



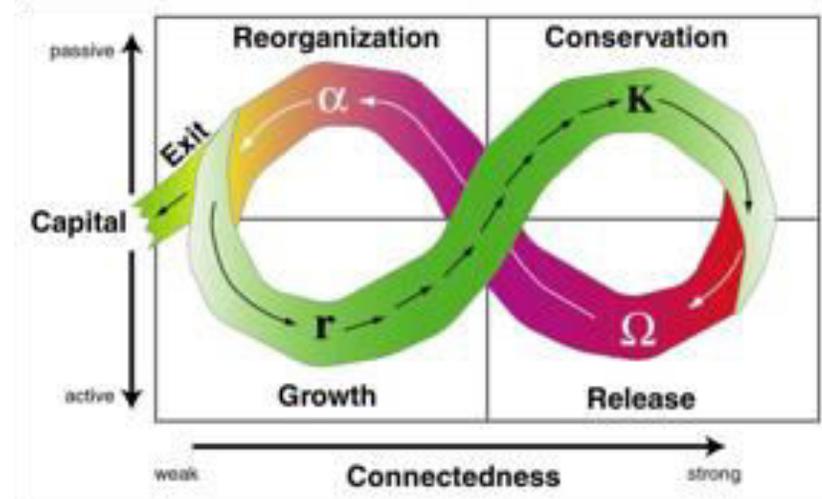
A SYSTEMS INNOVATOR'S GLOSSARY

ADAPTIVE CYCLE A conceptual model intended to expose the degree to which a complex system is resilient. It is applicable to biophysical systems, social-economic systems, and joint human-natural systems. It combines insights about the accumulation of resources or capital within the structure of systems, with insights about the increasing complexity that results from ecological succession or social problem solving (Scheffer et al. 2002) ... The adaptive cycle includes a growth phase, leading to a conservation phase. Disturbance and stress, whether internal or external, can lead to a release phase, and if the resource base available to the system is not depleted by the disturbance, a reorganization phase can set the stage for a subsequent growth phase

[The Baltimore Ecosystem Study](#) Urban Lexicon

...the four phases are not represented as linear but rather as an infinity loop. Once an idea or organization reaches the maturity (conservation) stage, it needs to release resources for novelty or change and re-engage in exploration in order to retain its resilience. The release and reorganization phase is often termed the back loop, where non-routine change is introduced. The exploitation and conservation phases are often termed the front loop, where change is slow, incremental, and more deliberate.

[Social Innovation Generation](#), definitions.



The Adaptive Cycle: a theory of the relationship of transformation to resilience in complex systems.

Source: Ten Conclusions from the Resilience Project. The Resilience Alliance, Peterson, G. (2009).

AGENCY The capacity of an individual or a group of individuals to act within a system. There is debate about the roles of agency and structure within a system and how they interact. Do structures constrain or enable agency? Does agency create and reproduce the structures? Or do structure and agency mutually create each other in constant cycles of feedback?

[What is agency? American Journal of Sociology](#), Emirbayer, M, Mische, A.

ATTRACTORS The patterns that a system tends to settle into. As long as the parameters are unchanged, if the system passes close enough to the attractor, then it will never leave the region. (Port and Van Gelder, p. 573). The simplest example is an attractor point, such as the lowest point in a pendulum swing.

BRICOLAGE A French term originally used in reference to junk collectors. “Making creative and resourceful use of whatever materials are at hand, regardless of their original purpose.”

[Social Innovation and Resilience: How One Enhances the Other](#), F. Westley.

Another definition is: “Creating something from nothing: resource construction through entrepreneurial bricolage.”

[Creating Something From Nothing: Resource Construction Through Entrepreneurial Bricolage](#), T. Baker and R.E. Nelson.

Bricolage is understood to be essential, since social innovation will always involve the recombination of existing materials, resources, or capital.

BRICOLEUR A person who engages in bricolage—one of the roles of the social and systems innovator.

CAUSAL LOOP DIAGRAM A closed loop of cause and effect linkages which captures how variables in a system are interrelated.

[The Vocabulary of Systems Thinking: A Pocket Guide](#), by Colleen Lannon.

