosely structured yet open-ended, allowing participants to intuitively explore, interact, and co-create. The emphasis is on feeling futures through materiality, soundscapes, and embodied engagement rather than simply reading or listening – and crucially expanding on this experience through on-going dialogue and co-creation. This forms the core part of the facilitation.

A modular, adaptable design of our multi-modal materials will allow for more flexibility in the production and set up of this spatial experience. Committed to minimising the environmental impact of our work, we aim to reuse and repurpose as much as possible – adapting to your available furniture, electronics and lighting components. This raises questions around the shift in aesthetics that is concomitant with regenerative design, challenging fundamental values as much in material properties (replicating non-regenerative materials vs. embracing biomaterials' inherent decay) as in their appearance.

The workshop is designed as an active engagement around the Future of Making exhibition displayed over the course of the conference. This allows participants to actively contribute to the explorations and shaping of our collective future.

Developed through Arup's Future of Making programme, at the intersection of academic thinking and industry-shaping practice, this work synthesises foresight methodologies, trend analysis, and speculative design practices. It draws on systemic design principles, weak signals, and participatory futures methods to construct immersive ex

Framing the Shift
Regeneration represents a fundamental shift beyond sustainability. While sustainability seeks to minimise harm and maintain existing systems, regeneration actively restores and enriches ecological and social systems, creating conditions for life to thrive (Mang & Reed, 2022). This transition demands a change in mindset, a reconfiguration across all layers that underpin design practice:

Litany: from incremental fixes to systemic renewal; Systemic Causes: from efficiency-driven models to interdependent resilience; Worldview: from

r‘nature as resource’ to ‘nature as co-creator' (for more on the layers, see Inayatullah, 1998 for Causal Layered Analysis)

It is clear that evidence alone is not enough to bring about change. Data and reports inform but they rarely transform. This is where speculative design becomes critical.

Speculative artefacts, such as those inspired by The Thing from the Future (Candy & Watsons, 201), act as boundary ob ects that bridge abstract principles and lived experiences. They invite intuitive engagement, provoke curiosity, and surface latent assumptions. nlike text-heavy design fiction, which requires cognitive investment, artefacts offer immediate, multisensory access to complex ideas. Through touch, texture, sound, and form, they evoke cultural values and emotional responses, making systemic challenges relatable and actionable for non-experts.

As Wakkary (2019) argues, material speculation enables us to understand futures better when we hold them in our hands , transforming abstract scenarios into tangible encounters. Similarly, DiSalvo (2009) positions design as a means of constructing publics, materialising discourse and creating issues around which collective deliberation can occur. In this sense, speculative artefacts do more than represent futures; they catalyse dialogue, unsettle dominant narratives, and invite participation. uilding on Candy & otter (2019), designers become facilitators of futures, curating experiences that operate not only at the cognitive level but also at the emotional and cultural layers of anticipation.

To catalyse regenerative futures, we must complement evidence with speculative practices that open space for creativity, foresight, and systemic innovation (Wakkary & og es, 202). Speculation is not an abandonment of rigour; rather, it is an expansion that embeds the imagination as a legitimate mode of inquiry and knowledge creation (Cardenas Cordova et al., 202).

Through speculative design, futures become tangible, emotionally resonant, and culturally situated (Gil Farias et al., 2022). This shift positions designers as agents of systemic change, embedding ethics and regeneration into practice (Gutierre Contreras, 202). Here, design moves beyond technical solutions to reconfigure narratives, values, and myths, enabling regenerative principles to take root in both imagination and action.

References

Candy, S., & Potter, C. (2019, March). Introduction to the special issue: Design and futures (Vol.

Candy, S., & Watsons, J. (2015). The Thing From The Future: Print-and-Play Edition. Retrieved from https://www.researchgate.net/publication/364677670_The_Thing_From_The_Future_Print-and-Play_Edition

Cardenas Cordova, D., Kelly, N., & Rezayan, L. (2025). A systematic literature review of the speculative design process and a proposed framework for speculative design. Design Science, 11, e38. https://doi.org/10.1017/dsj.2025.10030

DiSalvo, C. (2009). Design and the Construction of Publics. Design Issues, 25(1), 48–63. https://doi.org/10.1162/desi.2009.25.1.48

Gil Farias, P., Bendor, R., & van Eekelen, B. F. (2022). Social dreaming together: A critical exploration of participatory speculative design. PDC 2022 Proceedings. https://doi.org/10.1145/3537797.3537826

Gutierrez Contreras, L. M. (2025). Regenerative Responsibility: a strategy for design education. Proceedings of the Design Society, ICED25, 2731–2740. Cambridge University Press. https://doi.org/10.1017/pds.2025.10287

Inayatullah, S. (1998). Causal layered analysis: Poststructuralism as method. Futures, 30(8), 815–829. https://doi.org/10.1016/S0016-3287(98)00086-X

Mang, P., & Reed, B. (2022). From sustainability to regeneration: Mapping the conceptual foundations and future directions of regenerative development. Sustainable Development, 30(4), 701–712. https://doi.org/10.1002/sd.70112

Wakkary, R. L., Odom, W. T., Hauser, S., Hertz, G., & Lin, H. (2016). Material speculation: Actual artifacts for critical inquiry. In Proceedings of the 5th Decennial Aarhus Conference on Critical Alternatives (pp. 97–108). Aarhus University Press. https://doi.org/10.7146/aahcc.v1i1.21299

Wakkary, R., & Oogjes, D. (2024). The Importance of Speculation in Design Research. Springer. https://link.springer.com/book/10.1007/978-3-031-67

Three Horizons

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Keywords: speculative futures; horizons thinking; design; strategy; capacity building

Participant maximum 40 persons in room with tables for group-work of six groups of approx. six participants each. Flip chart or similar for each table.

Experience

The processes described above indicates that participants will be introduced to new concepts and take the role of explorers. We have some maps, but mainly these are not detailed. Explorers find paths

The futures field has long grappled with a persistent challenge: how do we translate compelling visions of possible futures into strategies organisations can actually implement?

This 90-minute interactive workshop explores Bill Sharpe's Three Horizons framework as a practical tool for organisational transformation.

What Is Three Horizons?

Three Horizons is a pattern map showing how systems transform. It recognises that multiple states coexist simultaneously:

Horizon 1 (H1): The dominant present—established systems, mature and optimised but showing signs of erosion (diminishing returns, fragility, talent loss, change debt).

Horizon 3 (H3): The emerging future—fundamentally different ways of creating value, organising, solving problems. New logic, governance, business architectures.

Horizon 2 (H2): The contested middle—where experimentation happens, feasibility is tested, and strategy becomes concrete: what to fund, stop, protect, build. Transformation succeeds or fails in H2.

These horizons are NOT sequential stages. They overlap and coexist, creating predictable conflicts.

The problem solves

Organisational transformation fails not because people resist change, but because they lack a shared collective view of how systems transform. Different functions live in different timeframes:

Operations and Finance anchor in H1 (reliability, cost, risk)

Innovation teams anchor in H3 (novelty, optionality, reframing)

Strategy and transformation offices work in H2 (scaling, integration)

These are legitimate perspectives shaped by incentives and professional cultures. The result is predictable: H1 experiences H3 as unrealistic; H3 experiences H1 as defensive; H2 feels unsupported. Three Horizons surfaces these perspectives and guides real strategic choices without demanding false consensus.

What you'll learn

Understand Three Horizons as a pattern map, not a linear timeline

Recognise how misalignment across horizons kills strategy execution

Map a working Three Horizons analysis (health insurer case study)

Practice horizons thinking as an intervention design tool

Apply this framework immediately in your practice

Case study

Participants work with a not-for-profit health insurer shifting from payer to partner in whole-population health. This real example illustrates multi-stakeholder complexity and how horizons thinking clarifies what to preserve, release, and build.

Key insights

Strategy is part ambition, part transition management, not destination selection

H2 is where transformation succeeds or fails (yet often under-resourced)

Both/And thinking beats Either/Or in uncertainty

Shared language across horizons creates conditions for real change

Who should attend

Futures and foresight practitioners, organisational designers, strategy facilitators, change leaders, and anyone working to translate futures thinking into practical organisational strategy. No prior knowledge of Three Horizons required.

Format

Interactive, hands-on. Small group mapping, real-time facilitation, immediate takeaways. All materials provided.

Tomorrow's You! A Career Guidebook for 2040

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Keywords: future skills; professional identities; labour narratives; career imaginaries; design futures

Intellectual framing

Technological advancement is often associated with societal revolutions that reshape organisations and people's lives, and it is frequently framed as a call for efficiency and progress. Yet these narratives do more than describe change: they normalise particular visions of the future, often presenting them as unavoidable and universally desirable. Similar claims operate on the premise of convincing society of the inevitability of certain futures, thereby sustaining the agendas of large tech companies. In the context of work, these claims also shape public discourse around what comes next: declining job profiles, disappearing professions, the perceived uselessness of once-valued skills, and assumptions about how education systems should respond to projected transitions in work roles. This workshop invites participants to explore how accelerated social, technological, and ecological changes contribute to a renegotiation of the future of the workforce. Rather than reducing this transformation to labour-market forecasting, the workshop approaches it as a broader cultural and political question concerning values, access, preparedness, and the conditions under which certain professional futures become imaginable and actionable, while also opening space for reflection on their implications for learning and education. Social, technological, and ecological forces are therefore not treated as vectors leading toward predefined destinations, but as conditions through which different individuals and groups may imagine and enact different futures according to varying degrees of preparedness and futures literacy. Accordingly, the session does not aim to predict labour-market trends; instead, it creates a contextualised space where frictions emerge and uncertainty opens opportunities for anticipatory negotiation, reconfiguring narratives about professions, skills, norms, and values attached to work and the workforce.

Experience and process

By adopting a speculative approach drawing on Design Futures, participants will collectively contribute to the 2040 Career Guidebook, a guide to occupations and skills used to navigate employment and career paths, through the creation of future job descriptions. Conceived as a designed object, the guidebook acts as both a shared frame and collective output: a fictional yet

situated publication through which participants can articulate, compare, and discuss professional trajectories. By articulating detailed future job descriptions (e.g., title, competencies, operating context, enabling conditions, and interpretive notes), the workshop provides a speculative space where conflicts between professions emerge, and multiple plausible directions take form. This approach foregrounds the layered, accretive nature of the future, in which old professions and skills are not simply replaced but coexist with new ones and continue to evolve in relation to broader socio-technological and ecological dynamics.

Supported by instructions and ready-made what-if scenarios, participants will explore generational gaps, AI, cognitive offloading and deskilling, workslop and creative independence, and disparities in the job market (e.g., access to technologies, training, job opportunities and gender gaps). Working in small groups, participants will reflect on a chosen scenario and use a modular prompt to generate fictional future professions that challenge assumptions, surface ethical questions, and highlight emerging societal and systemic demands. Participants will articulate their future job descriptions as entries in a fictional career guidebook, highlighting core skills, required tools, and the cultural or organisational context in which they operate. The resulting designed object serves as a catalyst for discussion, helping participants reflect on how professional identities are shaped and redefined over time and on the implications of these shifts for learning, training, and education.

Through this collaborative exploration, participants are invited to question the economic, social, political, and technological structures that shape dominant narratives about the future of jobs and the supposed inevitability of certain tropes, using fictional artefacts to reflect on labour-system interdependencies.

Requirements

The format aims to cultivate anticipatory thinking and open dialogue about job futures, offering participants a playful yet critical space to imagine alternative trajectories, identify unexpected connections, and question the values shaping tomorrow’s professions. The workshop is intentionally low-tech and discussion-based to privilege collective reflection, accessibility, and direct engagement over individualised or screen-based interaction. Displaying and discussing the produced materials in a shared space is essential, as collective review is central to the workshop methodology.

The workshop is designed as a 90-minute session for up to 30 participants. Attendees will work on printed canvases provided by the facilitators. These canvases will guide participants in articulating future-oriented job profiles in response to the chosen scenarios and prompts, while helping them structure and share their contributions within a common format.

A projector is required. No digital tools are needed. Desks for group work and a blackboard or wall to display outputs are required. Participants should bring their own pens.

The workshop is structured around the following phases:

Introduction (10 min)

Overview of the workshop's framing and objectives. Participants are introduced to the speculative exercise and the 2040 Career Guidebook as the shared artefact through which future job roles are articulated and discussed.

Review of forces and scenario alignment (20 min)

Participants are introduced to socio-technological and ecological forces. Working in small groups, they review proposed what-if scenarios and consider how these configurations might reframe work, professional roles, and their broader implications.

Creating future job description (20 min)

Participants select one scenario and build a generative prompt to guide the development of a fictional profession. Using the workshop canvases, they articulate their future job roles as entries for the guidebook, outlining role, skills, tools, and operating context.

Sharing & reflection (30 min)

Participants present their guidebook entries. The resulting collection of fictional professions becomes a shared artefact through which participants reflect on professional identities, systemic tensions, and alternative narratives about the future of work.

Closing & takeaways (10 min)

The facilitators synthesise key insights from the workshop and invite participants to reflect critically on jobs, skills, and technological change.

References

Auger, J. (2013). Speculative design: Crafting the speculation. Digital Creativity, 24(1), 11–35. https://doi.org/10.1080/14626268.2013.767276

Bleecker, J., Foster, N., Girardin, F., & Nova, N. (2022). The manual of design fiction. Near-Future Laboratory.

Challapally, A., Pease, C., Raskar, R., & Chari, P. (2025). State of AI in Business 2025: The GenAI Divide (Report). MIT NANDA. https://www.artificialintelligence-news.com/wp-content/uploads/2025/08/ai_report_2025.pdf

Gerlich, M. (2025). AI tools in society: Impacts on cognitive offloading and the future of critical thinking. Societies, 15(1), 6. https://doi.org/10.3390/soc15010006

Graeber, D. (2018). Bullshit jobs: A theory. Penguin Books.

Ingold, T. (2023). The rise and fall of generation now. Polity Press.

Jameson, F. (2020). Archaeologies of the future: The desire called utopia and other science fictions. Verso.

Merchant, B. (2023). Blood in the machine: The origins of the rebellion against big tech. Little, Brown.

Miller, R. (Ed.). (2018). Transforming the future: Anticipation in the 21st century. Taylor & Francis.

Niederhoffer, K., Rosen Kellerman, G., Lee, A., Liebscher, A., Rapuano, K., & Hancock, J. T. (2025, September 22). AI-generated “workslop” is destroying productivity. Harvard Business Review. https://hbr.org/2025/09/ai-generated-workslop-is-destroying-productivity

Samarajiva, I. (2025, September 25). The technological generation gap. indi.ca. https://indi.ca/the-technological-generation-gap/

Tharp, B. M., & Tharp, S. M. (2019). Discursive design: Critical, speculative, and alternative things. MIT Press.

Yee, L., Madgavkar, A., Smit, S., Krivkovich, A., Chui, M., Ramírez, M. J., & Castresana, D. (2025, November 25). Agents, robots, and us: Skill partnerships in the age of AI (McKinsey Global Institute Report). McKinsey & Company. https://www.mckinsey.com/mgi/our-research/agents-robots-and-us-skill-partnerships-in-the-age-of-ai

Train the TrAIner. What if Agentic AI enters the learning scene?

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Keywords: multi-agent learning; scenotypes; anticipatory pedagogies; human–AI knowledge reconfiguration

An experiment from EXTRA, the Wicked Problem Factory of Advanced Design Unit, University of Bologna

As artificial intelligence becomes agentic, i.e. capable of initiative, reflection, and relational learning, the architecture of education begins to mutate. The classroom no longer functions as a human enclave but as an ecology of interacting intelligences, where agency, memory, and both tacit and explicit forms of knowledge are shared across biological and computational entities.

At this moment of “reshuffle” (Choudary, 2025), education risks losing its transformative function, similar to the one Jacques Attali (2025) refers to when he considers it capable of helping individuals “become themselves, be active citizens of humanity”, by fostering “sincerity, curiosity, motivation, a propensity for reasoning, creativity, art, and critical thinking”. A typical anthropocentric bias has long led us to consider these competencies as sheltered from any form of automation or technological competition, as if understanding, creativity, and consciousness represented an exclusive and impregnable territory. However, more recent studies (De Caro, Giovanola, 2025) now challenge this assumption, showing how even domains traditionally considered distinctive of human intelligence are increasingly being traversed by artificial systems capable of simulating, supporting, and in some cases surpassing specific cognitive performances.

Recent research further complicates the role of AI in education by shifting attention from performance to interaction. As highlighted by Riedl and Weidmann (2025), the most significant advances do not lie in AI outperforming humans, but in human–AI synergy, where the value of intelligence emerges from collaboration rather than substitution. This perspective redefines what “skill” means in an AI-augmented world, emphasizing that learning outcomes increasingly depend on how effectively humans and AI systems co-evolve within shared cognitive environments and reinforcing the need to rethink education as the design of relational conditions in which different forms of intelligence can mutually enhance or destabilize one another. Furthermore, research on human–AI knowledge work identifies different modes of

interaction—cyborgs, centaurs, and self-automators—each implying distinct configurations of agency, responsibility, and expertise (Randazzo et al., 2025).

This radical reshuffling in the knowledge economy places all those involved in education in front of an urgent question: if even understanding, creativity, and consciousness can no longer be taken for granted as exclusive competitive advantages of human beings, what should education really focus on today?

The workshop “Train the TrAIner” stages this question as a live experiment. Developed within Design Extra, the Wicked Problem Factory created by the Advanced Design Unit of the University of Bologna, the session treats education as a design frontier, a space where human and artificial intelligences confront, contaminate, and reconfigure one another. Participants will be invited to reflect on a pivotal question: how can learning itself be redesigned when AI becomes a co-learner, co-teacher, and co-designer of learning paths?

As Design Extra aims to connect enterprises, designers, students, and territories through a distinctive learning paradigm, Futures as a Service (FaaS), its theoretical core lies in the concept of the Sextuple Helix, an evolution of the “Quintuple Helix” of innovation expanded by the inclusion of agentic AI. This additional helix reframes innovation and learning as multi-agentic ecologies, in which human, institutional, and algorithmic intelligences co-produce knowledge, meaning, and value.

In this workshop, participants will enter this ecology and prototype possible futures of learning.

Through speculative design methods and collective foresight tools, we will explore what forms of teaching, authorship, and responsibility emerge when AI becomes a learner, mentor, and epistemic partner.

Rather than demonstrating a technology, the Train the TrAIner workshop proposes a collective inquiry into the temporal, ethical, and cognitive implications of co-learning with AI. Participants will reflect on pedagogical temporalities when the immediacy of algorithmic feedback coexist with the slowness of human reflection and teaching paradigms shift when what we teach also learns and learns faster than we do.

The workshop is structured as a participatory and co-creative inquiry designed to make participants actively engage with the conditions under which future learning configurations may emerge. Rather than applying predefined anticipatory methods, participants are invited into a guided yet open-ended process in which different dimensions of human–AI learning ecologies are progressively articulated and recomposed. At the core of the experience lies a generative system of “conceptual devices” having the form of cards: archetypes, which embody distinct epistemic attitudes toward the evolution of human–machine learning; pretotypes, understood as minimal features,

processes, or tools that operationalize specific modes of interaction; learnotypes, which describe the emergent logic and goals of learning; placeotypes, which define the situated context (organizational, institutional, socio-technical) within which the learning challenge is set. These elements do not function as isolated categories but as interdependent components that, when assembled, give shape to situated configurations called scenotypes that articulate plausible, visionary and coherent scenarios of anticipatory learning.

Thanks to this structured composition, participants are asked to construct and interrogate concrete learning systems, making explicit the assumptions, tensions, and implications embedded within them. The process is further activated through exchanges between groups, where scenarios are reinterpreted, transformed, and stress-tested by others, introducing discontinuities and alternative readings. In this way, the workshop operates as a distributed design inquiry in which futures are continuously challenged, negotiated, contested, reformulated. By mobilizing this layered interplay between Archetypes, Pretotypes, Learnotypes, and Scenotypes, the session aims to surface how agency, authorship, and responsibility are reconfigured in emerging educational ecologies, while maintaining a level of openness that allows unexpected configurations and the related consequences to emerge.

Through the exploration of the Design Extra model, this workshop seeks to test and expose it as a living lab for anticipatory learning design, where the emergence of agentic AI is not a mere disruption but a condition to be critically, creatively, and collectively interpreted and inhabited.

References

Attali, J. (2025). Conoscenza o barbarie. Storia e futuro dell'educazione. Fazi Editore

Choudary, S. P. (2025). Reshuffle. Who wins when AI restacks the knowledge economy. Independently published

De Caro, M., Giovanola, B. (2025). Intelligenze. Etica e politica dell'IA. Mulino

Randazzo, S., Lifshitz-Assaf, H., Kellogg, K., Dell'Acqua, F., Mollick, E. R., Candelon, F., & Lakhani, K. R. (2025). Cyborgs, centaurs and self-automators: The three modes of human–GenAI knowledge work and their implications for skilling and the future of expertise. SSRN. https://doi.org/10.2139/ssrn.4921696

Riedl, C., & Weidmann, B. (2025). Quantifying human–AI synergy. OSF Preprints. https://osf.io/preprints/psyarxiv/vbkmt_v1

Troubling Futures with InspAIr: An Experiential Workshop with AI Critical Inquisitors

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Keywords: speculative design, GPTs, critical pedagogy, InspAIr, secondary school

In a world where digital technologies increasingly shape social, cultural, and environmental dynamics, the capacity to interrogate technological futures critically and imaginatively becomes essential—not only for young people in schools but for all those engaged in anticipatory practice, and in ways that recognise the relational, multispecies, and more-than-human entanglements through which futures emerge. This workshop introduces an experiential fragment of InspAIr, an educational laboratory currently being piloted in secondary schools across Italy, designed to cultivate a culture of critical digital innovation among secondary students and teachers, foregrounding the non-neutral, situated, and power-laden nature of technological development. Building on tools from speculative design, critical pedagogy, and feminist theories, InspAIr helps participants imagine technological futures while simultaneously learning to unmask the power relations, environmental implications, and socio-political asymmetries embedded in those futures. The approach is grounded in the belief, supported by early iterations of the program, that schools can become cultural ecosystems where futures are collectively imagined, shaped, and critically questioned in relation with the human and more-than-human world.

For Anticipation 2026, we propose a 90-minute workshop for a maximum of 30 participants that recreates one of the most distinctive components of InspAIr: an exercise in which participants create future scenarios and engage with a constellation of custom-built GPT agents acting as critical inquisitors. These agents have been intentionally trained and fine-tuned on intersectionality, environmental justice theories, critical AI studies, and emancipatory pedagogical perspectives. Their role is not to provide answers, but to destabilize assumptions, unsettle human-centred imaginaries, and surface hidden biases within the futures imagined by humans, revealing the interdependencies that shape technological, ecological, and social change. In the school laboratories, this activity enables students to uncover implicit power structures, inequities, and epistemic blindspots that permeate their technological imaginaries, whether about AI, robotics, or broader socio-technical transformations. In the context of this conference, the same activity becomes an opportunity to test and refine an anticipatory methodology

designed specifically to stimulate relational, affective, and critical capacities for working with the future.

The workshop will begin with a short introduction to the conceptual foundations of InspAIr: how speculative design can be used in secondary school classrooms to activate imagination and critical thinking; how students learn to construct future scenarios that move beyond linear narratives of progress or enhancement; and how the educational process shifts when young people are invited not only to design futures but to subject those futures to ethical, political, ecological, and multispecies scrutiny. Drawing from the structure of the school-based laboratories, where activities unfold through inspiration, exploration, and representation phases, participants will experience a condensed and reimagined version focused on the interaction with the critical inquisitors GPTs.

The core activity invites participants, in small groups, to generate a brief scenario involving digital technologies in 2056. Once a scenario is drafted, groups will submit it to one or more of the four critical inquisitor GPTs. Each inquisitor embodies a specific critical lens: intersectional, environmental, emancipatory, or attentive to relations of surveillance and technological determinism. Their responses do not aim to correct the scenario or impose alternative futures; instead, they raise questions, challenge assumptions, and reveal layers of complexity that young people often ignore.

Participants will then engage in a reflective dialogue where they discuss how the inquisitors reframed their scenarios, what forms of uncertainty or discomfort emerged, and how the process shifted their understanding of anticipatory work. This moment demonstrates that futures literacy is not only about envisioning possibilities but also about cultivating the ability to interrogate futures, confront power, and remain open to relational and ethical complexity. By surfacing tensions, contradictions, and situated experiences, the activity echoes the larger aims of InspAIr: to empower learners to frame problems critically, identify oppressive dynamics hidden within technological imaginaries, and reclaim the future as a domain of collective agency rather than passive adaptation.

