

Zooming Out and Zooming In: Studying Social Innovation through Systems Thinking and Leverage Points

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ABSTRACT

Social innovation involves the novel reconfiguration of resources and ideas to address significant social challenges. To map associated complexities and interdependencies and develop more effective interventions, social innovators are increasingly adopting a systems approach and related tools. Although management scholars have celebrated the practical use of such tools, they have been slow to adopt them to methodologically and theoretically advance the study of social innovation. Therefore, we ask: *How might systems thinking help advance scholarship on social innovation?* We first review extant scholarship on social innovation, highlighting areas where some methodological and theoretical progress has been made toward developing a more dynamic systems approach. Specifically, we consider scholars' previous efforts to capture, analyze, and theorize multi-level and non-linear relationships involved in social innovation, as well as the intended and unanticipated effects of associated interventions. Second, we highlight how effectively applying systems thinking to social innovation research requires sequentially zooming out and zooming in to ensure parsimony in the design, data collection, and analysis stages of the research process. We offer methodological guidance and examples of tools that can be used to apply systems thinking to better capture, analyze, and theorize the complexities of social innovation.

Keywords: systems thinking, social innovation, research methods, complexities, social impact

INTRODUCTION

Although the literature on social innovation and its effects on institutional change has grown significantly (Logue, 2019; Tracey & Stott, 2017), recent critiques suggest that the narrow empirical focus of many studies often falls prey to “uncritical, sanitized and dangerously misleading simplification of messy, complex social phenomena” (Munir, 2020, p. 1). To address such oversimplification, a number of scholars have begun calling for research capable of both theoretically and methodologically unpacking more complex system change (Cajaiba-Santana, 2014; Dorado et al., 2022; Goldstein et al., 2010; Kania & Kramer, 2013; Stroh, 2015; Westley & Antadze, 2010). In the context of social innovation, systems are described as “causal architectures,” i.e., constellations of institutions, organizations, norms and relationships, “that have social problems as their effect” (Seelos & Mair, 2018, p. 36). Thus, “systems change” refers to individual and collective efforts to reorganize causal architectures to promote desirable social outcomes (Mair & Seelos, 2021).

Scholarly calls to broaden the scope of social innovation research reflect similar calls by practitioners to broaden the scope of their interventions (Awad, 2023; Elmes et al., 2016). Social problems, such as homelessness, poverty, and poor health are often highly intertwined, requiring holistic solutions (Awad, 2023). While social innovations promise to “generate more effective or just solutions to address complex social problems, for collective gain” (Beckman et al., 2023, p. 686), realizing this promise requires moving beyond merely introducing new products, services, organizational forms, or patterns of stakeholder interaction and collaboration toward organizing for broad systems change (Besharov, 2022; Ramus et al., 2018; Westley & Antadze, 2010).

Systems thinking has more recently been advanced as a methodology that can help broaden the analytical focus in research on contemporary organizational issues (Grewatsch et al., 2021;

Klag & Langley, 2023) and overcome the predominant focus on the “techno-rational linear connection between ideation, action, and outcome” (Dorado et al., 2022, p. 1255). As a methodology, systems thinking foregrounds the importance of interdependence between actors, organizations, and institutions, flows of resources between them, as well as the structures and behaviors governing these interactions which collectively drive both intended and unintended outcomes (Grewatsch et al., 2021; Stroh, 2015). Proponents of this method argue that only by studying the interrelations between various parts of a system can the system or changes to that system be understood. In other words, systems thinking considers how many problems “have no clear boundaries, exhibit non-linear dynamics, and require new ways of thinking” to be fully understood (Grewatsch et al., 2021, p. 2). While it may be clear that social innovation research would benefit by zooming out to consider broader ecosystems of related social innovations, social problems, and their interdependencies (Henriques et al., 2022; Schad & Bansal, 2018), methodological ambiguity related to systems thinking has thus far prevented its broad application. As Seelos and Mair (2021, p. 3) noted, the application of systems thinking is often undermined by its own “complexity [which] obfuscates the determination of appropriate levels of analysis and the boundaries of social systems and exposes the limits of well-vetted methodological tools.”

In this chapter, we ask: *How might systems thinking help advance scholarship on social innovation?* Building on other work which has called attention to the benefits of systems thinking as an approach in management research (Dorado et al., 2022; Grewatsch et al., 2021; Mair & Seelos, 2021), we offer practical insight into the methodological process of applying systems thinking to the study of social innovation. We argue that systems thinking demands a dualistic approach to the entire research process, from design to data collection and analysis. On the one hand, systems thinking requires “zooming out” to consider relationships between actors,

organizations, and institutions, perhaps across spatial boundaries. On the other hand, systems thinking requires “zooming in” to understand how micro-level actions are negotiated, enacted, and scaffolded to advance social innovation, and how specific interventions or configurations of activity lead to both intended and unintended outcomes. Together, zooming out and zooming in using systems thinking can advance scholarship on social innovation and pathways to impact.

This chapter proceeds as follows. We first review the extant literature on social innovation, highlighting four complexities associated with researching and theorizing social innovation and pathways to impact. Second, we illustrate how methodologically navigating these complexities necessitates a dualistic and sequential research process of “zooming out” and “zooming in.” We then introduce a methodological toolkit to help researchers apply systems thinking when designing and conducting social innovation research. Finally, we discuss the relevance of these techniques alongside related challenges, offering suggestions for future research.

SOCIAL INNOVATION AND THE COMPLEXITIES OF SCOPE AND SCALE

Social innovations address unmet societal needs by changing norms, patterns of interaction and flows of resources between actors, organizations, and institutions (Westley & Antadze, 2010). To date, scholars who have studied social innovation have done so with either an implicit or explicit interest in the scope and scale of proposed solutions and associated impacts (Beckman et al., 2023). Scope refers to the extent to which a given social innovation addresses parts of the system which perpetuate social challenges, operates systematically with other social innovations, or attempts to “cover” many parts of the system (Kim & Kim, 2022; Park et al., 2022). In the context of addressing inequality and labor rights, for instance, research has uncovered how organizations sometimes limit the scope of their interventions to focus efforts on parts of a system

(Khan et al., 2007), whereas at other times they deliberately “scaffold” complementary interventions to ensure systems change (Mair et al., 2016).

Relatedly, scholars have considered the scale of social innovation and its impacts, focusing on the extent to which social innovations scale “deep,” scale “up,” or scale “down” (Chatterjee et al., 2022; Desa & Koch, 2014; Moore et al., 2015; Westley et al., 2014; Westley & Antadze, 2010). In other words, social innovation often emerges as solutions are developed to address co-constituent parts of a social problem (i.e., by considering solutions targeting overlapping challenges). For example, Gram Vikas has developed solutions aimed at transforming many parts of the system related to inequality in India (Dittrich, 2022; Mair et al., 2016). Alternatively, pathways to scaling impact can include replicating or translating existing models in other regions (Tracey et al., 2018; Westley et al., 2014).