CAUSAL LOOP DIAGRAM: BALANCING LOOP Balancing processes seek equilibrium—they try to bring things to a desired state and keep them there. They also limit and constrain. A balancing loop depicts a balancing process. Also called negative loop.

CAUSAL LOOP DIAGRAM: FEEDBACK LOOP The return of information about the status of a process. For example, annual performance reviews are a way of returning information to an employee about the status of his/her work

[The Vocabulary of Systems Thinking: A Pocket Guide](#), by Colleen Lannon.

CAUSAL LOOP DIAGRAM: REINFORCING LOOP Reinforcing processes produce both growth and collapse — they compound change in one direction with even more change. A reinforcing loop depicts a reinforcing process. Also known as vicious cycles or virtuous cycles and positive feedback loops.

[The Vocabulary of Systems Thinking: A Pocket Guide](#), by Colleen Lannon.



COMPLEX ADAPTIVE SYSTEMS

Systems comprised of dynamic and non-linear interactions. They are self-learning, self-organizing, and self-reproducing.

Schwab Foundation, Social entrepreneurs and systems change, 2017.

They are dynamic and opportunistic, operating at every level from the cellular to the galactic, characterised by the property of emergence, living on the edge of chaos and always moving into adjacent possibilities. Human beings, societies, and ecosystems are all examples of complex adaptive systems.

[Triarchy Press.](#)

COMPLEXITY

Having many diverse and autonomous, but interrelated and interdependent parts linked through many dense interconnections. This is in stark contrast to linear and mechanistic (sometimes called Newtonian) thinking.

COMPLEXITY THINKING

Because of the nature of complexity and the relationships between agency and structure defined above, we can't see ourselves outside the system. We can't expect things to behave deterministically and when we repeat an activity we can't expect it to evolve in the same way the second time.

Complexity thinking applies our understandings of complex adaptive systems to our social innovation approaches—and to the dynamic processes of social, economic, technical, and cultural change that will be part of a systemic change.

CLOSED SYSTEM AND OPEN SYSTEM

Open systems are influenced by their environment while closed systems are isolated from their environment. Differences in how systems are bound or defined can determine whether systems are classified as open or closed.

DEVELOPMENTAL EVALUATION

an evaluation approach that facilitates real-time, or close to real-time, feedback to program staff thus facilitating a continuous development loop.

Development evaluation is particularly suited to innovation, radical program re-design, replication, complex issues, crises

In these situations, DE can help by: framing concepts, test quick iterations, tracking developments, surfacing issues.

[Better Evaluation](#)

DIVERSITY

Diversity is a key feature of complex systems and is critical for systems innovators, with representation across sectors, skill sets, geographies, demographics, etc.

ECOSYSTEM

A system or a group of interconnected elements, formed by the interaction of a community of organisms within their environment; Any system or network of interconnecting parts, as in a business.

[Dictionary.com](#)



EMERGENCE The tendency of components and interactions within complex adaptive systems to form patterns and regularities of behaviour.

Higher-order complexity arising out of chaos in which novel, coherent structures coalesce through interactions among the diverse entities in a system.

[What is Emergence?](#) Peggy Holman.

HEURISTIC A heuristic technique—often called simply a heuristic—is any approach to problem-solving, learning, or discovery that employs a practical method not guaranteed to be optimal or perfect, but sufficient for the immediate goals.

[Wikipedia.](#)

In general conversation, we often think of heuristics as mental shortcuts that allows us to solve problems and make judgements quickly and efficiently. Heuristics are helpful in many situations but they can also lead to cognitive biases.

[Very Well Mind](#), Kendra Cherry.

HORNS OF THE DILEMMA To be on the horns of a dilemma is to be unable to decide which of two things to do because either could have bad results. [Cambridge Dictionary.](#)

In social systems, most problem (homelessness, poverty, food security, urban sustainability) have paradoxes or oppositions, sometimes referred to as the horns of the dilemma. So, for example, we may feel everyone should have a home but at the same time value private property. There are some enduring paradoxes in most human societies—e.g. individualism vs. the collective good; the value of expertise vs the importance of self-help. We are prone to emphasize one horn, defining one as positive and the other as a negative, or to view favouring one over the other as a linear trade-off ... Innovation, however, is stimulated when we define both horns in terms of their positive value (e.g. just rules *and* personalized relationships; private property *and* shelter for all, individual choice *and* dependable exchanges in the social interest).