The workshop will close with a collective discussion on methodological implications. Participants will be invited to share their impressions, critique the method, and propose alternative or expanded uses.

This workshop speaks directly to the conference themes, particularly Temporalities in Tension, Critical Capacities and Futures Literacy, Embodying and Sensing Futures, and Futuring by Designing. It explores how futures are felt, contested, co-constructed, and entangled across human and more-than-human actors; how power circulates through technological imaginaries; and how speculative and anticipatory practices can foster ethical, relational, and imaginative capacities. By inviting participants into an experiential, playful, and intellectually demanding encounter with the critical inquisitors, the workshop

offers a space to reflect on the role of anticipation in education and society. It proposes a method that merges affect, imagination, and critique, demonstrating how AI, embedded in a speculative and relational process, can be mobilized not as a predictive oracle but as a situated provocateur, one that enables humans to confront their assumptions and imagine futures that are more equitable, attentive, and alive to the complexities of technological and ecological change.

Worldbuilding Futures: Applying African Speculative Fiction to Research, Policy, and Anticipatory Governance

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Keywords: applied speculative fiction, futures literacy, anticipatory governance, narrative futures, worldbuilding, scenario exploration, critical futures, participatory futures, climate justice, ai and data governance, african futures, decolonising futures, open-access toolkit, futures education

Speculative cultures, such as science fiction, games, film, and narrative design, are increasingly used in the Global North as applied tools within futures studies, risk analysis, scenario modelling, prototyping (including diegetic fiction), and anticipatory governance. These approaches are valued not only for their capacity to imagine alternative futures, but also for their ability to surface uncertainty, interrogate assumptions, and reveal the ethical, emotional, and cultural dimensions of research and policy decisions. Within higher education and research contexts, Applied Science Fiction has emerged as a growing field that supports critical thinking, expands imaginaries, enhances science communication, and enables more inclusive and reflexive innovation practices.

Yet African speculative cultures remain largely marginal within these applied futures methodologies. When they do appear, they are often framed as cultural artefacts or illustrative examples rather than engaged as epistemic tools capable of shaping research agendas, governance models, and anticipatory practice. Most networks linking writers, scientists, policymakers, and foresight practitioners are concentrated in the Global North, with limited and uneven connections to African institutions. This imbalance risks reproducing externally authored futures that insufficiently reflect African socio-ecological realities, cultural logics, and knowledge systems.

This workshop introduces the Applied African SF program (appliedafricansf.com) as a practice-led, participatory methodology for anticipatory governance and futures work grounded in African perspectives. The project started as a collaboration between The African Speculative Fiction Society (ASFS), Imperial College London, the University of Nairobi, Vector magazine (vector-bsfa.com), and the International Black Speculative Writing Festival and brings African writers, scientists, and researchers into structured

collaboration. Through commissioned writing, interdisciplinary workshops, and applied teaching, the project explores how speculative narrative can be used to interrogate research cultures, derisk policy design, and imagine futures that are grounded in diverse histories and values, culturally situated, and socially responsive.

The proposed Anticipation workshop builds on the project's experience of delivering workshops in several countries and different settings, most recently at the University of Lagos. It is designed as a co-facilitated, participatory session that combines short provocations, guided group work, and creative reflection. Participants will not be passive listeners, but active contributors, engaging directly with speculative texts and foresight methodologies.

The workshop is structured around two complementary applied approaches:

1. Scientific Worldbuilding: Participants will explore how speculative fiction can be used as a structured worldbuilding practice that integrates scientific research, cultural context, and narrative design. Working in facilitated groups, participants will engage with short fiction addressing themes such as climate justice, AI and data governance, urbanisation, conservation, health systems, energy transition, and extractive economies. The stories from our Applied African SF Toolkit are used not to predict the future, but to test assumptions, imagine consequences, and explore how scientific ideas intersect with lived experience.
2. Derisking Research Through Fiction: In the second phase, participants will use fiction as a tool to examine risk, uncertainty, and power within research and policy frameworks. Through guided prompts, groups will analyse how narratives can reveal blind spots in modelling, expose ethical tensions, and surface questions around equity, representation, and unintended harm. This approach demonstrates how speculative fiction can support anticipatory governance by enabling researchers and policymakers to explore "what if?" questions in a safe but critical space before real-world implementation.

Central to the workshop is a demonstration of the Applied African SF Online Toolkit, which will launch publicly in June 2026. The toolkit consolidates the project's methodologies into an open-access digital resource, bringing together African speculative fiction texts, short lectures, facilitation guides, and thematic discussion frameworks. During the session, facilitators will showcase the toolkit's structure and walk participants through specific use cases, illustrating how it can be applied within higher education, research design, policy workshops, and foresight exercises. Participants will be invited to engage with the toolkit directly and to provide feedback on its usability, adaptability, and relevance to anticipatory practice.

By foregrounding African speculative fiction as an applied methodology rather than a representational add-on, the workshop challenges extractive models of futures thinking and advocates for more plural, culturally grounded approaches to anticipation. African speculative narratives bring distinctive contributions to futures work through their engagement with non-linear temporalities, relational ontologies, postcolonial critique, and deep entanglements between technology, ecology, and society.

Participants will leave the workshop with practical experience using speculative fiction as an anticipatory and analytical tool; frameworks adaptable to research, policy analysis, and teaching; insight into how African speculative cultures can enrich global futures practice; and familiarity with the Toolkit and confidence in applying it on their own.

Ultimately, the workshop argues that no coherent discussion of world futures can be meaningfully anticipated without African imaginations as part of the process. Applied African SF offers not only new stories, but new methods, expanding who gets to imagine the future, how those futures are explored, and whose knowledge shapes anticipatory governance.

Anticipation 2026

6th International Conference

BOOK OF ABSTRACTS

PhD School

POLITECNICO MILANO 1863 | DIPARTIMENTO DI DESIGN | POLI.DESIGN

PhD Summer School

The PhD Summer School ahead of the Anticipation Conference 2026 is organised to give doctoral students and early-career researchers an opportunity to collectively explore paradoxes and challenges in their research.

During the Summer School participants will be introduced to the use of *design games* in research; a design-based method of inquiry which affords experimental and playful ways of engaging with seemingly irresolvable complexities and dilemmas related to anticipatory practices. Literally trying to embrace the ambition of the call: *Designing within Paradox.*

After the Summer School, the doctoral students will be given the opportunity to share their design games with delegates at the main Anticipation Conference. In this way, space is created for continuous dialogues and exchange of knowledge with scholars and practitioners, with a common interest in anticipation and futures studies.

We would like to express our gratitude to Ted Fuller, John Carney, Sirkka Heinonen, Riel Miller and Lucy Kimbell for accepting our invitation to give inspirational talks, create moments of provocations and feedback – and to act as our expert guest players. Also, the planning and hosting of the Summer School at Politecnico di Milano, would not have been possible without the invaluable collaboration with Manuela Celi, Marzia Mortati and Victoria Rodriguez Schon.

We look forward to welcome 30 doctoral students, who submitted their abstract, as an introduction to their research, which can be found in this booklet.

Thomas Markussen and Eva Knutz

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Academic-policy engagement as expansive anticipatory practices

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Keywords: academic-policy engagement; long-termism; anticipatory practices; future-resilient governance; intertemporal dilemmas

My doctoral research project is exploring how academic-policy engagement (APE) can support policymaking for long-term societal challenges. By focusing on long-termism in policymaking and how it might be supported through APE, this project brings together two underexplored areas – temporal dimension of policy choices and APE. APE can be understood as a set of practices which include different modes of partnership and exchange between academic research and education, and public policy activities of agenda setting and policy development. However, as an emerging field, APE remains under-theorised as new activity is outpacing the research capacity to conceptualise it (Hopkins et al., 2021; MacKillop, Quarmby and Downe, 2020). This is compounded by the fact that different terminology is used across the APE-related literature including science advice, knowledge brokering, knowledge exchange, knowledge transfer, boundary work, translation (Oliver et al. 2022; Gluckman, Bardley and Kaiser, 2021).

The project speaks to a pressing policy and research need, particularly considering increasing calls for anticipatory and future-resilient governance and intergenerational equity (UNDP, 2023; UNDDR, 2022; Abdillah et al., 2025). In this context, APE is explored as one of the mechanisms through which anticipatory capacities might be cultivated within democratic institutions. This reframes APE not just as knowledge transfer but as a set of practices for collective futures-making.

This work is engaging with a key challenge of adopting a long-term approach in decision-making, i.e. managing intertemporal dilemmas or trade-offs between taking actions which maximise social welfare in the present and investing in the future (Jacobs, 2016). This is amplified by the fact that there is a number of driving factors which promote the prioritisation of short-term net policy benefits over longer-term ones, pointing to different dimensions of institutional unfitness in democratic systems in relation solving long-term problems. These include electoral cycles, political influence of interest groups and the absence of representation of future generations in the current political decision-making process (Ogami, 2024). Political short-termism however risks undermining effective management of long-term, complex policy challenges by delaying

meaningful action, which can in turn exacerbate those issues and erode trust in democratic institutions and intergenerational reciprocity (Howe, 2022; Fisher, 2023; Improta and Mannoni, 2024; Sangha, 2025).

My research is exploring how APE could help policymakers dwell productively on the tensions and trade-off between present near-term benefit and future investment rather than default to short-term logics. Within this, a key focus area of my research is whether APE offers pathways to address the institutional lag between existing governance tools and long problems.

As an embedded researcher in the UCL Policy Impact Unit, my work is the primary locus for my data collection. Taking a mixed-methods approach underpinned by action research principles, the methodology used for the investigation includes interviews with key stakeholders from the UK and international APE ecosystem, a series of workshops as well as testing and evaluating both established and innovative APE approaches. Some of the APE approaches I will be evaluating are informed by 'Futures studies' methodologies, which support with identifying long-term challenges shaping the future development of a policy area and exploring their implications for policy development.

This work is expected to make a conceptual contribution at the intersection of long-term societal problems and APE as well as an empirical contribution to the nascent area of APE by assessing the mechanisms, conditions and dynamics of APE and its potential impact in relation to long-termism in policymaking.

The provocation I would propose for debate during the school is: Can academic-policy engagement cultivate the anticipatory capacities that democratic institutions currently lack, or does it merely reproduce existing short-term logics?

References

Abdillah, A., Widianingsih, I., Buchari, R. A., & Nurasa, H. (2025). Resilience governance: A concepts analysis and research synthesis. Discover Environment, 3(1), 50. https://doi.org/10.1007/s44274-025-00229-3

Fisher, R. (2023). The Long View. Wildfire.

Gluckman, P. D., Bardsley, A., & Kaiser, M. (2021). Brokerage at the science–policy interface: From conceptual framework to practical guidance. Humanities and Social Sciences Communications, 8(1), 84. https://doi.org/10.1057/s41599-021-00756-3

Hopkins, A., Oliver, K., Boaz, A., Guillot-Wright, S., & Cairney, P. (2021). Are research-policy engagement activities informed by policy theory and evidence? 7 challenges to the UK impact agenda. Policy Design and Practice, 4(3), 341–356. https://doi.org/10.1080/25741292.2021.1921373

Howe, S. (2022). Future Perfect: Integrating Long-term Thinking into Public Policy. IISD SDG Knowledge Hub. https://sdg.iisd.org/commentary/guest-articles/future-perfect-integrating-long-term-thinking-into-public-policy/

Improta, M., & Mannoni, E. (2025). Government short-termism and the management of global challenges. The British Journal of Politics and International Relations, 27(2), 612–627. https://doi.org/10.1177/13691481241280172

Jacobs, A. M. (2016). Policy Making for the Long Term in Advanced Democracies. Annual Review of Political Science, 19(Volume 19, 2016), 433–454. https://doi.org/10.1146/annurev-polisci-110813-034103

MacKillop, E., Quarmby, S., & Downe, J. (2020). Does knowledge brokering facilitate evidence-based policy? A review of existing knowledge and an agenda for future research. Policy & Politics, 48(2), 335–353. https://doi.org/10.1332/030557319X15740848311069

Ogami, M. (2024). The Conditionality of Political Short-Termism: A Review of Empirical and Experimental Studies. Politics and Governance, 12(0). https://doi.org/10.17645/pag.7764

Oliver, K., Hopkins, A., Boaz, A., Guillot-Wright, S., & Cairney, P. (2022). What works to promote research-policy engagement? Evidence & Policy, 18(4), 691–713. https://doi.org/10.1332/174426421X16420918447616

Sangha, A. (2025). Mission to the Future. How and why UK politics must embrace long-termism. Fairness Foundation. https://files.fairnessfoundation.com/mission-to-the-future.pdf

UNDDR. (2022). Global Assessment Report on Disaster Risk Reduction 2022: Our World at Risk: Transforming Governance for a Resilient Future (9789212320281). https://www.undrr.org/gar/gar2022-our-world-risk-gar

UNDP. (2023). Choosing Your Tomorrows: Using Foresight and Anticipatory Governance to Explore Multiple Futures in Support of Risk-Informed Development. https://www.undp.org/publications/dfs-choosing-your-tomorrows-using-foresight-and-anticipatory-governance-explore-multiple-futures-support-risk-informed-development

Activating participatory embodied futuring: practices and institutional conditions for Just Climate Transitions

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Keywords: participatory futuring processes; anticipation studies; embodiment; resonance; just climate transitions

This PhD, conducted within the Marie Skłodowska-Curie CoDesign4Transitions network, situates its investigation into Participatory Futuring Processes (PFPs) for collective learning – collaborative approaches that aim not only to inform policy but to cultivate collective intelligence and anticipatory capacities (Neuhoff et al., 2023). Positioned within Anticipation Studies (Poli, 2017), the research shifts attention from predicting futures to understanding how people sense, interpret and navigate uncertainty amid growing conditions of futurelessness (Tutton, 2023) and systemic defuturing (Fry, 2018).

Within this landscape, the project examines a core paradox: although PFPs are acknowledged to be crucial in supporting just climate transitions by creating spaces for relational, plural futures and collective intelligence generation, the ways in which these processes are typically designed, facilitated and managed often undermine these very aims (Akavarapu, 2025; Barendregt et al., 2024; Neuhoff et al., 2023). Short timeframes, expert-driven structures and a lack of continuity restrict how futures can be sensed, embodied and enacted. Instead of fostering openness and collective learning, they tend to generate participation fatigue and reinforce power dynamics, limiting participants' ability to imagine and navigate futures in situated and transformative ways (Miller, 2024). In other words, these processes promise collective transformation but they reproduce the very conditions that constrain it.

In approaching this paradox, the research adopts the lens of embodied futuring, exploring how PFPs might be reconfigured to cultivate resonant, relational and enduring forms of anticipation capable of responding to institutional unfitness in contemporary governance systems. To understand why embodied futuring is often inhibited, the project draws on Hartmut Rosa's concept of Resonance (2019), defined as a relational mode in which "subject and world meet and transform each other" (ibid., p. 298). Resonance stands in contrast to the systemic alienation of accelerated modernity (Rosa, 2013), which leaves little room for openness or relational depth. According to Rosa, resonance arises through openness, responsiveness, mutual transformation and an inherent unpredictability that prevents it from being engineered, only enabled. These

qualities offer a lens for examining how resonant—and dissonant—conditions emerge within PFPs and the institutional structures that design and sustain them.

Grounded in this framing, the research asks how can participatory and organisational practices be designed to enable resonant forms of collective anticipation within Participatory Futuring Processes (PFPs) — and what conditions enable these to stabilise as an ongoing institutional practice that supports just climate transitions? examining these questions across three levels: participatory moments, practitioner practices, and organisational arrangements.

Methodologically, the project unfolds through an initial inductive, qualitative exploratory phase, followed by abductive, mixed-methods Action Research cycles. The exploratory phase draws on interviews, observations, and interactive focus groups to investigate how practitioners working within democratic innovation and sustainability transitions perceive, experience and respond to resonance. At this early stage, resonance is defined as the participants' (and practitioners') attentive and receptive stance that enables flexible adaptation of the process structure. This phase is being conducted during my doctoral secondment at Democratic Society, a European nonprofit specialising in democratic innovation and participatory deliberative governance. The collaboration offers a situated opportunity to co-develop an "on-field" working definition of resonance alongside a provisional framework of enabling and constraining conditions and related observable indicators.

Expected outcomes include a map of practitioners' tacit strategies for fostering – or inadvertently inhibiting – resonance, and an initial set of design principles. These insights will refine the research questions into actionable prompts for the subsequent Action Research cycles, which will prototype and test practices, mediational formats and interventions in situ, iteratively generating and refining design principles and empirical insights into the conditions that foster resonance and their effects on collective learning and anticipation.

Overall, the research aligns with the Summer School theme by using resonance as a lens for "designing within paradox" in participatory and institutional settings shaped by deterministic, expert-driven and short-term futuring that neglects embodied and relational experience. While centred on PFPs for collective learning, the work extends to anticipatory governance by examining how resonant and dissonant conditions emerge within both participatory processes and the institutions that design and manage them. This perspective highlights tensions of institutional unfitness, ethical drift and fragmented capacities, calling for a move beyond instrumental participation toward relational, embodied and anticipatory conditions. It prompts critical questions: Can institutions built for control host practices grounded in openness? What forms of governance

emerge when unpredictability becomes a condition for learning? And what does resonance ask for institutions that privilege efficiency over relation?

References

Akavarapu, S. V. (2025). A systematic literature review furthering the participatory futures and governance debate to capacities. Futures, 173, 103670. https://doi.org/10.1016/j.futures.2025.103670

Barendregt, L., Bendor, R., & Van Eekelen, B. F. (2024). Public participation in futuring: A systematic literature review. Futures, 158, 103346. https://doi.org/10.1016/j.futures.2024.103346

Fry, T. (2018). Design futuring: Sustainability, ethics and new practice (English ed). Bloomsbury Visual Arts.

Miller. (2011). Futures Literacy—Embracing Complexity and Using the Future. Ethos, 10(10), 23–28. https://www.researchgate.net/publication/272739756_Futures_Literacy_-_Embracing_Complexity_and_Using_the_Future

Miller, R. (Ed.). (2018). Transforming the future: Anticipation in the 21st century. Routledge.

Miller, R. (2024). Liberating the human imagination: Futures literacy and the diversification of anticipation. In R. Poli (Ed.), Handbook of Futures Studies (pp. 117–130). Edward Elgar Publishing. https://doi.org/10.4337/9781035301607.00015

Neuhoff, R., Simeone, L., & Laursen, L. H. (2023). Forms of participatory futuring for urban sustainability: A systematic review. Futures, 154, 103268. https://doi.org/10.1016/j.futures.2023.103268

Poli, R. (2010). An introduction to the ontology of anticipation. Futures, 42(7), 769–776. https://doi.org/10.1016/j.futures.2010.04.028

Poli, R. (2017). Introduction to Anticipation Studies (Vol. 1). Springer International Publishing. https://doi.org/10.1007/978-3-319-63023-6

Rosa, H. (2013). Social Acceleration: A New Theory of Modernity. Columbia University Press. https://doi.org/10.7312/rosa14834

Rosa, H. (2019). Resonance: A sociology of our relationship to the world (J. C. Wagner, Trans.). Polity Press.

Tutton, R. (2023). The Sociology of Futurelessness. Sociology, 57(2), 438–453. https://doi.org/10.1177/00380385221122420

Anticipating Sustainable Futures: Personal Responsibility, Agency, and Trust in Uncertain Times

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Keywords: personal responsibility; agency; trust; sustainability; uncertainty

Sustainability has become a defining challenge of the twenty-first century, characterized by complexity and uncertainty that require shifts in mindsets, values, and behaviour (UNESCO, 2017). Despite increasing awareness, individual engagement with sustainability remains fragmented and often misaligned with long-term goals (Gifford, 2011; Johansson Sevä & Kulin, 2018). This persistent attitude–behaviour gap points to the need to better understand key psychological constructs that shape sustainable behaviour. This project focuses on three interrelated constructs – personal responsibility, agency, and trust – which influence individuals' moral orientation, perceived capacity to act, and confidence in others and institutions. The research aims to clarify how these constructs relate to one another and how they empirically connect to sustainability-related attitudes and behaviour.

The study is structured in two phases. The first phase conducts a conceptual analysis to define personal responsibility and examine its relationships with agency, trust, and related antecedents of responsible action in sustainability-related contexts. This phase results in a preliminary process model illustrating how individuals translate environmental awareness into behavioural engagement, which will be subsequently examined using secondary datasets to assess its empirical plausibility and refine its key constructs and relationships. Building on this foundation, the second phase employs a mixed-methods design. A large-scale survey will be used to further test these relationships within a representative sample in Estonia, complemented by focus groups that will support instrument development and the interpretation of findings.

The project is expected to generate several key contributions. First, it seeks to clarify and operationalise the key concepts of personal responsibility, agency, and trust within a coherent analytical framework for sustainability and post-growth transitions. Second, it examines how individuals attribute responsibility for sustainability outcomes across different social actors – including themselves, communities, governments, and other relevant stakeholders – within the Estonian context and the wider European Union. Third, it empirically investigates the relationships among personal responsibility, trust, perceived agency, and sustainable behaviours. Finally, it aims to translate these insights into actionable guidance for the design of learning environments, institutional

practices, and community initiatives that support the development of responsible, trusting, and agentic participation in sustainability-related practice.

This project aligns closely with the Summer School theme, by foregrounding the psychological and ethical conditions under which individuals act within sustainability transitions marked by uncertainty, blurred responsibility, and uneven institutional support (European Environment Agency, 2024; Jensen, Nielsen, & Russel, 2020). In many sustainability domains, public trust in political and expert institutions is fragile, and lower levels of institutional trust are associated with increased climate scepticism and resistance to climate policy (Huber, Greussing, & Eberl, 2022). Under such conditions, individuals are increasingly required to anticipate their roles, make normative judgments, and act in the absence of clear or consistent guidance (EEA, 2024). By examining how personal responsibility, agency, and trust are formed and interact in these contexts, the project highlights the human dimensions of anticipatory action, and sheds light on how individuals imagine future possibilities, decide what they ought to do, what they can do, and whom they can rely on shaping possible futures.

In light of these concerns, the project raises several critical questions: How does an individual's sense of personal responsibility influence their decisions, actions, and capacity to imagine themselves as agents within uncertain future scenarios? To what extent can anticipatory agency be maintained when trust in key institutional or collective actors is fragile, or when institutional signals about responsibility are ambiguous, inconsistent, or perceived as insufficient? How do individuals shift from automatic, habitual responses to more reflective and responsible forms of decision-making, and what role does personal responsibility play in enabling this shift?

References

European Environment Agency. (2024). Delivering justice in sustainability transitions. Policy Briefing. https://www.eea.europa.eu/publications/delivering-justice-in-sustainability-transitions

Gifford, R. (2011). The dragons of inaction: psychological barriers that limit climate change mitigation and adaptation. American psychologist, 66(4), 290.

Huber, R. A., Greussing, E., & Eberl, J. M. (2022). From populism to climate scepticism: the role of institutional trust and attitudes towards science. Environmental Politics, 31(7), 1115-1138.

Jensen, A., Nielsen, H. Ø., & Russel, D. (2020). Climate policy in a fragmented world—Transformative governance interactions at multiple levels. Sustainability, 12(23), 10017.

Johansson Sevä, I., & Kulin, J. (2018). A little more action, please: increasing the understanding about citizens' lack of commitment to protecting the environment in different national contexts. International Journal of Sociology, 48(4), 314-339.

Beyond Artefacts: Crafting Relationality in Design

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Keywords: research through design; relational making; traditional craft; material engagement; onto-epistemic design

This practice-based doctoral research explores how embodied engagement with traditional craft can challenge and reshape the ontological grounding of dominant design practice. The research emerges from my experience of practising industrial design in ways detached from the material, temporal, and ecological contexts of making. This reflects a contested disciplinary history shaped by onto-epistemological assumptions that have contributed to the interrelated crises we face today (Escobar, 2018). In contrast, place-based ways of making, characteristic of traditional craft, tell a different story—one of mutual interdependence between humans and their environments. They are shaped by relational conditions of making with materials, seasons, and local ecologies—attuned to their life cycles—dimensions that are often obscured in dominant design. Here, relationality is understood as a "foundational story of life" pointing to radical interdependence (Escobar et al., 2024, p. 6). I argue that revisiting these forms of making can help reorient design toward eco-socially attuned, futuring (Fry, 2020) pathways. Although relational approaches to design have been widely theorised, and craft has been examined as an embodied and situated mode of making, less attention has been paid to how sustained engagement with traditional craft might reconfigure the foundations of design practice.