Taken together, this research on the varied scope and scale of social innovation highlights how the relationships between innovations and impacts often are not linear; instead, they are deeply intertwined with ongoing efforts and dynamics occurring within the broader system. In the following subsections, we illustrate how existing scholarship points to four complexities that interact and make it difficult for scholars to accurately capture the relationship between social innovation and the scope and scale of its impact: multi-level effects, non-linear dynamics, unintended consequences, and boundaries.

Multi-level Effects

Social innovations can have impacts not only on beneficiaries, but also on individuals and entities across multiple levels of society. To examine multi-level effects of social innovation on complex interlinked challenges—for example, child labor, women’s rights, entrepreneurship, and poverty in developing countries—organizational scholars have tended to ground their

investigations in longstanding research on institutional theory (Khan et al., 2007; Mair & Marti, 2009). For instance, scholars have demonstrated how social innovations change institutional arrangements (Pacheco et al., 2014; Wry & Haugh, 2018) by reshaping social norms (Purtik & Arenas, 2019), attitudes (DeJordy et al., 2020), and practices (Cobb et al., 2016). In other words, to investigate how actors challenge existing macro-institutions, researchers examine how social innovations provide scaffolding for institutional change by inspiring individual action, modifying organizational practices, and reconfiguring fields (Mair, Wolf, & Seelos, 2016; van Wijk et al., 2019).

Often, these multi-level effects do not occur independently or incrementally, but rather interdependently and simultaneously. In this way, it is critical for social innovation scholars to attend to the cross-level mechanisms compelling systems change. For instance, Tracey, Phillips, and Jarvis (2011) illustrated the interlinked activities of a social enterprise to address unemployment and homelessness, explicating how action unfolds at the micro, meso, and macro levels. This attention to cross-level dynamics often requires moving beyond studying the cognitive and cultural work associated with change, and toward capturing the relational processes associated with social innovation as actors, organizations, and the institutional environment interact (Lawrence et al., 2013; Le Ber & Branzei, 2010). For example, Chatterjee and colleagues (2022) described how social innovators “weave” together the strategies and actions of organizations and institutions, highlighting the dynamics of both multi- and cross-level action to advance social innovations.

Non-linear Dynamics

Although many practitioners espouse “theories of change” which tend to depict change as linear, change rarely occurs linearly in practice. Such change often is subject to non-linear

dynamics, where changes in input do not result in proportional changes in output. Similarly, although social innovation researchers may initially design studies to trace the linear relationship between organizational identities, strategies, outputs, outcomes, and impact (Wry & Haugh, 2018), these relationships are often moderated by positive and negative feedback loops, or “circular arrangements of casual connections, [whereby] actions elicit responses that ‘feed back’ to influence the original propagator” (Grewatsch et al., 2021, p. 5). Feedback loops can operate by either amplifying previous activity or dampening subsequent activity. Recent studies highlight how feedback loops can be keys to understanding how systemic barriers are either reinforced or overcome (Klag & Langley, 2023; Williams & Shepherd, 2016). For instance, in the context of post-disaster recovery in Haiti, Williams and Shepherd (2016) found a reinforcing effect between social innovators’ reputations in their communities and their abilities to create positive local impacts, leading to a virtuous cycle. Conversely, feedback loops can rebuff attempts to introduce change where deeply embedded relationships encourage inertia (Khan et al., 2007; van Wijk et al., 2019). As such, failing to attend to non-linearities within social innovation research can obfuscate the nature of the relationship between an innovation and its impacts.

In addition to feedback loops, non-linear dynamics unfold in the presence of thresholds, i.e., structural and cultural barriers which prevent change, yet also represent “tipping points” beyond which transformation can occur. Prior research has demonstrated how identifying thresholds in the context of social innovation is challenging for both researchers and practitioners. For instance, scholars have posited that even as persistent institutional and ideological barriers inhibit successful systems change, it can be difficult to identify inflection points where such barriers collapse (Frey-Heger et al., 2022). Conversely, the presence of threshold effects points to the value of “small wins” that culminate in systems change through a process of “punctuated equilibrium” (Gersick,

1991; Termeer & Metze, 2019). Despite the ultimate significance of these thresholds, however, both researchers and practitioners may overlook these slow-burning and otherwise mundane processes which initially appear to be insignificant yet introduce non-linear effects.

Unintended Consequences

Existing scholarship on the relationship between social innovation and the scope and scale of its impact has begun to account for both intended and unintended consequences. Whereas scholars traditionally presumed and documented the prosocial intentions of those involved in social innovation (Miller et al., 2012), they are increasingly drawing attention to unintended consequences, many of which result from unanticipated interdependencies between diverse problems and solutions (Dorado & Ventresca, 2013; Gras et al., 2020; Grimes et al., 2020).

These unintended consequences may be positive or negative. For instance, gender equity may be unintentionally advanced by microfinance innovations focused on poverty reduction, infrastructure projects aimed at providing local access to clean water or sanitation equipment, or consumer packaged goods targeting child malnutrition. In this way, one solution may unintentionally introduce positive spillovers (Mair et al., 2012; White & Damon, 2018). However, well-intended solutions may also exacerbate existing problems or even introduce new ones. For instance, much has been written about the unintended consequences of over-indebtedness which can arise from the often-celebrated practice of microfinance (Karnani, 2007). Although microfinance offerings are intended to increase families' earning potential, they can also expose vulnerable populations to increased economic strain, mental health issues, and social ostracization (Karim, 2011).

Despite a few notable exceptions (e.g., Khan et al., 2007; Larsson & Brandsen, 2016; Ruebottom & Toubiana, 2021), many social innovation researchers have overlooked opportunities

to attend to these second-order effects as part of their research designs. Moreover, given the non-linear nature of system dynamics, such unintended consequences may only manifest over a much longer timeframe. For example, scholars have noted how growth in an increasingly professionalized non-profit sector may offer numerous benefits, yet may also contribute to the decline of social safety nets (Hwang & Powell, 2009). These protracted unintended consequences can reveal concerning patterns of institutional change and point to the need for historical studies of social innovation and their system effects over longer periods of time.

Boundaries

For the reasons noted above, defining the boundaries of a particular social innovation and its effects is a complex undertaking. Social challenges rarely arise in isolation from other social challenges, and thus the sphere of opportunity for both action and roadblocks to that action are numerous (Elmes et al., 2016; Frey-Heger et al., 2022). On the one hand, a more accurate representation of a particular system requires taking a broader view to understand how networks of actors, organizations, and institutions contribute to and hinder social progress (Grewatsch et al., 2021; Jarzabkowski et al., 2022). Yet, on the other hand, given the combined pressures for both theoretical precision and methodological rigor, academics often face a “reductive tendency” (Gras et al., 2020), drawing ever tighter boundaries around the systems they are studying. Accurately documenting the interrelatedness between solutions and problems can be methodologically overwhelming, as doing so requires excessive resources and time. Interrelatedness can also pose theoretical challenges by demanding expertise beyond current scholarly paradigms in management research (Klag & Langley, 2023). Unfortunately, these challenges can lead to overly restrictive bounding of social innovation scholarship, thereby limiting its real-world applicability.

