Organizational Learning & Living Systems Design Thinking
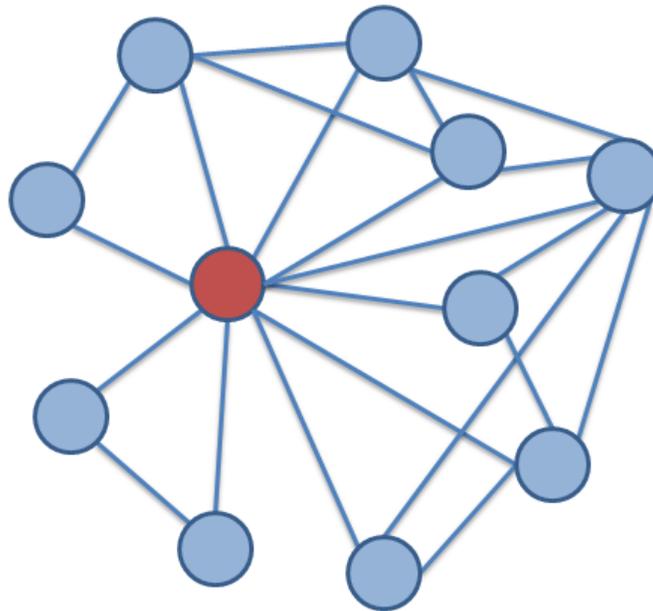
Tom Palmer, Founder & CEO

Wired Roots Learning & Development LLC

January 19, 2017

Introduction

"The major problems of the world are the result of the difference between the way nature works and the way people think." – Gregory Bateson

This report explores the learning and development processes of the human organization as a living system. It proposes that the design of how an organization functions and grows is best informed by the patterns and principles found in all living systems throughout nature — that nature itself is our ultimate mentor and guide in the design of human systems. Aligning with these patterns and principles allows an organization to learn well, and through its learning it may adapt, evolve and thrive in an era of increasingly complex challenges.

Organizations play a key role in developing and nurturing life-long learners, which are the fabric of any resilient community. The ways in which a community's organizations evolve, integrating with the unique patterns of their place, indicate the degree to which that community is likely to thrive. Likewise, the ways in which networks of resilient communities across the globe learn, adapt and evolve together indicates the degree to which we will thrive into the future as a species.

At the heart of the shift that needs to occur, as the quote above suggests, is a new pattern of thinking — one that aligns and resonates with the patterns in nature and in doing so, transforms relationships between individuals, teams, organizations, communities, and the ecosystems of which they are all an inextricable part.

The Limits of the Old Paradigm

When you hear someone mention 'the good old days,' you might recognize in their tone the longing for simpler times. With simplicity exists space — space to think well, reflect and to be creative. It is this space that seems to be increasingly rare as we as individuals, and as a species, get older. At times it reveals a sense of profound loss.

Today's world is ever-more complex. Space is full — full of information, images, sounds, and never-ending digital communication. All day, every day we are bombarded from all angles. Aware of events taking place across the planet as they occur, we are caught in the crossfire of opposing perspectives.

The vast majority of these perspectives are highly analytical. They pick apart events and focus in on their individual pieces. In this way space, already full, becomes increasingly dense and difficult to navigate.

Most of us have the tendency to think this way — analytically breaking things down into smaller and smaller pieces to better understand them. It is how we have been taught to think. The approach is called reductionism, and it is based on the belief that something can be understood by analyzing its individual parts. The primary metaphor it uses for how nature functions is the machine.

On one hand, reductionism has served us quite well. It has enabled incredible industrial and technological advances, increasing the quality of life for many people. It has produced an astonishing body of scientific knowledge. On the other hand, we are currently facing some very significant challenges to our species: climate change, terrorism, economic volatility, resource wars and an intensifying refugee crisis to name a few.

Creating solutions to these challenges are momentous tasks that the younger generations in particular face. Yet through reductionist thinking, we can see ourselves struggling to understand them. How did they happen? What caused them? How are they related? What can be done?

Analysis alone is useful when the answers to these questions are clear. It relies on linear cause and effect — A caused B and B caused C, etc. Yet these challenges are difficult to grasp because they are caused by complex webs of interactions and events. Trying to break them apart and identify what caused what often results in confusion and worse — interventions that only intensify the original problem.

