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Transformation Systems for Socioeconomic Transition

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Transformation Systems for Socioeconomic Transition

Deep system challenges in the sustainable seafood industry

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A systemic design approach to purposeful socioeconomic transformation moves beyond idealistic future interventions to address deeply-embedded issues that prevent change here and now. We identify the persistence of consistent "deep system challenges" faced by complex change programs discovered across a range of cases. In the case study of sustainable seafood practices at the industry level, we show the development of the transformation system process and its theoretical and methodological support.

These deep system challenges represent six knots of complex and interconnected problems demanding new organising approaches. These challenges were identified over a wide range of cases and have been studied since 2016 in an ongoing action research programme. The deeply-rooted social complexity of these systemic (wicked) challenges prevents the effectiveness of superficial attempts at quick-gain change in organisations and multi-stakeholder networks where these challenges exist and persist. Shifting these system dynamics is well beyond the capacity of any single or small set of change initiatives. Instead, we argue for an approach that involves catalysing what we call transformation systems into existence and greater transformative power – or a transformation system strategy. A transformation system

strategy involves the development of capacities and infrastructures that absorb the complexity of these systems challenges across a network or organisation.

For such expansive contexts as socioeconomic and industry-level transformation, for example, in the present case, the complexly interrelated seafood industry, the organising potential of smaller, faster-paced change initiatives can be mobilised through purposeful transformation systems. These are developed by transformation *catalysts* that serve as experimental, evaluable system-change deployments that draw resources and prepare networks to form new structures that regenerate the transformation system itself.

KEYWORDS: transition, social system design, system transformation, systemic governance, collaborative action, flourishing

RSD TOPIC(S): Cases & Practice, Economics & Organizations, Socioecological Design

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Presentation summary

> To change something, build a new model that makes the existing model obsolete.
> *R. Buckminster Fuller, 1975*

Buckminster Fuller's (1975) well-known dictum of "creating a new system that makes the old one obsolete" has proven a formidable challenge in our globalised digital era, where existing systems are deeply digitised and have become more resilient to change, due to their complexity. Most economists would have no idea of how to change the modern economy or societies, let alone designers. But yet, that is the scale of the societal challenge we are impelled to address when millions of citizens demand changes to housing affordability, labour and employment, income inequality, as well as surveillance and sustainability economics, not to mention climate change, species loss, collapsing ecosystems, and other huge societal crises.

In the context of what some are now calling a polycrisis – interlinked and multiple crises, purposeful system transformation is on the rise (Fazey & Leicester, 2022; Waddock et al., 2020). Many change agents and citizens alike recognise the fundamental imperative to

achieve a world that people want to live in and where other beings can thrive, too—what Lovins and colleagues in the Club of Rome call “a finer future” (Lovins et al., 2018). Such organised transformation efforts, however, are greatly challenged by political divisiveness and “wickedly” and inextricably interlinked with numerous ongoing crises. Six years of action research suggests that beneath these crises are six powerful common knots of issues that we call deep systems challenges. The effort needed to take on these issues defies the capacities of the many, mostly small and largely separate efforts to shift the system, a meta-movement of individual, relatively small-scale change and largely non-transformative efforts that Paul Hawken called “blessed unrest” (Hawken, 2007). Systemic design strategies are required across many boundaries (Murphy & Jones, 2020) to begin to organise these efforts in new, more coherent and aligned ways to enhance their potential for transformative impact, that is, into what we call transformation systems. This transformation system response to tackling the six deep systems challenges systemically *designs* purposeful transformation systems (Waddock et al., 2022) through the work of “transformation catalysts” (Waddock & Waddell, 2021; Lee & Waddock, 2021).

The six deep systems challenges were identified through a systematic exploration of what it takes to achieve purposeful transformation. They were first outlined in 2016-17 in interviews by the lead author with about five dozen transformation agents. Interviews focused on the question, “What is holding back your transformation efforts from greater success?” The results provided the basis for forming working groups that further explored each of the identified issues. Issues raised by informants were ultimately synthesised into six broad categories: narrative; evaluation, learning, monitoring, and research; innovation systems; financing systems; governance mechanisms; and collaborative or co-creative efficacy. Understanding of these issues was further refined using existing literature, including reports on transformational impediments identified by the International Panel on Climate Change (Allen et al., 2019).

