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Boundaries as Connection Zones: Expanding systemic design methodologies through an elastic toggling process

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Artificial boundaries continue to disconnect us from our inner selves, each other, and the broader biosphere we inhabit. One example of this inability to transcend boundaries is highlighted by sustainability science researchers: the conundrum in current transdisciplinary research on the overemphasis of complex problems themselves rather than the collaborative processes needed to address them. Systemic design offers promising co-creative methodologies to better design such complex collaboration processes and reimagine boundaries as zones of connection rather than separation. However, despite the broad, transdisciplinary focus of systemic design, greater integration of diverse methods and practices that stem from different ways of knowing and being is needed. Therefore, this presentation demonstrates how a proposed process of elastic toggling between diverse worldviews, methods, practices, and contexts can be operationalised for broadening awareness and participation in sustainability transformations. As part of on-going PhD research in systems-oriented design, initial findings will be presented on how the process is being iterated and applied across three international mountain communities. The process uses different practices and approaches (including co-creative gigamapping, synthesis maps, social network analysis, resilience assessment, land use analysis and immersive place-based experience) in the attempt to weave together design, science and transformative praxis. Throughout the PhD research thus far, the elastic toggling process has

allowed for iteration and adjustment between each of these approaches in an emergent and structured manner and to adapt to the ever-changing contexts and increasing complexities of engaging in real-world communities. Along these lines, this contribution aims to expand the discussion around systemic design methodologies by unpacking the boundaries around the usage of primary vs secondary data, different knowledge types, qualitative vs quantitative methods and the co-creative vs individual data collection and analysis processes. The hope is that such critical dialogue around these topics can help mobilise greater synergies across different ways of knowing and being to activate more inclusivity and interconnectedness in collective sustainability transformations.

KEYWORDS: knowledge systems, mountain communities, narrative, complexity, social-ecological systems, sustainability science, immersive experience

RSD TOPIC(S): Methods & Methodology, Society & Culture, Cases & Practice

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Presentation description

In today's world of increasing complexity and uncertainty, artificial and constructed boundaries continue to disconnect us from our inner selves, each other, and the broader biosphere we inhabit. As Donella Meadows highlights, "There are only boundaries of word, thought, perception, and social agreement—artificial, mental-model boundaries" (2008 pg. 95). Sustainability science scholars highlight a blind spot within transdisciplinary research and praxis: an overemphasis on wicked problems but a lack of attention to fostering the processes needed to cross boundaries to address such problems (Brown et al., 2021; Perz, 2020). Likewise, researchers are continually advocating for a greater understanding of the deep leverage points (worldviews, mental models, etc.) that shape social-ecological systems (SES) and how they can be activated for transformative change (Davelaar, 2021; Riechers et al., 2021; Vogel & O'Brien, 2021). Therefore, what kind of processes could help reimagine boundaries as zones of connection rather than separation? How often do we, as systemic designers, truly step

beyond our own worldviews and methodological assumptions to actively question how we design with complexity?

Building from "Redefining System Boundaries" (Luthe et al., 2020),[1] this presentation introduces an in-progress process to engage in complex sustainability transformations in mountain communities. Dealing with boundaries is a core aspect of navigating complex systems and designing methodologies to effectively understand and change them (Qiang et al., 2000). Different disciplines conceptualise and use boundaries in diverse ways. Within critical systems thinking, the widely used boundary critique concept considers boundaries as an exercise in the continuous negotiation between facts, values, and judgement of the system (Midgley, 2016; Ulrich, 2000). This has been explored beyond an academic setting and into the complexity of real-world settings, such as Open University's Systems Thinking in Practice (STiP) (Reynolds & Wilding, 2017). Within social-ecological systems research, boundaries are intrinsically seen as connection zones: where the edges of different ecosystems meet (ecotones) and offer the highest degree of biodiversity (Kark, 2017; Martín-López et al., 2017). Furthermore, landscape architects are increasingly advocating that in order to more effectively design for complex societal challenges, greater emphasis is needed on expanding their own worldviews and mental boundaries within the profession itself as a creative process of "boundary thinking" (Brink et al., 2022).