Toward a Systems Thinking Approach to Social Innovation Scholarship

Devoting greater attention to each of these distinctive complexities can yield a better understanding of the scope and scale of the impacts of social innovation (Bhardwaj et al., 2023; Haugh & Talwar, 2016; Seelos & Mair, 2020; Stroh, 2015; Waddock et al., 2022). While our brief review highlights how failing to attend to these complexities can severely undermine our understanding of social innovation, it also acknowledges methodological challenges that limit scholars' capacity to effectively study them. Despite calls to apply systems thinking to better capture those complexities in management and organizational research, methodological guides are few and far between (Grewatsch et al., 2021). In the sections that follow, we highlight the core tenets of systems thinking, how scholars can benefit from such an approach, and how to implement it throughout the research process.

SYSTEMS THINKING APPROACHES TO STUDY SOCIAL INNOVATION

As discussed, social problems are part of interlinked systems, and thus the required responses to such issues are multifaceted. As a research methodology, systems thinking can help scholars “zoom out” to model the overarching properties, structures, and behaviors of a system to capture multi-level effects, non-linearities, and unintended consequences of social innovation and systems change (Mair & Seelos, 2021; Seelos & Mair, 2018). Systems thinking is associated with three core properties which enable these understandings.

First, systems thinking is used to identify formal arrangements of resources, flows, organizations, and institutions, as well as informal arrangements of norms and patterns of interaction that govern behavior and the achievement of system goals. Scholars often depict systems according to how they are structured and how they dynamically evolve to maintain support for goals, both stated and unstated (Kania & Kramer, 2013). For instance, in the context of impact investing, researchers have documented the formalization of institutions that uphold the goal of

positive societal impact through entrepreneurship and business, as well as the role that investors have played in that process by spreading norms and beliefs (Hehenberger et al., 2019; Logue & Grimes, 2022). Researchers have also used systems thinking to explore the equifinality and multifinality of systems—that is, to broaden the boundaries of investigation to consider how multiple pathways in a system can result in similar outcomes, or how pathways intended to achieve a particular goal might produce unintended effects on other parts of the system (Furnari et al., 2021).

Second, systems thinking within the research process requires focusing on interconnectedness (i.e., the relationships between and interdependence of system elements), thereby encouraging social innovation scholars to move beyond identifying disparate parts of a system toward developing a more holistic understanding (Mair & Seelos, 2021). For instance, understanding how a socially innovative organization might address food insecurity requires attending to the organizations addressing the issue, the relationships between those organizations in terms of stocks and flows (e.g., financial resources and food), and the institutional environment that conditions those relationships (e.g., the professionalization of the non-profit sector) (Awad, 2023; Elmes et al., 2016; Hwang & Powell, 2009). These organizations are interlinked in their efforts to resolve social issues, and at times, to maintain the status quo (Stroh, 2015).

Third, systems thinking requires scholars to attend to emergence, or “the arising of novel patterns, novel structures, and novel properties” as existing system elements are recombined (Goldstein et al., 2010, p. 110). Studies highlight how “the process of collective impact generates emergent solutions toward the intended outcomes under continually changing circumstances” (Kania & Kramer, 2013, p. 2). For instance, changing public attitudes might make certain social innovations more acceptable, thereby creating the emergent conditions for impact, as documented

in the case of domestic partner health benefits extending to same-sex couples (DeJordy et al., 2020). In this way, social innovation is as much about the combination of elements as it is about the conditions under which they are introduced, such that it complicates scholars' ability to foresee how one initial solution might fully address outstanding social issues (Moore et al., 2018).

The complexities arising from the scope and scale of social innovation introduces new challenges and opportunities for researchers (Beckman et al., 2023; Dittrich, 2022; Jarzabkowski et al., 2019). Scholars can apply systems thinking to zoom out and capture the complexities of multi-level effects, non-linear dynamics, boundaries, and unintended consequences that may contribute to and confound impact. However, as systems thinking expands the focus of scholarly attention, the approach also risks introducing an overwhelming amount of theoretical and empirical complexity into the research process. Therefore, while scholarship may benefit from “zooming out,” the approach must be balanced by simultaneous or sequential efforts to “zoom in” on relationships and patterns of theoretical and practical significance.

In the sections that follow, we break down and identify some potential tools for applying systems thinking as a dualistic research methodology by sequentially zooming out and zooming in throughout the research process to capture the complexities arising from the scope and scale of social innovation and its impact. Table 1 summarizes potential systems thinking approaches.

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Systems Thinking and Research Design

The research design stage of academic research involves planning and structuring the methodology and approach to systematically investigate a specific question or hypothesis. At this stage, systems thinking can be applied through *systems mapping*. This involves zooming out to gain an understanding of the scope of the problem(s) and surrounding context, and then zooming

in on promising points of intervention within those systems. For instance, causal loop diagramming can be used to hypothesize plausible relationships that have reinforced or are reinforcing social challenges. Systems mapping can therefore guide the systematic investigation of social innovation.

Zooming out. Social innovation practitioners have increasingly adopted systems mapping as a tool to facilitate a deeper understanding of grand challenges. For example, the global “Map the System” competition organized by the Skoll Centre for Social Entrepreneurship challenges students to delve into a social issue and build a “deep understanding of complex problems as the foundation for driving transformational change.”¹ Through a structured approach, students move toward developing a visual artifact that exposes complex sets of relationships within the system associated with the social issue. Systems mapping is a process whereby actors define the boundaries and constituent elements of a system, identify meaningful and multi-level relationships, and perhaps envision how social innovations could alter relationships and outcomes, culminating in a visual representation (Dentoni et al., 2023).

Social innovation researchers can engage in systems mapping to help sensitize them to the problem field, using their initial understanding of the system targeted by a social innovation to direct future data collection efforts. Morrison and Morgan (1999) described the creation of models and representations of systems as a two-part learning process: “learning from construction” (p. 30), and learning through “trial and error... pinching bits from other modelling attempts... [in a] process of interpreting, conceptualising, and integrating” (p. 31). For instance, in designing a potential research study, it is considered ideal practice to develop a list of actors, stakeholders, organizations, and institutions that may affect or be affected by a particular social innovation. However, systems mapping challenges researchers to not only identify individual elements of the

¹ <https://mapthesystem.sbs.ox.ac.uk/overview>

system, but also illustrate underlying social and resource networks (Grewatsch et al., 2021; Kump & Fikar, 2021). Scholars can illustrate these relationships in visual representations that help them identify research opportunities. Patala, Albareda, and Halme (2022) leveraged this tool to develop an initial understanding of governance systems in circular economy systems: “in each case, we started with *an analysis of different levels of activities, projects, and organizations, including relational maps* and timelines of each case” (p. 1575, emphasis added).

Systems mapping can be tailored to help identify the boundaries and scope of research (see examples in Figure 1). For instance, in their study of the Edmonton AI ecosystem, Hannigan and colleagues (2022, p. 6) asked participants to “discuss key actors and the others in the system with whom they were tied ... then asked them to build upon these insights and draw a map that contained the key actors and their tangible and intangible resource ties.” They then used these responses to create a composite stakeholder/actor map of ties and relationships (Figure 1a). Alternatively, scholars might develop issue/value chain-focused systems maps outlining key resources and flows to highlight the relationships and mechanisms of a particular social innovation (Figure 1b). For example, the RE-AMP Energy Network—a collective of a 125 nonprofits and foundations focused on climate change and energy policy in the US Midwest—created a systems map which detailed the relationships between local energy production and GHG emissions. Maps such as this can highlight possible points for intervention and thus opportunities for focusing the research process. In practice, tools such as Kumu.io can facilitate map creation.