Table 1 compares the definitions of the six systemic challenges to traditional management approaches for dealing with similar issues, recognising that the last six years of work have evolved these constructs. For example, while conventional approaches to change use standard forms of data organised as statistics, informants and the working groups identified the actual challenge as emerging new and compelling narratives with the power to shift

understandings. Similarly, informants argued that typical linear or narrowly-constructed metrics and KPIs (key performance indicators) needed to be replaced with broader evaluation metrics that allow for learning, continuous monitoring, and further research into issues within the system. Similarly, while conventionally, innovation is understood to be important, informants understood innovation to be so important in transformation that it requires systems capable of producing ongoing innovation. Conventional financing approaches were also seen as problematic, with informants arguing for the development of well-designed financing systems capable of resourcing more holistic and transformative approaches to problem solving. Similarly, traditional governance systems were viewed as problematic, with informants arguing for new governance mechanisms oriented to the collective problems facing many institutions and systems. Finally, while informants recognised the need for collaborative approaches in creating transformational change, they enhanced that approach with greater *co-creative* efficacy. The definition of these six systemic challenges was further enhanced during a more recent transformational change effort, as described in the next section.

Table 1. Comparison of traditional management and deep system challenges.

Traditional Management	**Deep Systems Challenges**
Statistics	Narrative
Metrics, KPIs	Evaluation, Learning, Monitoring, Research
Innovations	innovation systems
Funding	Financing systems
Policy	Governance mechanisms
Collaborating	Co-creative efficacy

Case study: Seafood 2030

The case of Seafood 2030 provides significant new evidence of the validity of the identification of the six deep system challenges. During 2021-22 a team from the Bounce Beyond initiative developed a series of engagements with seafood industry participants that was designed to help them define next-generation sustainable seafood initiatives within the industry. A combination of Three Horizons thinking (Sharpe et al., 2016), stakeholder surveys and dialogue-based discussion was used to scope and identify key issues facing the seafood industry. Three Horizons thinking is a visioning process designed to identify the current dominant system in a given context, in this case, the seafood industry, participants' future aspirations and vision for the context, and the transition activities and innovations already underway – or needed to make the transition.

Figure 1 provides the analysis of key transition activities (the second horizon) identified by seafood industry participants as needed to move from the first horizon to the third. Initially, however, the seafood industry's process for Three Horizons thinking was undertaken with no reference to the six deep system challenges. In a process that validates the original insight of the predominance of these six deep system challenges, seafood industry participants nonetheless identified the *same* six systemic challenges facing their industry as had earlier been identified by the systems change agents. It was, however, only after the Bounce Beyond team and industry participants revisited the figure more than a year after the original Three Horizons work was done that the alignment was recognised between the six deep systems and the transition issues, and the new labels reflecting the systemic challenges (in orange) were added to the figure. We were encouraged to discover this consonance, thereby providing further validity for the existence – and prevalence of these particular systemic challenges in transformation contexts.