The research is guided by the question: What kinds of design practices might emerge when the relational configuration of making, as encountered in traditional basketry, is enacted within contemporary design contexts? Basketry is chosen as a situated research field because of its direct connection to local eco-social conditions: it emerges in places where ecological dynamics support the growth of basketry plants and where alternative livelihoods were historically limited. At the same time, its relatively modest technical threshold—requiring only simple tools and limited workspace—makes it particularly accessible for sustained embodied learning. By focusing on traditional basketry in Croatia—specifically weaving with willow, corn husk, and bulrush—this research unfolds through three interconnected methodological strands: ethnography and autoethnography grounded in these practices, and research through design (RtD), which extends this inquiry into a different material and contextual setting.

Knowledge is approached phenomenologically—as arising through lived experience and sensory engagement. Ethnographic inquiry traces the relational configuration of making within traditional basketry by exploring how ecological conditions, materials, temporal rhythms, and socio-cultural practices intertwine in the craft process. Autoethnography extends this inquiry inward. Through sustained engagement with basketry weaving, as well as growing and foraging plants used for weaving, I seek to embody the relational configuration of making. Taken together, these insights inform a series of research through design (RtD) explorations that take place in my own urban context of practice.

The RtD explorations bring the relational configuration of basketry into dialogue with dominant assumptions within design practice. Within this paradigm, design has often been framed as “a search process that applies knowledge to addressing a specific problem” (Groth & Nimkulrat, 2024, p. 2), or, in regard to material production, as imposing “forms internal to the mind upon a material world” (Ingold, 2013, p. 21). In this research, the paradigm is reworked through a series of RtD explorations that do not aim to produce generalised theories or transferable models, but instead open up new ways of understanding and engaging with making in design. Along the way, a series of situated design artefacts are generated and reflected upon—not treated as data from which conclusions are extracted, but as traces of material engagements through which the inquiry unfolds and understanding gradually takes shape (Redström, 2021; Ingold, 2013; Gaver, 2012; Mäkelä, 2007).

From conversations and joint weaving sessions with knowledge bearers, to growing and foraging plants used for weaving, and experimenting with materials from my immediate surroundings—“fusing research and expression” (Schouwenberg, 2021, p. 13)—several questions emerge: How does designing change when it begins with encounters with locally available materials rather than predefined design resources? What happens when material harvesting becomes part of the design process? How does designing change when materials are approached as temporal processes rather than stable resources? What forms of governance might emerge when local craft practices are acknowledged as ecological authorities? What regulatory or policy frameworks might shift when material biographies are foregrounded in design?

This research seeks to contribute to an existing body of work that understands design as an onto-epistemic and relational practice. By exploring relational configurations of making—as encountered in traditional basketry—it considers how designing might be reconfigured from a conventional model of detached planning toward a situated, hands-on practice in which engagement with materials, temporalities, and environments enables new ways of perceiving and inhabiting relations that might otherwise remain unnoticed. In this way, the research opens up possibilities for alternative design practices and draws

attention to the relevance of local craft practices and knowledges in rethinking design.

This research connects to the Summer School theme—Designing within Paradox: Reconfiguring Governance in Times of Institutional Unfitness and Ethical Dislocation—through its focus on the ontological dimension of making: the nature of the relations we form through the practice of making, and how material outputs, such as artefacts, structures, and systems, shape us in turn (Willis, 2006). As Zahn and Walker (2019) suggest, engaging in craft practices through making, using, and appreciating material artefacts can prompt reflection on material culture and the relations they embody, fostering shifts in mindset, values, and worldviews that may, in turn, influence institutional frameworks and public policies. In this sense, bringing the relational configurations of craft into contemporary design practice opens up possibilities for alternative forms of eco-social attunement, with potential implications for governance.

Provocations:

How can we avoid romanticizing traditional practices while using them to shape the future of design?

How can we learn from traditional practices without instrumentalizing them?

What truths emerge only through embodied making—beyond cognition or representation?

What forms of resistance appear when design shifts from universal, market-driven solutions towards particular, locally embedded practices?

Is design's ecological and social unfitness partly a crisis of sensitivity—an inability to perceive, value, or engage with materials?

References

Escobar, A. (2018). Designs for the pluriverse: Radical interdependence, autonomy, and the making of worlds. Duke University Press.

Escobar, A., Osterweil, M., & Sharma, K. (2024). Relationality: An emergent politics of life beyond the human. Bloomsbury.

Fry, T. (2020). Defuturing: A new design philosophy. Bloomsbury.

Gaver, W. (2012). What should we expect from research through design? In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (pp. 937–946). Association for Computing Machinery. https://doi.org/10.1145/2207676.2208538

Groth, C., & Nimkulrat, N. (2024). Introduction: Making as reflecting through interaction with the material environment. In N. Nimkulrat & C. Groth (Eds.), Craft and design practice from an embodied perspective (pp. 1–12). Routledge.

Ingold, T. (2013). Making: Anthropology, archaeology, art and architecture. Routledge.

Mäkelä, M. (2007). Knowing through making: The role of the artefact in practice-led research. Knowledge, Technology & Policy, 20, 157–163. https://doi.org/10.1007/s12130-007-9028-2

Redström, J. (2021). Research through and through design. Artifact: Journal of Design Practice, 8(1–2), 16.1–16.19. https://doi.org/10.1386/art_00016_1

Schouwenberg, L., & Kaethler, M. (Eds.). (2021). The auto-ethnographic turn in design. Valiz.

Willis, A.-M. (2006). Ontological designing. Design Philosophy Papers, 4(2), 69–92. https://doi.org/10.2752/144871306X13966268131514

Zahn, J., & Walker, S. (2019). Craft as leverage for sustainable design transformation: A theoretical foundation. The Design Journal, 22(3), 483–503. https://doi.org/10.1080/14606925.2019.1613040

Co-creating secondhand fashion futures; an empirical study exploring the impact of collaborative future making

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Keywords: sustainable transitions; circular economy; future making; secondhand fashion; collaborative design

The New Apparel Industry (NAI) is responsible for 10% of global carbon emissions (EU, 2023) and reducing its impact will require radical systemic change across the entire fashion system (Fletcher and Tham, 2019; Textile Exchange, 2024; Circular Economy Foundation, 2024; Wrap, 2024). Most Sustainable Transition Plans (STR) for fashion highlight the Secondhand Apparel Market (SAM), as a route to reducing fashion's emissions (Wrap, 2021; McKinsey & Co, 2020; World Resources Institute, 2021; Buchel et al, 2022; Domenech et al, 2023; European Commission, 2023) but provide no cohesive vision of the SAM's future for stakeholders and consumers to anticipate and orientate towards.

The rationale linking the SAM with sustainability is that it increases the worn life of apparel thereby reducing new apparel consumption, but academic studies have found no evidence of this (Sweet, Aflaki & Stolder, 2019; Armstrong, & Park, 2020; Dalgaard Nielsen & Skjold, 2024). Paradoxically, by making the disposal of unwanted apparel easier, the SAM may be increasing overall apparel consumption (Mizrachi & Sharon, 2025; Le Zotte, 2017) and creating a self-reinforcing feedback loop (Meadows, 2008) where the NAI is reliant on the SAM providing an overflow for the overconsumption feeding its growth.

Directly connecting with 'Designing within Paradox' this real-life study will democratise futuring by involving SAM consumers in collaborating with experts and SAM practitioners to co-create desirable and sustainable futures for the SAM designed to support radical change in the fashion system. Addressing ethical dislocation, the focus on 'desirable' (Gumusay & Reinecke, 2024) and 'sustainable' (UN, 1987) futures is intended to forefront questions around values.

This research will contribute to debates in management research around the 'emancipatory' potential of 'future making' (Comi et al, 2025) and explore the connections between anticipation and action (Poli, 2019). As Wright (2025) points out, co-creating desirable futures only makes a difference if people bring

this ‘future into the present’ and research is needed to investigate the real-world impacts of collaborative future making.

Research Questions: How do circular fashion experts, practitioners and consumers currently view the SAM’s future, its potential contribution to sustainable transition plans and their agency in delivering this future? How might collaborative, future-focused and action-oriented design practices be developed to create an intervention that supports the transdisciplinary co-creation of desirable and sustainable futures for the SAM? What SAM futures are co-created through the interventions, and in what ways do these futures differ from the outcomes participants identified in RQ1? And, in what ways does participation in the co-creation of these futures lead the research participants to think differently about, or take actions to support, the SAM’s contribution to sustainable fashion transition plans in the present?

Methodology & Research Design: This exploratory, action-oriented, and interpretivist study is divided into iterative stages and utilises a mix of qualitative and creative methods to answer the research questions. Participants will include circular fashion experts, practitioners working within the SAM and consumers shopping from the SAM in the UK.

In contrast to management research, which lacks the foundations for studying futures (Gumusay & Reinecke, 2024), a future orientation is intrinsic to ‘designing’ (Celi & Morrison, 2019). Originally trained as a designer, I worked in the fashion industry for over 30 years, and this study will utilise my ‘design mindset’ (Mejia et al, 2023) to explore what management studies might learn from incorporating action-oriented collaborative design approaches to anticipating new futures.

The first stage comprises semi-structured scoping interviews exploring participants’ views on the SAM’s future and their own agency in contributing to this future. The data collected will be used to design, prototype, test, and facilitate a series of collaborative futuring interventions.

The co-created futures generated will be collated and shared with the participants. Then, one year later, follow-up qualitative interviews will explore how participation in the co-creation impacted their views on the future of, or their actions in relation to, the SAM. The final stage will be the evaluation of all the data collected and the creation of a framework for designing, facilitating and assessing the impact of collaborative future making interventions.

References

Armstrong, C.M.J. and Park, H., 2020. Online Clothing Resale: A Practice Theory Approach to Evaluate Sustainable Consumption Gains. Journal of Sustainability Research, 2 (2).

Buchel, S., et al., 2022. Disrupting the status quo: a sustainability transitions analysis of the fashion system. Sustainability : Science, Practice, & Policy, 18 (1), 231–246.

Celi, M. and Morrison, A., 2019, Anticipation and Design Inquiry. In: Anticipation and Design InquiryHandbook of Anticipation. Cham: Springer International Publishing, 2019, pp. 795–819.

Comi, A., Mosca, L. and Whyte, J., 2025. Future Making as Emancipatory Inquiry: A Value-Based Exploration of Desirable Futures. Journal of Management Studies, .

Dalgaard Nielsen, M. and Skjold, E., 2024. Does resale extend the use phase of garments? Exploring longevity on the fashion resale market. International Journal of Sustainable Fashion & Textiles, 3 (1), 29–48.

Domenech, T., et al., 2023. London's fashion footprint: An analysis of clothing material flows, emissions and levers for climate action in London. London UK: ReLondon.

Fletcher, K. and Tham, M., 2019. Earth Logic.

Gümüsay, A.A. and Reinecke, J., 2024. Imagining Desirable Futures: A call for prospective theorizing with speculative rigour. Organization Theory, 5 (1).

Meadows, D., 2008. Thinking in Systems : International Bestseller. Chelsea Green Publishing.

Mejía, G.M., et al., 2023. From researching to making futures: a design mindset for transdisciplinary collaboration. Interdisciplinary Science Reviews, 48 (1), 77–108.

Mizrachi, M.P. and Sharon, O., 2025. Secondhand fashion consumers exhibit fast fashion behaviors despite sustainability narratives. Scientific Reports, 15 (1), 34968–19

Poli, R., 2019, Introducing Anticipation. In: Introducing Anticipation Handbook of Anticipation. Cham: Springer International Publishing, 2019, pp. 3–16.

Sweet, S., Aflaki, R. and Stolder, M., 2019. The Swedish Market for pre-owned apparel and its role in moving the fashion industry towards more sustainable practices, Mistra Future Fashion. Available at (Accessed: 11 July 2023). Mistra Future Fashion.

Wright, A., 2025. Back to the Future? A Caution. Journal of Management Studies

Designing Across Disciplines: What Biodesign Education Reveals About the Governance of Hybrid Knowledge

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Keywords: biodesign education; interdisciplinary collaboration; educational governance; hybrid knowledge; supercomplexity

Biodesign, as an emerging design field operating at the intersection of design and the life sciences (Myers, 2012), is by definition dependent on crossing disciplinary boundaries. While interdisciplinary or even transdisciplinary collaboration is increasingly called for, traditional academic structures remain largely organised around these very boundaries. Departments, curricula, and assessment frameworks are built to serve disciplinary knowledge, and design education has struggled to adapt to the expanding, interdisciplinary nature of contemporary design practice (Wilson & Zamberlan, 2015). Barnett (2000) describes this tension between universities promoting interdisciplinary work while being structurally unprepared for it as a condition of supercomplexity: an age in which knowledge frameworks multiply and collide, yet institutional structures struggle to accommodate the resulting plurality. Ito (2016) further illustrates this gap by depicting existing disciplines as dots on a sheet of paper, with the empty white space in between representing antidisciplinary territory. This white space is exactly what hybrid disciplines like biodesign occupy, but at the same time it is the very space for which many traditional universities offer the least institutional support. As a practice that integrates designerly ways of knowing (Cross, 1982; Cross, 2006) with biological inquiry, biodesign generates knowledge that does not sit neatly within either design or natural science. The structures governing academic knowledge production therefore offer little space for such hybrid forms of knowledge.

This misalignment is further examined through the author's experience of designing and delivering two biodesign courses at Politecnico di Milano, both offered as extracurricular activities connected to the international student competition Biodesign Challenge, focused on designing with and for the marine ecosystem. The initial idea was to create a highly interdisciplinary learning environment where students from different disciplinary backgrounds could work together, enabling cross-pollination rather than parallel expertise. This, however, proved institutionally unachievable. Since Politecnico di Milano is a technical university without specialisation in the life sciences, recruiting mixed biology and design student teams was not possible, and cross-institutional

arrangements would have required funding and logistics beyond the scope of the course. As biodesign is not recognised in the standard curriculum, the course had to be offered with minimal credits, open to design students only.

In the first iteration, due to the requirement of not interfering with the standard design curriculum, the course was scheduled in a marginal evening time slot of one hour per week throughout the semester. Students had to invest substantial time outside the classroom, since biodesign requires engaging with many areas of knowledge. Access to a laboratory or workshop space was not available, and students conducted experiments at home. Knowledge support for the scientific side was equally limited, as teaching staff came solely from a design background. Informal conversations after the course consistently revealed that time and access to scientific knowledge were the main barriers to developing their projects.

In response to this feedback, the second edition was completely restructured as a flexible-hours, one-week hackathon at the start of the semester, supervised by a marine scientist and design researchers with interdisciplinary experience.

The shift from a weekly format to an intensive, co-taught structure, consistent with calls for more participatory and co-creative modes of design education (Sanders & Stappers, 2008), produced markedly different outcomes. Students were highly motivated, showing great commitment and autonomy. They remained in class whenever possible and worked long hours.

Projects demonstrated considerably stronger scientific grounding; the constant exchange with the marine scientist became embedded in the working process rather than remaining an aspiration. Following the course, the collaborating scientist reflected on the student outcomes from a scientific perspective with a notably positive attitude. One of the most valuable insights was that students opened solution-oriented perspectives that his own discipline's methodology, structured around research questions, data collection, and analysis rather than intervention, does not typically generate. He observed that marine science increasingly faces the question of "so what": there is perhaps a lack of concrete ideas for interventions to be developed from generated data. Design's way of knowing and its capacity to think toward solutions represents a genuinely valuable point of intersection. This resonates with a broader pattern in biodesign-science collaborations, where designers are often welcomed into scientific environments but positioned as service providers rather than epistemic partners (Bénony & Maudet, 2020), a pattern the hackathon format began to disrupt.

This course offers a glimpse into an effort to disrupt static educational curricula and formats. These preliminary findings suggest that hybrid models of knowledge and ways of teaching can serve as a successful approach to breaking disciplinary stigmas and working towards education's ability to adapt to

the age of supercomplexity. As of now, the knowledge generated from this course still sits uncomfortably within existing academic structures. The student projects are neither conventional design outcomes nor rigorous scientific contributions; they are hybrid modes of knowledge, drawing from both disciplines but belonging fully to neither. Finding appropriate venues to share these contributions beyond the Biodesign Challenge remains a challenge in itself. This is not a shortcoming of the work but a symptom of how academic knowledge is still governed: through disciplinary categories that cannot hold what interdisciplinary practice produces. Rather than framing this as institutional failure, this contribution proposes approaching the university itself as a site of design inquiry. If design thinking can address indeterminate problems across domains (Buchanan, 1992), then the governance structures of universities, the rules, cultures, and systems through which they organise knowledge, can themselves become objects of designerly investigation. Drawing on Dewey's (1938) understanding of inquiry as situated and experimental, it argues that educational governance needs to evolve from disciplinary containers toward adaptive frameworks capable of holding hybrid knowledge practices. Design, with its orientation toward navigating complexity and working productively with uncertainty, is well positioned to contribute to this reconfiguration, not by seeking validation within existing hierarchies, but by helping to imagine new ones.

References

Barnett, R. (2000). University knowledge in an age of supercomplexity. Higher Education, 40(4), 409–422. https://doi.org/10.1023/A:1004159513741

Bénony, M., & Maudet, N. (2020). From guests and guides to collaborators: Negotiating roles in design and biology collaborations. The Design Journal, 23(4), 493–513. https://doi.org/10.1080/14606925.2020.1762339

Buchanan, R. (1992). Wicked problems in design thinking. Design Issues, 8(2), 5–21.

Cross, N. (1982). Designerly ways of knowing. Design Studies, 3(4), 221–227.

Cross, N. (2006). Designerly ways of knowing. Springer.

Dewey, J. (1938). Logic: The theory of inquiry. Henry Holt and Company.

Ito, J. (2016). Design and science. Journal of Design and Science, 1(1). https://doi.org/10.21428/f4c68887

Myers, W. (2012). Bio design: Nature, science, creativity. Thames & Hudson.

Sanders, E. B.-N., & Stappers, P. J. (2008). Co-creation and the new landscapes of design. CoDesign, 4(1), 5–18. https://doi.org/10.1080/15710880701875068

Wilson, S. E., & Zamberlan, L. (2015). Design for an unknown future: Amplified roles for collaboration, new design knowledge, and creativity. Design Issues, 31(2), 3–15.

Designing Within Paradox: Community-Led Futures in Post-Conflict Northern Ireland

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Keywords: co-design; anticipatory governance; participatory action research; futures literacy; post-conflict contexts

My PhD research proposes that place-based co-design and participatory action research can function as forms of anticipatory governance in contexts marked by political instability, institutional distrust, and the ongoing legacies of conflict, where past and present remain entangled in everyday life. The study adopts an emergent and adaptive design, in which participatory engagement evolves differently across contexts while remaining grounded in relational and practice-based inquiry. Anticipatory governance is understood here as emerging through participatory and imaginative practices that inform present-day decision-making. Developed through two case studies on Rathlin Island and in the Greater Shankill area of Belfast, the project examines how visual, embodied, and participatory methods illuminate alternative pathways for governance.

Northern Ireland provides a compelling context for examining institutional unfitness - moments when governance systems become unable to respond to social needs or sustain public confidence. Here, peace is not experienced as a fixed endpoint but as an ongoing negotiation shaping everyday life and future-oriented thinking. This is reflected in the systemic instability and recurrent collapse of its power-sharing institutions (Carmichael & Knox, 2025; Haughey & Loughran, 2023; Birrell & Gormley-Heenan, 2015).

Anticipatory governance refers to the ways futures thinking, imagination, and participatory practices inform present-day decision-making (Guston, 2014; Kimbell & Vesnić-Alujević, 2020). In this research, it is understood as an emergent, community-led process shaped through co-design in contexts of institutional instability.

The first case study focuses on Rathlin Island, Northern Ireland's only inhabited offshore island, and forms part of the AHRC-funded Future Island-Island project (Kimbell et al., 2025). It offers a longitudinal example of community-led anticipation. The study began as a retrospective, participatory exploration of an existing civic design history centred on visual minutes (graphic recordings), examining how participatory and visual methods were embedded within a specific local context. Sustained relational engagement led to collaborative interpretation and the co-creation of new representational outputs, including a

visual timeline shaped by community preferences. Although this did not constitute a formally facilitated PAR cycle, it involved meaningful participation in how experiences were interpreted and carried forward.

Narrative and thematic analysis helped illuminate how creative tools and visual documentation function as governance infrastructures, making collective knowledge visible and strengthening community voice. They also reveal how community collaboration evolved into co-production with government and wider partnerships over time, echoing arguments about community-driven governance infrastructures (Kimbell et al., 2025). The case also highlights the importance of 'islandness' - place-based identity, interconnectedness, and shared stewardship - in shaping how futures are imagined and enacted (Baldacchino, 2005).

The second case study, in the Shankill area of Belfast, engages a contrasting context: an urban loyalist community shaped by persistent social inequalities, intergenerational trauma, and mistrust of formal institutions. This practice-based PAR study involved iterative co-design workshops exploring possible futures.

Through sensory, relational, and creative practices, participants worked with paradox, holding tensions of pride and loss, memory and possibility, hope and scepticism - an approach that contributes to the development of futures literacy (Miller, 2018; Candy & Dunagan, 2017). Within this setting, these methods support participants to work with paradox: holding together the simultaneous pull of pride and loss, memory and possibility, hope and scepticism.

Rather than resolving these tensions, co-design creates space for them to be explored and sustained as part of anticipatory practice.

The Shankill case illustrates how anticipatory work unfolds where governance is both present and absent -felt in its effects yet often unstable or inaccessible as a mechanism for shaping long-term futures. A form of 'islandness' emerges here: participants described experiences of isolation, boundedness, and exclusion, shaping how futures are negotiated under conditions of constraint and disconnection (Kelman, 2023).

Together, the cases demonstrate how place-based contexts shape the ways communities engage with futures, and how participatory practices adapt to relational, social, and political conditions. Across both sites, visual, embodied, and creative methods make futures more accessible, experiential, and emotionally resonant.

In this research, co-design operates as a means of engaging with futures where formal governance is experienced as unstable, distant, or insufficient. Anticipatory practices are enacted through community-led, situated processes that enable collective reflection, imagination, and negotiation of possible futures. This positions co-design not simply as a method of participation, but as a way of engaging with governance itself, aligning with DiSalvo's (2022) framing

of design as democratic inquiry and participatory design scholarship that positions communities as active publics in shaping civic futures (Björgvinsson, Ehn & Hillgren, 2010).

Drawing on over two decades of community practice, my positionality is rooted in relational ethics, mutual trust, and recognition of community knowledge as expertise. The study is underpinned by trauma-informed and reflexive practice, recognising that anticipation in post-conflict places requires sensitivity to memory, identity, and lived experience (Dietkus, 2022).

By focusing on how communities navigate paradox and imagine futures amid institutional instability, this research contributes to Governance, Justice, and the Public while intersecting with Futures Literacy and Embodied Futures. It highlights how anticipatory practices can become forms of governance where formal systems remain fragile or unresponsive, and foregrounds ethical dislocation as a defining feature of post-conflict Northern Ireland. In this sense, community-led futures work becomes not only a creative process, but an ethical and political act.

These findings surface key tensions at the heart of designing within paradox in post-conflict contexts: How do communities imagine shared futures when unresolved histories remain present in everyday life? How can design hold conflicting truths without forcing premature consensus? Ultimately, the research argues that community-led anticipatory practices can serve as experimental sites of governance - spaces where alternative futures are imagined, rehearsed, contested, and made tangible through collective creativity.

References

Baldacchino, G. (2005). Islands - objects of representation. Geografiska Annaler: Series B, Human Geography, 87(4), 247–251.

Birrell, D., & Gormley-Heenan, C. (2015). Multi-level governance and Northern Ireland. Palgrave Macmillan.

Björgvinsson, E., Ehn, P., & Hillgren, P.-A. (2010). Participatory design and ""democratic innovation"". In Proceedings of the 11th Biennial Participatory Design Conference (pp. 41–50).

Candy, S., & Dunagan, J. (2017). Designing an experiential scenario: The people who vanished. Futures, 86, 136–153.

Carmichael, P., & Knox, C. (2025). Devolution in Northern Ireland—Grounds for optimism? Public Money & Management, 1–12.

Dietkus, R. (2022). The call for trauma-informed design research and practice. Design Management Review, 33(2), 26–31.

Escobar, A. (2018). Designs for the pluriverse: Radical interdependence, autonomy, and the making of worlds. Duke University Press.

Guston, D. (2014). Understanding ‘anticipatory governance.’ Social Studies of Science, 44(2), 218–242.

Haughey, S., & Loughran, T. (2023). Public opinion and consociationalism in Northern Ireland: Towards the ‘end stage’ of the power-sharing lifecycle? The British Journal of Politics and International Relations, 26(1), 187–207.

Kelman, I. (2023). The island as a political interstice. Political Geography, 107, 102977.