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Zooming in. Creating systems maps that illustrate potentially important actors, organizations, institutions, resources, and flows can aid in the exploration of research phenomena; however, systems maps also can be used to zoom in on plausible relationships and causal mechanisms of

particular importance. Specifically, *causal loop diagrams* detail directional flows of resources and power, as well as feedback loops arising from system relationships, aiding in the identification of plausible non-linearities and unintended consequences. There are two primary types of feedback loops: reinforcing and balancing. Reinforcing feedback loops, also known as positive feedback loops, amplify changes and can lead to exponential growth or decline. For example, the more popular a social innovation becomes, the more people want it, further increasing its popularity.

On the other hand, balancing feedback loops, also known as negative feedback loops, work to stabilize or counteract changes in a system. For example, to identify the challenges associated with maintaining and diffusing social innovation, Kump and Fikar (2021) drew on existing literature to develop a causal loop diagram of a cooperative food system, using the diagram to highlight opportunities for future qualitative research. By doing so, the authors not only exposed the assumed current system and the various flows, but also identified potential opportunities to methodologically zoom in on social innovations which might reshape those flows. Such feedback loops are also illustrated in a system map developed by RE-AMP (Figure 1b) where the organization visualized the linkages and interdependencies between actors and action. For instance, one set of feedback loops exposes research opportunities to further examine interventions that might alter the “market acceptance of clean technology”, and therefore could direct stakeholder conversation and subsequent activity.

Systems Thinking and Data Collection

Scholars also can apply systems thinking during the data collection stage of a research project. In this section, we first consider how engaging in a multi-informant, multi-site, and multi-context data collection approach can uncover important relationships and attempts to reorganize for impact (Grewatsch et al., 2021; Logue, 2019; Schad & Bansal, 2018). Second, we consider how zooming

in on specific leverage points can further uncover and document the processes associated with social innovations.

Zooming out. Capturing systems change requires shifting the unit of analysis beyond that of a given social innovation to capture data from multiple informants (i.e., various actors across a system), multiple sites (i.e., different organizations involved in advancing a social innovation), and multiple contexts (i.e., geographically or temporally distributed patterns of activity). As an initial data collection practice, for example, scholars can encourage multiple informants from different parts of a system to develop their own systems maps, exposing any consistency or variance in their situated understandings of system boundaries, stakeholders, and relationships. For instance, during their fieldwork, Claus and Tracey (2020, p. 980) “asked actors to mark and describe their position in the campaign against child marriage on a ‘map’ indicating their connections to other members” to “aid [the researchers’] own understanding” of the layered structure of a coalition to eradicate child marriage in Indonesia. By documenting these subjective maps, researchers can also identify where interactions within the system may be most intensive or lacking. Such data can prove to be important, not only by shaping eventual findings, but also by exposing additional data collection opportunities (Dentoni et al., 2023).

Likewise, researchers might seek to expand their data collection opportunities across diverse participants and actors to ensure coverage of increasingly dispersed and distributed activity across systems. Such an approach allows researchers to “follow” systems change (Prasad & Shadnam, 2023), even when such change is geographically or temporally distributed. For instance, in examining the emergence of a novel form of disaster insurance, Jarzabkowski and colleagues (2022) adopted a systems lens to consider how participants in a common risk pool, including national governments, insurers, and risk management organizations, took actions over several

years to reduce costs associated with global disasters. Capturing geographically and temporally dispersed activity within a single organization also can uncover system change efforts. For example, Frey-Heger and colleagues (2022) collected data from an international aid organization across five different refugee camps in Rwanda and the organization’s headquarters in Switzerland over a six year period. Drawing on these observations and leveraging access to multiple key actors and adjacent organizations (e.g., UN-affiliated organizations, international NGOs), they unpacked the systemic nature of protracted refugee displacement.

Zooming in. While offering critical information to better understand the relationship between social innovation and impact, increasing the breadth of data collection can also inadvertently increase the risk of excessive “noise” which obscures important signals in the data. When engaging in systems thinking, it can be difficult “to see the interconnections between things without becoming intellectually overwhelmed and trapped by them into a fatalism which presumes that change is impossible” (Mulgan, 2015, p. 14). To overcome these challenges, Donella Meadows (1999) introduced a typology of 12 “leverage points” based on her observations of policymakers’ efforts to introduce new mechanisms to manage important social issues, arranged hierarchically by degree of effectiveness (see Table 2).

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The concept of leverage points usefully guides scholarly attention toward deep investigation of systems change during data collection (Riechers et al., 2022). Existing typologies of leverage points can help researchers identify opportunities for systems change and model how associated interventions change relationships among the stocks, flows, and goals of a given system. For instance, such typologies often point to the important leverage of interventions which reconfigure existing (dis)incentive systems, shaping the actions and motivations of individuals. Similarly, the

concept and existing typologies also point toward the leverage of interventions which introduce new monitoring systems that reorient collective attention (Hehenberger et al., 2019).

In her review of leverage points Meadows (1999) suggested that the most accessible and tangible leverage points (i.e., those affecting lower order and mechanistic system structures) are often the least likely to significantly change a system. For instance, the introduction of carbon offsets, a form of voluntary tax, is occasionally described as a shallow leverage point, as existing market-based mechanisms are used to encourage carbon emissions reduction (Fischer & Riechers, 2019). Many have debated the effectiveness of carbon credits, which can introduce a number of unintended consequences. Because they shift responsibility for emissions reduction and create opportunities for fraudulent or ineffective offsets, carbon credits may actually lead to an increase in overall emissions (Kotchen, 2009). Nevertheless, easily identifiable opportunities to intervene at lower orders of the system can encourage action. Such innovations are also generally less controversial to dominant field actors, leading to quick mobilization and acceptance.

In contrast, interventions at higher order leverage points are particularly challenging for social innovators to design and implement, as they involve reorienting behavior and the goals of the system. For instance, the introduction of impact investing has coincided with the advancement of countercultural ideologies which challenge the dominant neoliberal ideology guiding the financing of social innovation (Hehenberger et al., 2019); however, these same movements have been co-opted by the existing finance industry to advance their own agendas. Designing effective social innovations at higher order leverage points thus can be challenging, as actors are likely to resist changes to ingrained structures, norms, and behaviors.

Meadows's (1999) framework of leverage points thus offers a powerful prognostic for zooming in during the data collection stage, enabling researchers to identify causal pathways and

outcomes of interest around social innovation. By focusing on leverage points in the research process, scholars can also more easily identify the scaffolding of various interventions and their effects on societal challenges. For instance, the movement to eradicate child labor has been advanced by social innovators alongside corporate action. Using leverage points to zoom in on systems change through social innovation directs scholars' attention not only to changes to specific rules and standards (e.g., the accord signed after the Rana Plaza disaster; see Reinecke & Donaghey, 2015), but also to broader attempts to reorient the intent of a system (e.g., poverty alleviation, as evidenced by the work of Gram Vikas; see Mair & Seelos, 2021).