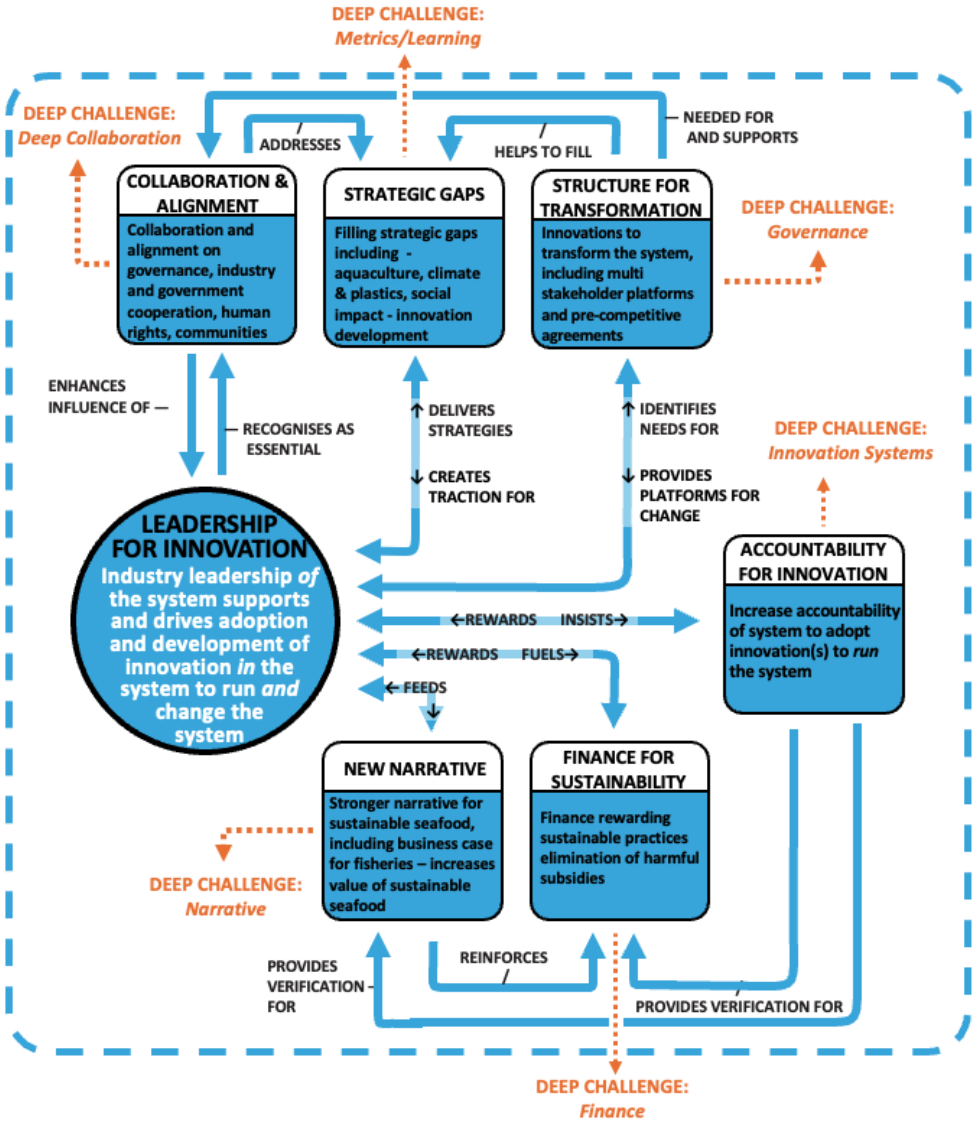

Figure 1. The second horizon of global sustainable seafood as identified by seafood industry participants, with the six systemic challenges labelled. (Image courtesy of Ian Kendrick, Ned Daley and Jonny Norton).

The combined interview results and subsequent working group elaborations of the six deep system challenges mesh neatly with the independent identification by seafood industry participants of the same set of challenges in their industry. This iteration of the deep system challenges in an independent context like seafood provides significant evidence that these particular challenges are potentially significant and important in a variety of contexts. As

currently understood, it seems that transformational system change in socio-economic systems requires that system participants deal with at least the following six deep system challenges:

1. **Narratives:** what are the new stories, narratives, and visions needed that articulate shared aspirations, purposes, and relationships between people and nature (Riedy, 2020; Waddock, 2021) and help define the aspirational system? What is the shared language that informs the transformed future?
2. **Monitoring, evaluation, research/reflection, and learning support:** what holistic and principles-based metrics are needed to assess and evaluate the performance of the new system (Patton, 2019) and provide a basis for further innovation, understanding, and ongoing learning?
3. **Innovation systems:** What technical, organisational and societal innovations are needed to produce a systemic perspective and socially-environmentally positive outcomes, and how can these innovations be developed and evolved as needed?
4. **Financing and resourcing mechanisms:** What changes are needed to the financing and resourcing systems to enable them to support transformative action and treat money as a means to societal goals (Waddell, 2021)?
5. **Governance and organising mechanisms for collective action structures:** What new approaches to governing and organising the system are needed to set shared direction and take aligned actions (Waddell, 2011) and ensure that all relevant voices are heard and listened to?
6. **Cocreation Efficacy** (Jones, 2018) or **Deep Collaboration:** What collaborative capacities are needed to enable co-creation and co-evolutionary participative engagement among actors to enable moving the system from organisation to understanding and seeing itself as an effective ecosystem (e.g., ego- to eco-consciousness (Scharmer & Kaufer, 2013) or transformation system (Waddell et al., 2021) for transformative action?

