

# What It Means to be a Systems-Centric Leader

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**Introduction**

In an earlier paper for the RoseMont Institute for Transformational Change, Kelvin Thompson and I posited that four major trends were redefining the context in which leaders must lead so dramatically that we need to rethink leadership itself. Those trends are climate change, global urbanization, the aging of the developed world, and the continued exponential increase in knowledge. One of our predictions was that, in this new world, effective leaders will need to exert influence far beyond their organizations to the full value chain in which they operate. We called these people “systems-centric leaders” and this paper examines what that means and why many traditional approaches to leadership fall short.

Systems-centric leaders face system-scale challenges: those “tough problems” (Kahane, 2007) which may be easy to identify yet which are difficult to solve, such as the threats posed by climate change and global urbanization. They involve many stakeholders with diverse interests and divergent perspectives on the scope and shape of the challenge. Today’s leaders find themselves trying to lead complex systems – a far more challenging job than moving forward the hierarchical organizations of yore.

Global organizations with extended supply chains, widely dispersed customers, and intricate webs of relationships with sub-contractors, free agents, outsourced resources, strategic partners and the like have more in common with modern mega-cities than with old-line, largely self-contained hierarchical organizations. Research into cities has been used to complement that into leadership to further our understanding of these issues.

We have reviewed representative selections from the traditional leadership literature to discover both their applicability and limitations with regard to leading in complex systems. Three critical issues that this literature fails to address explicitly arise from this exercise: complexity, agency, and emergence. If they do not sound familiar to you, that is likely why.

**The Organization as a Meta-System**

A system is a set of elements that work together (Alexander, 1966); a set of elements that, because of their interconnection, produce a distinct pattern of behavior over time (Meadows, 2008, p.2). The modern global corporation is a meta-system: a system comprising subsystems, or nested systems (and networked systems), each of which is interdependent with the others and with the whole itself, and in which the whole is dependent upon the component systems. There are at least five such subsystems found in or used by virtually any global organization, no matter its geographic location or state of development: economic, natural resources, infrastructure, knowledge, and social.

The economic system is that set of arrangements through which goods and services are traded both within the organization and with others. The natural resources system comprises the environmental elements: the ground on which structures are built, sources of water, air, and other natural elements including those used in production. The infrastructure system comprises the built components: structures, travel ways, water delivery and waste disposal mechanisms, power lines, information technology, and such. The knowledge system is that through which learning and experience are captured and lessons transmitted among individuals including the education of new employees and attraction of new customers. The social system is that set of arrangements through which “residents” of the system – employees and executives – interact with each other residents and outsiders such as customers, suppliers, shareholders, and others. These include the governance structures they create, levels of status they confer, and norms and mores they adopt.

Thus, the modern global organization is a human interaction network comprising both natural and built elements (Hawley, 1986). The elements in each subsystem can influence the others but no single component of the network controls or can direct all of the others. The sustainability of the system requires that each of these subsystems operates smoothly with regard to its own function and also in its interactions with the other systems. As a result of system interdependencies, the failure of any one of these subsystems may cause the failure of the meta-system. In this for leaders is the persistent dilemma of aligning departments, business units, suppliers, and others in pursuit of unity of effort toward some defined goal.

Coward &Salingaros (2004) took an information architecture perspective and saw cities as complex adaptive systems and posited that cities exist for the exchange of information (with “information” broadly defined to include products, services, and funds as well as knowledge and data) and that they develop heuristically so as to optimize interaction of the components it comprises. This can easily be extrapolated to the complex global organization. There is an inherent tension between the desire of subsystems to optimize within that set and the desire of the meta-system to optimize overall information exchange: do you make each component (e.g. business unit) as efficient (or profitable or whatever other metric is chosen) as possible or try to coordinate them such that the performance of the whole is greater than the sum of its parts.

Organizations, like cities, are not islands and are dependent upon their relationships with other like entities in “relational hierarchies” (Neal as cited by Florida, 2008a). For example, global organizations are dependent upon and interdependent with local, state, national, and international policies, regulations, and protocols covering a wide range of factors including trade, immigration, and environmental standards. Katz et al called for “integrative, multidimensional thinking and action” because “the path of development in many cities around the world is simply not sustainable socially or environmentally or politically – nor, ultimately, economically” (Katz et al, 2008, p. 476). Might this also apply to global corporations and other organizations?

In order to understand the challenges systems-centric leaders face, one must first understand the principles that govern systems.

**Principles of Complex Systems**

Systems thinking is built on scientific observation of the natural world, principally through quantum physics, complexity theory, self-organizing systems theory, and chaos theory. This “new science” revealed “the inherent orderliness of the universe” (Wheatley, 1999, p.4). It stands at odds with the linear Newtonian worldview based on reason, predictability, and reductionist reasoning where the world is a machine that can best be understood by examining its individual pieces – and the logic that undergirds much management thinking and tools. Systems thinkers maintain that a complex system can only be comprehended through “contemplating the whole, not any individual part of the pattern” (Senge 2006, p.6) and that it is dynamic and non-linear (Meadows, 2008; Senge, 2006; Wheatley, 1999).

The most significant determinant of system behavior is often purpose, yet purpose can also be the most difficult to discern (Meadows, 2008, p.14). The leader must be aware that the system's purpose may not equate to human purpose nor that intended by any actor in the system (Meadows, 2008, p.15). Purpose should thus be derived through analyzing behavior, not stated objectives, goals, or desires (Meadows, 2008, p.17). Thus, the purpose of your organization is expressed through what actually happens, not the aspirational wishes of your mission statement or the lofty goals of your strategy.