To identify potential leverage points, scholars could probe the potential multi-level, nonlinear, and unintended effects associated with social innovation by specifically questioning the targeted level of change as well as expected and unexpected observed changes. In Table 3, we provide a set of questions which can draw out these effects and changes and surface potential leverage points. For example, Mair and Seelos (2021) studied a pro-social organization, Gram Vikas, which primarily sought to resolve issues related to water and sanitation. Exploring the introduction of sanitary toilets into a community was a natural leverage point to study changing individual level access to sanitation. However, by probing “the targeted level of change,” the authors uncovered that these toilets were “merely a distraction for addressing what the organization considered to be a troubling situation of inequality based on high levels of social exclusion of lower-caste people as well as women” (Mair & Seelos, 2021, p. 11). Moreover, by exploring “expected or unexpected observed changes” the authors learned that Gram Vikas utilized this “distraction” to enact a paradigm shift (a higher-order leverage point) around the marginalization of these communities to facilitate much larger systems change. In this way, leverage points can serve as prognostics for

data collection and expose consequences of social innovation activity—both intended and unintended—that otherwise would be obfuscated.

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Systems Thinking and Data Analysis

Given the varying scope and scale of social innovation, scholars have recognized that often “the process is too long and complex to discern cause-effect relationships between the realized projects or programs and their achieved impact” (Antadze & Westley, 2012, p. 142). Systems thinking helps scholars analyze “dynamic interpretations of causal connections that may be distant in time and space” (Grewatsch et al., 2021, p. 6). As previously noted, the creation of impact through social innovation rarely follows discrete and linear processes and can evolve through multiple pathways (Oeij et al., 2019). During the data analysis stage, systems thinking can facilitate zooming out to capture multifinality (i.e., different forms of impact stemming from a particular social innovation), and zooming in to capture equifinality (i.e., different social innovations leading to a particular form of impact).

Zooming out. Analyzing data through a systems lens increases scholars’ capacity to capture multiple forms of impact resulting from a particular social innovation, including multi-level, non-linear, and unintended effects. Although social innovations often are introduced with corresponding theories of change that describe intended paths for addressing societal concerns (van Wijk et al., 2019), the correspondence between theories of change and actual change should not be assumed (Grimes et al., 2019). Social innovation scholars can strengthen their analyses by exploring counterfactuals to test and critique the presumed assumption that a given social innovation generates social impact (Durand & Vaara, 2009). For example, Seelos and Mair (2014) theorized potential unintended consequences of expanding the scope (i.e., “mission drift”) and

scale of a social enterprise at Aravind Eye Hospital focused primarily on providing cataract surgeries in India. While the social enterprise remained focused on its core mission to treat cataracts, tracing potential counterfactual outcomes enabled the researchers to provide robust evidence for the outcomes they observed.

Moreover, even when theories of change hold, scholars should anticipate spillover effects, both positive and negative. Researchers should probe their data to account for multiple outcomes that align with the desired pathway for impact, as well as others that arise as part of the social innovation activity. While many outcomes may support the theory of change or extend beyond it, even well-meaning social innovations may introduce problematic reforms that fail to alleviate the circumstances they set out to resolve (Mair & Seelos, 2021) or worse, accentuate the underlying social conditions (Khan et al., 2007).

Causal loop diagrams created during the research design process (and updated with feedback loops as they are identified) can support analysis of multi-level, non-linear, and unintended effects. For instance, researchers can consider actors' interventions around one leverage point and trace impacts through various feedback loops. In a study of private sector, public sector, and social interventions to advance circular economies in Europe, Bassi and colleagues (2021, p. 135) used causal loop diagrams to identify how "different combinations of interventions emerge as viable options to have lasting impacts," as illustrated in Figure 2, showing differences across two regions. This process also can be leveraged to identify the conditions under which unintended effects might materialize, such as connections between the social and commercial sectors facilitating the co-optation of microfinance by commercial enterprises (Kent & Dacin, 2013).

--- Insert Figure 2 about here ---

Zooming in. During the analysis stage, social innovation scholarship can benefit from efforts to zoom in on different configurations of practices and processes which are either sufficient or necessary for creating impact. To uncover the pathways whereby different combinations of social innovations might lead to similar levels of impact, scholars are increasingly embracing configurational methods (Furnari et al., 2021; Greckhamer et al., 2018). Configurational methods share a common aim of “identifying why or how multiple explanatory factors combine into configurations that bring about an outcome of interest ... not only understanding the multiple attributes that constitute a configuration and their linkages, but also the orchestrating themes that underlie their coherence” (Furnari et al., 2021, p. 781). The most common configurational method in social innovation research, qualitative comparative analysis (QCA), is used to identify “causal recipes” for social innovation creation, scaling, and realization of impact.

Configurational approaches shift the orientation of theorizing away from linear and independent effects and instead emphasize the interdependent, non-linear nature of social innovation activity and its outcomes. By taking a configurational approach, scholars can zoom in on the conditions which enable or hinder the adoption of social innovation. For instance, Westley and colleagues (2014, p. 239) used QCA to identify thresholds for adoption and the associated strategies used by social innovators to “trigger the momentum for system change.” A configurational approach can expose how combinations of leverage points interact to advance system change. For example, research has shown how shareholder coalitions “tailor” the configurations of leverage points used to “target” firms to instigate climate action, revealing how “multiple levers of coalition composition combine to induce shifts in corporate climate change practices” (Slager et al., 2023, p. 2), as well as combinations which fail to inspire action. Table 4 outlines successful and unsuccessful configurations from that study. For instance, a “trust the

experts” configuration draws on large coalitions of experienced activist shareholders and is likely to lead to successful engagement, whereas an “ownership is not enough” configuration highlights how building a coalition of majority shareholders is insufficient to compel action. Configurational approaches can reveal combinations of simultaneously enacted leverage points, or sequences of “shallow, mid-level, and deep systemic changes [that] flow on from one another ... [which] can highlight possible mismatches or inadequacies of interventions at different levels of systemic depth” (Riechers et al., 2022, p. 4). By adopting a configurational approach, scholars can broaden analysis beyond a single intervention, exposing how combinations of interventions or “chains of leverage” might reinforce or undermine each another.

--- Insert Table 4 about here ---

CONCLUSION

Social innovation has been celebrated for introducing impactful solutions in response to many pervasive social challenges (Wry & Haugh, 2018). In designing these responses, social innovators increasingly engage in systems thinking to identify interdependencies which have led to chronic failures within existing systems. For instance, those working to address homelessness recognize intrinsic links to poor health and other inequalities: “thinking systemically means recognizing the connections between housing, homelessness, and everything else” (Foo et al., 2022). Taking inspiration from these social innovators, we have highlighted benefits of adopting systems thinking as a methodological practice for social innovation researchers. We have shown how a dualistic approach of zooming out and zooming in can be used to examine and theorize the complexities of social innovation more effectively, revealing its multi-level, non-linear, and unintended effects, and its fuzzy boundaries.