Several systemic design practices proved valuable in the strategic framing that evolved within the seafood industry group. The first stage of developmental design was facilitated by broad seafood industry participant input to the (3H) mapping. The 3H framework provided common ground for the second stage of strategy making, which aimed to identify preferred

strategies for resolving ongoing issues (e.g., fair labour, sustainable fishing, fishery management). Strategies were presented as options in stakeholder dialogue, using the well-known iceberg model (see Figure 2) based on causal layered analysis (Inayatullah, 1998) to demonstrate an interactive issue mapping.

At this stage, the distinctive role of deep systems challenges was understood by participants through a lens of needing to develop broad-based capacities within the industry that might resolve challenges across the different strategies. These approaches raised new ways of thinking about the need for collective action, rather than individual responses, on common issues. For example, there is a common assumption that policy changes can deliver desired shifts in a system's outcomes, processes, or orientation. Recognising the governance deep systems challenge, on the other hand, means seeing the policy-making and implementation process itself as dysfunctional, perhaps captured by the status quo or under-resourced. Therefore, that awareness discloses the need to change governance or collective action structures themselves, which are often associated with government but actually can exist throughout society--and potentially be tapped in new ways. For example, in seafood, a Global Hub has been created to bring together all actors in the sustainable seafood transformation system to take joint action. Similarly, transformation agents generally agree that while innovation is needed, it needs to be accountable for its systemic impact on society and the environment and provide broad benefits rather than simply benefitting financial elites and short-term interests.

