Systemic Innovation in a World of Uncertainty

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Abstract

Systemic Innovation is a field of praxis that is rapidly taking shape as a key driver in R&D initiatives focused on integral sustainability the world over. This field curates the exploration of socio-technical systems design, implementation and insertion in society in ways that foster planetary thrivability at local and global (aka 'glocal') levels. To do so, it adopts a transformative approach to characteristically "wicked" societal problems through the transdisciplinary study of ways in which pragmatic socio-technical systems innovation can dissolve VUCA challenges (i.e., those that are characteristically volatile, uncertain, complex and ambiguous). This paper explores how insights from the systems sciences can directly influence real-world socio-technical systems change. By considering both the systemic leverage points and systemic nurturance spaces that foster the emergence of innovations for thrivability, the field of systemic innovation is developing new methods, models and means of emerging ecosystems of R&D+i (research and development plus innovation). Results include the generation of socio-technical solutions that are synergetic with each other (thereby forming collective incubators or innovation greenhouses based on the application of collective intelligence). The emergence of such innovation ecosystems requires leadership and systemic innovation that incorporates social values, technological creativity, economic opportunity and environmental integrity. This paper considers themes of innovation, leadership, connective intelligence, collective intelligence, collective creativity, design thinking, systems practice, entrepreneurial experimentation and other considerations related to the emerging field of leadership and systemic innovation.

Keywords

Systemic innovation, thrivability, collective intelligence, design thinking, disruptive innovation, socio-technical systems theory, experimental prototyping, innovation ecosystem, VUCA challenges.

Introduction

New ways of living, of creating value, and of raising not only standards of living but —
what is far more important — quality of life call for augmented and expanded
treatments of innovation in the context of societal evolution. Unfortunately,
contemporary approaches to the development and implementation of advances in the
application of technology tend, at best, to emphasize the synergetic relationship
between human-beings, technology, society, and the environment. We can do better
than this. Indeed, if we wish to curate conditions for the emergence of a world of
human dignity and thrivability for all, we will have to.

According to standard usage, an *innovation* is the concretization of a practical idea that
augments human capability for action with societal impact, existing as an intermediate
phase between the conceptual *invention* of an idea and its marketable *diffusion* in
society. Clearly, advances in science and technology have created unprecedented
opportunities for human development and well-being. And yet, as Jacques Ellul warned
reprovingly over fifty years ago, "the machine tends not only to create a new human
environment, but also to modify man's very essence."[1] As such, technological progress
over the last 150 years has brought with it certain "side-effects"[2] that, although
generally ignored for some time, have now become global issues that threaten the
stability of societies and ecosystems the world over. The familiar litany of modern-day
ills include population growth, social inequities, hunger, armed conflicts, water
shortages, pollution, climate change – and these are but a few of the issues, each of
which is related to every other, and which together form a complex challenge for
societal development.[3] In ever more urgent and pressing ways, the finitude of
resources on our planet calls for new forms of production, distribution, and

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[1] Ellul, Jacques. *The technological society.* New York: Vintage Books, 1964.
[2] Meadows, Donella et. al. *The Limits to Growth.* New York: Potomac Books, 1972.
[3] Merry, Uri. *Coping with Uncertainty: Insights from the new sciences of chaos, self-organization, and complexity*. Westport: Praeger, 1995. P. 78

consumption … and for new ways of researching, developing, and innovating social and technological change in order to answer the call.

Normative considerations

What is called for is a clear and well developed appreciation of how the dynamics of socio-cultural change are linked to the dynamics of innovation. The set of interconnected and interdependent challenges that characterize global civilization in the first half of the 21st century directly impact, and are impacted by, the advancement of society at local and regional levels.[4] As mentioned above, an extrapolation of the trends that characterize the current set of challenges for humanity point toward ecological catastrophe and social disintegration. However, with a solid grounding in systems thinking and the sciences of complexity, it is possible to explain why this is happening — and to develop policies and strategies to innovate the means of emerging a future that is not only sustainable, but also desirable and even thrivable, as well. There is an urgent societal need for research, development and innovation based on the systems sciences, and in particular, on the sciences of complexity and the study of socio-technical systems.[5,6,7]