Kimbell, L., Morgan, B., Newell, K., Beattie, M., Dixon, B., Steel, G., Magee, J., Johnson, M., O’Connor, K., & Calderon, E. (2025). Sustainable futures through democratic design: Towards community-led democratic localism in Rathlin Island. Belfast School of Art, Ulster University.

Kimbell, L., & Vesnić-Alujević, L. (2020). After the toolkit: Anticipatory logics and the future of government. Policy Design and Practice, 3(2), 95–108.

Miller, R. (2018). Transforming the future: Anticipation in the 21st century. Routledge.

Ethics in Superposition: Designing Ethical Governance for Quantum Futures

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Keywords: quantum technologies; responsible innovation; design for values; value-sensitive design; ethics of technology

Though still in their infancy, the ethical foundations of quantum technologies (QT) are already being shaped by their innovation context, where geopolitical fragmentation and economic competitiveness predominate as guiding forces (Vermaas & Mans, 2024). These innovation dynamics inhabit – and are inhabited by – a widening constellation of paradoxes; i.e. East versus West, global versus national, openness versus secrecy. Besides describing the political economy of QT, these dichotomies also serve to actively perform it, narrowing the space of ethical possibility, while amplifying uncertainty about how the technology will unfold and what futures it will anchor. Crucially, these paradoxes expose the limits of existing ethical governance approaches, inviting the cultivation of new capacities for (re)imagining and (re)designing within uncertainty and ambiguity.

My PhD research investigates how QT's ethical tensions might be engaged through ethics-of-technology approaches – particularly Responsible Innovation (RI) and Design for Values (DfV) (Stilgoe et al., 2013; van den Hoven et al., 2015). Yet, emerging research suggests that these approaches, while valuable, tend to retain a latent desire for control and linear governance, often ignoring the socio-political situatedness of technological developments (Blok & Lemmens, 2015; Hagendorff, 2021; Rességuier & Rodrigues, 2020; Szymanski et al., 2021; Wang & Blok, 2025). Such tendencies sit uneasily with the deeply socio-political and epistemic entanglements of quantum innovation, with indeterminacy being a constitutive feature of their innovation landscape. As Coenen and colleagues (2022) note: "if quantum technologies are to be meaningfully disruptive, they should not be developed in ways that merely extend the status quo, uncritically reproducing prevailing social conditions and unsustainable values into the quantum future" (p.4).

An ethics of QT, therefore, cannot rely on stabilising imaginaries or prescriptive solutions; rather, it must evolve to stay with the entanglements, paradoxes, and uncertainties that shape their context (Haraway, 2016). My study aims to contribute to the cultivation of response-able and situated ethical practices (Barad, 2007; Haraway, 2016) that can accompany QT's development in ways that remain attentive to the plurality of possible worlds yet to emerge. To this

end, the research combines various forms of qualitative research, including foundational normative analysis, interviews, as well as document and discourse analysis. The project is interdisciplinary in nature, situated at the intersection of feminist STS, political philosophy, political economic theory, and international relations.

Building on a growing body of scholarship urging socio-politically situated approaches to technology ethics (Blok & Lemmens, 2015; Hagendorff, 2021; Rességuier & Rodrigues, 2020; Szymanski et al., 2021; Wang & Blok, 2025), emerging results gesture toward the need for a relational and multi-scalar sensibility in ethical quantum governance – one attentive to how tensions materialise and interact simultaneously across, and within, technologies, research practices, and broader geopolitical imaginaries. These initial insights, while evolving, form the early contours of an approach that seeks to navigate and design within a state of normative ambiguity.

References

Blok, V., & Lemmens, P. (2015). The emerging concept of responsible innovation: Three reasons why it is questionable and calls for a radical transformation of the concept of innovation. Responsible Innovation 2: Concepts, Approaches, and Applications, 19-35.

Coenen, C., Grinbaum, A., Grunwald, A., Milburn, C., & Vermaas, P. (2022). Quantum Technologies and Society: Towards a Different Spin. NanoEthics, 16(1), 1-6. https://doi.org/10.1007/s11569-021-00409-4

Hagendorff T (2021) Blind spots in AI ethics. AI and Ethics 2(4): 851-867.

Haraway, D. J. (2016). Staying with the trouble: Making kin in the Chthulucene. Duke University Press.

Rességuier, A., & Rodrigues, R. (2020). AI ethics should not remain toothless! A call to bring back the teeth of ethics. Big Data & Society, 7(2). https://doi.org/10.1177/2053951720942541

Stilgoe, J., Owen, R., & Macnaghten, P. (2013). Developing a framework for responsible innovation. Research Policy, 42(9), 1568-1580. https://doi.org/10.1016/j.respol.2013.05.008

Szymanski, E. A., Smith, R. D. J., & Calvert, J. (2021). Responsible research and innovation meets multispecies studies: why RRI needs to be a more-than-human exercise. Journal of Responsible Innovation, 8(2), 261–266. https://doi.org/10.1080/23299460.2021.1906040

Van den Hoven, J., Vermaas, P., & van de Poel, I. (Eds.). (2015). Design for Values. Springer.

Wang, H., & Blok, V. (2025). Why putting artificial intelligence ethics into practice is not enough: Towards a multi-level framework. Big Data & Society, 12(2). https://doi.org/10.1177/20539517251340620 (Original work published 2025)

Exploring relational, more-than-human futures: paradoxes of agency, human-nature relationships, and values in visions

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Keywords: more-than-human futures; nonhuman agency; human-nature relationships; visioning; transformative change

My PhD investigates how relational, more-than-human futures can be imagined, sensed, and governed in the Northern Netherlands. This research explores the paradox: ecosystems actively shape possibilities for human-nature relationships, yet governance structures often assume predictability and control, prioritizing human needs and constraining nonhuman agency. To explore this tension, I combine participatory, embodied, and speculative methods that surface human and nonhuman agency, plural values, and emergent governance possibilities. In this manner, I investigate how anticipatory practices engage with uncertainty, inhabit paradox, and enable relational, more-than-human futures that respect both human and nonhuman interests. I employ an integrated methodological visioning approach combining three complementary strands to explore relational, more-than-human futures (Barrineau et al., 2025; Granjou and Salazar, 2016) in the Northern Netherlands. In the Wadden, I developed an embodied, arts-based visioning approach including walking interviews (Evans and Jones, 2011), photo-elicitation (Orr et al., 2020), guided meditations (Neuhoff, 2023), and in-depth interviews (in review: Gietzelt et al., 2025c). Across the Wadden and Lauwers regions, I explored participants' plural and relational values of nature (Himes et al., 2024) underlying envisioned futures using visual-elicitation and interviews (manuscript in preparation: Gietzelt et al., 2025b). Building on these insights, I designed a speculative multispecies justice workshop (Celermajer et al., 2021, Tschakert et al., 2021) to co-create climate-resilient futures, centering nonhuman and future-human perspectives (in review: Gietzelt et al., 2025a). Together, these methods reveal how nonhuman agency shapes future possibilities, ground visions in plural ethical considerations, and explore anticipatory practices that integrate diverse interests.

This research reveals the paradoxes shaping relational, more-than-human futures. The first paradox centers on nonhuman agency. Embodied, arts-based visioning showed that the Wadden's dynamics actively shape human-nature futures, supporting research that identified futures as emerging from

multispecies entanglements (Barrineau et al., 2025; Cielemęcka and Daigle, 2019; Granjou and Salazar, 2016). However, governance (and anticipatory practice) remains largely anthropocentric, assuming predictability and focusing on human needs (Lauer et al., 2024). This creates a tension between what is possible or desirable from an ecological perspective and the institutions people use to plan, manage, and intervene in the landscape. The speculative workshop highlighted this tension, as participants grappled with imagining futures that could incorporate the perspectives of nonhuman and future-human actors alike. This paradox reveals the ethical, practical, and conceptual challenges of designing anticipatory practices that respect and respond to more-than-human futures.

A second paradox emerged from participant visions of future human-nature relationships: while current governance often emphasizes control, participants imagined adaptive, relational modes of coexistence that align with the Wadden's ecological rhythms. This connects to Groves (2017: 34-35) concept of 'abstract and empty' futures that flatten uncertainties into a single 'predictable trajectory', and 'lived futures' that preserve multiplicity and situated experience of the future. In the speculative workshop, a related tension emerged: centering nonhuman perspectives revealed the need to make space for nature, in conflict with human objectives for control, such as the expansion of sustainable energy systems. Across both strands, this paradox illustrates that coexistence with nature requires rethinking governance, balancing human needs with agency required by more-than-human actors.

References

Barrineau, S., Do, T., & Powell, N. (2025). Creating alternative future trajectories for carbon farming through a relational lens: Pathways towards transformative social-ecological change in the European Union. Ecosystems and People, 21(1), 2461535. https://doi.org/10.1080/26395916.2025.2461535

Celermajer, D., Sria, C., Cochrane, A., Fishel, S., Astrida, N., Anne, O., Reid, S., Krithika, S., Schlosberg, D., & Anik, W. (2020). Justice Through a Multispecies Lens. Contemporary Political Theory, 19(3), 475–512. https://doi.org/10.1057/s41296-020-00386-5

Cielemęcka, O., & Daigle, C. (2019). Posthuman Sustainability: An Ethos for our Anthropocenic Future. Theory, Culture & Society, 36(7–8), 67–87. https://doi.org/10.1177/0263276419873710

Evans, J., & Jones, P. (2011). The walking interview: Methodology, mobility and place. Applied Geography, 31(2), 849–858. https://doi.org/10.1016/j.apgeog.2010.09.005

Gietzelt, J.M., Lazurko, A., & Kok, K. (2025a). Encounters of empathetic imagining: embedding justice in envisioning positive futures. [Manuscript under review at Ecology and Society].

Gietzelt, J.M., Blankevoort, L., Tengo, M., Verschuuren, B., Kok, K. (2025b). What values underpin transformations of human-nature relations? Insights from envisioned futures in the Northern Netherlands. [Manuscript in preparation].

Gietzelt, J.M., Tengo, M., Verschuuren, B., & Kok, K. (2025c). Envisioning human-nature relationships in the Wadden: an embodied, arts-based approach for exploring relational, more-than-human futures. [Manuscript in preparation].

Granjou, C., & Salazar, J. F. (2016). Future. Environmental Humanities, 8(2), 240–244. https://doi.org/10.1215/22011919-3664342

Groves, C. (2017). Emptying the future: On the environmental politics of anticipation. Futures, 92, 29–38. https://doi.org/10.1016/j.futures.2016.06.003

Himes, A., Muraca, B., Anderson, C. B., Athayde, S., Beery, T., Cantú-Fernández, M., González-Jiménez, D., Gould, R. K., Hejnowicz, A. P., Kenter, J., Lenzi, D., Murali, R., Pascual, U., Raymond, C., Ring, A., Russo, K., Samakov, A., Stålhammar, S., Thorén, H., & Zent, E. (2024). Why nature matters: A systematic review of intrinsic, instrumental, and relational values. BioScience, 74(1), 25–43. https://doi.org/10.1093/biosci/biad109

Lauer, A., de Castro, C., & Carpintero, Ó. (2024). Between continuous presents and disruptive futures: Identifying the ideological backbones of global environmental scenarios. Futures, 163, 103460. https://doi.org/10.1016/j.futures.2024.103460

Neuhoff, R. (2023). Meditation-inspired Visioning: An Experiential Method to Envision the Future. Cubic Journal, 6, 116–119. https://doi.org/10.31182/cubic.2023.6.64

Orr, E. R., Ballantyne, M., Gonzalez, A., & Jack, S. M. (2020). Visual Elicitation: Methods for Enhancing the Quality and Depth of Interview Data in Applied Qualitative Health Research. Advances in Nursing Science, 43(3), 202. https://doi.org/10.1097/ANS.0000000000000321

Tschakert, P. (2022). More-than-human solidarity and multispecies justice in the climate crisis. Environmental Politics, 31(2), 277–296. https://doi.org/10.1080/09644016.2020.1853448

Facilitating future practices for just regenerative food transitions

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Keywords: sustainability transitions; regenerative agriculture; feminist participatory action research; participatory workshops

Situated within the doctoral network 'CoDesign4Transitions' that explores sustainability transitions through design, this PhD project investigates the bottom-up approaches to systemic change. The chosen topical lens is food as making the food system more local and regenerative is a keystone solution to many of today's crises (Hawken, 2021).

Sustainability transitions seek to bring an intentional approach to transforming our political, economic and social systems (Geels, 2019) while staying critical of the power dynamics (Loorbach et al., 2017) and the logic of prevailing capitalist paradigm (Wright, 2015). They operate amidst various paradoxes, such as the need for urgent environmental action conflicting with slow democratic processes (Loorbach, 2010), the push for continuous economic growth amidst ecological limits (Gaziulusoy and Houtbeckers, 2018) or wanting to achieve transformation from within the institutional lock-ins and path dependencies (Geels, 2019), to name but a few. While their systemic nature implies change across multiple levels and scales (Loorbach et al., 2017), the regenerative food growing practices are bottom-up initiatives emerging in the margins of the mainstream which in the multi-level perspective (MLP) framework is called "niche" (Geels, 2019). Working with a concept of regenerative agriculture, which does not yet contain a universally agreed definition (Newton et al 2020), I tentatively step away from dogmatic characterisation and choose to look at it through the lens of care. In the context of agriculture, care means looking at nature as a community member rather than a commodity which requires to relinquish control and embrace collaboration and respect (Hassink et al, 2020). Thus, the current iteration of my research question is 'how we can scale care-based food growing niches'?

Scaling is often categorised as scaling up (into policy), scaling out (expansion or replication), and scaling deep (through capacities) (Moore, 2024). O'Brien et al (2023) also mentions scaling down (enhancing local involvement) and introduces fractal scaling which strategically embodies the desired future in the present.

The methodology underpinning this project is feminist participatory action research which seeks to create new knowledge through action, participation and experimentation while paying attention to epistemological and methodological concerns of power, participation, and relationality (Fletcher, 1998). It is conducted through designerly experiments (Cross, 2001; Brandt and Binder, 2007) in the form of participatory workshops which take ‘frontstage’ (Akasaka et al, 2024) and allow to co-create knowledge and advance my research program along (Brandt and Binder, 2007). Relationship building is essential for my 'backstage' activities (Akasaka et al, 2024) of building relationships and looking for collaborators in the local food community through participatory observations and informal conversations captured in copious field notes.

The expected outputs include examples showcasing the regenerative food niche and its practices, and a conceptual scaling framework.

The Danish regenerative food niche became the first opportunistic empirical case as I moved to Denmark for PhD. Applying the MLP lens to the insights emerging from almost a hundred hours of field work and two participatory workshops so far, I see how scalar levels of landscape, regime and niche interact in Denmark’s food system and the paradoxes they reveal in regards to different future visions.

The recently introduced progressive agricultural policy ‘Tri-Partite’ represents the landscape level pressure on the regime. Its future pathways aim to reduce greenhouse emissions through technological innovation rather than transforming or replacing harmful mainstream practices. The regenerative food niche, however, presents an alternative pathway which promotes regeneration and care-based approaches to growing food which currently operate at a very small scale. This niche’s views on scaling differ – some aim to orient towards the regime (Gugerell and Penker, 2020) while others maintain a critical stance and remain autonomous and even antagonistic (ibid) favouring scaling down or fractal scaling approaches (O’Brien et al, 2023).

These insights leave me with some provocative questions that Anticipation PhD School could help me address: How do we support the development of niches whose future vision challenge the one presented by the regime, especially when the niche itself is a loosely bound network of actors without a clear governance structure? And, how to reconcile my own normativity towards the food system expressed in my focus on regenerative approaches with making my research relevant to those who may not align with such views?

References

Akasaka, F., Sakakura, K., Miki, Y. (2024). Consciously drifting: Exploratory design practices that embrace influences from local community. In: Participatory Design Conference 2024. pp. 60–66. https://doi.org/10.1145/3661455.3669871

Brandt, E., Binder, T. (2007). Experimental design research: Genealogy – intervention – argument. In: IASDR Conference 2007.

Cross, N. (2001). Designerly Ways of Knowing: Design Discipline Versus Design Science. Design Issues 17, pp.49–55. https://doi.org/10.1162/074793601750357196

Gaziulusoy, A.I., Houtbeckers, E. (2018). Convergences: Design for Sustainability Transitions and Degrowth. In: International Degrowth Conference 2018.

Geels, F.W. (2019). Socio-technical transitions to sustainability: a review of criticisms and elaborations of the Multi-Level Perspective. Current Opinion in Environmental Sustainability, Open Issue 2019 39, 187–201. https://doi.org/10.1016/j.cosust.2019.06.009

Gugerell, C., Penker, M. (2020). Change Agents' Perspectives on Spatial–Relational Proximities and Urban Food Niches. Sustainability 12, 2333. https://doi.org/10.3390/su12062333

Hassink, J., Moriggi, A., Senni, S., Hense, E., de Moor, D. (2020). Caring Agricultural and Food Practices. In: Routledge Handbook of Sustainable and Regenerative Food Systems. Taylor & Francis Group, Oxford, pp.126-140.

Hawken, P. (2021). Regeneration. Ending the climate crisis in one generation. Penguin Random House UK.

Loorbach, D. (2010). Transition Management for Sustainable Development: A Prescriptive, Complexity-Based Governance Framework. Governance 23, pp.161–183. https://doi.org/10.1111/j.1468-0491.2009.01471.x

Loorbach, D., Frantzeskaki, N., Avelino, F. (2017). Sustainability Transitions Research: Transforming Science and Practice for Societal Change. Annual Review of Environment and Resources 42, pp.599–626. https://doi.org/10.1146/annurev-environ-102014-021340

Moore, M.L., Riddell, D., Vocisano, D. (2024). Scaling Out, Scaling Up, Scaling Deep. In: Large Systems Change: An Emerging Field of Transformation and Transitions. Routledge, London, pp. 67–84. https://doi.org/10.4324/9781003579380-7

Newton, P., Civita, N., Frankel-Goldwater, L., Bartel, K., Johns, C. (2020). What Is Regenerative Agriculture? A Review of Scholar and Practitioner Definitions Based on Processes and Outcomes. Front. Sustain. Food Syst. 4. https://doi.org/10.3389/fsufs.2020.577723

O'Brien, K., Carmona, R., Gram-Hanssen, I., Hochachka, G., Sygna, L., Rosenberg, M. (2023). Fractal approaches to scaling transformations to sustainability. Ambio 52, pp.1448–1461. https://doi.org/10.1007/s13280-023-01873-w

Wright, E.O. (2015). How to be an anti-capitalist for the 21st century. Journal of Australian Political Economy 77, pp.5-22

Hydrosensory Autoethnography as a Way of Engaging Futures in Environmental Governance

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Keywords: water; water governance; sensory ethnography; hydrofeminism; posthumanism

Contemporary environmental governance operates under conditions of urgency and uncertainty. As ecological crises become increasingly prevalent, governance processes often respond by reinforcing ecomodernist, technopositivist modes of control (Hajer & Oomen, 2025), often relying on a procedural distance from the landscapes they are supposed to manage. This produces a paradoxical situation: institutions act in the name of the future while remaining bodily and sensorially detached from the environments whose futures are at stake.

My PhD research departs from this detachment by exploring how embodied and material engagements with water might open up alternative ways of doing environmental governance. The research is grounded in Flanders, Northern Belgium—one of the European regions suffering from the highest water distress (Belgium - European Commission, n.d.). A preliminary analysis of regional projects related to water revealed that waterbodies and waterscapes are primarily framed as resources to be managed, as objects of governance and human dominion. Such a framing further intensifies the problematic relationship that we, humans, have with our natural surroundings, contributing to a widespread belief that we are masters of nature (Plumwood, 1993), and, perhaps, masters of nature's futures? However, this mastery is a myth that we convinced ourselves of.

Rather than approaching nature (and its future) as something to be managed, I currently work through bodily and sensory practices to investigate how futures are already being shaped in the present through relations, memories, and affects. I do this in particular through a method I call 'hydrosensory autoethnography,' which combines sensory ethnography with posthuman and hydrofeminist perspectives (Pink, 2015, 2023; Brisini & Simmons, 2022; Neimanis, 2017; Vannini, 2024). The method involves situated, embodied encounters with anthropogenic waterbodies—such as canals, reservoirs, and post-industrial lakes—through practices of walking, swimming, listening, observing, and documenting multisensory experiences (for a more detailed discussion, see Obukhova, 2026). Rather than treating my body as a neutral observer, hydrosensory autoethnography positions it as a relational interface: a

body of water encountering other, more-than-human (MTH) bodies of water, attuning to their material histories, ecological vulnerabilities, and affective atmospheres. These encounters generate situated forms of knowledge grounded in memory, sensation, and relation, allowing water to be approached not only as an object of governance but as an embodied participant in shaping how futures are imagined.

Through these sensory engagements, futures are approached as emergent conditions shaped by ongoing relations between human and MTH actors. The bodies of water I encounter, often involuntarily, came into being through governance-supported infrastructural decisions in extractive industrial pasts. Future decisions concerning these and other waters and their landscapes will be made in the present. This is why it is so important to sediment new governance imaginaries today. Against this backdrop, my research asks: what conditions need to be created in the present to allow alternative futures of environmental governance to emerge—futures grounded in embodied, affective, and MTH relations?

With my research, I hope to spark a reflection on these necessary conditions. Already now, my embodied and sensory explorations reveal the limitations of dominant institutional imaginaries, which prove to be grounded in human exceptionalism. In this sense, my work engages directly with the paradox at the heart of contemporary governance: institutions are increasingly called upon to act in conditions of urgency and uncertainty, yet the very frameworks through which they operate render them unfit to engage ethically with MTH worlds. Working within this paradox means neither rejecting institutions nor reinforcing their technocratic logics, but rather experimenting with practices that expose their limits while opening up space for other ways of decision-making.

The Anticipation PhD Summer School is for me a space where bodily and sensory engagements with water can be placed in dialogue with anticipation studies. I seek to open questions about how futures are conditioned in the present, and about what forms of governance might emerge if MTH relations were not represented at a distance, but lived and sensed from within.

References

Belgium—European Commission. (n.d.). Retrieved August 25, 2025, from https://environment.ec.europa.eu/topics/water/water-wise-eu/belgium_en

Brisini, T., & Simmons, J. (2022). Posthumanist Autoethnography. In T. E. Adams, S. L. Holman Jones, & C. Ellis (Eds.), Handbook of autoethnography (Second edition, pp. 355–365). Routledge, Taylor & Francis Group. https://doi.org/10.4324/9780429431760-35

Hajer, M. A., & Oomen, J. (2025). Captured Futures: Rethinking the Drama of Environmental Politics. Oxford University PressOxford. https://doi.org/10.1093/9780198955382.001.0001

Neimanis, A. (2017). Bodies of water: Posthuman feminist phenomenology. Bloomsbury academic. https://doi.org/10.5040/9781474275415

Obukhova, K. (forthcoming 2026). Hydrosensory Autoethnography: Sensing Intimacy and Governance in Anthropogenic Waters of Limburg, Belgium.

Pink, S. (2015). Doing Sensory Ethnography (2nd ed.). SAGE. https://doi.org/10.4135/9781473917057

Pink, S. (2023). Sensory Futures Ethnography. In P. Vannini, The Routledge International Handbook of Sensory Ethnography (1st ed., pp. 82–94). Routledge. https://doi.org/10.4324/9781003317111-8

Plumwood, V. (Ed.). (1993). Feminism and the mastery of nature. Routledge. https://doi.org/10.4324/9780203006757

Vannini, P. (Ed.). (2024). The Routledge international handbook of sensory ethnography. Routledge, Taylor & Francis Group. https://doi.org/10.4324/9781003317

Misalignment and Epistemic Negotiation in Craft–LLM Interaction: Crafting Situated Futures

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Keywords: craft knowledge; misalignment; human–AI interaction; AI mediation; Textile Practices

Craft knowledge increasingly encounters digital and AI-mediated systems that require practitioners to articulate embodied know-how in structured linguistic form. Large language models (LLMs) intensify this condition by operating through prompts and textual reformulations, creating situations in which embodied judgement, material sensitivity, and situated procedures are articulated in computationally legible terms.

Within this perspective, textile practice can be understood as a form of embodied algorithmic reasoning enacted through material sequences. Craft scholarship has long characterised craft knowledge as embodied, tacit, and situated, emerging through material engagement rather than abstract instruction (Polanyi, 1966; Pye, 1968; Sennett, 2008; Ingold, 2013). At the same time, research in science and technology studies demonstrates that documentation and classification systems do not neutrally capture knowledge but transform what becomes visible and legitimate (Bowker & Star, 1999; Suchman, 2007; Latour, 2005). Digital heritage scholarship further shows that processes of inscription reorganise living practices into administrable forms (Choay, 2009).