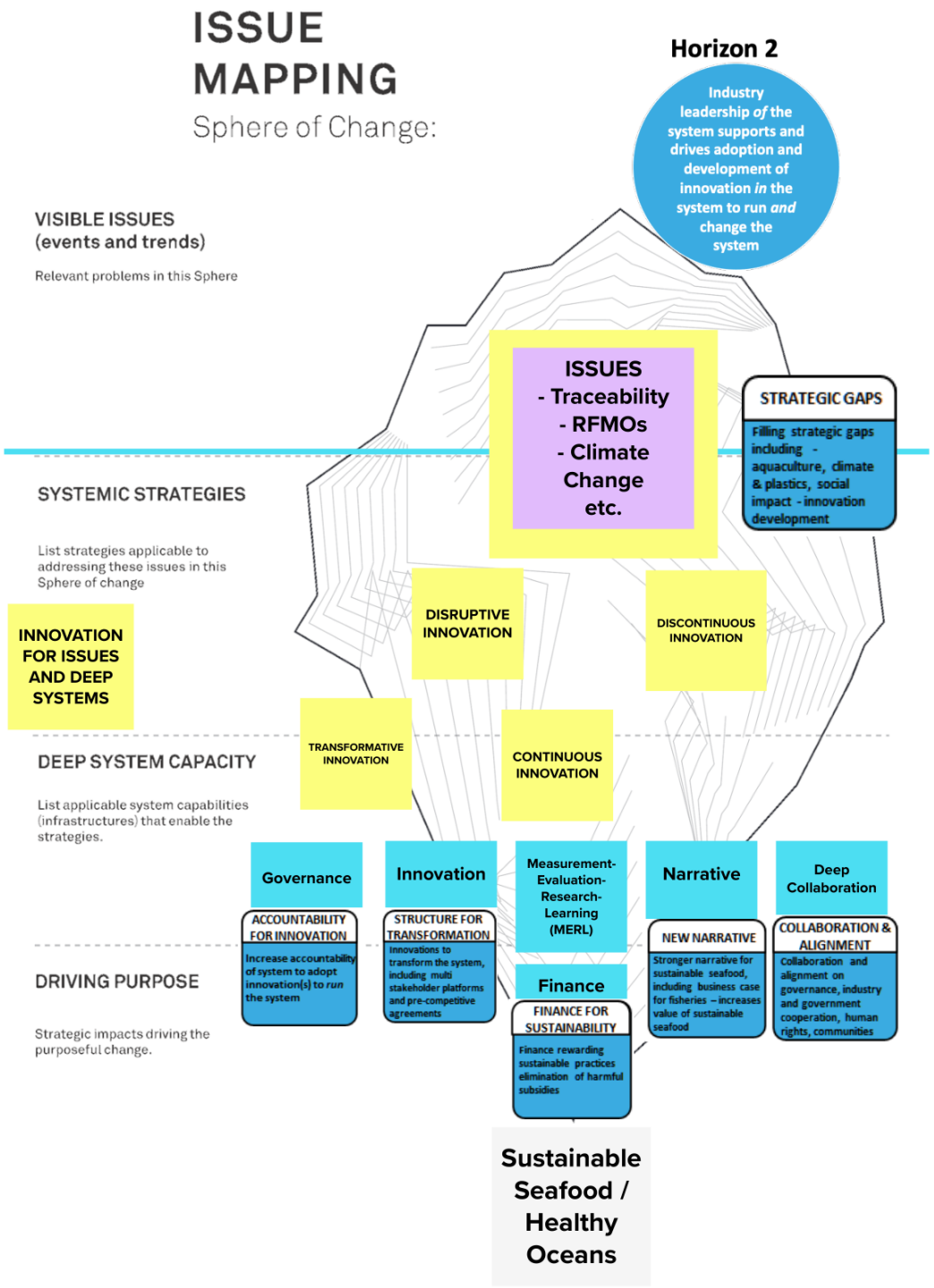

Figure 2.

Iceberg model with issues, strategies and deep systems challenges identified by seafood industry participants.

Among the visible impacts of unsustainable seafood are the depletion of fish stocks, which is well-known. Less visible is a form of modern slavery that holds informal labour as recruits on fishing vessels against their will. Change agents working for the driving purpose of sustainable seafood most often focus on systemic strategies to address industry problems, such as changing laws and improving data. But laws are very difficult to change because the governance systems that produce laws are dysfunctional; data are poorly connected to changing actual behaviours, and from a systems design perspective, new approaches are needed.

Meadows' concept of leverage points (Meadows, 1997) reminds us that different actions associated with deep systems challenges are needed for systemic change. Using some of the deep system challenges as leverage points provides an illustration. Narratives, for example, can shape information flows, mindsets, attitudes, beliefs, and, ultimately, worldviews and behaviours based on the paradigms that explain our relationships with others and the world around us. Meadows describes transcending existing paradigms and mindsets as the most highly-leveraged position for effecting systems change because of the power of new paradigms to impact behaviours and practices. Acknowledging deep systems challenges recognises narrative change as a source of potential innovation by transforming existing paradigms and reshaping key relationships and understandings. Governance structures power, goals, and resource flows and forms the basis for information flows and collaboration. Metrics and learning are key components driving reinforcing and balancing feedback loops. Shifting these deep systems challenges offers clear potential for transformative change – through the deliberate evolution and formation of purposeful transformation systems – the collection of change efforts oriented towards similar aspirations in a given context (Waddell et al., 2021). Doing that work of evolving effective transformation systems is the task of entities we call transformation catalysts (Waddock and Waddell, 2020; Lee and Waddock, 2020), which we briefly describe in the last section below.

Transformation catalysts

The deep-rooted, cross-cutting and powerful nature of the deep systems challenges makes changing them formidable, particularly in light of the fragmentation of most change efforts. Shifting them is well beyond the capacity of any single, or even a small set, of change initiatives. Purposeful transformation systems are fostered and evolved through the work of entities we call transformation catalysts (TCs). TCs serve as intentional social systems that cohere, connect, and amplify the work of the many, typically fragmented initiatives in a broad landscape of the transformation system (T-system). The T-system is the collection of initiatives that are aligned around a generally shared set of aspirations – although until they are organised as a T-system, they may not recognise each other or that alignment. Such systems, as with Seafood 2030, form around common issues, known geographies, or self-organising stakeholder groups.