The three basic elements in systems are stocks, flows, and feedback loops. Stocks are the elements that one can “see, count, or measure” (Meadows, 2008, p.17). Examining the systems in the organizational meta-system reveals many stocks: capital, jobs, accounts payable, and accounts receivable in the economic system; trees, fresh air, clean water, and pollution in the environmental system; roads, bridges, railways, and buildings in the infrastructure system; and data in the knowledge systems. The most difficult to see, count, or measure are the stocks of the social system: e.g. trust, goodwill, bigotry, and enthusiasm.

Flows are the movements of elements into and out of stocks allowing the stock to increase or decrease. Payments and withdrawals affect the levels of economic stocks; births, growth, and deaths in the environmental system; building and demolition in the infrastructure system; bytes of information acquired or lost in the knowledge system; and contracts made or terminated, promises broken or kept, and relationships strengthened or weakened in the social system.

Feedback loops are the mechanisms by which flows are regulated. Balancing feedback loops seek a goal or stability much as a thermostat works to keep a room at a constant temperature. Reinforcing feedback loops push the system in a certain direction much as compounding interest causes a stock of money to accelerate its growth over time. Sales of goods create a feedback loop affecting stocks of inventory, cash on hand, and accounts receivable in the economic system, for example. New goods may be ordered to replace those that have been sold and will be paid for by the increased cash on hand or credit made possible by the accounts receivable balance.

Feedback mechanisms do not always operate smoothly (Meadows, 2008, p.30). They can be distorted by changing conditions, delays, or other factors. Distortions are pervasive in systems, particularly those involving large organizations with multiple layers (Meadows, 2008, p.78). Senge (2006, p.189) maintained that many of the “mental models” through which individuals approach a situation are “systematically flawed” because they fail to recognize some feedback loops, misread time delays, and may emphasize variables which are most visible rather than those with the greatest potential for influence. Meadows (2008, p.22) said that such mental models are simplifications of reality and should not be mistaken to be the real world.

In the sale of goods example above, if the sales are higher than expected they may indicate rising demand that will continue to climb or a one-time blip caused by an extraordinary event. Whether the perceived change in sales is based on data reported by the hour, day, week, or month can affect how it is perceived and what action is then taken. So too can the position of the perceiver in the value chain and many other factors. The same dilemma would hold true with tax revenue for a city or donations to a non-profit.

Senge (2006, p.27-40) regularly ran an exercise with students called "the beer game”. In this game, the students played the role of shop owners who experience a sudden rise in sales of a certain niche beer that is mentioned in a music video. The students were asked to decide how to respond through their weekly orders to their distributor. Across several thousand iterations of the game, students consistently order such that they initially receive too little inventory and then ultimately too much because they misread the feedback loop in their store and do not have visibility into the feedback loops between the distributor and the brewery. The initial distortion had cascaded through the supply chain and was amplified such that, ultimately, more beer was produced than could be sold.

The consistent results from the beer game impart these lessons: System structure influences behavior – different people made the same misjudgments and mistakes when placing orders for beer. Structure in human systems includes interrelationships and not simply visible limitations – system structure can be difficult to perceive. Leverage points, too, can be difficult to see until one thinks not only of one’s own decisions but also how those decisions affect the decisions and actions of others (Senge, 2006, p.40).

A typical process map would have shown some of these linkages, likely smoothed out to present a neat, linear flow. Reality, however, is far more complex.

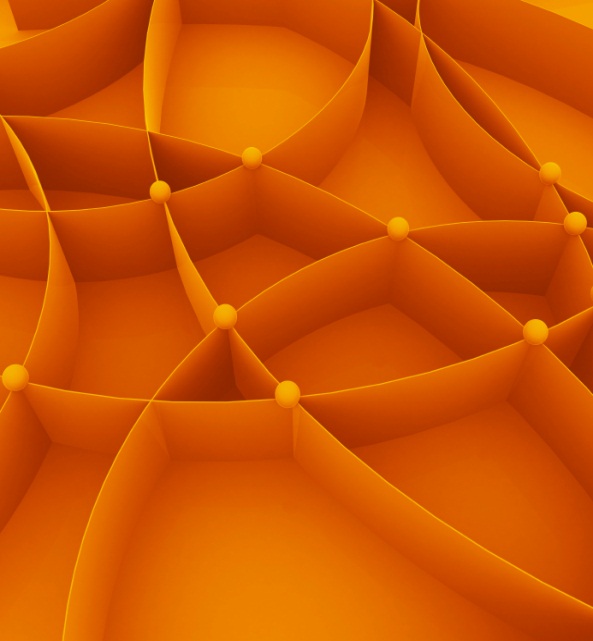
Echoing Senge’s observation on leverage, Meadows (2008, p.3) maintained that, in complex systems, delays in feedback loops can create a situation in which problems can be difficult to solve by the time they become apparent. She also stated that in any physical system there will ultimately be a constraint to growth that will serve as a balancing feedback loop that counters the reinforcing loop that drives growth (Meadows, 2008, p.59).

The dispute over climate change, another of the Four Pillars of the New Reality, can be seen as a battle over the value and meaning of feedback loops. The stock of carbon dioxide (CO2) in the atmosphere has increased most dramatically over the past 150 to 200 years (Maslin, 2009, p.9, 121). Increases in the stock of scientific knowledge have allowed one to measure both the increase in the CO2 stock as well as the possible flows that are increasing or decreasing that stock. Those who are alarmed by the increases advocate using other feedback loops such as regulation and pricing to alter the practices that are increasing the flow of carbon into the atmosphere such that the inflow is diminished. They also advocate measures such as forest conservation to increase the flow of carbon out of the atmosphere through photosynthesis.