While these fields acknowledge that formalisation reshapes knowledge, there is little situated empirical research examining what happens when craft practitioners directly interact with AI-based language systems. In particular, it remains unclear where divergences emerge when embodied know-how is translated into structured textual input, and how such divergences are recognised, negotiated, repaired, or deliberately withheld in practice.

This project addresses the following research question: when craft practitioners use large language models to formalise craft know-how as structured descriptions, where do misalignments occur and how are they negotiated, repaired, or resisted?

Misalignment is not treated as technical failure, but as an epistemic boundary event in which the limits of computational representation become interactionally visible. Research on human–AI interaction shows persistent tensions between embodied judgement and probabilistic language generation, particularly in contexts requiring contextual sensitivity and pragmatic alignment (Lamoureaux

et al., 2025; Zhong et al., 2024). Rather than approaching these tensions as deficits to be optimised, this project examines them as sites of negotiation.

Grounded in a constructivist epistemology, the study adopts a research-through-design approach (Koskinen et al., 2011; Gray & Malins, 2004). A prior scoping literature review (Arksey & O'Malley, 2005; Grant & Booth, 2009) mapped interdisciplinary debates across craft theory, datafication, and AI mediation, identifying recurring tensions between articulation and opacity, expressibility and resistance, visibility and protection, and slowness and acceleration.

Empirically, the project will stage documented interaction sessions between textile practitioners—Fiocco weaving in Southern Italy and Sadu weaving in Saudi Arabia—and an LLM system. Sessions will involve inviting practitioners to describe material gestures, processes, or judgements to the system and iteratively reformulate prompts in response to generated outputs. Interactions are documented through prompt logs, observation, and transcript analysis. The unit of analysis is the moment of misalignment, identified through prompt reformulation, hesitation, explicit dissatisfaction, selective omission, or repair sequences. The focus is not on output quality but on negotiation dynamics.

These encounters function as anticipatory sites in which hybrid human–AI reasoning is examined not as smooth fusion but as ongoing negotiation. Rather than proposing a scalable digital platform, the project investigates the conditions under which AI participation might remain situated, accountable, and culturally grounded. By reframing misalignment as an epistemic resource rather than a deficit, the research contributes to anticipatory debates on how design can engage with fragile knowledge ecologies without accelerating their abstraction or extraction.

References

Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. International Journal of Social Research Methodology, 8(1), 19–32. https://doi.org/10.1080/1364557032000119616

Bowker, G. C., & Star, S. L. (1999). Sorting Things Out: Classification and Its Consequences. MIT Press.

Choay, F. (2009). Le patrimoine en questions. Esprit, (11), 194-222.

Grant, M. J., & Booth, A. (2009). A typology of reviews: An analysis of 14 review types and associated methodologies. Health Information & Libraries Journal, 26(2), 91–108. https://doi.org/10.1111/j.1471-1842.2009.00848.x

Gray, C., & Malins, J. (2004). Visualizing research: A guide to the research process in art and design. Ashgate.

Ingold, T. (2013). Making: Anthropology, archaeology, art and architecture. Routledge.

Koskinen, I., Zimmerman, J., Binder, T., Redström, J., & Wensveen, S. (2011). Design research through practice: From the lab, field, and showroom. Morgan Kaufmann.

Lamoureaux, M., Castelle, M., & Weichselbraun, A. (2025). Language machines: Toward a linguistic anthropology of large language models. Journal of Linguistic Anthropology. Advance online publication.

Latour, B. (2005). Reassembling the social: An introduction to actor-network-theory. Oxford University Press.

Polanyi, M. (1966). The tacit dimension. Routledge & Kegan Paul.

Pye, D. (1968). The nature and art of workmanship. Cambridge University Press.

Sennett, R. (2008). The craftsman. Yale University Press.

Suchman, L. A. (2007). Human-machine reconfigurations: Plans and situated actions (2nd ed.). Cambridge University Press.

Zhong, S., Gatti, E., Cho, Y., & Obrist, M. (2024). Feeling textiles through AI: An exploration into multimodal language models and human perception alignment. In Proceedings of the 26th International Conference on Multimodal Interaction (pp. 33–37). https://doi.org/10.1145/3678957.3685756

Navigating toward just transitions with fragmented, uncertain and incomplete knowledge within Länsstyrelsen

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Keywords: just transitions; incomplete knowledge; uncertain knowledge; fragmented knowledge

Governance is riddled with tensions and conflicts, especially surrounding wicked problems (Rittel & Webber, 1973). These tensions can be collective-individual interest, short-long term impact, global- local... This is particularly noticeable in governing just climate transitions, where social and environmental are treated as separate goals (Berglund et al., 2023).

Considering both environmental and socio- economical dimensions at the same time means involving multiple knowledge types. These knowledge types can be found when discussing about new construction projects, forest or agricultural areas, or how public transportation should be handled within the region with different organisations and different areas of expertise (discussion with practitioners, 2023). It also involves dealing with fragmented, uncertain and incomplete knowledge and outcomes (Stoeth & Carter, 2023; Kay & King, 2021).

This research investigates Länsstyrelsen Östergötland's governance of just climate transitions, more specifically on how the Energy, climate and growth, Urban planning and Social sustainability units work with just transitions governance.

Länsstyrelsen—an organisation mandated by the national government and acting at the regional scale, composed of experts across many domains (County Administrative Board in English)—is tasked to collaborate with, support and regulate local governments (municipalities) based on national laws and goals; ensure good living conditions, environmental care and fair local development are met; and coordinate climate action at the regional level. They must deal with the conflicting perspectives and tensions that often originate from different perceptions of reality.

In my research, I am exploring the concept of fragmentation, uncertainty and incompleteness of knowledge in the context of just transition governance. Fragmentation refers to the separation of different sources of knowledge, often highlighted by disciplinary silos cutting through different levels of governance. Uncertainty refers to the epistemic limitations in current understanding, from

predictions to ambiguity in interpretation. Incompleteness refers to gaps in data and/or knowledge which leads to partial representations of multifaceted socio-environmental systems. Navigating toward just transitions is about embracing the complexity, the messiness, the dynamic aspects of transitions, in negotiating multiple needs, multiple knowledges and multiple interests.

Through a transdisciplinary methodology— developing the research and practice alongside and with practitioners—I aim to co-develop tools and strategies to navigate change toward just transitions with Länsstyrelsen Östergötland. In my first engagements, an interview series and a workshop, I have been exploring the different justice, climate and knowledge approaches within Länsstyrelsen Östergötland. The first results indicate that they have different ways of approaching those concepts and would benefit from sharing their specialized knowledge by working together across the silo-based structure of Länsstyrelsen Östergötland. Recently, we also also experimented with a workshop what would be needed for them to engage together in complex just transitions. In parallel, I am aiming to build common destinations through post-transition futures with Länsstyrelsen Östergötland, local actors and community. That will lead to a reflection on the role of Länsstyrelsen Östergötland and their strategies in navigating just transitions under incomplete knowledge.

Climate change needs quick decisions and decisive action; justice requires to take time to evaluate and involve a variety of actors. There is thus a tension between emergency and rushing possibly unfair climate measures. in Länsstyrelsen Östergötland, Energy and climate strategy and Social sustainability teams work independently from each other. However, to collaborate and coordinate the regional and municipal levels toward just transitions, those two teams need to rethink their ways of working and their organizational structure. As a PhD student, and I believe participating in this PhD School would enrich my research project, especially the part on building common destinations within a multitude of actors. Furthermore, it would be an important first step for me to build a network in the anticipation area and learn from other design researchers in the field.

References

Berglund, O., Britton, J., Hatzisavvidou, S., Robbins, C. & Shackleton, D. (2023) Just transition in the post-pandemic city. Local Environment, 28 (6), pp.753–767.

Kay, J.A. & King, M. (2021) Radical uncertainty: [decision-making for an unknowable future]. London, The Bridge Street Press.

Rittel, H.W.J. & Webber, M.M. (1973) Dilemmas in a general theory of planning. Policy Sciences, 4 (2), pp.155–169.

Stoeth, A.M. & Carter, K. (2023) Climate change summit: testing the impact of role playing games on crossing the knowledge to action gap. Environmental Education Research, 29 (12), pp.1796–1813.

Prototyping for ‘infrastructuring’ agonism in the co-governance of scarce commons

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Keywords: agonism; co-design; prototyping; water; co-governance

This PhD explores agonistic prototyping practices to enable just water co-governance amid scarcity and contestation. It is positioned within the broader field of “just sustainability transitions” (Avelino et al., 2024; Geels, 2010; Hebinck et al., 2022).

Through my PhD, I interrogate how design and prototyping practices might ‘infrastructure’ agonistic pluralism in water governance institutions, enabling democratic engagement with emerging conflicts and power asymmetries in policymaking processes.

“Agonistic pluralism” is a model of democracy grounded in productive conflict aimed at achieving a democratic society that preserves different perspectives (DiSalvo, 2010; Mouffe, 1999). Water governance is a complex ecosystem that involves multiple actors across levels, especially in polycentric and adaptive models (Folke et al., 2005; Pahl-Wostl, 2020). This multiplicity often entails unevenly distributed power dimensions, including different access to resources (e.g., financial, natural, and knowledge resources), discursive influence, and coercive power (McIlwain et al., 2023; Pansardi & Bindi, 2021). Building on Wyborn et al. (2023), my research argues that an agonistic approach is essential for adaptive water governance, making power dynamics explicit and engaging with conflicts generatively.

Co-design in public policymaking can engage multiple actors by making complex systems tangible (Bason, 2014). However, critics argue that, in political contexts, it often relies on consensus, reinforcing existing power structures (Keshavarz & Maze, 2013; von Busch & Palmås, 2023), and therefore propose agonism as a key perspective in participatory practices (Björgvinsson et al., 2012; DiSalvo, 2010). Building on these critiques, this research examines how agonistic-oriented design practices could foster reflexivity and social learning, anticipating conflict and power asymmetries within emerging governance structures.

The research-through-design PhD unfolds across three phases that address three research questions:

How do power, conflict, and justice dimensions currently manifest in water co-governance arrangements facing scarcity? Drawing on a literature review, this question informs the design of semi-structured interviews and observations. These take the form of co-mapping activities that examine existing structures, power dynamics within the Catalan water ecosystem of actors, and, specifically, the case of the “Observatori de l’Aigua de Terrassa,” an urban water co-governance arrangement.

How does agonistic anticipatory prototyping facilitate engagement with dimensions of power, conflict, and justice? This second question guides the inquiry-through-design of a prototyping approach: an “anticipatory agonistic game” that is developed and iteratively tested through workshops conducted during secondment periods with practice–research partners.

In what ways, if any, do agonistic-oriented prototyping practices foster reflexivity and social learning in governance under conditions of scarcity? The third phase aims to generate insights and evidence on the extent to which reflexivity and social learning are enabled by the developed prototyping method within water governance structures.

In terms of its contribution, this study aims to develop a method for multi-actor networks to prototype just governance models for contested scarce resources. This method is intended to be valuable for:

- Policymakers and Public Institutions: Providing frameworks that embrace, rather than suppress, contestation, thereby supporting more adaptive policymaking around resource allocation.
- Civil Society Organizations: Offering tools for meaningful engagement in governance design beyond traditional consultation, enabling sustained participation in shaping transition pathways.
- Design practitioners: Advancing design practice beyond consensus-building towards navigating agonism in co-design.
- Academic fields: Connecting theoretical frameworks with practical methodologies that experiment with agonistic pluralism in design for policy, transition governance, and water governance.

This research addresses the Summer School theme by exploring how design can engage with paradoxes in governance through agonistic prototyping methods. Focusing on conflict, pluralism, and justice in water governance, it investigates how design-led experimentation can reshape governance for more just and reflexive decision-making during times of ethical uncertainty.

Questions and provocations: what is my role as a researcher navigating between grassroots activism and government institutions? What is the role of design in contexts where it is not traditionally recognized, such as water governance institutions? How can I ensure my methods are not extractive or

colonizing, especially in time-limited or vulnerable contexts? How can the research be shared in impactful, accessible ways beyond academia, to benefit communities and stakeholders?

References

Avelino, F., Wijsman, K., van Steenbergen, F., Jhagroe, S., Wittmayer, J., Akerboom, S., Bogner, K., Jansen, E. F., Frantzeskaki, N., & Kalfagianni, A. (2024). Just sustainability transitions: Politics, power, and prefiguration in transformative change toward justice and sustainability. Annual Review of Environment and Resources, 49. https://doi.org/10.1146/annurev-environ-112321-081722

Bason, C. (2014). Design for Policy (1st ed.). Routledge. https://doi.org/10.4324/9781315576640

Björgvinsson, E., Ehn, P., & Hillgren, P.-A. (2012). Agonistic participatory design: Working with marginalised social movements. CoDesign, 8(2–3), 127–144. https://doi.org/10.1080/15710882.2012.672577

DiSalvo, C. (2010). Design, democracy and agonistic pluralism. In D. Durling, R. Bousbaci, L. Chen, P. Gauthier, T. Poldma, S. Roworth-Stokes, & E. Stolterman (Eds.), Proceedings of the Design Research Society International Conference: Design & complexity (pp. 1–15). Design Research Society. https://dl.designresearchsociety.org/drs-conference-papers/drs2010/researchpapers/31/

Folke, C., Hahn, T., Olsson, P., & Norberg, J. (2005). Adaptive governance of social-ecological systems. Annual Review of Environment and Resources, 30, 441–473.

Geels, F. W. (2010). Ontologies, socio-technical transitions (to sustainability), and the multi-level perspective. Research Policy, 39(4), 495–510. https://doi.org/10.1016/j.respol.2010.01.022

Hebinck, A., Diercks, G., von Wirth, T., Beers, P. J., Barsties, L., Buchel, S., Greer, R., van Steenbergen, F., & Loorbach, D. (2022). An actionable understanding of societal transitions: The X-curve framework. Sustainability Science, 17(3), 1009–1021. https://doi.org/10.1007/s11625-021-01084-w

Keshavarz, M., & Maze, R. (2013). Design and dissensus: Framing and staging participation in design research. Design Philosophy Papers, 11(1), 7–29. https://doi.org/10.2752/089279313X13968799815994

McIlwain, L., Holzer, J. M., Baird, J., & Baldwin, C. L. (2023). Power research in adaptive water governance and beyond: A review. Ecology and Society, 28(2), Article 22. https://doi.org/10.5751/ES-14072-280222

Mouffe, C. (1999). Deliberative democracy or agonistic pluralism? Social Research, 66(3), 745–758. https://www.jstor.org/stable/40971349

Pahl-Wostl, C. (2020). Adaptive and sustainable water management: From improved conceptual foundations to transformative change. International Journal of Water Resources Development, 36(2–3), 397–415. https://doi.org/10.1080/07900627.2020.1721268

Pansardi, P., & Bindi, M. (2021). The new concepts of power? Power-over, power-to and power-with. Journal of Political Power, 14(1), 51–71. https://doi.org/10.1080/2158379X.2021.1877001

von Busch, O., & Palmås, K. (2023). The corruption of co-design: Political and social conflicts in participatory design thinking. Routledge. https://doi.org/10.4324/9781003281443

Wyborn, C. A., van Kerkhoff, L. E., Colloff, M. J., Alexandra, J., & Olsson, R. (2023). The politics of adaptive governance: Water reform, climate change, and First Nations' justice in Australia's Murray-Darling Basin. Ecology and Society, 28(1), Article 4. https://doi.org/10.5751/ES-13641-280104

Relational design for systemic transitions: navigating institutional paradox in municipal climate governance

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Keywords: anticipatory governance; climate transitions; organisational learning; relational design

European municipalities today are confronted with the accelerating challenge of achieving climate neutrality while operating within governance systems that are widely recognised as unfit for the complexity of the task (Bason, 2017). Climate neutrality constitutes a “wicked problem” (Rittel & Webber, 1973) requiring systemic, cross-sectoral, and participatory approaches (Mayne et al., 2020), and cities, responsible for more than 70 percent of global emissions, are at the frontline of this transformation. This research examines how design practices can support municipalities participating in the EU Mission for 100 Climate-Neutral and Smart Cities by 2030 (European Commission, 2020) in adopting a systemic approach to climate neutrality, and how these practices become internalised within organisational routines and cultures, so that cities are more prepared to coordinate across administrative boundaries and anticipate the evolving demands of climate transitions.

Municipalities engaged in climate transitions encounter several institutional paradoxes, such as the urgency of transition versus the slow rhythms of bureaucratic processes, cross-sectoral coordination versus entrenched organisational silos, and the need to produce credible climate strategies under political uncertainty. These tensions align with the broader paradoxes of governance introduced by the Anticipation 2026 Summer School and illustrate the systemic challenges faced by contemporary public institutions.

To investigate how design practices play a role in this context, the study adopts a qualitative comparative case study design (Yin, 2018). Five European municipalities, selected to reflect different geographical contexts and levels of governance maturity, are examined to understand diverse interpretations and uses of design. This is complemented by one in-depth theoretical case that allows close analysis of organisational dynamics and institutional learning. Methods include document analysis, semi-structured interviews, observations, and design sessions with city advisors, who are experts supporting municipalities in their journey toward climate neutrality.

Early findings from the analysis of cities’ climate plans indicate substantial variation in how municipalities engage with design, both explicitly and implicitly. Although many cities refer to design, sometimes through different terms, not all

apply it in a substantive way. A few demonstrate a clear understanding and purposeful integration of design, while others mention it only superficially, with limited evidence of practical use or strategic intent. These findings provide an initial comparative understanding of how design is operationalised in climate transitions and contribute to ongoing debates about the potential of design within the European public sector.

The research conceptualises design along three interrelated dimensions; relational, systemic, and learning-oriented, that together form the theoretical foundation of the study. Within these three interconnected dimensions of design, this PhD research positions relationality as the foundational dimension from which systemic inquiry and organisational learning emerge. The relational role of design is understood as one that brings agency, foster shared sense-making and forge long-term relations between actors (Blomkamp, 2025; Boztepe et al., 2024). On this relational ground, systemic inquiry becomes possible enabling actors to explore interdependencies and engage with the complexity of climate transitions, (Gaziulusoy & Ryan, 2017; Irwin, 2015; Sevaldson, 2013). These relational and systemic engagements of design contribute to organisational learning processes, shaping new capacities, routines, and anticipatory practices within public institutions (Elsbach & Stigliani, 2018; Rizzo et al., 2017; Schön, 1983).

In response to the theme “Designing within Paradox: Reconfiguring Governance in Times of Institutional Unfitness and Ethical Dislocation,” the research proposes that design practices can help institutions navigate contradictions by cultivating relational conditions that enable plural perspectives, systemic inquiry, and learning among public servants.

From a more provocative standpoint, rather than offering fixed solutions to structurally unfit institutions, design, as conceptualised in this research, can act as a sailmaker within turbulent governance seas, enabling institutions to confront tensions, work with uncertainty, and collectively steer toward climate-neutral futures. Relationality alone cannot shift institutions if no agency is activated, and it is precisely design’s intentional orientation toward change that can mobilise actors and provide new possibilities for collective action.

References

Bason, C. (2017). Leading Public Design: Discovering human-centred governance.

Blomkamp, E. (2025). Mapping Relational Dimensions of Systemic Co-Design Practice.

Boztepe, S., Christiansson, J., de Götzen, A., Hepburn, L.-A., & Keinonen, T. (2024). Rethinking design in the public sector: A relational turn. https://doi.org/10.57698/V18I3.01

Elsbach, & Stigliani. (2018). Design Thinking and Organizational Culture: A Review and Framework for Future Research. https://doi.org/10.1177/0149206317744252

European Commission. (2020). Proposed mission: 100 climate-neutral cities by 2030 - by and for the citizens : report of the Mission Board for climate-neutral and smart cities. European Commission.

Gaziulusoy, İ., & Ryan, C. (2017). Roles of design in sustainability transitions projects: A case study of Visions and Pathways 2040 project from Australia. Journal of Cleaner Production, 162, 1297–1307. https://doi.org/10.1016/j.jclepro.2017.06.122

Irwin, T. (2015). Transition Design: A Proposal for a New Area of Design Practice, Study, and Research. Design and Culture, 7(2), 229–246. https://doi.org/10.1080/17547075.2015.1051829

Jones, P. (2014). Systemic Design Principles for Complex Social Systems. In G. S. Metcalf (Ed.), Social Systems and Design (Vol. 1, pp. 91–128). Springer Japan. https://doi.org/10.1007/978-4-431-54478-4_4

Mayne, Q., De Jong, J., & Fernandez-Monge, F. (2020). State Capabilities for Problem-Oriented Governance. Perspectives on Public Management and Governance, 3(1), 33–44. https://doi.org/10.1093/ppmgov/gvz023

Rittel, H. W. J., & Webber, M. M. (1973). Dilemmas in a general theory of planning. https://doi.org/10.1007/BF01405730

Rizzo, F., Deserti, A., Cobanli, O., & Politecnico di Milano. (2017). Introducing Design Thinking in Social Innovation and in the Public Sector: A design based learning framework. European Public & Social Innovation Review, 2(1). https://doi.org/10.31637/epsir.17-1.9

Schön, D. A. (1983). The Reflective Practitioner How Professionals Think In Action (Donald A. Schön) (Z-Library). London: Temple Smith.

Sevaldson, B. (2013). Systems Oriented Design: The emergence and development of a designerly approach to address complexity.

Yin, R. K. (2018). Case study research and applications: Design and methods (Sixth edition). SAGE.

Shaping sustainable futures: anticipatory governance of transformative innovation

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Keywords: anticipatory governance; transformative innovation; sustainable futures

It is well established that the world is confronting a number of interconnected challenges which led to a state of perma-crisis (Papadakis and Tzagkarakis, 2025), exacerbated by the VUCA and BANI (Cascio et al, 2025) nature of the underlying phenomena. Innovation has been identified as one of the driving forces that may tackle and overcome these challenges (Schot and Steinmueller, 2018). However, too many innovations are still designed without a purpose to contribute to the public value, and even when they try to do it, they fail because they are still designed with old paradigms in mind, creating unintended negative consequences (Scherer and Voegtlin, 2020), failing to deliver the needed deep and systemic change (Ghosh et al., 2021). Previous research highlights how this ill-nature of innovation derives from the barriers to imagine alternative futures (Gumusay and Reinecke, 2024), restraining organizations to legacy path dependencies (Loorbach et al., 2017). These barriers thus prevent impactful innovation from shaping new desirable futures. Attempts at changing existing innovation approaches, like technology foresight (Georghiou et al., 2008) or responsible innovation (Stilgoe et al., 2013) lacked a normative stance, in the case of the former, or a proactive approach, in the case of the latter. On the other hand, new proactive and merging strategies are emerging, with the aim of aligning innovation and common good by design, with an anticipatory approach. One of them is anticipatory innovation governance (AIG) (Tonurist, 2020), understood as “a broad-based capacity to actively explore options as part of broader anticipatory governance, with a particular aim of spurring on innovations … connected to uncertain futures in the hopes of shaping the former through the innovative practice.” (OPSI, 2019). In particular, studies acknowledge the potential of bridging AIG and transformative innovation (Ghosh et al., 2025) approaches to address grand challenges and foster sustainable transformations (Bergsma et al., 2026; Muiderman et al., 2020; Priebe et al., 2025).

Research questions: transformative innovation has been recognized as crucial in achieving deep transformations to more just and desirable futures (Ghosh et al., 2025). Anticipatory innovation governance is acknowledged as a novel paradigm to guide the generation of innovation, not only by envisioning its potential negative effects, but also to shape its outcomes through participatory

and reflexive approaches and enhance its positive effects on society (Tõnurist and Orlik, 2025). However, the two concepts have been mostly addressed from a policy or governmental perspectives (Bernal-Hernández et al., 2025; Fasoli and Poli, 2024; Steward, 2021; Tõnurist and Hanson, 2020) and have been seldom linked in synergy (Muiderman et al., 2020). I aim at advancing the field by exploring the research gap on anticipatory governance of transformative innovation in organizations (Vedel et al., 2025), answering the calls for a deeper understanding of the mechanisms through which anticipatory methodologies and structures may enhance the generation of transformative innovation aiming at solving wicked problems by systemic change, with a particular focus on the role of different actors (Haddad et al., 2022), of temporality (Vedel et al., 2025), and the need to evaluate transformative innovation initiatives (Haddad et al., 2022).

The thesis will be articulated in three parts: in the first paper, I will conduct an exploratory literature review to derive two frameworks to analyze and assess anticipatory governance practices and transformative innovation processes in organizations. Then, I will conduct an in-depth case study with a multi-national energy company to stress-test and refine the frameworks.

The case study will be developed through semi-structured interviews, focus groups, and ethnographic observation of meetings and workshops.

