Relating Systems Thinking and Design
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Navigating Wicked Futures Through More-Than-Human Perspectives

Experiments in design education

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This presentation discusses the design and outcome of POD (Participatory Ocean-Sensitive Design), a game combining strategy and experimental design. It was developed as an instantiation of systems play, a mode of collaborative speculative world-building. The game presented a speculative scenario demonstrating a plausible outcome of current human responses to climate change, employing conventions of design fiction and pervasive games (Raby, 2018). In POD, players were assigned species identities, oriented within one of four locally connected habitats, and prompted to respond to ecosystemic conditions of anthropogenic climate change at different scales and across different time horizons (Biggs et al., 2015). We will discuss the method underlying the design, which is intended to prime groups through play to manage complexity and uncertainty. The experience was created and tested by Information Experience Design (IED) specialists from the Royal College of Art within a four-month project funded by the British Academy. It employs the unconventional strengths of art and design experimentation, most notably a positive orientation toward uncertainty, to generate social cohesion and creative problem-solving around shared goals. As a learning mode and engagement tool,

systems play has exciting potential to destabilise established norms of problem-solving and orient collaboration toward system-wide resilience.

KEYWORDS: Systemic design, immersive games, social games, more-than-human perspectives, time, ecocentric design, emergent behaviour, methodologies, design education, speculative design

RSD TOPIC(S): Learning & Education, Methods & Methodology, Socioecological Design

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Presentation Summary

In this presentation, we share methods and learnings from a systems-oriented game experience called POD, and propose a framework for designing experimental pedagogical play with a focus on post-human knowledge development and systems thinking. The objective of the POD game is to fortify resilience across ecosystems within the Thames estuary through the development of strategic, mutualistic inter-species relationships. By focusing the game on knowledge formation processes, as opposed to designed solutions, POD reveals how identity, values, and context shape behaviour and decision-making and how alternative perspectives can challenge human-centric and institutionalised approaches to design (Barab, 2010).

Theoretical foundations

POD was developed as an instantiation of systems play: collaborative speculative world-building designed to facilitate experimental systems design in a realistic context. Systems design, for our purposes, has been contextualised specifically in relation to complexity and uncertainty, drawing on real-world dynamics and systemic impacts. The purpose of systems play is to prime groups for better real-world problem-solving through playful world-building. In this instance, ‘better’ describes problem-solving as collective and inclusive, oriented toward overall system resilience, tolerant of perspectival difference, and having the capacity and inclination to act despite uncertainty (Barab, 2010). The pathways to resilience are argued to be relationship generation and building social capacity for innovation rather than focusing on one-off

innovation outcomes. This addresses a major gap in sustainability research and policy, which broadly neglects social connectedness as an innovation outcome in itself (Moldavanova, 2017).

Systems design approaches are also increasingly important to community engagement, with a growing transdisciplinary wealth of literature demonstrating the value of systemic engagement and whole-systems approaches for knowledge production and humane discourse (Stroh, 2015; Chon, 2017). It has been shown that complexity and system dynamics are fundamental dimensions of human and nonhuman experiences and that understanding and working confidently with systems dynamics is a crucial skill set for disarming destructive, simplistic cultural narratives, such as notions of success (Molderez, 2018). Systems thinking principles can help stakeholders “see the big picture more clearly”, thereby anticipating and avoiding the negative longer-term consequences of well-intentioned solutions (Stroh, 2015). Stroh suggests that this is because systems thinking is more akin to ‘a way of being’ than ‘a way of thinking’. Systems thinkers develop not only cognitive but also emotional and behavioural capacities, a set of character traits based on systems tools that reframe the ways in which individuals approach problems and view the world (Stroh, 2015). We sought to leverage these theories within an immersive game to understand how principles might be applied to non-human character development and decision-making within a plausible near-future scenario.

Social gaming as a design and research framework presents opportunities for simulation, making, and data collection, particularly when modelling ‘possible futures’. Humans have a normalcy bias, a belief that life events will continue to occur in the way they always have (McGonigal, 2018). This cognitive bias can prevent us from anticipating and imagining change, which limits the scope of futuring activities and can inadvertently reinforce conventional modalities and power structures (Sools & Mooren, 2012). In games that function as social simulations, “[p]eople are the algorithms'' (McGonigal, 2018). This allows researchers to study “real and often surprising behaviour” within specific contexts in ways that can be “more reliable” than analysing historical data, particularly concerning new or future-oriented problems (McGonigal, 2018). POD integrates systems thinking with speculative principles of experimental design and

design education to produce a unique and engaging approach to social capacity-building.

From this theoretical grounding, three research questions were created to guide the development of the project:

1. How can experimental design methods inform the development of greater resilience from a systems perspective?
2. How can situated speculative design be used to foster shared commitments to goals, values, and processes of social and environmental change-making?
3. In what ways can pervasive games help us simulate and derive applicable learnings from real-world occurrences?

Methodology

Our methodology uses live modelling, design fiction and 'worlding' as tools for generating social cohesion around complex imagery that can become a proxy for a real-world challenge. We adapt precedents used by Soden et al. (2020), Dolejšová et al. (2021) and Morrison & Chisin (2017), whereby design challenge-based responses and solutions are facilitated using a 'living lab' scenario on climate change, where outcomes are relevant to both collaborative knowledge-building and behaviour change outcomes. From design fiction, we expanded on the use of "what if?" questions, diegetic artefacts, and world-building processes in order to creatively drive the generation of new conceptual formats for futures whilst "suspending disbelief about change" (Dunne & Raby, 2013; Sterling, 2013). The features the game world initially corresponded to were the plausible worst-case outcomes for marine environments, as posited by the most recent comprehensive climate report published by the Intergovernmental Panel on Climate Change (IPCC, 2022).

Built from these parts, the initial framework proposed for structuring the experience consists of eight events, each designed to be malleable at spatial and temporal scales, to utilise materiality and objects where possible, and to have fungibility in relation to the overall framework, so that they can be played simultaneously, in a branching format, and multiple possible orders (Barrios-O'Neill & Hook, 2012; Barrios-O'Neill & Hook, 2016).

Concluding thoughts

POD has generated fascinating initial insights concerning the potential for playful world-building to enable real processes of change-making. The outcomes emphasise the value of engaging uncertainty as a positive dimension of systems experience and change and for this to become a key component of resilience generation in social groups. This is relevant not just for designers but for many stakeholders involved in the speculation, shaping and management of our future world.

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