Sussex Research

Climate Uncertainty and the Arts

Joseph Walton

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Climate uncertainty and the arts

Rethinking the role of the arts in climate action

PASTRES
Pastoralism, Uncertainty, Resilience

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Correspondence

j.c.walton@sussex.ac.uk

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Executive summary

Climate uncertainty and the arts

Uncertainty is an intrinsic part of all policy, planning and practice. In connection with climate change, uncertainty has unique features which require innovative interdisciplinary methods alongside traditional approaches. Arts practice can foster complementary and alternative approaches to uncertainty.

Arts practice is however often not well understood in science, policy and organisational contexts. Arts practitioners may bring unfamiliar ways of working and evaluating progress and success. Where there are inappropriate expectations (such as wishful thinking) this may lead to ineffectual or even adverse results. Care should be taken not to overestimate the capacity of arts workshop participants to imagine alternative climate futures from scratch, without adequate information, inspiration, space and support. The role of arts practice should also be considered within the context of wider cultural production, climate policy, and the science and political economy of climate change. Arts practitioners are seldom well-placed to comprehensively evaluate the impact of arts interventions within these contexts.

Risk, uncertainty, and climate change

Risk and uncertainty are an inevitable part of policy, planning and practice. **Traditional risk management** typically assumes that risks can be identified, quantified, and treated. However, in the context of climate action, these assumptions often break down. Climate action can benefit from innovative interdisciplinary approaches, including arts practice. Such approaches have potential to accommodate a plurality of viewpoints.

As is now widely recognised, climate change involves interactions among **nonlinear systems**, within which small changes can lead to large and unpredictable outcomes. **Tipping points** are critical thresholds in a system that, once exceeded, lead to a relatively rapid reorganisation of the system, often irreversible. For example, the collapse of the Atlantic Meridional Overturning Circulation (AMOC) could have a devastating impact on global climate. Such climatic tipping points are by definition challenging to identify with precision and confidence.

Cascade risks exist because of the complex interconnections among multiple climate and socioeconomic systems. Drought in one region can impact food security in another, which can in turn impact social unrest, political stability, and so on. Tipping points can also exist within socioeconomic systems, and across climate and socioeconomic systems.

Climate transition must operate across **multiple scales,** and there can be misalignment between entity-level risk and systemic risk. For example, a firm can manage its own climate risk in ways that exacerbates climate risk for others, as well as its own climate risk when viewed on a longer time horizon. "*[C]limate risk management (CRM) is often erroneously conflated with seeking or achieving alignment with climate outcomes (ACO). While there is some overlap […] they have different objectives and often different results*" (Caldecott 2020).

Climate risk is also complicated by **reflexivity and performativity**. In other words, the ways we think about and express risk affects what risks exist. Some transition risks are at least partly policy constructs, which seek to influence behaviours by changing the risk landscape.

Arts-led approaches to climate uncertainty

The arts refers to all kinds of creative activities such as literature and storytelling, visual arts, performing arts, music, game design, and so on.

Arts practice can be used as a tool to **communicate** and to **educate** around climate issues, including risks and uncertainties. For example, artistic enrichment has the potential to make relevant information more memorable and relateable. The arts can help to provide rapid accessible education on technical topics, often using analogy and metaphor to create non-technical proxies.

The arts can also be used as part of **participatory processes**, for example to engage stakeholders, to create new public forums, or to change the way people think and act within existing forums. Arts practice can also be incorporated into formulating visions and strategies, and can inform **decision-making**.

The arts already play an important roles across climate policy, planning, and practice. The arts also have many **untapped potentials**. However, it is also important to be clear about **limitations**: about what the arts can and cannot do, as well as potential for adverse impacts.

No uncertain terms?

Is there a risk we misunderstand *risk*? Are we certain about the word *uncertainty*? One useful and influential definition treats **risk** as quantified or in principle quantifiable, and **uncertainty** as unquantified or in principle unquantifiable (Knight 1921). But what counts as 'quantified' or 'quantifiable'? Every quantification embeds various political values and assumptions about how the world works: "All that can reliably be known in any situation, is the uncertainty under a *particular view* – not the *actual* uncertainty in the situation itself. […] A *risk* is what results from a structured calculation that must necessarily reflect a particular view. An *uncertainty* is what these risk calculations might leave out" (Stirling 2019).