For this reason, wicked questions are best posed as a paradox that demands reconciliation of perceived opposites, both seen as valuable.

See [Charting the Corporate Mind](#), Charles Hampden-Turner.

INSCAPING “The practice of surfacing the inner experiences of organisational members during the normal course of everyday work ... ideas and intuitions, aspirations and fears, values and memories.”

[Social Innovation from the Inside Out](#), Warren Nilsson.

INSTITUTIONS Beliefs and norms that shape a given problem domain, embedded in the day-to-day experiences of the people in that domain (social, economic, political, etc.).

A term derived from sociology which describes “stable patterns of behaviour that define, govern, and constrain action.

[Oxford Bibliographies.](#)



INTERSTITIAL SPACE Various kinds of processes that occur in the spaces and cracks within some dominant social structure of power.

[Envisioning Real Utopias](#), Erik Olin Wright.

LEVERAGE POINTS [Donnella Meadows](#) defines leverage points simply as “Places to intervene in a system” to create shifts or changes in the system. She identified nine such leverage points (here listed in decreasing order of effectiveness, according to Meadows):

1. The mindset or paradigm out of which the system arises (goals, power structure, rules, culture).
2. The goals of the system.
3. The distribution of power over the rules of the system.
4. The rules of the system (incentives, punishments, constraints).
5. Information flows.
6. Material flows and nodes of material intersection.
7. Driving positive feedback loops.
8. Regulating positive feedback loops.
9. Constants, parameters, numbers (subsidies, taxes, standards).

PANARCHY Generally considered the opposite of traditional, hierarchical descriptions of systems, panarchy refers to the *linked and nested* nature of social-ecological systems, and includes both the dynamics of the adaptive cycle at each scale, and the connections between scales.

[Panarchy: Theory and Application](#), Craig R. Allen, et. Al.

Within this is the idea of nested scales: systems exist at different scales which are highly interrelated, and which go through cycles at different times and paces. Adaptive cycles are “nested, one within the other, across space and time scales,” (Holling, et al, 2002) and thus, changes at one level can affect the other levels.

For more on this, see [When scaling out is not enough: strategies for systems change](#), Westley and Antadze, 2013.

PRAXIS Practical application of theory. [Merriam-Webster Dictionary](#).

It is the nexus of learning and practice, and implies bring the two together in constant, mutually-informing iterations.

RESILIENCE The ability to absorb shocks while maintaining the capacity for adaptation, learning, and transformation.

[Handbook of Sustainability and Social Science Research](#).

Resilience is not always desirable; sometimes system entrepreneurs need to work to reduce the resilience of entrenched systems.



SCALE Systems operate at many different levels: individuals, families, neighbourhoods, cities, nations and the global community.

In social innovation, the terms scale and scaling are used. Social and social-ecological scales involve different levels. The macro level is characterized by norms, beliefs, values, spirituality, and major social-ecological-economic-technological trends. Meso level scales involve the dominant sets of rules and power that determine who has power, how resources flow, and the major organizational structures that shape governance and policy. Micro level scale involves individual interactions and may involve safe niches for experimenting with innovation.

For more on this, see [Scaling Out, Scaling Up, Scaling Deep: Advancing Systemic Social Innovation and the Learning Process to Support It](#), Darcy Riddell and Michele-Lee Moore.

SCALING The term scaling is commonly used to refer to successfully spreading an initiative. However, in systems innovation, we distinguish among three forms:

Scaling out: Repeating or duplicating an innovation at the same scale (typically the micro scale), such as repeating a successful program in multiple schools, or multiple hospitals.

Scaling up: Changing laws, policies, rules (meso-level structures). Quite often, the innovation at this scale is different from the innovation that has been successfully scaled out at the micro level.

Scaling deep: Changing relationships, values, norms, or beliefs, and the macro level of social scales.