Others who are not alarmed do not find the feedback loop on the level of the stock of CO2 in the atmosphere compelling. In their view, neither causes nor effects are clear and the increase in CO2 may result from natural oscillations which are not yet fully understood. They see measures such as regulation taken to mitigate carbon levels as a distortion of market feedback mechanisms that help optimize the flow of capital in the economic system.

In simple terms, one side has greatest confidence in scientific feedback loops while the other has greatest confidence in economic feedback loops. Each feedback loop is subject to distortion through delays -- both sides acknowledge that any impact of climate change may be slow moving – and the larger the initial stock of resource, the longer it will take for balancing feedback loops to constrain the reinforcing feedback loops of growth (Meadows, 2008, p.65). Each side is subject to bias such as emphasizing the subsystem in which it has greater investment over the others. Each may perceive an alternative purpose for the system. Each may fall prey to a tendency toward advocacy rather than inquiry (Senge, 2005, p.183).

The relationships between the elements in a system are more important than the elements themselves (Wheatley, 1999, p.36; Senge, 2006, p.40). The individual elements, however, are more easily discerned than are the interconnections and interdependencies between them (Meadows, 2008, p.14). Most management tools, from spreadsheets to process flows to organizational charts, concentrate on the elements and not the relationships between them. Leaders must do more. In order to begin to see and understand system structure, a leader must begin to think of the world as a series of feedback processes (Meadows, 2008, p.25); a leader must see the interdependencies (Senge, 2006, p.343). Wheatley (1999, p.45) maintained that the leader must focus on “critical connections”.

Complicating the task of understanding and leading in a system, according to Wheatley (1999 p.44), is that no individual can ever know everything about the system as a whole and thus one cannot predict exactly what will result from one’s actions and attempts to influence it. For example, a CEO of a global corporation knows a lot, but far from everything, about what is happening within his or her “four walls”. He or she knows less about the company’s suppliers, their suppliers, and in turn their suppliers. This is also true with regulators, customers, the investment community, and so on. One is thus charged with leading without full knowledge of what one is leading, what are the motivations and reservations of all of the stakeholders, and not even the full impact of his or her decisions and actions.

An aphorism ascribed to Deming is that every system is perfectly designed to deliver the results it produces (Paulker, Zane, & Salem, 2005). Changing complex systems is hard because they are resilient. They "survive and persist" amidst changing conditions (Meadows, 2008, p.76). Even changing all of the components of a system will not change the system if its purpose and interconnections remain intact (Meadows, 2008, p.16; Senge, 2006, p.40). For example, swapping out all of the parts of a car still leaves you with a car. Living systems change only to remain the same (Wheatley, 1999, p.170) that is, to remain true to their original purpose. This is in part why it is so difficult for the new “savior CEO” to change an organization: simply changing the head, or even the top team, does not automatically change the system that is the corporation.

Patterns of behavior are the result of structure and purpose; thus changing behavior requires changing structure (Senge, 2006, p.52; Meadows, 2008, p.89) and purpose (Meadows, 2008, p.151). Structure includes interdependencies, interrelationships, processes, norms, objectives, rules, and other factors. So too must mental models be changed as individuals behave consistently with their mental models (Argyris as cited by Senge 2006, p.164).

There are numerous leverage points for influencing change in a system. Meadows identified a dozen in ascending order of effectiveness:

* Constants and parameters such as taxes and standards;
* Stock buffers – stock size relative to flow (e.g. boosting or depleting inventory);
* Physically rebuilding the system;
* Adjusting delays in the system (e.g. adopting a “just in time” supply chain structure;
* Balancing feedback loops;
* Reinforcing feedback loops;
* Restructuring information flows;
* Incentives and rules;
* Enabling self-organization;
* Shifting the goals or purpose of the system;
* Changing the system paradigm – the mindset out of which comes the goals, structure, rules, delays, and parameter; and
* Transcending the paradigm by acknowledging that no paradigm represents the absolute and complete truth.

Meadows also maintained that the greater the potential effectiveness of the leverage point, the greater would be the resistance in the system (Meadows, 2008, p.145-165).

Well-functioning complex systems are also self-organizing (Meadows, 2008, p.87) in that they have the ability to evolve or change over time. This is a form of resilience and demonstrates the system’s ability to learn, become more complex, and fulfill its purpose.

Hierarchy is present in complex systems as a result of self-organization. Such hierarchy in natural systems is built from the bottom up with each new level of complexity there to “serve the purposes of the lower layers” (Meadows, 2008, p.85). It must balance the needs of the subsystems and the meta-system by allowing both for coordination to achieve the larger system purpose while also preserving the functioning of the subsystems. The ability to align the purposes of subsystems and the meta-system is a characteristic of successful systems (Meadows, 2008, p.16). Hierarchy creates resilience and allows a system to become a larger system: a camp becomes a settlement, which becomes a village, which becomes a town, which ultimately becomes a city. Contrast this with hierarchy in many corporations: built from the top down with the objective of supporting upper layers of management.

When these concepts are extrapolated to the level of a global organization with multiple subsystems comprising many individuals and organizations, each with multiple stocks, flows, and feedback loops, and where there may be many who aspire to lead, each with different visions, one begins to comprehend the challenges of leadership of a meta-system.