This is broadly the PASTRES approach, for example. On the other hand, this terminological distinction is not followed universally. Since it is unlikely that a standardised distinction between risk and uncertainty will gain universal acceptance any time soon, the best we can do is be aware of how terms are being used in a given context. In particular, the IPCC defines **risk** as the potential for adverse consequences for human or ecological systems (recognising the diversity of values associated with such systems). Risks are typically broken down into hazard, vulnerability, and exposure, and different types of **uncertainty** may be associated with each component. In IPCC use of the term, uncertainty may or may not be quantifiable: "Uncertainty can be […] represented by quantitative measures (e.g. a probability density function) or by qualitative statements (e.g. reflecting the judgement of a team of experts)" (AR6 WGI 2021). The IPCC also uses calibrated confidence language: when terms like *very likely* appear in italics in IPCC publications, it implies evaluation of the available evidence according to a standard IPCC framework.

Concepts of risk are not uniform, e.g. risk will be understood differently in a disaster management context compared to an ESG context. So there is potential not only for misunderstanding, but for misunderstanding to go unnoticed. Nevertheless, risk is institutionalised across many policy, business, and finance contexts with *some* consistency. Risk has therefore become a key concept for aligning climate action across different spheres and scales. The term *uncertainty* is comparatively less institutionalised. In particular, physical scientists and policymakers may attach quite different meanings to the word: "To someone from a non-scientific background, the word *uncertainty* is associated with hesitancy" (Walton et al. 2022a: 12).

Another distinction sometimes used (e.g. in decision theory) is between **uncertainty** and **deep uncertainty**, which has similarities to the Knightian distinction between risk and uncertainty. "Climate change is commonly mentioned as a source of deep uncertainty. The question of assigning probabilities to future scenarios of climate change is particularly controversial" (Marchau et al. 2019).

Communication, participation, democratisation

Arts practice is often viewed as a tool to **communicate** science and policy more effectively. "*Scientists often find it difficult to communicate with the general public. [...] the arts have long communicated issues, influenced and educated people, and challenged dominant paradigms*" (Curtis, Reid, and Ballard 2012). This might include the communication of **complex and uncertain** climate-related information.

However, **the ability of arts practitioners to assimilate and/or communicate such information effectively is highly variable**. Furthermore, not every arts practitioner is capable of or interested in engaging the kinds of audiences, or stirring the kinds of emotional responses, that science, policy, and development collaborators might expect. Framing arts practice in this way tends to obscure the many other ways arts practitioners can contribute.

In particular, **participatory arts practices**, which break down the barriers between artists and non-artists, can help to create spaces for reflection and dialogue by transforming the emotional and political charge of key issues. In these spaces, conventions of 'work' and 'play' may be productively uncertain. A simple example would be when stakeholders are more willing to devote time to formulating their views on an issue because the engagement activity feels like entertainment and leisure.

In these ways, the arts can be used to facilitate a range of **participatory processes**, such as stakeholder engagement, participatory policymaking, co-creation of research, interdisciplinary research and practice, people- and planet-centred design, and commoning and local democratic governance. "*Climate change places major transformational demands on modern societies. Transformations require the capacity to collectively envision and meaningfully debate realistic and desirable futures. Without such a collective imagination capacity and active deliberation processes, societies lack both the motivation for change and guidance for decision-making in a certain direction of change*" (Milkoreit 2017).

Arts practice is also sometimes used **therapeutically**, for instance in post-disaster recovery.

Often the benefits of arts interventions may be **indirect**. A thoughtfully designed art or music festival can foster a sense of community and lessen the impacts of social isolation. Likewise, just having artists involved in a project may sometimes allow a greater diversity of lived experience to inform what is said and done.

Of course, arts practice can also be **intrinsically valuable.** As well as contributing to human flourishing in various ways, it can *be* part of that flourishing.

Using the arts to question certainty

Risk management approaches often take for granted certain **foundational legal, economic and social institutions**, such as banking, markets, and financial institutions; enforceable property rights and contract law; national publics constituted around shared media and communications networks; and so on. In fact these institutions are themselves jeopardised by climate change. As the speculative fiction Margaret Atwood has memorably described it, climate change is "**everything change**".

Risk management also often assumes **policymakers** are responsible for ensuring alignment between an actor's outward impacts and an actor's risk environment, so that the actor gets the full picture of harmful impacts by monitoring their reputational, liability, compliance, and other risks. But this does not adequately accommodate the plural and political character of policymaking, and it assumes that policymakers are always free, empowered, competent, and willing to pursue this objective. This is often not the case. Sticking to this idealised account of policy can prevent clear understanding of the socioeconomic implications of climate science, in comparison with more oppositional perspectives, e.g. systems change — which for their part tend to struggle with granular detail.