What we are witnessing are the limits of a way of thinking that has dominated much of human culture for hundreds of years. It is rooted in a perspective informed by classical mechanics, which sees nature as a machine and everything in it as essentially

mechanical, operating under the same principles. It assumes that if you can understand how the pieces of a machine work in isolation, you will understand the machine.

Though that view was disrupted by Einstein's theory of relativity and many other thinkers and scientists to follow, it has continued to dominate the collective worldview in many ways. We live within and depend on systems designed under this view, for example: government, business organizations, systems of education and agriculture.

Einstein's often-quoted idea that we cannot solve our problems from the same thinking that produced them is at the heart of the intervention to be described in this report. This not to say that the baby should be thrown out with the bathwater — only that reductionism is incomplete — that it is suited for simple problems and not for the complexity of those mentioned above. If we are to rise to these challenges, we need a transformation in the way we see and think about the world.

Strategic Intervention

In Donella Meadow's "Places to Intervene in a System," *the mindset or paradigm out of which the system arises* and *the power to transcend paradigms* are listed as the two intervention points with the highest degree of leverage for systemic change. (1) Both point to changing the way people think.

Our thinking is a product of our mental models — these are established patterns of thought that represent our understanding of how the world works. They act as filters or lenses that help us make sense of what is going on around us and within us, and are based on and nourished by our attitudes, assumptions, worldviews, biases, opinions, preconceptions and beliefs. (2) Our mental models are products of our life experiences — our upbringing, education, and cultural influences.

Recent research has shed light on the flexible nature of the brain and our thought patterns. (3) This flexibility is called *neuroplasticity*. Whereas we once believed that our brain structures and mental models were largely formed in our childhoods and did not change much afterward, we now understand that the brain is capable of change and growth throughout our lives. In other words, it is never too late to transform the ways in which we think.

To affect change in the larger systems that arise out of our mindsets, by influencing the ways we think, we look to make a strategic intervention in the smaller systems that are influential in the formation and re-formation of our mental models. Particularly for our purposes here, the system that is the field of organizational learning & development.

At the heart of this mission to expand our mental models is the synthesis of two emerging fields: living systems thinking and designing thinking. This synthesis will be called here "Living Systems Design Thinking." It involves moving beyond our tendency to think about the world as a machine, instead seeing it in terms of networks of dynamic, co-evolving relationships.

This to enable the design of effective interventions that evolve these systems toward greater states of wellness and abundance. We will explore this much more in depth in the following sections.

Our main goal is to apply insights from these fields to the creation of impactful learning experiences and strategies that simultaneously transform existing mental models, our relationship with the mental models themselves, the systems that arise from them, and the ways that we live, work and relate to one another.

Systems Thinking

Over the course of the 20th century, insights from physics, biology, ecology and psychology, amongst other fields, have contributed to what has come to be called systems thinking. In 1968 Ludwig von Bertalanffy published *General Systems Theory,* which would become foundational, and since then many works have been published on the topic. Bertalanffy writes:

> Classical science in its diverse disciplines, be it chemistry, biology, psychology or the social sciences, tried to isolate the elements of the observed universe - chemical compounds and enzymes, cells, elementary sensations, freely competing individuals, what not -- expecting that, by putting them together again, conceptually or experimentally, the whole or system - cell, mind, society - would result and be intelligible. Now we have learned that for an understanding not only the elements but their interrelations as well are required. (4)

In 1990, Peter Senge's bestselling book *The Fifth Discipline: The Art and Practice of the Learning Organization* identified systems thinking as the key to building adaptive organizations. This influential work has made it a popular concept in the world of business and organizational development.

> You can only understand the system of rainstorm by contemplating the whole, not any part of the pattern. Businesses and other human endeavors are also systems.

They, too, are bound by invisible fabrics of interrelated actions, which often take years to fully play out their effects on each other. Since we are part of that lacework ourselves, it's doubly hard to see the whole pattern of change. Instead we tend to focus on snapshots of isolated parts of the system, and wonder why our deepest problems never seem to get resolved. (5)

Systems thinking represents a paradigm that works in the opposite direction of reductionism: instead of breaking things apart to understand them, the focus is on understanding the context of their relationships to other parts in a system that functions as a whole. Rather than analysis, the foundation of this type of thinking is synthesis, and is based on observing and understanding patterns.