Systems thinking is one response to growing calls to adopt a “big picture approach” to scholarship on social innovation (Dorado et al., 2022; Grewatsch et al., 2021; Henriques et al., 2022; Mair & Seelos, 2021; Mulgan, 2015). Whereas much work has detailed the foundational motivations, practices, and processes associated with social innovation, we have highlighted a need to direct greater attention to the scaffolding of social innovations to develop a better understanding of systems change. We also have shown how systems thinking can be practically applied across the research process, from research design to data collection and analysis, and have offered several tools and frameworks for doing so. Collectively, these can be viewed as a methodological toolkit—single or multiple tools may be applied at once. Most critically, we have advocated for the application of a dualistic methodological approach that involves sequentially “zooming out” and “zooming in” throughout the research process to capture the scale and scope of social innovations and their impacts more accurately by better accounting for multi-level, non-linear, and unintended effects.

Highlighting a need for additional social innovation research which foregrounds these complexities, we acknowledge the longstanding tension between simplicity and complexity in producing knowledge and understanding within management theory (Eisenhardt et al., 2016; Klag & Langley, 2023; Tsoukas, 2017; Tweedie, 2022). Whereas the benefits of simplicity are self-evident, “to increase both generality and accuracy, the complexity of our theories must necessarily be increased” (Thorngate, 1976, pp. 134–135). Systems thinking is a bold approach that captures the complex dynamics of systems change and exposes the limitations of theoretical simplicity. Indeed, the need to increase the complexity of theorization to unpack systems change arising from social innovation is an important implication of this research methodology. As scholars more rigorously apply an increasing number of tools and templates designed to facilitate zooming out

and zooming in, we anticipate that scholars will be able to move toward an ideal middle ground between complexity and simplicity.

Finally, we have highlighted the importance of systems thinking in understanding the increasing power of social innovations to reshape entire systems in both productive and less productive ways. As social innovations combine with technological innovations to reshape fields, professions, and communities, there is pressing need to reorient our methods to capture these complex dynamics and reconsider how we map, trace, and theorize societal change. Social innovation scholars have begun to consider, for instance, societal impacts of artificial intelligence—not only positive and negative, but also intended and unintended (Sgaier et al., 2020). It is thus timely to consider how promising innovations introduce both positive social change and potential spillover effects. Other social innovations, such as the movement advancing the Benefit Corporation model, certification, legislation, and adjacent frameworks and tools reflect the growing influence and promise of systemic interventions, but also suggest the need for an enriched methodology to understand and map those interventions and their effects (Park et al., 2022).

In this chapter, we have shown how systems thinking offers a methodological opportunity to advance social innovation scholarship. We hope our work inspires a “systems turn” in social innovation research and increases collective opportunities for impact through scholarship that captures “big picture” systems change.

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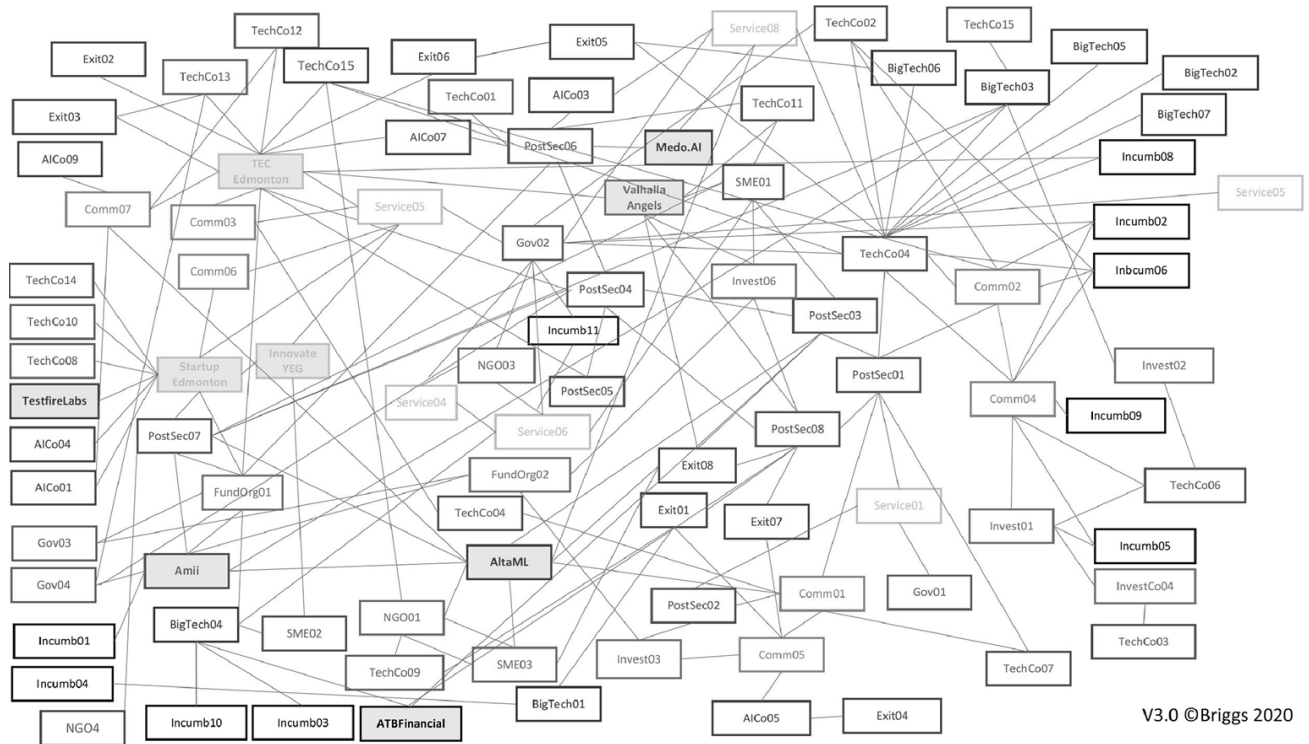
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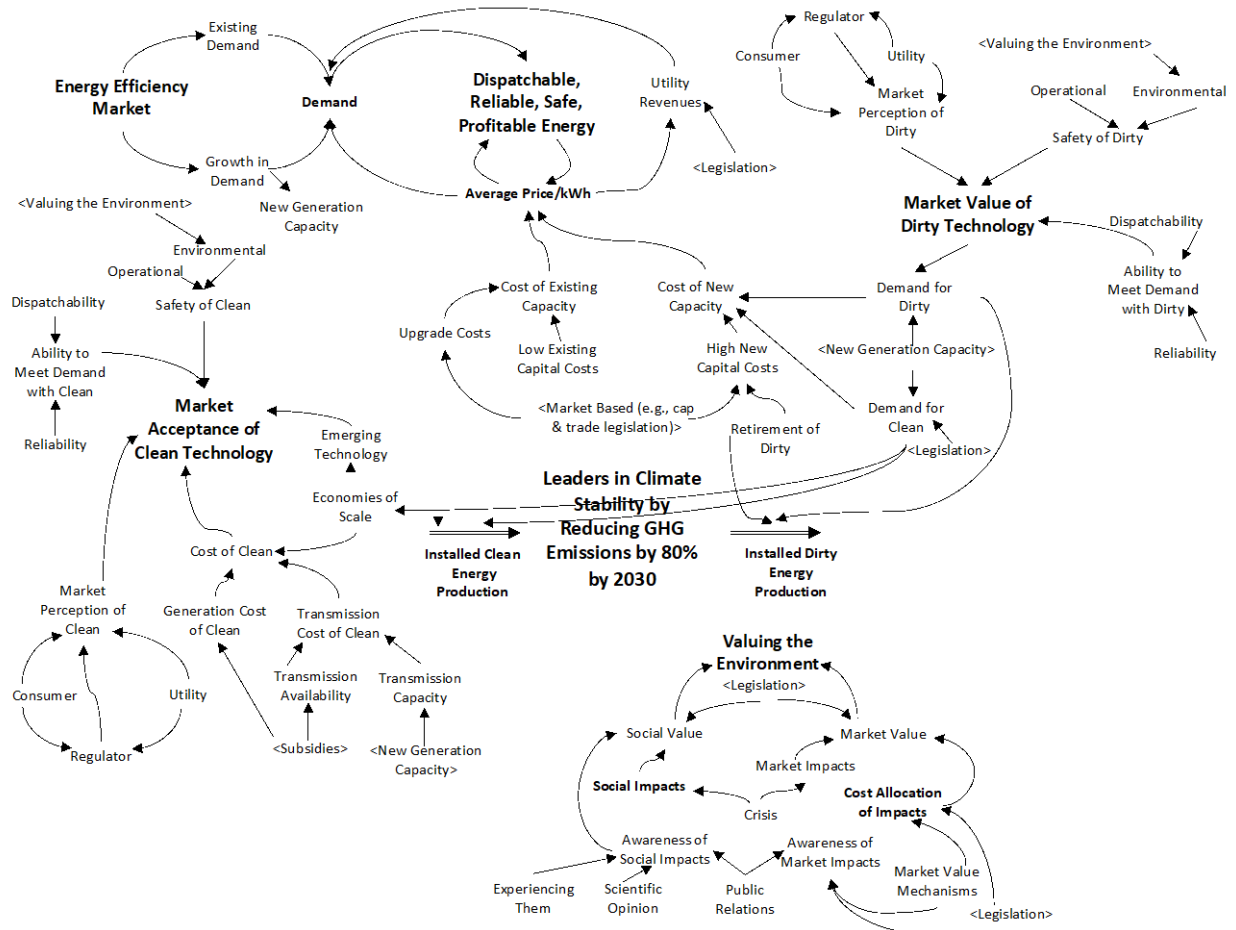
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Figure 1: Example Systems Maps