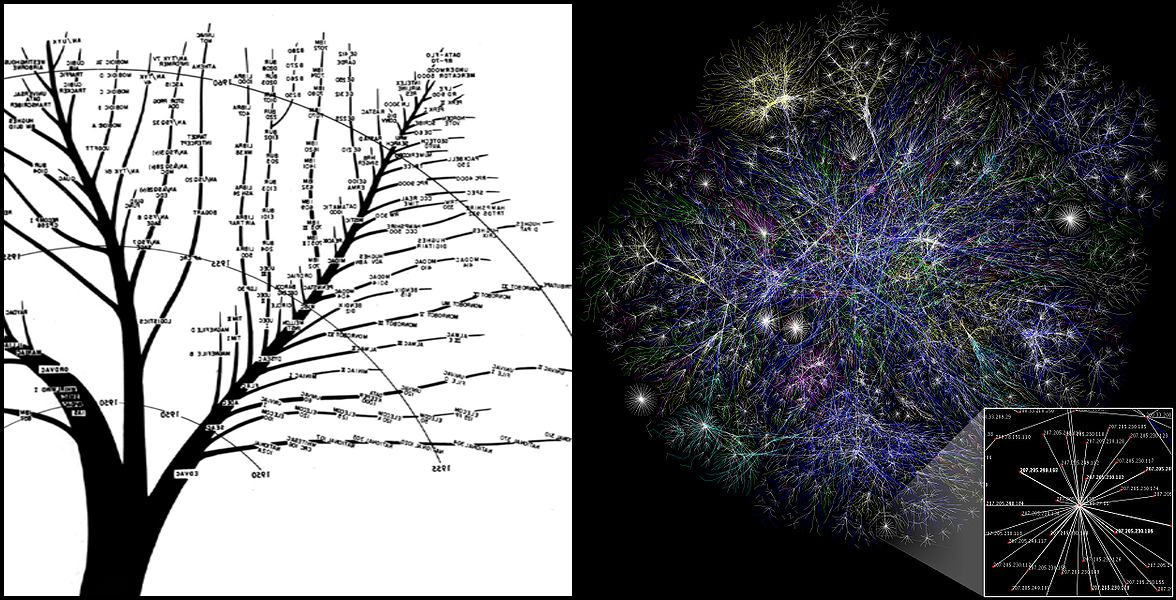
**Leadership and Systems Theory**

Theorists taking a systems view of leadership extrapolate the science-based understanding of the natural world for application in organizations and structures created by humans. Meg Wheatley said (1999, p.15) “organizations are living systems, possessing the same capacity to adapt and grow that is common to all life” and that in observing principles for well-organized systems in nature, “it is highly probable that those principles apply to human life and organizations as well” (1999, p.162).

This is a view distinctly different from more linear views of leadership based on the notion of the leader as hero who provides direction, imposes order, and exerts control (Wheatley & Frieze, 2011; Snook & Khurana, 2009), the “triumphant individual” (Bennis & Biederman 1997).

Meg Wheatley and Peter Senge are among the best known among those identify themselves as system thinkers on leadership. Their work and that of others who have both preceded and followed them reveals three interrelated themes critical to leading the meta-system that are not addressed explicitly in most traditional thinking on leadership: complexity, agency, and emergence.

*Complexity*

Danielson (2011) posited that “the global environment is increasing in the degree of complexityfor organizations operating anywhere in the world.” Complexity is a dimension of the challenges facing a meta-system such as global organization. To simply think of “complexity” as the antonym of “simplicity”, however, understates the complexity of complexity.Alexander (1966) contrasted the organizational principles of a tree and a semi-lattice as approaches to thinking about how many subsystems make up a complex meta-system such as a global organization. He claimed that how one perceived subsets of elements in the system determined how one saw the system and that the tree and the semi-lattice were distinct ways of organizing elements and subsystems. A tree is a collection of sets where, with any two sets that belong to the collection, one is either wholly contained in the other or they are completely separate. A typical organization chart depicts a tree with separate divisions, business units, etc. Each unit is connected to the ones above and below it through a single connection. A semi-lattice exists “when two overlapping sets belong to the collection, then the set of elements common to both also belong to the collection.” Thus, a semi-lattice view of an organization would include cross-functional teams, social connections, and other relationships that cross organizational boundaries. The difference: in a collection with 20 elements, a tree “can contain at most 19 further subsets” while a semi-lattice with the same 20 elements can have more than one million subsets. Semi-lattices are far more complex than are trees.

Both trees and semi-lattices represent a view of order but, according to Alexander, the semi-lattice is a “thicker, tougher, more subtle, and more complex view of structure.” Alexander wrote about cities and, in his view, a living city must be a semi-lattice. It is not hard to imagine saying the same thing about a global organization.

Organization designers, urban planners, executives, and others consistently and persistently ignore the semi-lattice structure. Why? Alexander feels that it is in part the hard-wiring of the human brain to simplify in the face of complexity. This may have arisen out of a primitive survival instinct to reduce complexity in the environment. Alexander (in collaboration with Huggins) conducted experiments in which people were shown patterns with overlapping internal units. Participants in the experiments “almost always invented a way of seeing the pattern as a tree”. He also cited experiments by Bartlett with similar outcomes: individuals reorganized complexity into the simpler “non-overlapping units” of the tree.

Thus, while humans simplify complexity, their organizations must in reality embody complexity if they are to be sustainable over time.

Quoting Jung, Danielson (2011) maintained that the “directed consciousness” of modern society has reduced the adaptive capacity individuals need for addressing a complex global environment. The directedness, according to Jung, causes individuals to exclude that which is not compatible with one’s worldview and that worldview is biased in favor of what is known. One is thus left less well equipped to operate in the “gray space of unformed understanding” that exists between the known past and an “indistinct future”. Leaders face the challenge of “finding a third space to hold different worldviews or operating logics that often clash like fault lines”.