An important characteristic of systemic innovation is its fusion of scientific and ethical knowledge. Instead of only answering "know how" type of questions, such innovative advancement in socio-technical systems must also provide the means to start to answers questions of "know why" and "care why" in regard to the way in which we live,

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[4] Meadows, Donella et. al. *Limits to Growth: The 30-Year Update,* Chelsea Green Publishing Company, White River Junction VT, 2004.
[5] Goerner, Sally. *Chaos and the evolving ecological universe*. Langhorne: Gordon and Breach, 1994.
[6] Capra, Fritjof. Evolution: The old view and the new view. Loye, David (Ed.) *The evolutionary outrider: The impact of the human agent on evolution.* England: Adamantine, 1998.
[7] Pasmore, William A. and Sherwood, John J. *Sociotechnical Systems: A Sourcebook*, 1978; and Pasmore, William A. *Designing Effective Organizations: The Sociotechnical Systems Perspective*, 1988.

work, and learn together. Ever more powerful technologies of communication and information processing have given rise to Big Data that can be transformed into Smart Data through meta-tags and evolutionary algorithms, creating not only a reservoir of extra-somatic brain power for humans, but also emerging a semi-autonomous Internet of Things. The dynamics of these socio-technical systems complexify and evolve ever more rapidly.

Clearly, for innovation to be efficient, efficacious and effective, as well as ethical, aesthetic, empathetic and humane, no single individual can be responsible for shaping it. This is another aspect of systemic innovation: it relies on collective intelligence. Systemic responses to the complexity of contemporary global and local challenges – personal, societal, planetary – require an expanded perspective: a way of recognizing interconnections, of perceiving wholes and parts, of acknowledging processes and structures, of blending apparent opposites. But most importantly, they require collaboration and an appreciation of reciprocity. Individual solutions and breakthrough ideas are necessary but not sufficient. Real opportunity to affect change arises from the systemic synergies that we create together. Those who are able to draw on contemporary insights from the sciences of complexity, computational and life sciences, and an embracive spirituality that re-instills a sense of integrity and ethical purpose are the leaders and designers of systemic innovation.

Toward a greater mind

In recent years, there has been a rise of an empathic consciousness amongst the diverse peoples of the world. This phenomenon has been largely catalyzed by global technologies of communication. As Peter Russell notes[8], a growing sense of the interconnection between parts of a whole serves as both an expression of coherence as well as a driver toward further coherence. The Internet, now expected to reach 66% of

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[8] See *The Global Brain* (Tarcher 1985) and *The Global Brain Awakens* (Element 2000).

humanity by the year 2020 — represents an extra-somatic form of this bio-organismic need for interconnectivity. Russell's work expresses this need in terms of the emergence of a "Global Brain." Recent neuroscience suggests that the mind is a function of the entire human body, though it is largely centered in the human heart. Contemporary technologies of connection and communication serve as the tangible expression of the extended mind of our species. Through distributed (and wireless) networks, they create new channels for the conscious communication of all members of our species with all others. The emerging global environment is characterized by unprecedented information flows that foster new levels of connection, collaboration, consciousness, and compassion.

In this context, linear, reductionist, single-discipline, mechanistic thinking is not only hopelessly out of date, it is increasingly irrelevant – even dangerous. Education purportedly prepares the learner to take control of their life. However, those who find themselves only caring for their own thrivability cannot participate in the co-creating of flourishing futures for all of humanity with the rest of life on this planet. The need to focus *also* on the thrivability *of* others and ways to provide convivial contexts *for* them to engage with life is increasingly a requisite survival skill. This frame evokes exploration of, and engagement with, the way in which learning, playing, talking, dancing, and all aspects of life as art connect us to *ourselves*, to *each other*, to *the more-than-human world*, and across time to *past and future generations* of all beings. These are the four intertwingled dimensions of systemic thrivability. Systemic innovation engages learners across all four dimensions through dynamics that encourage consciously connecting, intertwingling, and cultivating the bigger story of our individual and collective being and becoming. The quality and character of this story depends on the way in which the leader of systemic innovation seeks to author their life along these four dimensions.