Although the broad nature of systemic design requires a constant engagement with boundaries, especially across disciplines, many of the widely used methods are qualitative, visual, and participatory. Prominent examples include gigamapping (Sevaldson, 2015), synthesis maps (P. Jones & Bowes, 2017) and a variety of tools such as the *Systemic Design Toolkit* (Ael et al., 2021) and the Design Council's *Systemic Design Framework* (2021). Many of these methodologies derive from design disciplines and are used in co-creative contexts with stakeholders or other practitioners. Likewise, systemic design methodologies are increasingly incorporating methods from sustainability transitions research, building off the multi-level perspective (Geels, 2007) and change theories to motivate foresight and futures visioning (Irwin, 2015; P. H. Jones, 2014; Pereno & Barbero, 2020). However, greater inclusion of scientific methods and

[1] cf. https://rsdsymposium.org/system-boundaries-in-mountain-communities/

approaches from other knowledge types, such as transformative praxis and place-based experience, are needed to effectively design and implement the regenerative futures we require (Luthe et al., 2021). Holistic Diagnosis (Battistoni et al., 2019) contributes to addressing this gap by explicitly combining quantitative "desk research" with qualitative "field research" methods for data collection, yet developing this further and across other systemic design methods would greatly benefit future transdisciplinary efforts.

Thus, this contribution aims to expand the discussion around systemic design methodologies by unpacking the boundaries around the usage of primary vs secondary data, different knowledge types, qualitative vs quantitative methods and the co-creative vs individual data collection and interpretation processes. systemic design researchers highlight the need to understand what types of scalability and replicability make sense for rural development (Barbero & Bicocca, 2018). For highly complex SES like mountain communities, this raises questions on to what extent systemic design methods can/should be replicated and scaled and how their effectiveness is measured, evaluated, and monitored; and by whom. In this presentation, the authors aim to demonstrate how the process of *elastic toggling* between diverse worldviews, methods/practices and places can be operationalised for broadening awareness and participation in sustainability transformations. Initial findings will be used to show how the process is being tested and applied across three international mountain communities: Ostana, Italy; Hemsedal, Norway and the Eastern Sierra, California.

This process of elastic toggling describes the stretchy, malleable practice of weaving between emergent and planned actions, adjusting mental and methodological boundaries as each community, individual, or moment in time presents unique complexities. The following transdisciplinary approaches and practices are used to operationalise the process across the three communities: co-creative gigamapping workshops and synthesis maps (systemic design), social network analysis (social science), community resilience assessment (sustainability science), land use analysis (landscape architecture) and immersive place-based experience (transformative praxis). Working with student courses co-taught by the authors (in universities associated with each of the three communities) acts as a sounding board to prototype synthesis maps in the Rich Design Space (Sevaldson, 2022) and place-based ways of stimulating

experiential systems-thinking (sheep herding with farmers, community trail-building, etc.) in a real-world context. These methods and practices are employed iteratively throughout each non-linear stage of the process: framing the system, identifying leverage points, sense-checking, and embodying system change. Each stage of engaging with different communities, methods, cultures, and disciplines offers a crucial opportunity for questioning the underlying worldviews – from the actors involved to disciplinary origins to the researchers' own.

Ultimately, this contribution aims to expand systemic design methodologies by demonstrating how a process of elastic toggling can encourage greater synergies across different ways of knowing and being. The methods and practices described above represent only a small portion of how the interweaving of approaches could help better understand our roles within our broader communities. Not only does this process aim to invite greater "collective reflexivity and reformation" with all involved actors, but also within the authors' "systemic self" (Vink et al., 2021). Through this process, the authors strive to question the underlying conventions, assumptions, and worldviews that shape how action-oriented and systemic design research is conducted – and ways to activate greater inclusivity and interconnectedness in our collective goals towards sustainability transformations.

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