For more on this, see [Scaling Out, Scaling Up, Scaling Deep: Advancing Systemic Social Innovation and the Learning Process to Support It](#), Darcy Riddell and Michele-Lee Moore.

SHADOW NETWORKS Shadow networks work separately from, but alongside existing networks in entrenched systems. They're characterized by:

- Political independence and being outside the fray of regulation and implementation.
- Being places to develop *alternative* policies (incubators), daring to learn from each other, and thinking creatively about how to resolve resource problems.
- Having the ability to link in to the *formal* political arenas and networks at different levels.

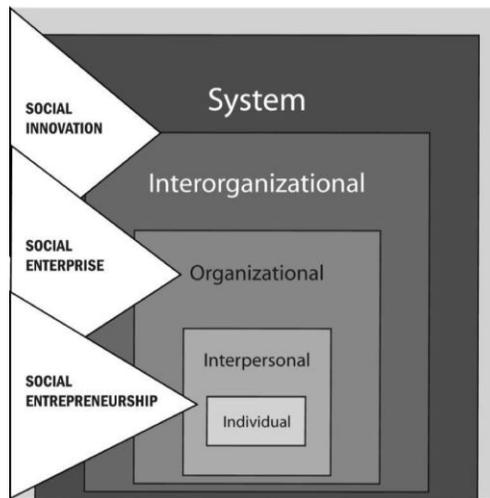
Per Olsson, [Research on Innovation and Transformation for People and Planet](#)



SOCIAL ENTREPRENEURSHIP

Social entrepreneurs are adept at creating and introducing new ideas, processes, and products into an existing system. Most do not challenge the broad institutional context (laws, policies, economy, culture), but instead, help keep the context resilient by allowing it to adapt and learn. “Whereas social entrepreneurship focuses on an individual and social enterprise addresses organizations, social innovation strives to change the way a system operates.” (Westley and Antadze).

This graphic shows the differences amongst



[Making a Difference: Strategies for Scaling Social Innovation for Greater Impact](#), Frances Westley and Nino Antadze.

SOCIAL INNOVATION

Novel ideas, practices, programmes, processes, or products that change the flow of resources and authority at the broadest level of social and ecological systems. This involves strategic interactions of social and institutional entrepreneurs operating across scales from local communities to the wider political, economic, and cultural institutions that order our societies.

STRUCTURE

The institutions and norms which shape and limit the opportunities for collective or individual action.

There is debate about the roles of agency and structure within a system and how they interact—the main question being: how much autonomous action can an individual take within a system?

e.g. [Structure and agency](#), Wikipedia

STRUCTURATION

Individuals and structures both create and reproduce social-ecological systems. Neither micro nor macro scales can be understood without the other, since they shape and reproduce each other. System entrepreneurs use this to understand how their social innovations may be shaped by other scales, and how they may also be reproducing positive or negative aspects of existing systems.



SYSTEM a group of interacting, interrelated, or interdependent elements forming a complex whole. Almost always defined with respect to a specific purpose. The terms system and structure are sometimes used interchangeably.

[The Vocabulary of Systems Thinking: A Pocket Guide](#), by Colleen Lannon.

SYSTEMS ARCHETYPE Systems archetypes can be thought of as classic storylines in systems—common patterns and structures that occur repeatedly ([Colleen Lannon](#)). Archetypes are useful tools to help us answer the question: “Why do we see the same problems recur over time?” ([William Braun](#)). To learn about systems archetypes, see Braun’s 2002 paper, [The System Archetypes](#).

SYSTEM BOUNDARIES Defining the boundaries of a system is critical to studying the system. Different boundaries can create different analyses and outcomes. The boundaries of a system can become a critical point of debate when performing systems analysis. Schwab Foundation, Social entrepreneurs and systems change, 2017.

SYSTEMS CHANGE
(sometimes called systems innovation or systems transformation) Fundamentally, and on a large scale, changing the way a majority of relevant players solve a big social challenge, such that a critical mass of people affected by that problem substantially benefit ([Beyond Organizational Scale: How Social Entrepreneurs Create System Change](#), Martin Fisher.