Transformation catalysts, as we have described them (Waddock & Waddell, 2020; Lee & Waddock, 2020), undertake three main activities in organising transformation (T-) systems: Connecting, cohering, and amplifying (see Figure 3). Connecting involves bringing potential T-system participants together to help “see” who is in their system, what they are doing, where, and how. Connecting also involves important sensemaking processes that enable T-system participants to understand what their shared aspirations are and how they might work together more effectively. Cohering involves activities like the collective visioning processes of 3H mapping described above for the seafood industry that enhance T-system capacity for emerging shared aspirations. It also involves doing the next step of emerging (collective and individual) cohered action strategies that enable the potential for more purposeful and effective transformative impact. Amplification involves implementation of the action strategies, guided by the shared narratives or aspirations developed during cohering processes, and the emergence of systemic capacities that are needed to sustain and continually evolve transformative action into the future.

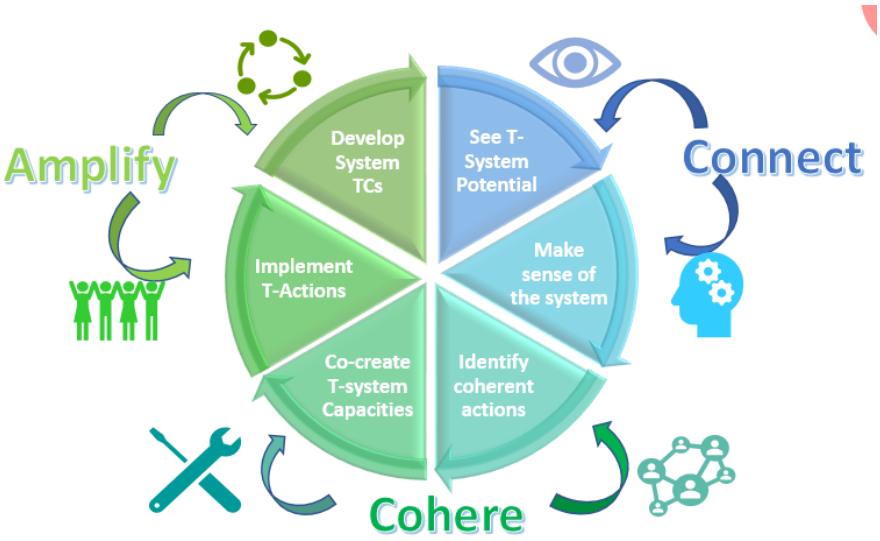

Figure 3. Connecting, cohering, and amplifying activities of transformation catalysts.

Transformation catalysts help T-systems participants see and understand their whole system, identify leverage points and design interventions to strengthen the collective potential of the transformation. Participants work across their own institutional and other boundaries. In effect, TCs are agents for massive collaboration. Although still in their early stages of development, examples include 1000 Landscapes for 1 Billion People[1] and the Global Alliance for the Future of Food.[2] As noted, our work in developing the sustainable seafood transformation system's ability to address deep system challenges represents another example.

[1] https://landscapes.global/

[2] https://futureoffood.org/

Conclusion

The work of transformational change is hard and made no less so by the complexity of systems to be changed, particularly the depth of the systemic challenges that any industry or system faces in attempting the fundamental change that transformation involves. We have argued that change makers in transformation catalysts can emerge with effective and purposeful transformation systems through processes of connecting, cohering, and amplifying their understanding of and capacities to tackle a set of six systemic challenges that appear pervasive in many complex socio-economic systems. These systemic challenges include: emerging new narratives that reframe system purposes and paradigms; developing powerful, holistic assessment, evaluation, and learning vehicles to measure progress and effectiveness; creating innovation *systems* that orient towards socio-ecological positive new approaches, designs, and innovations; creating systems-based financing mechanisms and approaches that are capable of resourcing needed transformative actions; evolving collective governance and organising mechanisms needed to sustain new systems; and evolving collaborative and co-creative capacities that enable collective actions for the greater good.