Category type	Description
InvestCo	Angel investor
FundOrg	Venture or program funder
AICo	AI at core of product or service
SME	Small or medium company not AI
TechCo	AI Adjacent with capabilities
Incumbent	Large local company not tech
BigTech	Non-local, large tech with AI capabilities
NGO	AI linked non-governmental organization
Community	Entrepreneurial community
Service	Government entrepreneurship service provider
Govern	City or provincial government
PostSec	Post-secondary faculty or unit
Exit	Exited techco

- Composite stakeholder map of Edmonton AI ecosystem. The various shades of nodes represent similar types of stakeholders, e.g., services, AI companies. (Figure reproduced from Hannigan et al., 2022)



b. System map supporting reduction in local GHG emissions by 80% by 2030, in regional energy systems, away from “dirty” production toward “clean” production. This systems map was used by RE-AMP to begin to understand the multiple forces animating regional energy systems. Potential leverage points are identified in brackets, such as <subsidies> and <legislation>. (Figure adapted from McLeod Grant, 2010)

Figure 2: Causal Loop Diagrams for Circular Economy Transition

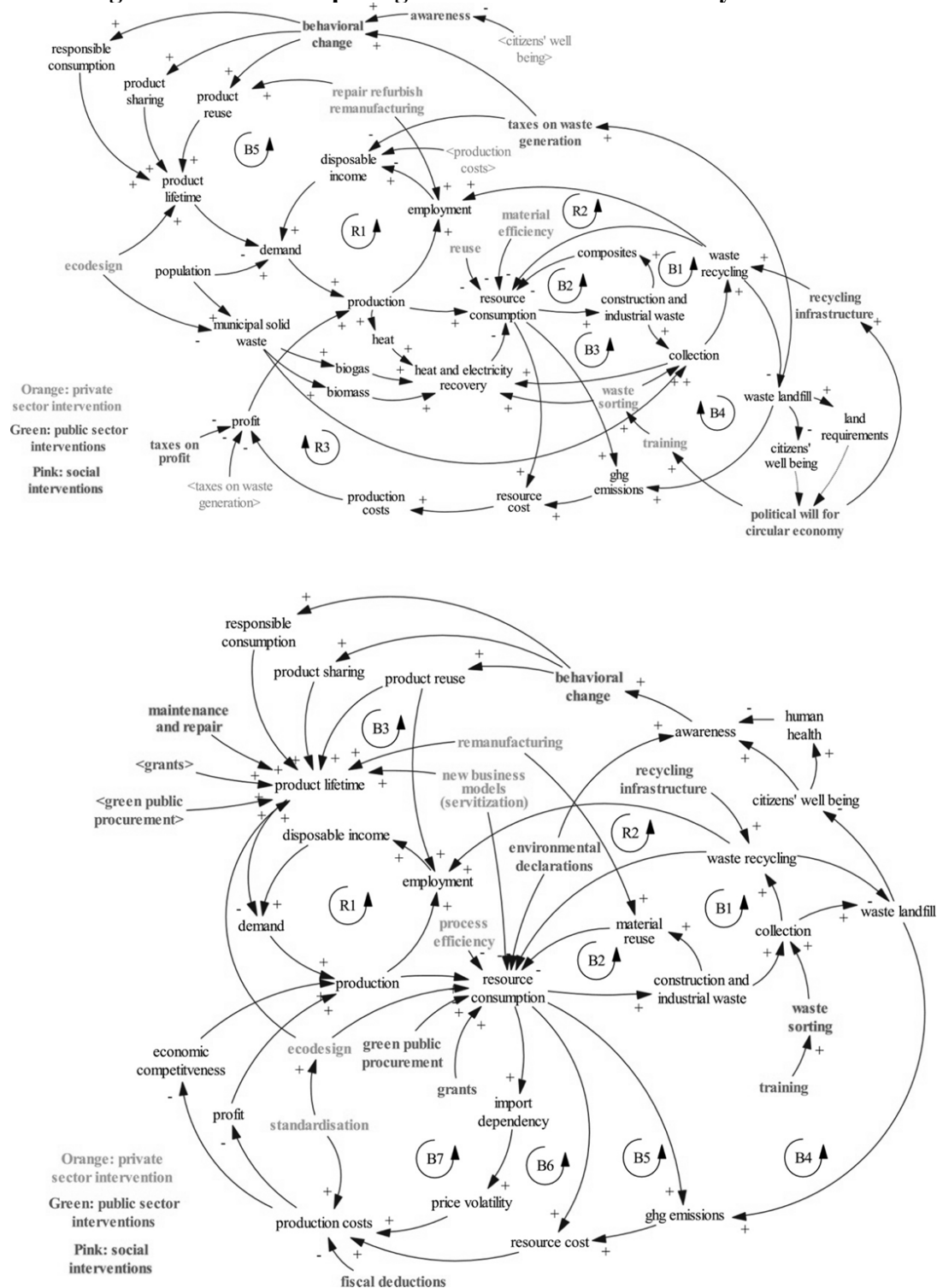


Figure 2 illustrates circular economy interventions in Maribor (top) and Basque country (bottom) by different actors advancing a transition. The interventions are grouped by colour, e.g., private sector interventions in light grey, public sector in medium grey, social interventions in dark grey. Balancing (negative) feedback loops are indicated with **B**, while reinforcing (positive) feedback loops are indicated with **R**. (Figure reproduced from Bassi et al., 2021)