While these dimensions have been articulated and explored in detail in other articles,[9] suffice it list them here:

- The <u>intra-personal dimension</u> of sustainability; thrivability within oneself
- The <u>inter-personal dimension</u> of sustainability; thrivability with one's communities and social systems
- The <u>trans-species dimension</u> of sustainability; thrivability with the more than human world
- The <u>trans-generational dimension</u> of sustainability; thrivability with past and future generations of all beings

By consciously, purposefully and intentionally curating each of these dimensions *in dynamic relationship to the other three*, it is possible to foster empathy based innovation in service of a greater World Narrative. The sense-abilities of the four dimensions and the concomitant sense of response-abilities to which they give rise provides a self-generated ethical compass by which to guide systemic innovation. Indeed, it isn't possible truly to address the second dimension without addressing the first – or the third without the other two. And the fourth dimension requires a truly transcendent capacity to move one's empathy and practice across time. It is possible to start with any of the dimensions – each of them is a portal for entry into this sacred dance. But the portal only opens to all four dimensions when engaged with and enacted through integral *intention* informed by the living quality of *love*. For this to happen beyond the domain of naïve good intentions, the competence of visionary leadership must infuse all efforts of systemic innovation. The rest is just one or another form of dreaming about it.

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[9] Laszlo, Alexander (2014). Connecting the D.O.T.S. — The Design Of Thrivable Systems through the power of Collective Intelligence, ISSS Yearbook Special Issue of *Systems Research & Behavioral Science,* A. Laszlo (Guest Ed.) *31:*5; Laszlo, Alexander (2015). Living Systems, Seeing Systems, Being Systems: Learning to be the systems we wish to see in the world" *Spanda Journal*, Vol. 6, No. 1, June 2015 issue on Systemic Change. Pp. 165-173.

Gandhi is often quoted as saying, "first, be the change you wish to see in the world." The first word is often omitted, yet it is key to being the change. The new map of reality shows how the in-formed and embedded co-arising of all things require that, if you are to "be the change," first you have to be in convivial relationship with yourself, and then everyone and everything with which you interact. Ultimately, this is an expression of love in the Greek sense of *agape*: it is the joy of connecting and being connected with, of affirming and being affirmed, of dancing your path into existence with every breath, every thought, and every act that is at the same time you and the rest of the universe.

Curating emergence for Thrivability

The Club of Rome coined the term "global problematique" to describe the complex entanglement of the collective challenges humanity faces at any given point in time. The leader of systemic innovation of today and for tomorrow seeks to create "solutionatiques" – systems of shared solutions that arise from the connected intelligence of leaders and designers of innovation. Those who wish to engage in such processes of systemic innovation immerse themselves in, and help to create, ecologies of new ways of researching, developing and innovating socio-technical solutionatiques that embody social values, technological creativity, economic opportunity, and environmental integrity. The potential to foster a positive VUCA world — one based on Vision, Understanding, Clarity and Agility[10] rather than on the reactive frame derived from the threat of environments that are perceived to be Volatile, Uncertain, Complex and Ambiguous — can best be advanced through systemic innovation that seeks to curate conditions of life and living that favor the dynamics thrivability. As Janine Benyus noted, *life creates conditions conducive to life.[11]* Systemic innovation provides a path to

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[10] Johansen, Robert. *Leader Make the Future: Ten New Leadership Skills for an Uncertain World,* Berrett-Koehler Pubs, 2012.

[11] Benyus, Janine (2002). "Innovations Inspired by Nature" in *Doors of Perception 7: Flow* (Conference in Amsterdam - 14, 15, 16 November) <http://flow.doorsofperception.com/content/benyus_trans.html> [retrieved 2016-10-22]

connect life with life and to re-imbue our relations with ourselves, with each other, with our more-than-human world, and with past and future generations of all beings in service of thrivable futures.