At the core of systems thinking is the notion that 'the whole is greater than the sum of its parts'. In this way, a system cannot be understood only through analyzing its individual parts — there is another element present in a system that we have struggled to understand through reductionist methods. It could be thought of as a relational element. The more complex a system is, the more diverse its interconnections and the more this tends to be true.

Living Systems Thinking

There are some important differences between a living and a non-living system. Living systems contain properties such as emergence, cognition, and self-organization, whereas non-living systems do not. These properties have important implications for designing the ways we live, work, and learn together and with our environment.

In 1978 James Grier Miller published *Living Systems,* a general theory about the nature of living systems. In it, he identifies a hierarchy of living systems, each level nested within the level(s) above it. The pattern can be likened to a Matryoshka Doll, or Russian Nesting Doll.

Miller's levels of living systems are: cell, organ, organism, group, organization, community, society, and supranational systems. The central thesis of his theory is that these eight levels are open systems each composed of twenty subsystems that process inputs, throughputs, and outputs of various forms of matter-energy and information.

> All nature is a continuum. The endless complexity of life is organized into patterns which repeat themselves—theme and variations—at each level of system. These similarities and differences are proper concerns for science. From the ceaseless streaming of protoplasm to the many-vectored activities of supranational systems, there are continuous flows through living systems as they maintain their highly organized steady states. (6)

In her book *The Responsible Business,* author and business development consultant Carol Sanford identifies the capacity for "living systems thinking" as one of the key characteristics of what she calls a "responsible business" — one that looks to create value and benefit a holistic range of stakeholders: customers, co-creators, the Earth, community, and investors. Sanford writes that the systems thinking Senge describes in his seminal work, as the key to building a learning organization, is still in many ways rooted in mechanistic thinking:

> (Senge and his colleagues at MIT) have created an industry around the application of systems thinking to organizational practice, and as a result systems dynamics is now a fairly pervasive concept in the business world. In this model, the connections and dynamic interactions among different parts of a system are identified and analyzed… Feedback loops are often used by systems dynamics to explain how businesses work. Feedback loops are created by downstream actions that affect upstream decisions… Feedback loops are an example of the "cybernetic" approach to systems thinking, which uses machines as models…This mechanical model is problematic in all but the simplest cases. In complex living systems, there are no simple cause-and-effect relationships. Nothing in nature is actually organized around a feedback loop. Our habit of thinking in machine-based metaphors causes us to oversimplify what's actually happening. (7)

Following Sanford's logic, we can see that while the emergence of systems thinking has helped us to consider relationships between individual elements in a system, in many of its common applications it still represents an oversimplification of how complex living systems like human organizations function. While Senge and others have laid a strong foundation for the application of systems thinking to the field of organizational learning, there is still plenty of space for this "industry," as Sanford calls it, to progress.

Considering the task of evolving our thinking in this way, we might observe how the human brain itself has evolved over time. The brain is commonly referred as being composed of 3 brains. The base brain is the reptilian brain, and is primarily responsible for sensing the environment. The mid-brain is the mammalian brain, evolving out of reptilian simplicity as mammals did to allow us to nurture our young, form groups and act collectively. The upper and largest part of the human brain (as well as the most recently evolved) is the neocortex, allowing us to create culture, language and art. The neocortex also allows us to project into the future — to think strategically.

The evolutionary pattern is one of layers building on top of one another — each previous layer is transcended and included. In other words, we still use all three brains on a regular basis, depending on the complexity of the task at hand. One way to think about the transformation of our mental models, then, is integrally. Instead of throwing out the mechanistic model, which is quite useful in simple situations but struggles with high degrees of complexity, we then look to transcend and include it, adding a new layer. This layer is equipped to address the unique characteristics and complexities of living systems.

Michelle Holiday speaks eloquently on this in her TED talk, *Patterns of Living Systems:*

> (The pattern of living systems) changes a lot from our original story that organizations are machines, but it doesn't change everything. All living systems do have mechanistic properties. Your heart is a pump. Your wrist is a marvel of mechanical engineering. But these are not the most important or powerful things about you. The same is true of our organizations. So we don't need to abandon all of the strategies that we have developed so far — we just need to add a layer of living tissue to the machine. When you look at the cutting edge of business today, you see that most pioneering and successful companies are moving in exactly that direction. Their leaders are evolving into stewards or hosts, creating the fertile conditions for people to thrive. (8)

Patterns and Principles of Living Systems

Of primary interest for our purposes here is how living systems thinking can be applied to the field of organizational learning & development. This not merely as another subject to be taught, but also as a paradigm shift that informs the re-design of learning and development systems and strategies themselves.