Climate decision-making is deeply laden with **value judgments** and agonistic or existential rivalries. These are tied to, for example, historic responsibility for carbon emissions; colonialism and neocolonialism; tensions between sustainable development, postdevelopment, and degrowth and postgrowth perspectives; biodiversity and the rights of nature; among other factors. Finally, climate change is an opportunity to review and to **reject certainties that do not serve human and ecological flourishing**. Where do narratives about what constitutes progress, wellbeing, and quality of life come from, with what voices do they speak, and whose interests do they serve? Climate change presents a mandate for radical social, economic, political, and cultural transformation. Despite the narrow window for effective climate action, there are nonetheless many possible future societies which can align with the minimum recommendations of climate science — so *which* of these should we work towards? As a default stance, policymakers, planners and practitioners may tend to try to remove uncertainty, and/or to classify, quantify and contain uncertainty (this may sometimes be described as turning uncertainty into risk: see 'No uncertain terms'). Arts practitioners are sometimes interested in doing the opposite — to explore ways of **generating uncertainty** about what was previously relatively certain.

Some types of arts practice

Games and play are an important part of arts practice, and are especially relevant to uncertainty. Games are systems capable of embodying multiple different outcomes simultaneously. Games can offer experience of nonlinearity. Games can embody knowledge without making it explicit.

Game environments can also be 'soft spaces' where participants can become different versions of themselves, and experimentally relax or suspend assumptions and norms. Games also overlap with methods of formulating policy or strategy that may not typically be thought of as playful (e.g. scenario planning, decision-making supported by data-driven models and simulations, foresight and futures tools, design sprints, innovation workshops).

Tabletop roleplaying games typically involve collaborative improvised storytelling, supported by rules and certain random elements. There are a wide variety of such games. Some of them offer a relatively accessible route into storytelling for people who may not yet consider themselves creative.

As an arts practice, game design is distinctive in having a relatively extensive 'applied' literature associated with it (e.g. **serious gaming, gamification, games for change, games for education**).

Art Wherever We Look

Even when arts practitioners are not directly involved, communication and decision-making is always shaped by metaphors, stories, persuasive rhetoric, expressive competitiveness, creative self-expression, appeals to emotion, sociotechnical imaginaries, etc. Thus, the arts and humanities can also provide insight into the aesthetic, cultural, and playful, and embodied dimensions of *all* policy and practice.

Speculative design and **design fiction** are ways of using design practice to provoke conversations and effect change. For example, an imaginary advertisement for a future product or service can spark debate about broader society it implies.

Generative AI offers to 'democratise' certain kinds of creative practice such as art, music, and writing. However there are considerable ethical complexities in the training and deployment of generative AI. Generative AI also contributes to a concerning trend in IT energy consumption globally. Generative AI is also not the most obvious source of new or alternative visions, since (simplifying somewhat) it works by statistically extrapolating from its training data. However, it is not incapable of novelty, since recombining old meanings can always give rise to new ones.

Internet culture includes a variety of newer arts practices (memes, livestreams, etc.).

Breaking down borders

Arts practice can be used within efforts to **decolonise** policymaking, planning and practice. It has a role in addressing "*the need for integration between creative and analytical processes, expansion of the roles we ascribe to diverse stakeholders, and rooting development futures in polycultures of knowledge that draw on history, culture and lived experience*" (Dhar et al. 2023). This includes potential to soften some cultural, linguistic, and socioeconomic barriers to mutual understanding and dialogue, by **mitigating power hierarchies**. As always, it is important to be realistic about what the arts can and cannot do.

Arts practice often overlaps with care ethics, in framing value as **contextual and relational**. Such value may by definition be extremely challenging to reflect in policy and practice, although it has been argued that "*by employing a care lens, practices become tangible and salient accounts of how transformations can be enacted in various realities. Their situational and contextual nature is thus an added value rather than a flaw*" (Moriggi et al. 2020).

Expanding Imaginaries

"To date, much sustainability education is prescriptive, rather than participatory, and most integrated art–science programming aims for content learning, rather than societal change. What this means is that learners are more often taught 'what is' than invited to imagine 'what if?' In order to envision and enact sustainable alternatives, there is a need for methods that allow community members, especially young people, to critically engage with the present, imagine a better future, and collaboratively act for sustainability today" (Trott et al. (2020)).

Limitations and pitfalls

The arts and humanities tends to have a different approach to **evidence and knowledge** compared to data-driven disciplines. These differences are simultaneously a source of tension, and a strength and rationale for collaboration. Arts and humanities research does sometimes collect and analyse quantitative data (e.g. in the digital humanities) but this tends to be the exception rather than the rule.