Jacobs cited research on the kind of problems in the history of scientific thought: simple problems (those with two, three, or four variables); problems of disorganized complexity (those with such a large number of variables that sophisticated statistical modeling techniques are required to begin to solve them by uncovering order and averages in the overall system in which the variables operate – short of this they may appear “irrational”); and problems of organized complexity (those which more than four variables yet fewer than those of disorganized complexity – and in which all of the variables are interrelated; the interrelationships hold the key to solving the challenge) (Weaver 1958 as cited by Jacobs, 1961, p.429-433).

Senge (2006, p.71-72) made the distinction between detail complexity and dynamic complexity which is similar to Weaver’s organized versus disorganized complexity model cited by Jacobs. Detail complexity is that in which complexity arises from the large number of variables. Dynamic complexity arises from the relationships between variables where cause and effect are not clear and may vary over time (e.g. the same intervention may result in a dramatically different outcome in the short term versus the long term). Leverage, Senge maintained, most often resulted from understanding dynamic complexity yet most management systems are designed to parse detail complexity.

Senge maintained that “the art of systems thinking lies in being able to recognize increasingly (dynamically) complex and subtle structures” (2006, p.124); that is, recognizing patterns, not pieces. In his estimation, few executives are trained to see both detail and dynamic complexity – to see both the forest and the trees.

Wheatley argued that there is a distinction between the complexity of nature and that created by humans. The latter results from the inability of individuals to grasp the foundations of the former: that “life uses networks; we still rely on boxes” (1999, p.144).

Further, she said that natural complexity, in the form of fractals, is built of simplicity in that fractals repeat simple patterns, changing size but not shape, to form complex objects. The basic shape of the fractal is the only constraint on behavior. A result is increased capacity to process information and resources. Organizations, she said, are all fractal in nature (Wheatley, 1999, p.128) and the repeating patterns constitute the culture of the organization: how customers are treated by employees reflects how employees are treated by their supervisors and so on.

What is important, according to Wheatley, is to discern the quality of the fractals in a system, the distinguishing shapes, and how they differ from those of other systems (1999, p.125). Doing so is necessary to see the system *as a system*. It is only then that leaders can begin to help provide the clarity that keeps complexity from degenerating into incoherence.

*Agency*

Griffin, Shaw, & Stacey (1998) described a tension between individual and collective, or decentered, agency in system design and evolution. One view held that individuals were primarily responsible for creating, planning, and realizing a complex system while the other saw both individual and collective forces co-creating systems: Individuals both play a role in creating the system and are created by the system. Patterns in the system are not “something hidden, waiting to be disclosed but something that is co-created by the agents” (Kauffman 1995 as cited by Griffin et al, 1998).

The dominant paradigm in management thinking is “organizing to realize prior intentions” (Griffin et al, 1998): individuals can make changes in themselves and the world around them to organize a system toward an intended outcome. Griffin et al remained unconvinced that this is possible, citing work from the Santa Fe Institute on non-linear systems (Holland 1995; Kauffman 1995; Goodwin 1994 as cited by Griffin et al, 1998) that indicated that change in complex adaptive systems comes not from the action of one agent but from the interactions between two or more agents.

Senge sought to extend the principles he espoused to a level of “collective aspiration and shared commitment” (2006, p.197). He saw teams, not individuals, as the fundamental units of learning (2006, p.xiii).

Wheatley (1999, p.163) maintained that system viability was the result of collective agency: “no subatomic particle exists independent of its participation with other particles.” So too with system stability which results from frequent, small “disturbances” in individuals or species constitute continual change within the meta-system that enable it to achieve stability over time (1999, p.86-87). It is, in Senge’s terms, achieving system coherence by the system pointing out incoherence to itself. No agent is acting toward system stability yet it is achieved; there is “a profound relationship between individual activity and the whole” (Wheatley 1999, p.167).

Intertwined with the concept of agency is that of control: how much can one control in a complex adaptive system? Wheatley argued that attempts to “impose control through rigid structures is suicide” (1999, p.25). When a system is managed for stability by limiting small internal disturbances, the result is always “far-reaching destruction” (1999, p.89). Rather than control, she proposed the goal should be order. The question then becomes whether order can be imposed or whether it must be allowed to emerge.

Advocates of individual agency long argued to exclude “externalities” from an entity’s calculations of what it should and should not do. Externalities are those effects an individual or entity has on the world but for which one is not directly called to account. Pollution is a prime example. Meyer and Kirby argued that those days have passed and that leaders of corporations and other entities must now acknowledge and engage responsibly and rationally in ways that are “defensible to all stakeholders” where cause and effect can be determined, those affected can be identified, those affected have no way to opt out of the impact, the impact can be measured, and a price can be put on the impact. “A consensus will emerge that we are all responsible for our world and must work together to make it better” (Meyer & Kirby, 2010).

Porter and Kramer (2011) expressed this as creating shared value in the context of private firms. In their view, it is unsustainable for leaders to limit their focus to creating shareholder value. They must instead seek to co-create value with and for a broader range of stakeholders.

*Emergence*

Emergence, or self-organization, is a central principal of systems theory. There is neither a “head tree” in the forest nor a “chief cell” in a human body yet these systems grow, adapt, and change over time within natural boundaries. To systems thinkers, these forms and boundaries are emergent and are the result of self-organization; because there appears to be a design does not mean that there must have been a designer (Griffin et al, 1998). It is through self-organization that stability over time is achieved (Wheatley, 1999, p.86). Meadows (2008, p.159) maintained that self-organization is the strongest form of system resilience.