Table 1: Questions and Approaches with Systems Thinking

Research Phase		Questions to Consider	Systems Thinking Approaches
Research Design	Zooming Out	- How do social innovators see linkages between the social problems they are addressing; what are the boundaries of scope? - How are social innovation activities linked, and to what ends? (e.g. stakeholders, partners; resources, collaboration)	- Systems mapping as a sensitizing process - Actor/Network maps - Issue/Value chain maps
	Zooming In	- What are the causal relationships that enable social innovations to be distributed, and how? - How will adjacent activity enable or hinder progress; what are the feedback loops? - What thresholds must be met to cause systems change to advance or take hold?	Causal loop diagramming
Data Collection	Zooming Out	- How do boundaries of the system the social innovation addresses vary? What opportunities or tensions emerge as a result? - How are different thresholds for adoption being accounted for—across levels, geography, temporality? Is impact likely to arise in a non-linear manner?	- Systems mapping as a data generating process - Holistic data strategy - Multi-sited - Multi-context - Multi-informant
	Zooming In	- What level of change are social innovators targeting? - What action unfolds at each level of society that the social innovation targets? - What are the intended and unintended consequences of the social innovation?	Leverage points as prognostics
Data Analysis	Zooming Out	- What other pathways complemented the social innovation approach? - Was impact realized in line with an intended or envisioned theory of change, or by alternative unintended actions and outcomes?	- Multifinality - Causal loop diagrams to trace impacts - Theorizing spillovers and unintended consequences
	Zooming In	What was present to allow social innovation impact to unfold? What thresholds were met; what barriers were absent?	- Equifinality - Configurational approaches (e.g. QCA, chains of leverage) - Theorizing absence

Table 2: Leverage Points

Leverage Points	Description and Examples of Interventions in the Context of Economic Inequality
Constants, parameters, numbers	Changing the targets, limits, and other metrics of a system: e.g., increasing minimum wage
Size of buffer stocks, relative to flows	Improving capacity to adapt to sudden changes in flows: e.g., establishing larger reserves of public funds to be invested in public goods and services
Structure of material stocks and flows	Improving physical infrastructure: e.g., enhancing stock and variety of affordable housing
Length of delays, relative to rate of systems change	Decreasing delay between the introduction of social innovation into a community and the observation of impact: e.g., speed up the process for small businesses to get loans
Strength of negative feedback loops, relative to the impacts they are trying to correct against	Stabilizing and balancing forces which move the system towards a goal: e.g., strengthening regulation to promote fair competition
Gain around driving reinforcing feedback loops	Introducing destabilizing forces which move systems towards a goal: e.g., introduction of mentorship programs that help disadvantaged individuals build networks and access opportunities
Structure of information flows	Introduction of new information feedback loops: e.g., ensure transparency in wage structures within companies to address wage gaps
Rules of the system (incentives, constraints)	Updating the governance of systems: e.g., cooperative legislation which supports different distribution of profits
Power to change system structure or self-organize	Enhancing the ability of agents to adapt to changing conditions: e.g., empower local communities to have a say in economic development projects in their areas
Goals of the system	Reconfiguring the overarching intent of a system: e.g., shift the focus of economic policy from mere GDP growth to broader measures of well-being and equality
Paradigm underpinning the system	Challenging the overarching unstated assumptions about the organization of goals, structures, rules, parameters: e.g., challenge the belief that unlimited growth is sustainable and push for a paradigm of sustainable and equitable growth
Power to transcend paradigms	Improving the ability of a system to move between paradigms and opposing assumptions: e.g., encourage education and dialogue about alternative economic models, such as cooperative economies or circular economies

Table 3: Questions to Probe Leverage Points

Opportunities for Leverage	Questions for Data Collection
Goals and Outcomes	• What are the key measurable intended outcomes for this social innovation? • Have potential unintended outcomes been identified by social innovators or the beneficiaries of social innovation? • Have these outcomes shown any trends or patterns over time? • What are the overarching goals, beliefs, and values of the entire system? • Are there emerging ideas or practices that challenge the foundational principles of this system? • Have there been instances where participants or communities have tried to reshape the current system from the ground up, and to any measurable outcome, whether failed or successful?
Design and Structure	• What structures are preventing the impact of this social innovation from emerging? • How is the current system structured in terms of its operations and networks? • What are the policies, guidelines, or informal norms guiding the current system? • How do these rules incentivize or limit the actions of participants and beneficiaries? • How adaptive is the innovation in response to new challenges or opportunities?
Feedbacks and Non-Linearities	• Where are the key points of collaboration or interaction? • Are there noticeable lags between intervention and observed results? • Are there elements that could amplify the success or challenges of the innovation? • How would potential feedback loops influence the expansion or decline of the innovation's impact? • How is information about the problem or the associated innovation disseminated among stakeholders? • Are there key stakeholders left out of critical communication loops?

Table 4: QCA Analysis of Configurations for Climate Activism Engagement Success and Failure

	Engagement Success				Engagement Failure			
	High Receptivity		Moderate Receptivity	Mixed Receptivity	Low Receptivity	Mixed Receptivity		
	1.	2.	3.	4.	5.	6.	7.	8.
	Trust the Experts	Localize the Common Good	Go local	Embed the experts	Ownership is not enough	Local access is not enough	Money is not enough	Amateur idealists
Target Firm Receptivity								
Target firm characteristics								
Highly profitable firms	●	●	⊗		⊗		●	⊗
Large firms	●	●	●	●	⊗	⊗		
Strong environmental record	●	●	●		⊗	⊗	⊗	
Coalition composition levers								
Large coalitions	●	●	●	●				
Large shareholdings					●	⊗	⊗	⊗
Experienced coalitions	●			●				⊗
Local access		●	●	●	⊗	●		⊗
Engagement issues								
Financially material issues	●	⊗	●	●	⊗	⊗	⊗	⊗
Disclosure seeking	⊗	⊗	⊗	⊗				⊗

Notes. Filled circles (●) indicate the presence of an attribute. Crossed circles (⊗) indicate the absence or negation of an attribute. Blank cells indicate that an attribute is either present or absent in the configuration.

(Table adapted from Slager et al., 2023)