References

1. Allen, M., Antwi-Agyei, P., Aragon-Durand, F., Babiker, M., Bertoldi, P., Bind, M., Brown, S., Buckeridge, M., Camilloni, I., & Cartwright, A. (2019). *Technical Summary: Global warming of 1.5° C. IPCC Special Report.* International Panel on Climate Change, Geneva.
2. Ciborra, C. U. (2009). The platform organisation: Recombining strategies, structures, and surprises. In *Bricolage, Care and Information* (pp. 134-158). Palgrave Macmillan.
3. Fazey, I., & Leicester, G. (2022). Archetypes of system transition and transformation: Six lessons for stewarding change. *Energy Research & Social Science*, p. 91, 102646.
4. Fuller, R.B. (1975). *Everything I know*. Lecture notes. San Francisco: Buckminster Fuller Institute. https://www.bfi.org/about-fuller/everything-i-know/
5. Hawken, P. (2007). *Blessed unrest: How the largest movement in the world came into being, and why no one saw it coming*. New York: Viking.
6. Inayatullah, S. (1998). Causal layered analysis: Poststructuralism as method. *Futures*, *30*(8), 815-829.
7. Jones, P. & Van Ael, K. (2022). *Design Journeys through Complex Systems.* Amsterdam: BIS Publishers.

8. Jones, P.H. (2018). Contexts of co-creation: Designing with system stakeholders. In P. Jones and K. Kijima (Eds.), *Systemic Design: Theory, Methods and Practice*, pp. 3–52. Volume 8 in Translational Systems Sciences Series. Springer Japan.
9. Lee, J. Y., & Waddock, S. (2021). How transformation catalysts take catalytic action. *Sustainability, 13*(17), 9813.
10. Lovins, L. H., Wallis, S., Wijkman, A., & Fullerton, J. (2018). *A finer future: Creating an economy in service to life*. New Society Publishers.
11. Meadows, D. (1997). Places to intervene in a system. *Whole Earth*, *91*(1), 78.
12. Murphy, R. & Jones, P. (2020). Systemic strategy: Systemic design methods for complex systems change. *Proceedings of Relating Systems Thinking and Design (RSD10) Symposium*. TUDelft, Oct 10-20, 2020.
13. Patton, M. Q. (2019). *Blue marble evaluation: Premises and principles*. Guilford Publications.
14. Riedy, C. (2020). Storying the future. *Storytelling for Sustainability in Higher Education: An Educator's Handbook*. Routledge.
15. Scharmer, O. & Kaufer, K. (2013). Leading from the emerging future: From ego-system to eco-system economies. San Francisco: Berrett-Koehler Publishers.
16. Sharpe, B., Hodgson, A., Leicester, G., Lyon, A., & Fazey, I. (2016). Three Horizons: A pathways practice for transformation. *Ecology and Society*, *21*(2).
17. Waddell, S. (2011). *Global Action Networks: Creating our future together*. London: Palgrave-MacMillan
18. Waddell, S. (2021). *An Investigation into financing transformation*. Catalyst 2030, Bounce Beyond, Cattail Strategy. https://catalyst2030.net/resources/an-investigation-into-financing-transformation
19. Waddock, S. (2021). Wellbeing economics narratives for a sustainable future. *Humanistic Management Journal, 4*(4), 165–182.
20. Waddock, S., & Waddell, S. (2021). Transformation Catalysts: Weaving transformational change for a flourishing World for all. *Cadmus, 4*(4), 165–182.
21. Waddock, S., Waddell, S., Goldstein, B., Linnér, B.-O., Schäpke, N., & Vogel, C. (2020). Transformation—How to spur radical change (pp. 82–89).
22. Waddock, S., Waddell, S., Jones, P. H., & Kendrick, I. (2022). Convening transformation systems to achieve system transformation. *Journal of Awareness-Based Systems Change, 2*(1), 77–100. https://doi.org/10.47061/jabsc.v2i1.2023