Wheatley held that central to effective self-organization was a clear sense of identity and the freedom to self-organize (1999, p.87) and that “the more freedom, the more order” (Jantsch 1980 as cited by Wheatley 1999, p.87). It is through self-organization that complexity and hierarchy arise in natural systems (though it must be noted again that hierarchy in nature is built from the bottom up with each new layer supporting the layers below it – the exact opposite of hierarchy in human organizations which tend to be viewed from the top down with each layer supporting those above it) (Meadows, 2008, p.83-85).

Let us use a city as a proxy for a complex system as it is an entity with which most readers will be familiar. What is your favorite? New York? Paris? Sao Paolo? Each of these is what Alexander called a “natural city” which grew and self-organized over time. Its design emerged and was not imposed. Artificial cities, those that are largely centrally planned and controlled, rarely meet the aspirations of their designers or residents.

Coward and Salingaros (2005) used a different approach to reach a conclusion similar to that of Alexander’s distinction between natural and artificial cities: natural cities emerge. They used the construct of information architecture to examine the functions of a city. This view contrasted how cities are often designed – with designated areas for residences, offices, stores, etc. – with how they are used – with individuals regularly crossing functional boundaries to complete the tasks that make living in a city possible and desirable. In their view, a city that cannot dynamically adapt to the changing needs of those who inhabit it – that is, self-organize – will inevitably decay; one whose complexity is reduced beyond a certain threshold will be “dead and sterile”. This is similar to the complaints commonly heard about bureaucratic organizations: they are ossified, slow to adapt, and frustrating for their customers.

Think about how the metaphor of the city applies to your organization. Is yours a “natural” or organization or an “artificial” one? When you look at the dysfunctions in your organization, how many appear to be design flaws: poor communication, failed handoffs, failure to collaborate, and the like?

Traditional leaders are trained to favor simplicity in visual design and organizational structure, clearly delineated lines of responsibility, and specified levels of authority and control. Leaders in complex systems operate in a more dynamic context. It takes courage to embrace self-organization but one must ask how much system design failure one should tolerate before at least giving it a try.

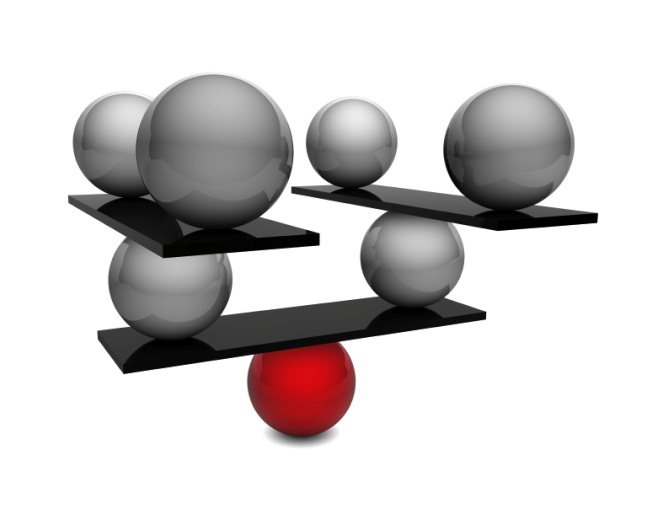
**Leading to Meet Meta-System Scale Challenges**

In our previous paper, we identified four meta-system scale challenges with which global organizations must cope. We called them Pillar Trends because they are global, have the potential to fundamentally transform how we live and work, and no single individual or organization can bend the trend line. Adaptation is the only option. Climate change, global urbanization, and the aging of the developed world are well-documented yet this makes them no easier to solve. Meadows stated that knowledge that a problem exists is not sufficient for action. There must also be knowledge of resources, incentives, and consequences (2008, p.14). These are “tough problems” in that they demonstrate three kinds of complexity: dynamic complexity (cause and effect are far apart in time and space); generative complexity (unfolding in unfamiliar and unpredictable ways); and social complexity (the people involved see things differently and so are prone to polarization) (Kahane, 2007, p.1-2).

Tough problems are similar to what Ackoff called “messes” – challenges which can only be comprehended as systems, taking account of the interrelationships and interdependencies between the components as well as the dynamics of the whole (Ackoff, 1974 as cited by Kahane 2007, p.31). They are also similar to what Churchman (1967) called “wicked problems” – a “class of social system problems which are ill-formed, where the information is confusing, where there are many clients and decision makers with conflicting values, and where the ramifications in the whole system are thoroughly confusing.”

Thus, if one who aspires to leadership in a system can do one thing it should be to advocate for a systems view and model behavior consistent with that (Spinosa, Glennon, &Sota, 2008). As stated earlier, no single individual can know everything about a complex system. However, the more individuals who can be persuaded to adopt a systems perspective, the greater the likelihood that they can together find clarity around a common purpose and that they will make the new connections from which innovation and fresh ideas can emerge (Wheatley, 1999, p.104; Wheatley & Frieze, 2011). To become an evangelist for systems thinking is to freely admit that one does not have all of the answers, to acknowledge that one is open to other perspectives and will challenge one’s own mental models, and to accept that one is part of the system – because if one is not part of the problem, one cannot be part of the solution (Torbet, n.d. as cited by Kahane, 2007, p.83-84). Such a stance prepares one for problem-solving activities that are “systemic, emergent, and participatory”, the only type suited to solving tough problems (Kahane, 2007, p.32).

Senge argued that meta-system leaders must strive to be designers, teachers, and stewards. As designers, they would seek clarity of purpose, values, and vision. As teachers, they would commit to learning and creating spaces where others can learn. As stewards they would articulate and serve a larger purpose while also working in the midst of change to preserve the identities and relationships valued by followers (2006, p.321-335).