The second paper will then implement the frameworks to perform an assessment of the current anticipatory and transformative practices of innovation governance in selected Italian companies. The main assessment tool will be a comprehensive survey based on the frameworks, complemented by semi-structured interviews. The latter will be focused on understanding whether anticipatory practices may enhance the generation of transformative innovation, and how.

Finally, in the third paper we will propose a new anticipatory framework to manage the impact of innovation based on literature on anticipatory and transformative evaluation. It will be tested through a single, longitudinal case study of an innovation project taking place in a prominent Italian company. Expected results entail a new validated framework and insights into its implementation.

Preliminary results of the exploratory literature review led to the definition of the following frameworks. AIG, Transformative Innovation, and paradoxes.

My research clearly resonates with the topic of the school “Designing within Paradox: Reconfiguring Governance in Times of Institutional Unfitness and Ethical Dislocation.” In fact, it aims at investigating how organizations are (re)designing the governance of innovation. Organizations are navigating many paradoxes, both at a structural level, between rigidity and flexibility, but also at a scope and objective level, between profit objectives and the need to address

grand challenges. Also, transformational objectives are inherently paradoxical, as they are continuously contested and adapted to ever changing contexts and involved stakeholders (Ghosh et al., 2025). Although I do not belong to the design field, I think I could benefit from many tools and perspectives coming from related disciplines, like anticipation (Celi and Morrison, 2019) and transition (Irwin, 2015) design.

References

Bergsma, J., Wiarda, M., Pruyn, J., & van de Kaa, G. (2026). Anticipatory governance of a maritime mission using a real-time mission-oriented transition assessment. Environmental Innovation and Societal Transitions, 60, 101128. https://doi.org/10.1016/j.eist.2026.101128

Flyverbom, M., & Garsten, C. (2021). Anticipation and Organization: Seeing, knowing and governing futures. Organization Theory, 2(3). https://doi.org/10.1177/26317877211020325

Muiderman, K., Gupta, A., Vervoort, J., & Biermann, F. (2020). Four approaches to anticipatory climate governance: Different conceptions of the future and implications for the present. In Wiley Interdisciplinary Reviews: Climate Change (Vol. 11, Issue 6). Wiley-Blackwell. https://doi.org/10.1002/wcc.673

Priebe, M., Warnke, P., & Weber, K. M. (2025). Setting the scene for discussing innovation policy directions: Foresight as a practice of synchronizing. Futures, 173. https://doi.org/10.1016/j.futures.2025.103681

Schot, J., & Steinmueller, W. E. (2018). Three frames for innovation policy: R&D, systems of innovation and transformative change. Research Policy, 47(9), 1554–1567. https://doi.org/10.1016/j.respol.2018.08.011

Tõnurist, P., & Hanson, A. (2020). Anticipatory Innovation Governance Shaping the future through proactive policy making.

Urueña, S. (2022). Anticipation and modal power: Opening up and closing down the momentum of sociotechnical systems. Social Studies of Science, 52(5), 783–805. https://doi.org/10.1177/03063127221111469

Vedel, J. B., Hasselbalch, J., Borrás, S., Irwin, A., & Simoneit, V. (2025). Organizing transformative innovation: Advancing an organizational research agenda within Transformative Innovation Policy. Research Policy, 54(9). https://doi.org/10.1016/j.respol.2025.105292

Situated clothing lifetimes: A critical review of the future-making potential of the EU Ecodesign regulations

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Keywords: policy design; ESPR; clothing consumption; actor network theory; plural futures

The success of the EU Ecodesign regulations for apparel and footwear (ESPR) and other EU policies in reducing environmental impacts from clothing consumption hinges on their capacity to create a future where less clothing is being produced and consumed. Not only does production and consumption of new clothing need to decrease, but clothing consumption cycles in general also need to slow down; as Mora-Sojo et al. (2023) show, replacing 74% of new purchases with second-hand purchases while maintaining current consumption cycles only decreases climate impacts by 57%. An equitable global consumption level within planetary boundaries would limit consumption to five pieces of new clothing per person per year (Coscieme et al., 2022). In comparison, the current global consumption is 16.7 pieces per person per year (Fashion United, 2022), while Norwegians purchase on average 40.6 garments per year (Mora-Sojo et al., 2023).

Ecodesign is, at its core, concerned with the economic and environmental aspects of products. This research rather takes as its point of departure the interrelatedness of products, practices, markets, culture, etc., to examine the feasibility of the ESPR in reducing environmental impacts by reducing the consumption of new clothing. Here, the ontologies and epistemologies the regulations build on are of key concern, as well as the potential of public policy to take anticipatory action towards plural and inclusive futures. However, in their analyses of the policy processes concerning the EU Textiles strategy, Maldini and Klepp (2025) show that voices that are critical of the proposed policy directions are filtered out in the large-scale policy processes in the EU, while non-threatening, status-quo-preserving voices are put forward in the summary of hearing responses. The policy processes are hence influenced by lobbyists and industry bodies, to the extent that industry bodies are leading working groups developing policy measures; for the Product Environmental Footprint, the industry is in charge of the development of this EU-initiated measure (Delre et al., 2025). It follows that large-scale businesses have a disproportionate impact on policy, while only providing a small share of the apparel market of clothing; the majority of the global clothing market consists of medium and

small-scale, often local, businesses that are ignored when policy is written. This has cultural implications as well as implications for homogenisation of the market – the ignored voices often lose out as the sustainability of their offerings does not fit within the policy frameworks. Furthermore, the textile value chain is complex and global, with raw materials, textiles and finished products travelling around the globe. In fact, the EU is a minor producer of textile goods, yet the possibility of being observers in the policy processes is limited to the countries in the EEA.

Contrary to its goals of decreasing environmental impacts, the policy development remains firmly rooted in socio-technical imaginaries of green growth (Adloff & Neckel, 2019; Jasanoff, 2015), prioritising Western and capitalist paradigms of positivist, reductionist thinking, separating the product and the user from the larger system and societies/cultures within which they act. The underlying assumptions are that prolonging product lifetimes will lead to decreased purchases, which will again lead to reduced production and lower environmental impacts, an assumption that has not been empirically demonstrated (Maldini et al., 2025). On the contrary, new studies show that product-level efforts, such as repair, are unlikely to have a significant impact on the clothing system as a whole (Sigaard & Laitala, 2025).

The ESPR, a product-focused regulation, firmly builds on the above assumptions, as well as positivist assumptions that one can measure the effects of design strategies such as design for durability, repair and re-use.

In stark contrast, Fletcher and Fitzpatrick (2024) point to plural perspectives on durability that open avenues for exploring non-Eurocentric sustainability models, hidden power dynamics and colonial legacies as well as non-market-driven and culturally rooted practices. Following that train of thought, this project explores how designing policy and policy processes can create an epistemic shift from measuring to sensing complexity, asking: Which other voices and actors could be brought to the fore and how? What would the ESPR look like if more plural views were included? Which policy processes and anticipatory practices would then emerge?

The methodological approach combines speculative design with actor-network theory (ANT) (Latour, 2005). Using ANT, I conduct a critical review of the ESPR and the related policy process, mapping current actors involved. I further conduct consumer studies through wardrobe studies (Klepp & Bjerck, 2014), incorporating phenomenological approaches, opening up for an epistemic shift in how wearer-garment experiences are captured. The studies enrich the previously mapped networks, while simultaneously examining the potential effects of ESPR measures on consumption practices, taking into account the material aspects of future-making (Aalders & Müller-Mahn, 2026). The maps then feed into speculative co-design workshops with consumers, businesses

and policymakers to explore what the ESPR directive would look like in a future, more inclusive, culturally diverse, and sufficiency-oriented context.

The ESPR is under development and due to be finalised at the end of 2026. The 3rd Milestone draft report, published by the Joint Research Centre in November 2025, builds on the 2nd Milestone report and presents some important changes. One of these pertains to durability, which has been reduced to “robustness”, i.e., changes in garments after five wash cycles, such as pilling and colour fastness. The cited reason is that durability in use is not currently measurable in labs.

In the case of the EU Textiles Strategy, there was an overrepresentation of businesses responding to the hearing, confirming the prior assumptions of the EC, while respondents from other stakeholders said that certain biases were already present in the hearing questionnaire , which limited their possibility to provide meaningful feedback (Maldini & Klepp, 2025). The voices represented in the ESPR responses will become apparent after the hearing deadline of 30 March 2026. The current questionnaire includes open fields to provide feedback, but it is 110 pages long, referring to the 600-page study (Klepp & Tobiasson, 2026). Hence, while the hearing format is now more open, the very technical report and process potentially hinder accessibility. I, therefore, expect to find other missing voices in the responses. I also expect to find the policy processes heavily influenced by dominating imaginaries and singular views, while hoping to bring forward some of the diverging perspectives.

References

Adloff, F., & Neckel, S. (2019). Futures of sustainability as modernization, transformation, and control: a conceptual framework. Sustainability Science, 14(4), 1015-1025. https://doi.org/10.1007/s11625-019-00671-2

Coscieme, L., Akenji, L., Latva-Hakuni, E., Vladimirova, K., Niinimäki, K., Nielsen, K., Henninger, C., Joyner-Martinez, C., Iran, S., & D´Itria, E. (2022). Unfit, Unfair, Unfashionable: Resizing Fashion for a Fair Consumption Space. Hot or Cool Institute. https://hotorcool.org/wp-content/uploads/2022/12/Hot_or_Cool_1_5_fashion_report_.pdf

Delre, A., Gonzalez Torres, M., Kouloumpis, V.,, Senatore, V., Perez Arribas, Z., Bernad Beltran,, D., P. C., M., N., Syrus, A., Magrini, C.,, Albizzati, P., F., Cappucci, G., Ardente, F.,, Moldovan, S., Costamagna, M., Molina Vercher,, C., M., K., Perucca, M., Gallego, E., Balaguer,, & A., G. J., E. (2025). Preparatory study on textiles for product policy instruments: Ecodesign, EU Green Public Procurement, EU Ecolabel. 3rd Milestone. Draft Document. JRC. JRC.

Fashion United. (2022). Global Fashion Industry Statistics. Fashion United. https://fashionunited.com/statistics/global-fashion-industry-statistics

Fletcher, K., & Fitzpatrick, A. (2024). Decentering Durability: Decarbonizing and Decolonizing Ideas and Practices of Long-Lasting Clothes. Fashion Theory, 1-27. https://doi.org/10.1080/1362704X.2024.2427493

Jasanoff, S. (2015). One. Future Imperfect: Science, Technology, and the Imaginations of Modernity. In J. Sheila & K. Sang-Hyun (Eds.), Dreamscapes of Modernity (pp. 1-33). University of Chicago Press. https://doi.org/10.7208/9780226276663-001

Klepp, I. G., & Bjerck, M. (2014). A methodological approach to the materiality of clothing: Wardrobe Studies. International Journal of Social Research Methodology, 17(4), 373-386. https://doi.org/10.1080/13645579.2012.737148

Klepp, I. G., & Tobiasson, T. S. (2026). Feedback 3rd milestone on ESPR (Ecodesign for Sustainable Products Regulation). Clothing Research, OsloMet. https://clothingresearch.oslomet.no/2026/03/17/feedback-3rd-milestone-on-espr-ecodesign-for-sustainable-products-regulation/

Latour, B. (2005). Reassembling the social. An introduction to Actor-Network-Theory. Oxford university press.

Maldini, I., & Klepp, I. G. (2025). The EU Textile Strategy: How to Avoid Overproduction and Overconsumption Measures in Environmental Policy. Journal of Sustainable Marketing, 1-17. https://doi.org/10.51300/JSM-2025-141

Maldini, I., Klepp, I. G., & Laitala, K. (2025). The environmental impact of product lifetime extension: a literature review and research agenda. Sustainable Production and Consumption, 56, 561-578. https://doi.org/10.1016/j.spc.2025.04.020

Mora-Sojo, M. C., Krych, K., & Pettersen, J. B. (2023). Evaluating the current Norwegian clothing system and a circular alternative. Resources, Conservation and Recycling, 197, 107109. https://doi.org/10.1016/j.resconrec.2023.107109

Sigaard, A. S., & Laitala, K. (2025). Repairability of Clothing and Textiles: Consumer Practices and Policy Implications. International Journal of Sustainable Fashion & Textiles, 4(2). https://doi.org/10.1386/sft_00064_1

Aalders, T., & Müller-Mahn, D. (2026). The hard work of future-making: alienated futures, invisible labour and liberation. Territory, Politics, Governance, 14(2), 265-282. https://doi.org/10.1080/21622671.2024.2438844

Speculating Through the Archive: Past Futures as Apparatus for Transformative Futures

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Keywords: speculative design; critical archiving; discursive design; science fiction; feminist theory

My topic under exploration for this summer school is the suspension of ambiguity through the combination of reflection on the archive as liberatory curation and motivator of transformative speculation. How can past-futures become apparatus for more transformative, inclusive present-futures? Grounded in previous pilot findings that emotional reflection on the design space enables more conceptually transformative speculation, I am currently building and analyzing an archive of American science fiction magazines from 1960-2020 to understand how engagement with past technological imaginaries shapes present speculative capacity. This project emerged from a curiosity about how designers might be limited by past technological speculations – speculations that are informed by Western, colonial, patriarchal perspectives.

The methodological approach used for this work is twofold. First it is an autoethnography of building the archive and indexing encountered technological imaginaries capturing decision-making, emotional responses, and theoretical struggles - what speculations do my encounters propagate? My second approach is a systematic analysis of the magazine content, interviews with authors/editors, historical research using grounded theory approaches to develop theoretical frameworks about how archives function as speculative apparatus.

Expected/Emerging Results: my current work in process has revealed a productive tension when engaging these stories through an interrogative lens that creates space for transformative speculations. When I encounter a western-spistemological-centric story from 1977, I experience a pull towards the imaginary possibility and critical awareness of the exclusion as it applies today. I then experience this as an invitation and an opening for imagining futures centered on other onto-epistemologies and cosmologies.

This foregrounds the archive as non-neutral as it excludes/includes narratives. As put forth by Michelle Caswell in ‘Urgent Archives’, it also positions the archive as liberatory and demonstrates the archive as an apparatus that shapes what futures become thinkable (Caswell, 2021). Its linear constitution from the 20th and 21st century makes-messy temporal, linear thinking by evoking the

past and future as simultaneously linear and collapsed into a suspended space for speculative imagining.

This work speaks within multiple intersecting paradoxes that examine institutional unfitness and ethical dislocation.

- Paradox of the Archive: How do you build an inclusive archive from exclusive material? How do you make-present an absence in an archive?
- Paradox of the temporal: Caswell argues that archives must activate the present. How do you both honor historical materials and use them to disrupt and liberate the excluded from present limitations? How do we dwell in the tension between preservation and transformation?
- Paradox of the category: Archival practice demands the implication of the category and classification, but these categories limit methods of knowing that replicate harm.
- Paradox of the emotional-critical: How might we simultaneously be emotionally open and vulnerable to past-futures while also being critically aware of their limitations? How do we both feel the pull of the imaginative but critique its embedded colonialism?

In addition to the above spaces for investigation, these questions can create space for further conversations. If our institutions for imagining futures are unfit due to their inherent exclusions, should we abandon them or leverage them? How might we stay with the trouble and grapple with the relics of colonialism?

References

Barad, K. (2003). Posthumanist performativity: Toward an understanding of how matter comes to matter. Signs, 28(3), 801–831. https://doi.org/10.1086/345321

Caswell, M. (2021). Urgent archives: Enacting liberatory memory work. Routledge. https://doi.org/10.4324/9781003001355

Haraway, D. J. (2016). Staying with the trouble: Making kin in the Chthulucene. Duke University Press.

Staying with the Cracks: From Quick Fixes to Transformative Explainable AI

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Keywords: large language models; anticipatory technologies; alternative futures

Large Language Models (LLMs), underlying platforms such as ChatGPT, are increasingly entangled with everyday knowledge systems. As technologies of anticipation, they not only predict user behavior by design but also participate in shaping how futures are imagined, governed, and performed, such as through behavioral modulation (Chaudhary & Penn, 2026). My dissertation examines how LLMs are implicated in stabilizing certain futures as much as in recomposing them, such that the same biased or nonsensical outputs may read as noise to be smoothed or as invitations to alternative ways of knowing and being. To grasp this ambivalence, I situate LLMs within a framework of cybernetic governmentality, in which disruption is an inherent condition of power, absorbed through feedback, recalibration, and adaptive control (Nosthoff, 2026). From this perspective, what have been popularized as ‘glitches’ are not necessarily emancipatory simply by virtue of their existence alone (Broussard, 2023). Policy responses like Explainable AI (XAI) or dataset diversification tend to legitimize and reproduce dominant hierarchies by treating opacity, bias, or so-called 'hallucinations' as problems of interpretability or technical correction rather than questioning the Eurocentric and developer-centric design regimes that produce them. As such, they contribute to perpetuating existing inequities and limiting the futures users can imagine and perform (Markham, 2021). This paradox may also be read as a form of recursive colonialism, in which the technopolitics of racial capitalism reassert foundational premises through liminal cracks produced by its own failures (Parisi & Dixon-Román, 2020). Consequently, treating disruptions as errors to be corrected overlooks their transformative potential, while considering them as emancipatory in themselves neglects the conditions under which they become material for recalibration.

What matters, then, lies in how rupture is sensed, interpreted, and taken up. As part of the junior research group “Development of Symmetrical Mental Models” at Paderborn University, affiliated with TRR 318 “Constructing Explainability,” I investigate cracks as phenomena at the interface, conceptualized as a liminal threshold where model logic, design intentions, and user practices converge (Schulz, 2023). In this context, glitches emerge as errors resulting from misalignments among these perspectives. When initiatives like XAI smooth over

these misalignments, they obscure the affective-epistemic disconcertment (Verran, 2023) that arises when different knowledge systems interact but do not fully align, as may occur in instances of generative epistemic injustice, for example, when LLMs magnify social bias or when they lack interpretative frameworks (Kay et al., 2025). Disconcertment provides an empirical means of understanding how cracks become perceptible as temporary imaginative openings that exceed anticipatory design frames (Akómoláfé, 2024; Holloway, 2010). However, whether glitches surface as disconcertment and whether their imaginative and transformative potential is taken up hinges on users' positionality (Alcoff, 1988). In Harawayan fashion, it thus becomes crucial to explore how to stay with the cracks before they are folded back into cycles of repair. To investigate these dynamics, I combine conceptual development with reflexive thematic analysis of how cracks manifest and are negotiated across user positionalities in XAI data, and participatory design workshops that explore how cracks might be nurtured in explanation practice and policy.

Through these lines of inquiry, the dissertation argues for a form of Explainable AI that does more than clarify a particular system's logic. It would also enable users to challenge and reinterpret explanations and outputs at a more fundamental level and, in doing so, contribute to recomposing futures rather than stabilizing them. Explanation is a relational, co-constructive process between explainer and explainee (Rohlfing et al., 2026), which inevitably creates some degree of disconcertment. To be transformative, however, it cannot remain a linear clarification process that folds users' sensemaking back into the system's own logic. To invite reimagination and collective world-making, explanation must remain open for uncertainty and enable genuine negotiation over the very terms under which explanations are offered (Menne & Schulz, 2026). The project itself confronts a constitutive paradox, which I hope to explore further at the summer school: documenting and designing for cracks may inadvertently stabilize the disruptions it seeks to preserve, and because critical practices are effortful, unevenly distributed, and not always feasible, staying with the cracks may itself produce inequity. These tensions become especially acute in institutional landscapes marked by conflicting epistemologies, such as media studies, linguistics, or computer science, where discomfort is all too easily translated into closure. Perhaps the task of transformative XAI is to keep these tensions open.

References

Akómoláfé, B. (2024). On Doors and \cracks\: Doors behave. https://www.bayoakomolafe.net/post/on-doors-and-cracks

Alcoff, L. (1988). Cultural Feminism versus Post-Structuralism: The Identity Crisis in Feminist Theory. Signs: Journal of Women in Culture and Society, 13(3), 405–436. https://doi.org/10.1086/494426

Broussard, M. (2023). More than a glitch: Confronting race, gender, and ability bias in tech (First MIT Press paperback edition). The MIT Press.

Chaudhary, Y., & Penn, J. (2026). New parameters of power: On LLM-based manipulation and control and the spectre of strategic AI. Big Data & Society, 13(1), Article 20539517261426450. https://doi.org/10.1177/20539517261426450

Holloway, J. (2010). Crack capitalism (1st ed.). Pluto Press.

Kay, J., Kasirzadeh, A., & Mohamed, S. (2025). Epistemic Injustice in Generative AI. In Proceedings fo the 2024 AAAI/ACM Conference on AI, Ethics, and Society (AIES '24). AAAI Press, 684–697.

Markham, A. (2021). The limits of the imaginary: Challenges to intervening in future speculations of memory, data, and algorithms. New Media & Society, 23(2), 382–405. https://doi.org/10.1177/1461444820929322

Menne & Schulz (in press). Social Context in HAI: Towards a Theoretical Framework Based on Multi-Perspectival Imaginaries. In Communications in Computer and Information Science, HCI International 2026 Posters: 28th International Conference on Human-Computer Interaction, HCI 2026, Montreal, Canada, July 26-31, 2026, Proceedings, Springer Nature Switzerland.

Nosthoff, A.-V. (2026). Kybernetik und Kritik: eine Theorie digitaler Regierungskunst (1st ed.). Suhrkamp.

Parisi, L., & Dixon-Román, E. (2020). Recursive Colonialism and Cosmo-Computation. In E. Dixon-Román (Ed.), Control Societies @ 30: Technopolitical Forces and Ontologies of Difference.

Rohlfing, K. J., Främling, K., Lim, B., Alpsancar, S., & Thommes, K. (2026). Social Explainable AI. Springer Nature Singapore. https://doi.org/10.1007/978-981-96-5290-7

Schulz, C. (2023). A new algorithmic imaginary. Media, Culture & Society, 45(3), 646–655. https://doi.org/10.1177/01634437221136014

Verran, H. (2023). How to use disconcertment as ethnographic field-device. In T. Sánchez Criado & A. Estalella (Eds.), Theorizing ethnography. An ethnographic inventory: Field devices for anthropological inquiry (pp. 43–51). Routledge Taylor & Francis Group.

The Mess of the Many: Enacting and Amplifying Pluriwhat Futures

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Keywords: pluriversal futures; design future; participatory futures; relationality; creative practice research

Living within the global polycrisis, an era marked by entangled environmental, social and political instability, requires reflection on the conditions that have brought the present into being and careful consideration of how it might continue otherwise. Against this backdrop, my practice-led PhD asks: How can notions of the pluriverse be enacted and amplified in design futures practice? Situated at the intersections of design and futures studies, the research investigates how futuring might be imagined and articulated otherwise, beyond dominant Western frameworks that privilege linear and progress-oriented narratives.

The pluriverse, or “pluriwhat”, as critically explored by Colombian design scholar Alberto Gutiérrez Borrero (2021) invites multiplicity and many ways of knowing and being. It resists the notion of a single future and opens space for coexistence and complexity. Arturo Escobar (2018) describes the turn towards designs for the pluriverse as an ontological reorientation that shifts away from the one-world tradition of design towards a world where many worlds fit. My research explores both the promise and the difficulty of this shift, focusing on the tensions, contradictions and messy encounters that arise when pluriversal concepts meet anticipatory and design practice, institutional expectations and grounded place-based realities.

To explore how pluriversality might be enacted in futuring practice, this research unfolds across participatory case studies in Sibu (Malaysia), Naarm/Melbourne (Australia), and Milan (Italy). It includes observations of futures-oriented, place-based projects alongside conversations with design and futures practitioners navigating ontological plurality in their work. Grounded in my background in visual communication, media and communication, design futures and design for social innovation, the research explores ways of making abstract pluriversal concepts tangible through practice. The methodology draws on participant observation, experimental creative-based futuring methods and practice reflections. Approaches such as collage and bricolage, spatial movement prompts and community-engaged creative workshops support participants to explore futures in embodied and relational ways.

Emerging results of the research demonstrate that plurality and pluriversality in futures resists coherence and legibility required by anticipatory tools. Participants' visions were often contradictory, embodied and closely tied to place. These findings highlight the governance paradox that aligns with the Summer School theme, where institutions increasingly call for plurality, but often only when plurality can be rendered manageable or administratively legible.

My position as a white settler designer living and working on unceded lands in Naarm (Melbourne), Australia also shapes this work. Situated reflexively, the project acknowledges both my entanglement in and responsibility toward the systems I critique. I have needed to understand the value of accepting messiness, uncertainty, discomfort and incompleteness. This messiness has become generative within the research, surfacing where futures work is constrained by colonial ontologies and where openings for reimagining practice might appear.