There is a considerable self-critical tradition in the arts that is **more pessimistic** about its capacity to enact positive changes. Suppose that arts practice does not "*spark and sustain much-needed processes of societal change in response to sustainability challenges*" (Trott, Even, and Frame 2020) to a given standard, e.g. timely alignment with net zero. It is then reasonable to consider the opportunity cost of arts practice to be whatever alternative practice would have effectively met this standard. One easy-to-grasp mechanism for such a trade-off would be the misallocation of funding, although climate funding for the arts and humanities remains relatively small. More difficult to assess but potentially far more damaging would be whether an association with the arts can diminish credibility: if the arts have a role to play in imagining alternative futures, **do the arts also play a role in ensuring that such futures remain 'alternative' not mainstream?** That they remain 'imagined' not real?

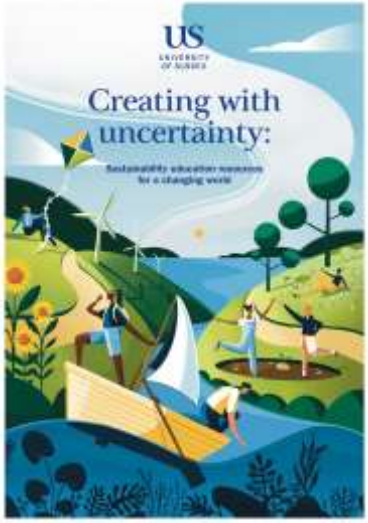
Arts practice is also sometimes seen as a key interface between mainstream policy and a wide variety of more **transformative and/or oppositional** worldviews and ontologies, e.g. Earth jurisprudence, conviviality, degrowth and postgrowth, the pluriverse, Buen Vivir, Ubuntu. Arts practice may thus play a role in introducing these into otherwise inaccessible policy and practice contexts. However, arts practice tends to be at best very marginal to major decision-making, and to the extent that it provides a channel for 'unconventional' perspectives, their importance tends to be **secondary and potentially ineffectual**.

There is also a risk that arts-led participatory processes can create spaces of so-called 'self-expression' in which **participants simply reiterate dominant narratives and framings**, since these are most familiar. Instead of creating real alternatives, such spaces can reinforce dominant understandings by recruiting participants and giving them a sense of ownership of pre-existing ideas.

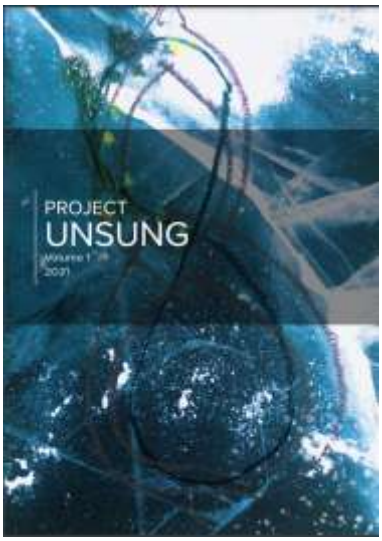
Whether used for communication, democratisation, or to explore alternative imaginaries, arts interventions never occur in isolation. Unfortunately, they seldom factor in the **broader context** of arts, media and culture in which they are interpreted. Furthermore, such arts interventions remain relatively **siloed**, with surprisingly few resources to support 'mainstream' cultural production to align with climate goals.

Case studies and resources

From the UNDP Asia and Pacific and Poppy Seed Lab, a report on using collective reflection and imagination to engage with citizens, towards building more just, equitable and inclusive futures.



From University of Sussex Open Press, resources to support students in engaging with the complexities of climate change and biodiversity loss in their everyday lives. It consists of ten on-the-ground sustainability topics, filled with opportunities to use uncertainty creatively.



From UNHRC, a **speculative storytelling project that brings to reimagine the humanitarian sector using science fiction, poetry, and art and illustration. Examples include speculative invoices for climate reparations.**

From Creative Practices for Transformational Futures (CreaTures), CreaTures Co-Laboratory Catalogue contains twenty experimental artistic productions.

Julie's Bicycle

CREATIVE • CLIMATE • ACTION

A UK based charity supporting arts and culture organisations to take action on climate and ecological crisis. The Resource Hub includes many case studies.

A special issue of *Vector* from the British Science Fiction Association and the PASTRES project, exploring 'applied science fiction' in all its forms. Highlights directly related to arts, climate and uncertainty includes an interview with Andrew Merrie and Pat Keys, two of the leaders of the Radical Ocean Futures project.