The authors cited in this paper also consistently advocate for focus on relationships, not things. This allows interrelationships and interdependencies to be discerned, feedback loops and distortions to them to be perceived, and purpose to be clarified. As existing relationships are acknowledged and appreciated, and new relationships are formed, the system is strengthened and develops greater capacity (Wheatley, 1999, p.146). In bringing such relationships to the fore leaders may be better able to make decisions in the long-term interest of the system, decisions that may determine the sustainability of the system be it a company, city, or a society (Diamond, 2005): like Diamond, British historian Arthur Toynbee, whose work was both global and longitudinal in nature, concluded that such decisions are critical. He is oft-quoted as saying that “Civilizations die by suicide, not from murder” (Toynbee as cited by Ruprecht 2009, p.254). So, too, with companies.

Leaders must also understand that managing relationships and activities in an emergent, self-organizing system is not straightforward. Plowman et al (2007) argued that traditional approaches to leadership emphasize predictability and stability through controlling behaviors, organizing structures, designating authority, and planning interventions. In a complex system, however, they maintain that it is more important for leaders to disrupt existing patterns, create constructive conflict, encourage novelty through simple rules and non-liner interactions, and help others make sense of change as it occurs. In their view, the precise contours of the future are unknowable and attempts to dictate them are futile. Leaders must instead seek to create the conditions in which a desirable future will emerge even while they accept that this future will be unpredictable in many specifics. Leaders can act as catalysts, or “tags”,who by directing attention to what is important and helping to distill the meaning of what is happening can enable or speed up specific behavior.

In seeking to understand and influence these relationships a leader must celebrate complexity (Meadows, 2008, p.181). This paper has presented several frameworks for dealing with complexity. Though each is in some way distinctive, they share in common the need to move beyond the impulse to simplify in order to begin to understand the system. Complex systems are unpredictable and uncontrollable but they are comprehensible (Goodwin, 1994 as cited by Griffin et al, 1999). Though no one person is in charge of a complex system (Wheatley & Frieze, 2011), there is ultimately order in the seeming chaos when one gains the perspective, and takes the time to see the whole: order cannot exist without disorder and neither can disorder exist without order (Wheatley, 1999, p.22-23).

Leaders must also understand their mental models and those of others as they shape the assumptions they make about the world (Senge, 2006, p.8). In organizational settings, Finkelstein found that executive failure most often occurred during periods of significant change. His was “the largest and most comprehensive study of business failure ever conducted” (Finkelstein, 2003, p.44). Unforeseen events were never the cause of the failure in any of the cases Finkelstein examined. Instead, these executives failed to understand the full complexity of the system in which they were operating. They did not foresee what were often logical consequences of the decisions they made, and failed to overcome the “installed base of ideas” that Finkelstein maintained exist in some form in every organization creating a “managerial mindset… that is very difficult to overcome” (2003, p.166). Such mental models steer leaders toward fixed ideas and cause them to reject evidence that contradicts those ideas (2003, p.167). Leaders must be flexible and willing to redraw boundaries and adapt structures when changes to the system are perceived (Meadows, 2008, p.172).

To accomplish this, leaders should “listen for difference”: probe for how others see themselves as different from oneself and understand why the others care about the difference (Spinosa, Glennon, &Sota, 2008). In doing so, the leader both gathers important input for his or her perspective and validates the alternative viewpoint, taking a step toward a “new reality” in which the leader’s own viewpoint and that of the others can coexist and which may offer dramatic new possibilities.

Diamond, in his analysis of societal collapse argued the societies tend to hold onto a paradigm after changes in context have invalidated it. Central to Diamond’s research was a finding that many causes of collapse were perceived as short-term environmental aberrations that could be survived rather than long-term changes that required significant adaptation (Diamond, 2005). Today, when corporations are the dominant organizing structure, they find themselves subject to a similar threat.

In times of rapid or large-scale change, paradigms must be amended or replaced regularly. It is critical for leaders to be lifelong learners who regularly refresh and replenish their knowledge stocks (Meadows, 2008, p.180; Wolfberg&Stumborg, 2007; Hagel, Seely Brown, & Davison, 2009). Knowledge can be a source of advantage in such situations and so leaders must continually seek new sources of insight and new ways of problem solving that can inform response and adaptation.

The systems-based view of leadership is not naturally abundant. Rooke&Torbet developed a seven-tiered structure of leadership tendencies centered on “internal action logic” based on research over 25 years with managers and executives across for profit, non-profit, and government sectors. Only five percent of their sample showed the natural tendencies consistent with meta-system leadership – “no longer seeking personal skills that will make them effective within existing organizational systems” and instead pursuing the creation of “projects, teams, networks, strategic alliances, and whole organizations on the basis of collaborative inquiry”. Only one percent had the internal action logic best suited for “society-wide transformation” (Rooke&Torbet, 2005). The largest concentration (38%) was found in a group that is knowledge and logic driven – characteristics one would not be surprised to find in fields such as finance, engineering, operations, and other technical specialties. They maintained that most senior management teams operate with an action logic based on “unambiguous targets and clear strategies, tactics, and plans”. Unfortunately, that action logic does not align with the reality in which most organizations operate.

**Leadership through Clarity of Purpose, Values, and Business Model**

The characteristics of the senior management teams above are a far stretch from the world of Wheatley, Senge, and Meadows that is steeped in ambiguity, complexity, and self-organization. Can more systems-oriented leaders be cultivated? Rooke and Torbet (2005) argued that there could be upward mobility through the tiers though their research showed that the advancement was confined to a span of one rung. Their research did not explore what changes in early life education or experience might increase the number of people with a natural tendency toward the tiers of transformational leadership.