Throughout the research, a set of conceptual orientations has emerged that function as navigational tools for practice. They highlight the importance of timing, relational attunement and the pressures that shape how place-based futures work unfolds. They bring awareness to the presences that cannot be fully represented (human/more-than-human), the multiplicity that cannot be neatly reconciled and the systemic forces that quietly redirect even the most open processes. These concepts are articulated through a set of metaphors: 'the carrot and the horse', 'haunting participants', 'the piazza paradox' and 'the tilt'.

This research aligns directly with the theme "Designing within Paradox: Reconfiguring Governance in Times of Institutional Unfitness and Ethical Dislocation". A pluriversal approach to design futures necessarily navigates paradox, asking designers to imagine beyond institutional structures while simultaneously working within them. It asks to centre relational ontologies while operating in systems built on binaries and to explore futures that make space for multiplicity without collapsing into singular logics. In contexts marked by institutional unfitness and ethical dislocation, pluriversal approaches to practice become a way of comprehending the limits of governance imagination while gesturing toward alternative orientations that emphasise reciprocity and collective becoming.

References

Escobar, A. (2018). Designs for the pluriverse: Radical interdependence, autonomy, and the making of worlds. Duke University Press.

Gutiérrez Borrero, A. (2021). Dessobons and archaeodesign. In Memory full? Reimagining the relations between design and history (Proceedings of the Design History Society Annual Conference, Basel, Switzerland). https://doi.org/10.26254/med/6309

Transformative change process of a company in the long term in complex systemic changes

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Keywords: anticipatory governance; transformation; disruption; temporal tensions; decision-making

Many global and broad regional trends have entered a state of crisis in recent decades. The situation is evolving rapidly in areas such as economy, climate change and geopolitical tensions. Hence, the complexity of companies' operating environments appears to be increasing, and at the same time the predictability decreasing. There is a need to develop a scientifically validated yet practically applicable anticipatory mechanism for strategic decision-making amid complex systemic changes.

This research focuses on long-term transformation of a company amid systemic changes, and the possible effects of disruptions during this process. The goal is to clarify the concepts of transformation and disruption.

Further, another goal is to investigate how corporates can renew and adapt their decision-making to complex systemic changes in such a way that their competitiveness and resilience are enhanced. The final goal of the study is to find out what would be ideal type of anticipatory framework for strategic decision-making in this kind of situations, enabling a company's strategy to be redefined in transformation, as well as clarifying vision for leadership in transformation.

This doctoral research is in its initial phase. A literature review is currently underway. Next, the practical preparations for the empirical phase begin, including mapping potential target industries, companies, and interviewees.

Research Questions: Which are the critical elements of the change process in a company, to truly be counted as transformative? What role does disruption play in driving or shaping transformative change? How to create a practical framework for anticipatory, long-term decision making, enabling transformative change process of a company in complex systemic changes?

Methodology and Data Collection: This study employs a qualitative case study approach, combining:

- A literature review on the concepts of transformation, disruption, and complex systemic changes.
- Expert interviews and workshops in example companies to explore futures and decision-making processes.

Data analysis applying the approach of Futures Map Framework and Cynefin Model.

In the empirical part of the research, the aim is to delve into companies from sectors that, in the light of megatrends, are likely to face major changes in the next 10+ years. For example, the pharmaceutical industry, the shipping industry, logistics and the insurance sector could be relevant examples. The multi-rhythm temporal approach is particularly relevant for large companies in these sectors, as many of them have several sites in multiple countries.

The data collection will take place through thematic interviews and workshops, utilizing application of PESTEC categorization. The most interesting and essential alternative development paths for further research will be identified in collaboration with the example companies by using a concept based on Futures Map Framework.

In the final stage of the research, the defining characteristics of alternative futures will be in focus, relating both to the nature of the surrounding systemic changes and to the situation(s) prevailing in the company as part of the wider system, which both will be affecting the choices in decision-making.

The ultimate objective is to develop a pragmatic, anticipatory framework for long-term decision-making. Here, the logic of Cynefin Model will be applied as a starting point. Cynefin is a dynamic decision-making model, aimed at facilitating the selection of an appropriate management strategy for varying situations.

Key Concepts and Theoretical Approach: The theoretical foundation of the research subject rests broadly on the following key concepts: systemic transformations, the increasing complexity, and the subsequent transformative change process, including disruptions.

This research work adopts a constructivist theoretical approach: it is not merely about forecasting nor representing futures, but primarily positioned in the areas of pursuing desired futures and making sense of anticipatory processes (as categorized by Minkkinen, 2020). Since the aim of the study is to develop a relatively practical framework that supports anticipatory decision-making of a company undergoing transformation, the role of the theorist is, instead of a pure analyst, more aiming at having influence, which can also be seen as one of the tasks of futures studies in general. In addition, the mindset of sense-making in anticipatory process is essential, especially when the aim is to grasp and prepare for novel futures.

The research engages the PhD Summer School theme by focusing on developing anticipatory governance and practices beyond reactive risk management, particularly prioritizing uncertainty and systemic challenges.

Further, another relevant angle is treating institutional “unfitness” as, in part, problems of tempo. Contemporary governance often imposes a single clock,

e.g. deadlines, quarterly targets and crisis urgency, onto polyrhythmic organizations embedded in systems with different cadences. This research will propose rhythm-aware anticipatory governance: temporal orientation levels, cadence mapping, and flexible vector-oriented objectives that could align heterogeneous rhythms without forcing simultaneity. This design approach will address core paradoxes – global coherence vs local relevance, near-term viability vs long-term commitments, speed vs legitimacy. This approach could offer a solution to reconfigure institutions that can act efficiently and with good quality under complexity.

References

Fasoli, G., & Poli, R. (2024). Future Orienteering Evaluation Model: Forecasting, foresight and anticipation indices. European Journal of Futures Research, 12(1), 1–8. https://doi.org/10.1186/s40309-024-00242-4

Furlanetto, A. (2024). Anticipatory risk management: Steps forward. In R. Poli, Handbook of Futures Studies (pp. 280–294). Edward Elgar Publishing Limited. https://doi.org/10.4337/9781035301607.00027

Heinonen, S., & Karjalainen, J. (2019). Pioneer Analysis as a Futures Research Method for Analysing Transformations. In R. Poli & M. Valerio (Eds.), Anticipation, Agency and Complexity (Vol. 4, pp. 61–77). Springer International Publishing. https://doi.org/10.1007/978-3-030-03623-2_5

Hernes, T., Blagoev, B., Kunisch, S., & Schultz, M. (2025). From Bouncing Back to Bouncing Forward: A Temporal Trajectory Model of Organizational Resilience. Academy of Management Review, 50(1), 72–92. https://doi.org/10.5465/amr.2022.0406

Johnstone, P., & Kivimaa, P. (2018). Multiple dimensions of disruption, energy transitions and industrial policy. Energy Research and Social Science, 37, 260–265. https://doi.org/10.1016/j.erss.2017.10.027

Kaivo-oja, J. R. L., & Lauraeus, I. T. (2018). The VUCA approach as a solution concept to corporate foresight challenges and global technological disruption. Foresight (Cambridge), 20(1), 27–49. https://doi.org/10.1108/FS-06-2017-0022

Ketonen-Oksi, S., & Vigren, M. (2024). Methods to imagine transformative futures. An integrative literature review. Futures, 157. https://doi.org/10.1016/j.futures.2024.103341

Krishnan, A. (2024). Foresight and anticipation in multilateral organisations. In R. Poli, Handbook of Futures Studies (pp. 404–415). Edward Elgar Publishing Limited. https://doi.org/10.4337/9781035301607.00035

Lawrence, M., Homer-Dixon, T., Janzwood, S., Rockström, J., Renn, O., & Donges, J. F. (2024). Global polycrisis: The causal mechanisms of crisis entanglement. Global Sustainability, 7(e6), 1–16. https://doi.org/10.1017/sus.2024.1

Meadows, D. H. (2008). Thinking in systems: A primer. Chelsea Green Publishing.

Minkkinen, M. (2020). Theories in Futures Studies: Examining the Theory Base of the Futures Field in Light of Survey Results. World Futures Review, 12(1), 12–25. https://doi.org/10.1177/1946756719887717

Snowden, D. (2024). As through a glass darkly: A complex systems approach to futures. In Handbook of Futures Studies (pp. 48–65). Edward Elgar Publishing. https://doi.org/10.4337/9781035301607.00011

Snowden, D., & Rancati, A. (2021). Managing complexity (and chaos) in times of crisis. A field guide for decision makers inspired by the Cynefin framework. JRC Publications Repository. https://doi.org/10.2760/353

Villman, T., & Kuusi, O. (2025). Developing the Futures Map Framework – an integrative hybrid foresight approach. European Journal of Futures Research, 13(1), 14. https://doi.org/10.1186/s40309-025-00252-w

Wet Imaginaries: Organising socio-ecological just Futures with(in) Öresund

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Keywords: speculative storytelling; ethical relationality; wayfaring methodology; environmental governance

Not a field. A collaborator. Mud underfoot. Eelgrass swaying like bureaucratic signatures. Currents drafting policy in saltwater ink.

This PhD explores what it might mean to organise with the Ocean as an active participant in social, political, and ecological life. Situated in Öresund, the narrow strait between Sweden and Denmark, the inquiry follows marine organisations, educators, scientists, and other-than-human actors to trace how oceanic futures are imagined, enacted, and unsettled in everyday practices. These futures surface in stone-reef restoration projects, the bureaucratic language of water management, and the pedagogical scripts of marine education. They raise questions that are not merely managerial or scientific, but profoundly ethical: How do we respond to the Sea as a collaborator? What stories become possible—or impossible—within frames of stewardship, advocacy, or mediation?

Methodology. A muddy approach. Compliance optional.

Drawing on Ingold's (2011) wayfaring and Haraway's (2016) speculative fabulation, I move through the field as a "Salted Wayfarer," tracing paths that emerge along interviews, observations, archival work, and multispecies encounters. Ethnographic engagements include conversations with marine educators and pilots, fieldnotes from shorelines and break rooms, and sensory encounters with eelgrass, sediments, and water. I treat stories as companions who are partial, provisional, and ethically entangled (Despret, 2005). Storytelling workshops will serve as space for speculative play, imagining oceanic futures otherwise through narratives that attend to what is murky, tentative, or still in formation.

Emerging insights.

Early fieldwork suggests marine organisations—ranging from pedagogical centres to collaborative water management bodies—are grappling with how to make sense of their responsibilities to the Sea. Some position themselves as stewards or translators, others as mediators or advocates. These roles rest on imaginaries of the Ocean that shape ethics and governance. Traditional organisational ethics, grounded in utilitarian or deontological frameworks, offers

little for these messy, relational worlds (Grant et al., 2017). Instead of neat rules, this work leans on thinkers who ask us to stay with trouble (Haraway, 2016), notice interdependence and care (Puig de la Bellacasa, 2017), and take seriously the idea that mussel reefs and salinity gradients might matter in ethical terms (Ergene & Calás, 2023). Ethics here is not a checklist; it is a practice of response and reciprocity, unfolding in tide and time.

One thorny question: consent. What does it mean to seek consent from a seagrass meadow? Or from the sedimented histories of a shoreline? Rather than treating consent as a box to tick, this project understands it as an ongoing relationship, an ethic of attentiveness and openness to encounter (Ingold, 2017). It means slowing down, listening, and sometimes letting the mud have the last word.

Connection to the theme “Designing within Paradox:” But what if design is the paradox? Governance today is imagined as making (poiesis) that seeks tangible products and predictable ends. Yet, as Hannah Arendt (1958/2018) warns in The Human Condition, this preference for making over acting risks eroding the very substance of relations. To renounce the boundlessness and uncertainty of action (praxis) is to foreclose the possibility of spontaneous, plural, and relational life—the fragile threads upon which democratic futures depend. My work responds by proposing governance not as fabrication but as improvisatory practice: a tide rather than a blueprint, a rhythm of encounters rather than a fixed design.

Provocations: What if governance learned to drift? When mud speaks, who listens? Can bureaucracy become a site of mischief rather than mastery? What worlds do stories make—and unmake—when eelgrass signs the memo?

This research does not offer remedies. It offers ripples, speculative tides that invite us to stay with the trouble (Haraway, 2016), dwell in uncertainty, and cultivate the ability to respond across difference. In this sense, storytelling is praxis, a way of weaving relations in the presence of others who will bear their consequences, rather than poiesis, the illusory promise of control.

References

Arendt, H. (1958/2018). The Human Condition (Second ed.). Universtiy of Chicago Press.

Despret, V. (2005). Sheep do have opinions. In B. Latour & P. Weibel (Eds.), Making things public: Atmospheres of democracy (pp. 360-371). MIT Press.

Ergene, S., & Calás, M. B. (2023). Becoming Naturecultural: Rethinking sustainability for a more-than-human world. Organization Studies, 44(12), 1961-1986. https://doi.org/10.1177/01708406231175293

Grant, P., Arjoon, S., & McGhee, P. (2017). Reconciling Ethical Theory and Practice Toward Developing a Business Ethics Pedagogical Model. Business & Professional Ethics Journal, 36(1), 41-65. https://www.jstor.org/stable/48561914

Haraway, D. (2016). Staying with the trouble: Making kin in the Chthulucene. Duke University Press.

Ingold, T. (2011). Being Alive: Essays on Movement, Knowledge and Description. Routledge.

Ingold, T. (2017). On human correspondence. Journal of the Royal Anthropological Institute, 23(1), 9-27. https://doi.org/https://doi.org/10.1111/1467-9655.12541

Puig de la Bellacasa, M. (2017). Matters of care: Speculative ethics in more than human worlds. University of Minnesota Press.

Reaching sustainability goals in turbulent times: how can foresight help?

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Keywords: foresight; backcasting; agrifood systems; sustainability transformations

As part of the Green Deal and the Farm to Fork strategy, the EU set a 25% target for agricultural area share in organic farming. In the OrganicTargets4EU project framework, a participatory backcasting process has been implemented to develop transition pathways to reach this goal (Zanoli et al., 2026). Backcasting consists in working backwards from a desired endpoint to define the necessary actions to reach it. In participatory workshops, stakeholders and researchers identified actions to be taken and milestones to each and organized and connected them to build a transition pathway.

This contribution takes a reflective stance. It draws on i) the results of this backcasting work, ii) recent developments in European agriculture and organic sector, and iii) broader social sciences literature on agricultural policy and agroecological transition. Building on these elements, it raises a series of questions regarding the role of backcasting—and of normative foresight more broadly—in turbulent times. What role can these approaches play, and how can their potential be effectively harnessed, when confronted with the following challenges:

- Institutions, understood in a broad sense including political institutions, long-standing policies, social relations and economic system are ill-suited for an agroecological transformation of food systems
    - Agricultural policymaking has been characterized by compartmentalized institutions with privileged access for incumbent farm groups, resulting in policies that tend to serve their interests (Daugbjerg & Feindt, 2017) but remain inadequate to tackle environmental issues. These policies are highly path-dependent and locked-in (Conti et al., 2021), reinforcing the difficulty of achieving change that meets the scale of the challenges.
    - Economic incentives do not support sustainable farming systems while leaving unchecked huge health, environmental and social costs borne by society at large.
- Ethical questions also emerge as:
    - A status quo coalition can –and indeed does- prevent sustainability transformations, as they prioritize short-term and private interests over public good.

- Policymakers do not act in line with the proven benefits of organic farming, providing limited support to organic farming, sometimes against the objectives they set or the recommendations of their own services.

The transition pathways developed through participatory backcasting rely on a contestable (and possibly outdated) theory of change, assuming that scientific evidence will drive policy change, and place their hopes on ambitious public policies despite the obstacles outlined above.

Backcasting may convey an image of transitions as linear and governable processes whereas recent events and research highlight their conflictual, contingent and power-laden nature, as well as the risk of backlash, setbacks or even reversals (Patterson et al., 2024)

Backcasting can generate valuable and strategic insights as it reconnects the long and short terms and provides short-term levers to trigger sustainability transformations. In the agrifood sector and beyond there is a proliferation of scenarios (often based on biophysical modelling) that provide desirable endpoints or visions in the distant future, for example of an agroecological Europe in 2050. However, they rarely address the question “how do we get there?” Backcasting thus fills an essential gap.

Yet, precisely because it has to deal with the short-term future, it needs to confront more directly these lock-ins, unfit institutions, difficult contexts and ethical considerations to ensure relevance and credibility. This might be seen as a paradox : backcasting and foresight are supposed to be methods intended to take a long-term perspective and tackle challenges requiring systemic change but they meet short-term obstacles that need to be addressed.

Overall, this contribution aims to trigger a discussion on the role, the added value of backcasting and foresight for sustainability transformation, and the ways to harness their potential in these turbulent times marked by stalled or reversed transitions, backlash, institutions unfitness and growing ethical questions.

References

Conti, C., Zanello, G., & Hall, A. (2021). Why are agri-food systems resistant to new directions of change? A systematic review. Global Food Security, 31, 100576. https://doi.org/10.1016/j.gfs.2021.100576

Daugbjerg, C., & Feindt, P. H. (2017). Post-exceptionalism in public policy: Transforming food and agricultural policy. Journal of European Public Policy, 24(11), 1565–1584. https://doi.org/10.1080/13501763.2017.1334081

Kishita, Y., Höjer, M., & Quist, J. (2024). Consolidating backcasting: A design framework towards a users’ guide. Technological Forecasting and Social Change, 202, 123285. https://doi.org/10.1016/j.techfore.2024.123285

Patterson, J. J., Feola, G., & Kim, R. E. (2024). Negotiating discord in sustainability transformations. Proceedings of the National Academy of Sciences, 121(21), e2310186121. https://doi.org/10.1073/pnas.2310186121

Zanoli, R., Gambelli, D., Vairo, D., Mora, O., & Schultz, E. (2026). Deliverable D2.1 – Scenarios for the development of the organic sector. OrganicTargets4EU, IFOAM Organics Europe. https://doi.org/10.3030/101060368

Kenotic Governance: Institutional Relinquishment for Regenerative Futures in Churches and Faith-Based Organizations

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Keywords: kenosis; social identity; political grief; relinquishment; identity fusion

This interdisciplinary research addresses the crisis of cascading Christian polarization and the increasing precedence of socio-political identity alignment over Christian witness facing executives in the religious sector. Currently, leaders of faith-based organizations (FBOs) and churches find themselves caught in a profound design paradox rooted in unrecognized grief. These institutions are often structurally engineered for self-preservation, which functions as a trauma-informed response to perceived cultural scarcity, yet they are theologically called to kenosis, the imperative of intentional self-emptying. This structural friction is exacerbated by deep-seated political polarization, where religious identity is increasingly fused with partisan social identity (Tucker, 2011). When identity-based threat occurs, it manifests as Political Grief, a form of disenfranchised loss that has no formal language or liturgical space within the institutional sanctuary (Harris, 2025).

Central to this "stuckness" is a crisis of power, authority, and influence. In highly polarized contexts, leadership often shifts from the pursuit of shared moral authority to the defensive maintenance of partisan influence. Drawing on the psychology of identity-based leadership, this study suggests that leaders may cling to entrenched power structures as a primary means of ensuring in-group survival against perceived cultural threats (Reicher et al., 2020). In this state, authority is no longer viewed as a gift for communal flourishing but as a scarce resource to be hoarded. This preoccupation with maintaining the seat of power creates an ethical dislocation, where the preservation of the group's social status supercedes the organization’s actual mission. Consequently, the drive for in-group influence weaponizes institutional governance against its own theological mandate, effectively inhibiting spiritual witness (Braunstein, 2017).

Because this grief and the resulting power-clinging remain unmediated, they migrate into the organizational psyche as a chronic state of institutional trauma. This trauma results in a refusal to mourn the necessary end of programs or structures, prioritizing the traumatized survival of the institution over its regenerative potential. Situated at the nexus of Theology, Ethics, Psychology, and Strategic Foresight, this research asks: How can a model of Kenotic Governance be designed to help leaders metabolize institutional and political

grief to intentionally relinquish entrenched power? By framing governance as a container for grief, the project seeks to move FBOs from anxious agents of control to catalysts for radical communal agency, regenerating futures.

The investigation employs a mixed-methods Action Research approach designed to link trauma-informed practice with design intervention. Utilizing Causal Layered Analysis (CLA) as a leadership diagnostic (Inayatullah, 2007), the research deconstructs the deep myths driving institutional anxiety. It specifically exposes the Trauma of Permanence, where the fear of institutional death functions as a defense mechanism against loss. This diagnostic phase informs the development and piloting of the Kenotic Governance Framework (KGF). Using the Four Scenarios method, the KGF functions as a liturgy of loss, guiding governing boards through ethical dilemmas where the institution must diminish or relinquish power to allow the community to flourish. Finally, the research utilizes participatory protocols from Theological Action Research to evaluate whether this grief-work as governance successfully shifts success metrics from self-preservation to communal agency.

The primary output is the Kenotic Governance Framework (KGF), a transferable model for institutional transformation. Secondary results include a Taxonomy of Institutional Grief, identifying where structural rigidity is a symptom of unprocessed trauma. The research anticipates demonstrating that futures literacy, grounded in the theological principle of kenosis, transforms structural obstacles into opportunities for healing (Carmack & DeGroot, 2018). This project directly engages the theme of "Designing within Paradox" by arguing that the crisis in FBOs is a psychological and theological paradox of grief. The KGF shifts the ethical orientation from self-preservation to self-offering, addressing "Ethical Dislocation" by forcing institutions to unlearn habits of control.

Provocations for Dialogue:

- The Trauma of Identity Survival: Is the design imperative for institutional permanence actually a trauma response intended to protect the power and influence of a polarized in-group identity?
- The Idolatry of Social Identity: Does the refusal to let a fused social identity "die to self" for the sake of the Gospel constitute a form of corporate idolatry rooted in unmourned political grief?
- Designing for Relinquishment: How do we design governance models that normalize the relinquishment of partisan authority as a critical function of faithful leadership in a future of radical uncertainty?

References

Braunstein, R. (2017). Prophets and patriots: Faith in democracy across the political divide. University of California Press.

Carmack, H. J., & DeGroot, J. M. (2018). Trauma metaphor use after Hillary Clinton's loss in the 2016 presidential election. Journal of Loss and Trauma, 23(6), 468–483.

Haidt, J. (2012). The righteous mind: Why good people are divided by politics and religion. Vintage Books.

Harris, D. L. (2025). The role of threat, meaning, and religion in political grief. Religions, 16(3), 1–24.

Inayatullah, S. (2007). Questioning the future: Methods and tools for organizational and societal transformation. Tamkang University Press.

Klein, E. (2020). Why we're polarized. Avid Reader Press.

Reicher, S., Haslam, S. A., & Platow, M. J. (2020). The new psychology of leadership: Identity, influence and power (2nd ed.). Routledge.

Tucker, J. B. (2011). Remain in your calling: Paul and the social identity of the Corinthians. University of Chicago Press.

Embodied Anticipation: Re-Sensing Hope Through Multisensory Participatory Transdisciplinary Design

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Keywords: embodied anticipation; hope as method; embodied relational practice; paradox and uncertainty; transdisciplinary design research; collective future orientation; multisensory participatory design

Hope has long been recognized as a vital resource for human survival and collective resilience, particularly in periods of prolonged crisis. Reflecting on his survival of Auschwitz, Viktor Frankl described hope as inseparable from meaning and purpose, positioning it as an active and sustaining force (Frankl, 1946/1985). In our zeitgeist overshadowed by a global polycrisis, marked by climate instability, political polarization, and social fragmentation, hope plays a critical role in sustaining agency and future orientation. As a future-oriented phenomenon, hope operates as a form of anticipation, shaping how possible futures are sensed, interpreted, and enacted. In inquiry, hope is primarily approached as a cognitive or psychological construct, measured through language-based and self-report indexes (Snyder et al., 2002; Herth, 1992; Leshem, 2023).

This paper investigates how participatory and multisensory design can ignite and cultivate embodied, action-oriented experiences of hope. It approaches hope not as an abstract mental state, but as a sensory, relational, and experiential phenomenon that can be activated and sustained through intentionally designed encounters. To structure this inquiry, I developed two interconnected frameworks: the Hope Activation Spiral and the Embodied Arc.

The Hope Activation Spiral distinguishes between the processes of igniting and sustaining hope. Igniting hope refers to an initial affective shift that opens individuals to new possibilities. This stage draws on Keltner's work on awe, which demonstrates how moments of perceptual expansion can dissolve the sense of self and create conditions for possibility and connection (Keltner, 2023). Sustaining hope refers to the continuation of this state through repeated, embodied micro-actions. This stage draws on Fogg's work on behavior change, emphasizing how small, achievable actions reinforce agency and build momentum over time (Fogg, 2019). Together, these processes describe hope as a dynamic loop between affective activation and ongoing practice.