From the GamEngage Network, *The GameBook* is a resource for users of serious games, including facilitators and designers.

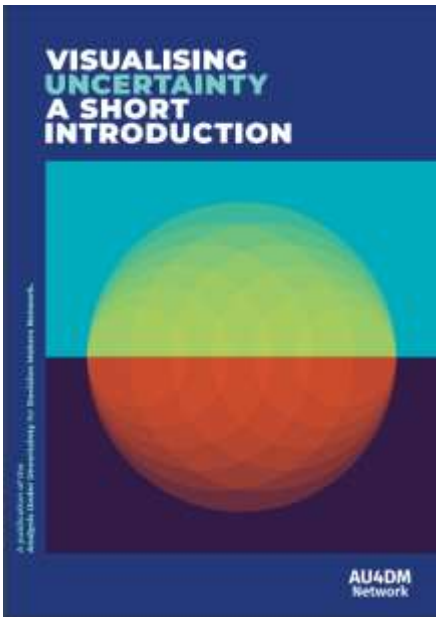
Let's PLAY GAMES SERIOUSLY AND SAVE THE WORLD

From the Sussex Sustainability Research Programme, Sussex Humanities Lab and PASTRES, Imagine Alternatives features the tabletop roleplaying game *Kampala Yénkya*, which uses collaborative storytelling and mapmaking to imagine the future of Kampala in 2060.

From the Red Cross Red Crescent Climate Centre, a project exploring humour and cartoons in climate action. Complemented by an extensive collection of climate games.

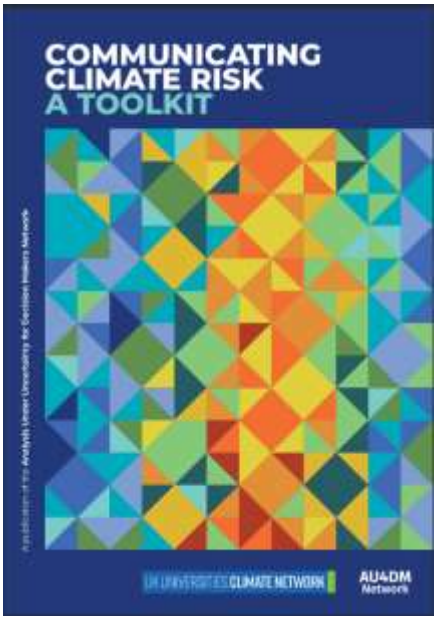
From CreaTures, 9 Dimensions is a meticulously researched tool to help creative practitioners, project managers, funders and other stakeholders evaluate creative practice in relation to social change.

From the PASTRES project, an online Photovoice exhibition, featuring stories and images to explore how pastoralists understand, experience and respond to uncertainty.



From AU4DM, this guide focuses on data visualisation, and on uncertainty as it is typically understood within decision theory.

The CreaTures Framework sets out how arts practices can stimulate action towards socially and ecologically sustainable futures, offering Research, Policy, Creative Practice and Funding pathways



From AU4DM and the UUCN, this guide attempts an interdisciplinary understanding of climate risk communication. Topics covered include modelling and finance.

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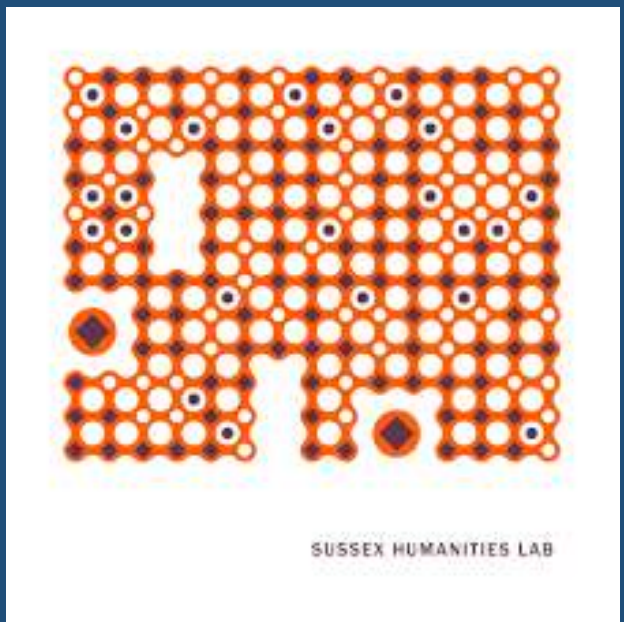

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