Systems change involves altering the linkages and interactions that form a system’s architecture – the rules and standards that make a system work the way it does, as well as the goals, norms and beliefs that, if left unchallenged, can prevent systems from working more inclusively. It “involves deep shifts in mental models, relationships, and taken-for-granted ways of operating as much as it involves shifts in organizational roles and formal structures, metrics and performance management, and goals and policies.

Academy for Systems Change, [What Is Systems Change?](#)

SYSTEMS COMPONENTS Systems are comprised of objects, attributes, relationships and environment. When studying a system, the importance is the interrelations and interdependencies of components, rather than the components individually. Schwab Foundation, Social entrepreneurs and systems change, 2017.

SYSTEMS DYNAMICS A field of study which includes a methodology for constructing computer simulation models to achieve better understanding and control of social and corporate systems. It draws on organizational studies, behavioral decision theory, and engineering to provide a theoretical and empirical base for structuring the relationships in complex systems.

[The Vocabulary of Systems Thinking: A Pocket Guide](#), by Colleen Lannon.



**SYSTEMS
ENTREPRENEUR/SHIP**
*(sometimes called institutional
entrepreneur/ship; we also use
the term systems innovator)*

In contrast to the social entrepreneur, the goal of the systems entrepreneur—or systems innovator—is to create change across an entire system (micro, meso, and macro scales)—that is, not to help the system adapt, but to help it transform. This involves generating a social innovation, embedding it with law, policies, or rules to affect social organization, and also changing the underlying social patterns of rules, beliefs, power structures, and resource flows which are contributing to the problems in the first place.

This work will involve understanding and being able to analyse and intervene in systems dynamics; working across scales (out, up, and deep); manoeuvring nested scales; and matching opportunities in the system with efforts for change.

[Surmountable Chasms: Networks and Social Innovation for Resilient Systems](#), Moore and Westley and [The Evolution of Social Innovation](#), Per Olsson.

**SYSTEMS
INNOVATION**

Change at the broadest level of the system itself; not to help the system adapt, but to help it transform, i.e. changing the patterned set of meanings and behaviors that structure social interactions over time; changing the underlying social patterns of rules, beliefs, power structures, resource flows, etc., which are contributing to the problems in the first place.

SYSTEMS THINKING

A school of thought which focuses on recognizing the interconnections between the parts of a system and synthesizing them into a unified view of the whole.

[The Vocabulary of Systems Thinking: A Pocket Guide](#), by Colleen Lannon.

TIPPING POINT

The critical point in a situation, process, or system beyond which a significant and often unstoppable effect or change takes place.

[Merriam-Webster Dictionary](#).

Social-ecological systems do not always respond proportionally to increasing or decreasing pressures, and once beyond a certain threshold or tipping point, any additional increase in pressure may suddenly trigger very large, and often rapid changes that cannot be reversed easily. Once a tipping point is passed, the system will move into a different state or follow a different development path.

See [Catastrophic shifts in ecosystems](#), Scheffer, et al and [Regime shifts in the anthropocene: drivers, risks, and resilience](#), Rocha et al.

TRICKSTER/ISM

In mythology, the trickster has special knowledge and playfully upsets common codes of behaviour in order to reveal hidden values and challenge the status quo. In Amerindian myth, for example, coyote is often a trickster, reversing the normal order of events and disrupting boundaries. In social change, tricksterism is a useful and necessary element so that new pathways can be imagined in a spirit of experimentation.



**UNINTENDED
CONSEQUENCES**

Because of non-linearity and unpredictability, there will always be unintended consequences.

**UNPREDICTABLE
OUTCOMES**

Because of the nature of complexity, we can't expect things to behave deterministically and when we repeat an activity we can't expect it to evolve the same way the second time.

WICKED PROBLEM

Wicked problems are intractable and seem impossible to solve. Big problems in complex, adaptive systems are, by nature, wicked because of interconnectedness, non-linearity, reinforcing feedback loops, etc.

For more on this, see [Dilemmas in a general theory of planning](#), Rittel and Webber.

WICKED QUESTION

Wicked questions phrase wicked problems in a specific way which incorporates what are seen as the two major opposing views on the issue (what is sometimes called the horns of the dilemma) and invite engagement and creative thinking.