The Embodied Arc provides a complementary structure for understanding how hope is experienced and enacted. It frames hope as unfolding through three

interconnected movements. Birth refers to the initial felt emergence of possibility. Expansion situates this possibility within broader relational, social, and global contexts, drawing on the relational dimensions of hope (Snyder et al., 2002; Herth, 1992). Action refers to the behavioral expression of hope through concrete steps and commitments. Rather than a linear sequence, these movements operate as a continuous experiential arc through which hope is sensed, shared, and enacted.

These two frameworks directly inform the design of the multisensory research project, The Rebirth of Hope, shaping both its structure and its experiential logic. The project unfolds through a sequence of interconnected touchpoints in which the Embodied Arc provides the prompts that detail one's sense of hope, while the Hope Activation Spiral structures how participants move through them over time.

The experience begins with a communal dining ritual in which participants engage with taste as an embodied method for accessing memory, affect, and tacit knowledge (Korsmeyer, 1999; Sutton, 2001). Through guided prompts, participants identify and select ingredients corresponding to the Birth, Expansion, and Action dimensions of their hope. The sensory intensity of taste, combined with immersive audio and blindfolding, supports the ignition of hope through affective and perceptual engagement, aligning with Keltner's model of awe.

Interpersonal exchange and shared dining extend this process, situating individual experiences within a relational field. As participants articulate and witness each other's selections, hope expands beyond the individual into a collective orientation. This stage reflects both the Expansion movement of the Embodied Arc and the reinforcing loop of the Hope Activation Spiral.

After a communal dining experience, where each participant eats their unique taste of hope, participants mark their ingredient selections. These selections are then translated through a mapping system into chords, colors, and shapes, drawing on aesthetic notation (Goodman, 1968) and data humanism (Lupi and Posavec, 2016). This translation externalizes internal states, making them perceptible and shareable. The process of seeing one's hope represented visually and musically reinforces engagement and continuity.

These visual scores are performed live as The Collective Music of Hope, where each participant contributes a 5-second segment of sound to a shared composition (Levitin, 2006). This collective performance transforms individual intention into shared expression through an embodied experience. At the same time, participation in the performance reinforces the sustaining dimension of hope, as individuals experience themselves as active contributors to a collective future.

By foregrounding multisensory and participatory engagement, this research expands existing models of hope beyond cognition, introducing an embodied and experiential dimension. It demonstrates how design can function as a mode of inquiry into phenomena that resist verbal articulation, enabling new forms of knowledge production through sensing, making, and collective participation.

Ultimately, the paper positions multisensory participatory design as a rigorous approach for investigating how hope is generated, sustained, and oriented toward action. By treating design and aesthetics as central to anticipatory practice, the research contributes to interdisciplinary discussions on how individuals and communities navigate uncertainty and cultivate future-oriented capacities in conditions of ongoing crisis.

References

Frankl, V. E. (1985). Man's search for meaning. Washington Square Press. (Original work published 1946)

Fogg, B. J. (2019). Tiny habits: The small changes that change everything. Houghton Mifflin Harcourt.

Goodman, N. (1968). Languages of art: An approach to a theory of symbols. Bobbs-Merrill.

Herth, K. (1992). Abbreviated instrument to measure hope: Development and psychometric evaluation. Journal of Advanced Nursing, 17(10), 1251–1259.

Keltner, D. (2023). Awe: The new science of everyday wonder and how it can transform your life. Penguin Press.

Korsmeyer, C. (1999). Making sense of taste: Food and philosophy. Cornell University Press.

Leshem, O. A. (2023). Rethinking hope: A two-dimensional model of hope. Review of General Psychology, 27(2), 178–189.

Levitin, D. J. (2006). This is your brain on music: The science of a human obsession. Dutton.

Lupi, G., & Posavec, S. (2016). Dear data. Princeton Architectural Press.

Pink, S. (2015). Doing sensory ethnography (2nd ed.). Sage. (Original work published 2009)

Schön, D. A. (1983). The reflective practitioner: How professionals think in action. Basic Books.

Snyder, C. R., Irving, L. M., & Anderson, J. R. (2002). Hope and health: Measuring the will and the ways. In C. R. Snyder & S. J. Lopez (Eds.), Handbook of positive psychology (pp. 257–276). Oxford University Press.

Spinuzzi, C. (2005). The methodology of participatory design. Technical Communication, 52(2), 163–174.

Sutton, D. E. (2001). Remembrance of repasts: An anthropology of food and memory. Berg.

Prefigurative politics, futurity: Youth Media Co-Creation for Climate Justice

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Keywords: Youth climate activism; participatory media; climate futures; digital storytelling; prefigurative politics

This proposed PhD project examines how youth living on climate frontlines in Toronto and Malmö may co-create digital audio-visual media as a form of anticipatory and prefigurative democratic practice. Situated at the intersection of youth climate justice, activist media, and anticipation studies, the project explores how collaborative media-making can function as a form of world-building that prototypes alternative social, political, and ecological futures amid institutional breakdown and democratic precarity.

Building on previous master's research examining UN-affiliated youth climate documentaries, the study begins from the critique that institutional climate media frequently reproduces sentimental, techno-capitalist, and human-centred imaginaries while positioning youth as symbolic moral actors rather than political agents (Terry, 2023; Lajarthe & Laigle, 2024; Castañeda, 2002). In response, this research asks how co-creative media practices might challenge dominant anticipatory frameworks and open space for more equitable and collective political horizons.

Empirically, the project will (in 2028) convene a transnational youth climate justice media collaboratorium involving youth-led organizations in Canada and Sweden. Methodologically, the research will combine Youth Participatory Action Research, Participatory Action Research, and arts-based research-creation through workshops, collaborative filmmaking, ethnographic observation, interviews, journals, and media analysis. Analytically, the project approaches media as a scene of action shaped by affect, collaboration, negotiation, and infrastructural constraint (Askanius, 2019; Loveless, 2019; Kulick, 2014). Ultimately, the research seeks to investigate how youth media practices may contribute to reimagining climate governance, democratic participation, and collective futurity in an era marked by institutional unfitness and ethical dislocation.

References

Askanius, T. (2019). Video activism as technology, text, testimony, or practices? In H. C. Stephansen & E. Treré (Eds.), Citizen media and practice (pp. 136–151). Routledge. https://doi.org/10.4324/9781351247375-10

Castañeda, C. (2002). Figurations: Child, bodies, worlds. Duke University Press.

Kulick, R. (2014). Making media for themselves: Strategic dilemmas of prefigurative work in independent media outlets. Social Movement Studies, 13(3), 365–380. https://doi.org/10.1080/14742837.2013.831754

Lajarthe, F., & Laigle, L. (2024). Bringing the future back to the present: Futures literacy as a tool for transformative action. Futures, 160, 103384. https://doi.org/10.1016/j.futures.2024.103384

Loveless, N. (2019). How to make art at the end of the world: A manifesto for research-creation. Duke University Press.

Terry, M. (2023). Speaking youth to power: Influencing climate action through youth-led activism and advocacy. Springer International Publishing. https://doi.org/10.1007/978-3-031-14298-7

Co-Designing Transitions: Amplifying Circularity Through Cultural Food Practices

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Keywords: embodied anticipation; multisensory participatory design; designing hope; aesthetic inquiry; collective future orientation

As climate change compels food systems to adapt and urban populations continue to grow, cities become critical sites for examining how fair and sustainable food transitions might unfold (FAO et al., 2023). Exploring the complexity of food consumption - how people purchase, prepare, and consume food - is increasingly relevant in this context, particularly in the domestic sphere where most daily choices occur and significant waste is produced. In these domestic spaces, food choices are rarely purely functional; they are culturally situated acts entangled with identity, memory, and meaning-making. Yet, such cultural complexity remains significantly underexplored in dominant transition discourses in food systems. Policymakers and businesses largely apply circular economy approaches that treat food as material flows to optimize, overlooking its cultural embeddedness (Corvellec et al., 2022). Instead, they frame food as a “commodity” and individuals as “consumers” (Jackson et al., 2021). Framing food transitions as technical processes governed by market logics implicitly determines only “one possible future” for sustainable food systems. This universalist position (De Bruin et al., 2024) contrasts sharply with the incommensurable food realities lived by individuals. These realities are entangled in intersectional positionalities and multiple ontologies that position food far beyond materiality, relating it complexly to culture, ecology, economy, and justice. The paradox of this universal approach is that rather than eliminating injustices, it systematizes them by obscuring the multiple intersectional food ontologies existing in urban contexts. This research aims to explore these contradictions by investigating how food-related cultural practices might inform more just and inclusive circular transitions.

Methodology: Situated in Barcelona and Melbourne - multicultural cities facing climate impacts and diverse food cultures - this study operates at the scale where food governance actually occurs: in homes. It examines domestic food consumption practices as a site where multiple food futures are negotiated daily. The research employs a participatory design approach that integrates qualitative, ethnographic observation with participatory documentation methods. Specifically, methods such as Food Diaries and Market Walks have already been applied in Barcelona to investigate how people navigate food decisions within the intersection of cultural, temporal, economic, and infrastructural

constraints. Furthermore, the research employs comparative observations and case study analysis between Barcelona and Melbourne and explores co-cooking as a situated co-design method

to investigate and amplify just circular transitions specifically within the Barcelona context.

Expected or Emerging Results: This research aims to contribute both theoretically and methodologically to understanding just circular transitions in urban food systems. Theoretically, the research aims to provide insights to integrate human, domestic, and daily food consumption practices into meta-governance models. This integration is intended to support more just and fair approaches to realizing circular economy ambitions. A crucial aspect of this contribution is exploring what it means to genuinely recognize di[erent ontologies and intersectionality within circular design frameworks. Methodologically, the research aims to develop a food-based co-design method. Specifically, it investigates whether co-cooking constitutes a suitable co-design method to amplify circular and just food transitions in urban contexts.

Connection to the PhD Summer School Theme: This research connects to the theme “Designing within Paradox: Reconfiguring Governance in Times of Institutional Unfitness and Ethical Dislocation” by exposing the fundamental paradox of circular food governance: it aims for "just" transitions yet imposes universal frameworks that erase the intersectional and culturally embedded diversity required for justice. This highlights institutional unfitness, as current governance tools are designed for the technical optimization of material flows and are unable to account for the cultural, relational, and emotional dimensions of food. Consequently, communities experience ethical dislocation, where their situated knowledge and daily practices are rendered invisible or “incorrect” by dominant models.

Provocations for Dialogue and Debate:

- What happens to justice when circular food governance insists on a single, universal vision of the "good" transition in contexts where food realities are radically di[erent and sometimes in tension?
- If people already hold sustainability values but are constrained by time, infrastructure, or income, what exactly is the role—and the limit—of “informed” consumption in transition narratives?
- Can transition governance frameworks truly address circularity while treating food merely as a commodity to be optimized? Or might governance be reconfigured to start from food as a relational, cultural practice, even if this makes measurement more complex?

- Is it possible to design participatory processes that surface conflict and incommensurable values without forcing consensus—and could such spaces inform more fair forms of anticipatory governance?

References

Corvellec, Hervé, Alison F. Stowell, and Nils Johansson. 2022. “Critiques of the Circular Economy.” Journal of Industrial Ecology 26 (2): 421–32. https://doi.org/10.1111/jiec.13187.

De Bruin, Annemarieke, Imke J.M. De Boer, Niels R. Faber, Gjalt De Jong, Katrien J.A.M. Termeer, and Evelien M. De Olde. 2024. “Easier Said than Defined? Conceptualising Justice in Food System Transitions.” Agriculture and Human Values 41 (1): 345–62. https://doi.org/10.1007/s10460-023-10482-y.

FAO, IFAD (International Fund for Agricultural Development), UNICEF (United Nations Children's Fund), WFP (World Food Programme), and WHO. 2023. The State of Food Security and Nutrition in the World 2023: Urbanization, Agrifood Systems Transformation and Healthy Diets across the Rural–Urban Continuum. Rome: FAO. https://www.fao.org/3/cc3017en/cc3017en.pdf

Jackson, Peter, Marta Guadalupe Rivera Ferre, Jeroen Candel, et al. 2021. “Food as a Commodity, Human Right or Common Good.” Nature Food 2 (3): 132–34. https://doi.org/10.1038/s43016-021-00245-5

Social foresight for food system transformation: Social entrepreneurship and governance in Bottom-of-the-Pyramid Contexts

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Keywords: social foresight; anticipatory capacities; social business model design; bottom of the pyramid; anticipatory governance

Amid rising social and economic inequalities, intensified by what has been described as a global "polycrisis," (Larence et al., 2022), the need for alternative pathways to development has become increasingly urgent. Bottom-of-the-Pyramid (BoP) contexts – characterised by structural vulnerability, limited access to essential resources, and institutional fragility – require approaches that move beyond dominant capitalist trajectories of growth (Barki et al., 2015). Instead, they call for the imagination and design of futures that are plural, community-centred, and oriented towards collective well-being (Escobar, 2018; Poli, 2015).

This doctoral research explores how social foresight can support the design and scaling of social entrepreneurship in BoP markets. Social foresight is understood, following Slaughter (2004), as "the human capacity to engage in speculative imagination, opening up a panorama of possible futures […] filled with images, meanings and possibilities". Beyond an individual cognitive ability, it constitutes a collective social capability through which communities can imagine, deliberate, and co-construct alternative futures.

Situated at the intersection of critical futures studies, social entrepreneurship, and business model design, the research is grounded in a systematic literature review that establishes the conceptual foundations of social foresight. Building on this, the project investigates how collective anticipatory capabilities and practices can contribute to paradigm shifts within social entrepreneurship, particularly in the design of business models that seek to balance social impact with economic viability.

At the core of this research lies a set of structural paradoxes fit for the theme of the summer school: social enterprises in BoP contexts must scale to increase impact, yet scaling often risks eroding local embeddedness, and equity. They must operate within dominant market logics while simultaneously attempting to transform them. They must engage with institutional frameworks that are often ill-equipped—if not structurally misaligned—with the realities of vulnerabilised communities. These conditions reflect forms of institutional unfitness and ethical dislocation, where existing governance systems fail to adequately address

complex social challenges. This project therefore reframes social foresight not merely as a strategic or analytical tool, but as a design practice that intervenes in business model creation and community governance. Through participatory and anticipatory processes, social foresight can reconfigure how decisions are made, whose knowledge is recognised, and how value is defined within business model ecosystems.

Empirically, this is explored through a participatory action research case study in the context of food system transformation in Piketberg (Western Cape, South Africa), where Futures Literacy Labs are employed to strengthen anticipatory capabilities and support the co-design of local social innovation, enabling stakeholders to collectively navigate uncertainty while critically examining dominant development paradigms and their underlying assumptions.

To stimulate dialogue within the summer school, the research proposes the following provocations:

- What alternative forms of social innovation and governance emerge when futures are co-designed across radically unequal contexts?
- How can research and design practices in contexts of structural inequality avoid reproducing extractive dynamics, even when they are explicitly oriented towards inclusion and social impact?
- In working with vulnerabilised communities, how can participatory approaches in foresight or co-design move beyond forms of epistemic extraction and instead enable genuinely reciprocal processes of mutual learning?
- Where is the line between enabling transformation and imposing external frames of knowledge, and who gets to define what “impact” or “progress” should look like?

Worldbuilding as Anticipatory Governance: Intergenerational Feminist Visions for Inclusive Peacebuilding at the United Nations

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Keywords: anticipatory governance; feminist foresight; intergenerational leadership; worldbuilding; UN peacebuilding; participatory design; temporal justice; human security

UN reform toward inclusive peacebuilding represents the need for a fundamental institutional shift from hierarchical, state-centric peace processes to participatory models centred on marginal voices. Catalyzed by the Women, Peace and Security agenda (UNSCR 1325, 2000) and the Youth, Peace and Security agenda (UNSCR 2250, 2015), this transformation challenges the liberal peace paradigm's top-down architecture. The "Sustaining Peace" resolutions (2016) operationalized inclusion as a core principle, mandating that peace processes address structural inequalities driving conflict. Yet implementation reveals persistent gaps: women comprise only ~6% of peace agreement signatories, and youth remain systematically excluded from formal negotiations despite constituting the demographic majority in post-conflict contexts (Simpson, 2018). Critical scholars argue that tokenistic inclusion such as simply adding women and youth to existing power structures results in reproducing patriarchal governance rather than transforming it. Feminist and intergenerational scholarship (Lee-Koo and Pruitt, 2024; Milojević 2024; Boulding, 2000; Simpson, 2018) suggests that genuine inclusive peacebuilding requires dismantling the institutions and epistemologies of liberal peace itself. They propose using locally-rooted, anticipatory feminist methodologies to imagine alternative futures for inclusive and transformative intergenerational, intersectional peace-building that centres those historically excluded from decision-making power. The UN's anticipatory capacities remain trapped in predictive, short-term planning cycles. Due to the organisation prioritising measurable outputs over transformative change, this temporal constraint perpetuates what Christie and Algar-Faria (2020) call "policy time". Various parts of the UN Inclusive Peacebuilding architecture privileges donor cycles over intergenerational time and local temporalities of social repair. Consequently, the structural barriers prevent genuine inclusion and keep hierarchies rooted in patriarchy and colonial logics of expertise in place. Furthermore, ageist gatekeeping, and asymmetrical power relations remain

largely unexamined and uncontested. This research addresses a critical gap: Can participatory foresight praxis that centres the visions, lived experiences, and temporal ethics of peacebuilders across generations transform the futures of inclusive peace in the UN system? How can anticipatory governance be reimagined through intergenerational feminist worldbuilding? This study reframes anticipation as a relational, embodied, and politically situated practice of co-creating futures. Drawing on feminist foresight scholarship (Milojević, 2022; Haraway, 1991), the research recognizes that all visions of the future are partial, embodied, and power-laden. Traditionally, dominant foresight epistemologies privilege linearity, rationality, and institutional control, feminist anticipatory governance foregrounds care, paradox, embodiment, and plurivocality as essential capacities for navigating post-normal conditions, institutional unfitness, and ethical dislocation. The research employs a suite of foresight methodologies as transformative praxis for collective imagination and institutional critique [the Futures Triangle (Inayatullah, 2013), Emerging Issues Analysis (Miller, 2018), Visioning (Boulding, 2000), and Causal Layered Analysis (Inayatullah, 2022)]. These tools are used for co-facilitating participatory worldbuilding workshops with feminist peacebuilders across three generational cohorts: senior/established leaders, mid-career practitioners, and emerging/younger activists. Participants will: Map the pulls of their preferred futures for UN inclusive peacebuilding, the pushes of current structural drivers, and the weight of historical barriers while taking stock of emerging issues that continue to influence the trajectory of UN Inclusive peacebuilding; Collectively envision alternative institutional futures where human security, everyday peace, and intergenerational care are embedded in governance logics; Use Causal Layered Analysis to deconstruct visions across four levels: the litany (surface narratives of inclusion), the systemic (donor-driven project cycles and institutional architecture), the worldview (paternalism, colonial difference, ageist epistemologies), and the myth/metaphor (underlying narratives about youth, women, and leadership). These visions function as speculative design prototypes that are often coherent storyworlds that simultaneously expose the constraints of existing UN architectures and rehearse new configurations of power, temporality, and collective responsibility. Furthermore, this study positions worldbuilding as both method and political intervention. Worldbuilding enables participants to design futures as systems of action (Pendleton-Jullian & Brown, 2018), moving beyond institutional critique to authorship of alternative governance imaginaries. In doing so, worldbuilding surfaces and engages the paradoxes central to the conference theme Designing within Paradox. Rather than resolving these tensions, the research holds them generatively as sites of transformation by touching upon temporal paradoxes, participatory paradoxes and institutional paradoxes. By deconstructing these paradoxes through participants' co-created visions, the study reveals which institutional futures are structurally foreclosed by current governance logics and which remain

negotiable and imaginable. The research employs a participatory foresight methodology grounded in feminist and decolonial epistemologies. Rather than extracting data from research subjects, the workshops function as transformative learning spaces where peacebuilders collectively theorise their own experiences, collectively critique structural barriers, and collectively author alternative futures. The research honours what Milojević (2024) calls feminist epistemologies of anticipation that are ways of knowing futures that centre relational accountability, situated knowledge, affect, and care as valid forms of evidence and insight. Preliminary findings from pilot consultations (2023-2024) reveal persistent generational rifts rooted in: (1) knowledge hierarchies that privilege institutional/international expertise over lived experience and local knowledge; (2) temporal hierarchies where older generations' timeframes are treated as more legitimate than youth-centred urgency or futures-focused timescales; (3) affective labour whereby women and young people bear the emotional and relational work of inclusion while remaining excluded from decision-making; and (4) structural gatekeeping wherein organisational cultures actively resist cultural change despite formal commitments to inclusion. Significantly, when given foresight tools and protected space for imagination, participants consistently envisioned radically different institutional futures that centre: distributed leadership across generations; temporal pluralism (holding multiple timescales simultaneously); care and repair as governance principles; epistemic justice (recognising diverse forms of knowledge and expertise); and power-sharing mechanisms embedded in institutional design. These visions challenge claims that UN transformation is "unrealistic" or "impractical." By treating worldbuilding as a form of anticipatory governance, this research is an invitation for exploring how design, imagination, and institutional critique can converge to reconfigure multilateral peacebuilding for post-normal conditions. It offers both theoretical insights and praxis-based methodologies for democratising anticipatory capacity and embedding feminist, intergenerational approaches into global governance innovation.

Reimagining Mobility Futures in the North West of England

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Keywords: mobility; transition; co-design; community; governance; creativity; futures; justice

In response to the urgency of the climate crisis and the broader harms associated with automobility – our current car-dominated mobility system – there is growing appetite for a shift in human mobility towards a more sustainable and just form. The challenge of mobility transition is immense, as compounding sociocultural, political economic, and geographical mechanisms conspire to 'lock-in' a car-dependent status quo. Recognising that conventional policy approaches to this challenge will not be sufficient alone, there is a turn towards deliberative participatory alternatives, which are posited to increase the transparency, quality, legitimacy, and hence acceptability, of politically contentious transport interventions.

My PhD focuses on understanding how co-design can be augmented to reimagine mobility futures in North West England by not only asking research participants what alternative mobility futures could look like, but also how they can then be achieved within, through, and beyond existing political realities. As such, I will be exploring how co-design can be used as a form of political mobilisation which harnesses the inherent participatory nature of mobility to and perturb society towards meaningful mobility transition by redistributing explicit anticipatory agency. This should be seen as both a challenge and complement to existing state-authorised approaches.

To investigate this my research will deploy qualitative research methods such as walking and semi-structured interviews, focus groups, and facilitated visual and arts-based methods to understand how the attitudes, ideas, and behaviours of participants evolve as they partake in an iterative series of place-based mobility co-design workshops. These workshops will involve explicit treatment of known motonormative status-quo biases – our shared tendency to view car use as a normal, necessary, and desirable whilst disregarding its blatant concurrent harms and inefficiencies.

I focus on under researched rural and peri-urban communities beyond the 'urban periphery' where the question of what dignified and just sustainable transport could look like remains, and the opportunity of mobility transition is least anticipated.

Whilst still at an early stage, I expect my research to provide insight into rural and peri-urban perspectives on mobility transition; the transferability and scalability of participatory approaches to different geographies; and the efficacy of creative co-design to generate and leverage anticipation for mobility transition.

My work closely intersects with the Summer School's theme of 'Designing within Paradox': the struggle for mobility transition is plagued by a complex web of seemingly paradoxical behavioural phenomena; democratic myopia continues to lock-in automobility despite rhetoric to the contrary; and existing consultative processes – the normative practice of democratic change – actively entrench the status quo. My project seeks to understand how augmented co-design can be used to politically perturb these existing transport governance infrastructures and radically reimagine new ones. I also engage with the broader themes of Anticipation, asking communities themselves how they can be empowered to create and act on their own futures, and how speculative participatory approaches can confront the cultural hegemony of the car.

My work raises important questions of mobility and transition justice, as well as of power, place, and the role of the public. I also consider if, how, and when existing stakeholders and policymakers should be invited into the co-design process. Further, I explore how participant-researcher trust can be built and positionality conserved within such an overtly political framing.

I finish with some provocations for the Summer School based on my research:

- Whose anticipation matters and what is the role of the citizen in bringing about just and sustainable transitions?
- How can speculative ideation of alternative mobility futures help us unlearn and challenge our status quo biases?
- Can participatory design approaches democratise anticipation during a time of dominant technocracy and techno-optimism?
- How can futures be leveraged in the relational and material practice of pursuing transition?