I propose that a primary objective for leaders should be clarity of purpose, values, and business model. Clarity is an elusive goal though many a management team has returned from a retreat thinking that it has been achieved. They memorialize it in a vision or mission statement. They have perhaps crafted a new organization chart or restructured divisions. The problem, of course, is that clarity is not fixed. As soon as a mission statement is exposed to the broader organization, people perceive it based on their own context and background. They see it differently. Then, when people join or leave the organization, a competitor makes a move, or the market shifts, clarity is further blurred. The pursuit of clarity is a constant endeavor. Clarity enables productive self-organization and allows complexity to be discerned and deciphered.

The structure of purpose, values, and business model is intentionally structured such that “the numbers” come last. Why? There are two primary reasons: As shown above, purpose is the primary determinant of system behavior. Thus if a leader wants to influence system behavior, he or she must influence the understanding and clarity of purpose. Second, most organizations are already good at maintaining clarity of their existing business models. There are extensive tools for managing revenue and costs, many meetings begin with a review of “the numbers”, and compensation is often tied to financial performance. There is great discipline around clarity of the financial aspects of an organization. These are important, make no mistake about that, but not to the exclusion of purpose and values.

Purpose comprises the answers to two questions: What job is our customer hiring us to do? What are we trying to build? Clarity around the first drives focus on providing products and services that meet a need of individuals or organizations willing to pay to have met. It helps avoid misguided new ventures or acquisitions driven by industry trends or purely financial considerations. The answer to the second helps make visible the larger mission of the organization: Why is it in the world? Why should people want to work for it? Why should its customers choose it? Why should investors back it?

Values guide the way that an organization does business. This can be expressed as a simple statement like Google’s “Don’t be evil” or more extensive narratives such as that of Amazon.com. What is important is that the values are broadly understood and embraced throughout the organization and its value chain. This, in turn, requires that they be embedded and reflected in every practice from compensation to procurement. A good test is to try to identify decisions made where values trumped financial considerations. When was the last time that a meeting focused on checking in on the values rather than the numbers?

A sound business model is the third leg on the stool. Even non-profit organizations must be financially viable if they are to survive and fulfill their missions. Little elaboration is needed here except to point out that it is important that individuals at all levels of an organization can benefit from understanding how the organizations gets it revenues and what are its expenses. Armed with such knowledge, individuals can make independent business decisions aligned with the purpose, values, and financial model of the organization.

**Meta-Leadership as an Organizing Framework**

The meta-leadership framework and practice method (Marcus, Dorn & Henderson, 2006) may hold some insight and potential for the development of meta-system leaders. It was developed in the realm or crisis preparedness and response – an area dominated by technically proficient managers and executives yet requiring cross-sector connectivity for success.

The meta-leadership framework comprises five dimensions: 1) the person of the meta-leader; 2) the situation; 3) leading down to an institutional base; 4) leading up to a boss; and 5) leading across to peers and other entities over which one has no formal authority.

Taken together, these five are a proxy for a systems-based approach to leadership. The first dimension places the leader squarely as part of the system, not separate from it. This reflects Wheatley’s assertion one cannot lead from “outside the web of relationships through which all work is accomplished” (1999, p.165). The second dimension, the context in which one hopes to lead, requires an understanding of feedback loops, mental models, and knowledge stocks and flows that can affect what one perceives as the situation and helps one come as close to objectivity as possible. The leader must strive for an accurate picture of reality and reveal it to others (Finkelstein, 2003). The third, fourth, and fifth dimensions present a three-hundred-sixty degree span of action and influence that is not constrained by organizational boundaries, formal position or hierarchies, or designations of authority.

The meta-leadership framework was the core of a series of 30 Meta-Leadership Summits for Preparedness held across the United States between June 2006 and March 2011. In total, approximately 4,000 leaders from the government, nonprofit, and for profit sectors were convened for these one-day events. In post-event surveys with 1968 respondents, greater than 9% “agreed” or “strongly agreed” that the summits were a valuable use of time and that they intended to apply the learning from the summits in their work. (Sobelson, Young, Marcus, & Dorn, 2011). While this research is only preliminary, it does indicate receptiveness to a systems-based leadership framework across all organizational sectors.

**Conclusion**

The literature indicates that leadership of complex systems is distinctly different from the models traditionally drawn upon for leadership of organizations and in situations perceived as linear: It emphasizes relationships, embraces complexity and ambiguity, and encourages self-organization and emergence. It is a model of leadership that acknowledges that no leader has all of the answers, that relies on the ability to collaborate and co-create with a full range of stakeholders, and that pursues intent through clarity of purpose and meaning rather than scale. It measures success as realizing that purpose and on collective rather than individual achievement.

Traditional training and education has produced leaders better suited to situations with unambiguous goals and directed strategies. The meta-leadership framework and practice model holds potential for helping those with traditional training to understand and deploy a systems-based leadership model and tools for meeting meta-system challenges and exerting leadership in the sustainable city. Realizing the extent of that potential calls for additional research on its application in more varied settings.

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The world faces a leadership crisis. Confidence in leaders has declined significantly in recent years resulting in what many leadership experts are now saying are significant threats to our economic and social systems. What we believe is needed is fresh thinking about the challenges leaders and organizations face as well as about the leadership that must be demonstrated in order to meet them.

The RoseMont Institute for Transformational Leadership provides a platform for a variety of compelling voices to engage in dialog and debate topics related to transformational leadership. We believe that the thinking is there – much of it with front line leaders – and the Institute endeavors to surface it, aggregate it, and catalyze conversations. Our outlook that is global, challenging, real-world based, and forward-looking.

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