The following model is an experimental adaptation of the nested pattern in James G. Miller's original model. Instead of 8 levels, 5 have been identified for the purposes of thinking about learning and development in human systems. Notice that at each level

there is distinguished human systems and non-human systems, which are in fact interdependent and integrated with one another. Many more levels could potentially be added, such as regional, national or bioregional systems for example. The important thing is to get a feel for the basic pattern.

Living Systems Development Model
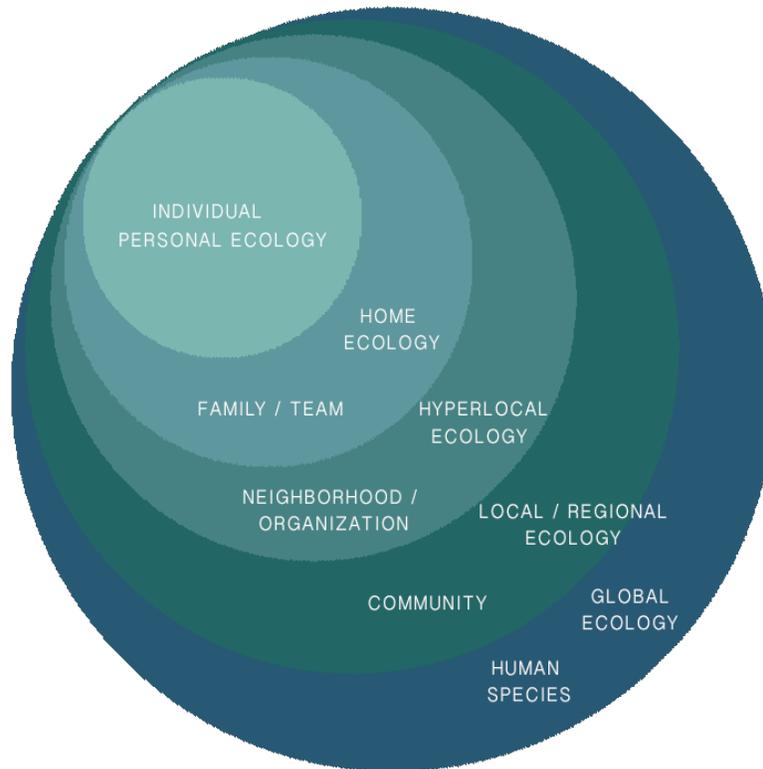
This model has been designed to help us think about the context of our own development as it relates to the development of the living systems in which we are nested. These living systems have interdependent relationships — what is good for one is good for the others. We are interested in better understanding how these systems co-develop and co-evolve so that we can become more strategic with our thinking and our actions.

I include the distinction of non-human living systems in the model to emphasize that we do not only learn from each other, but perhaps even more importantly, from natural systems as well. As Miller wrote, there are patterns that repeat themselves on all levels. An organization has important lessons to learn from biology and ecology, lessons that give it insight into how to structure itself, grow and adapt.

Here we will explore some key characteristics of living systems, looking for such insights.

Three Criteria of Living Systems

According to renowned physicist and systems theorist Fritjof Capra in his book *The Web of Life* (9), living systems are defined by three criteria — the pattern of organization, the structure, and the life process:

- Pattern of organization is the configuration of relationships that determines the system's essential characteristics (Autopoiesis as defined by Maturana and Varela, 1987).

- Structure is the physical embodiment of the system's pattern of organization (Dissipative structures as defined by Prigogine and Stengers, 1987).

- Life process is the activity involved in the continual embodiment of the system's pattern of organization. (Cognition as defined by Gregory Bateson, 1979).

Nested Holarchies

Living systems are **nested in a holarchy**. As illustrated in the model above, each of these systems are both whole — or **autonomous** in themselves — and at the same time are part of larger systems, with which they have **interdependent relationships**. Working to understand this **paradox** is critical.

Self-Organization

Another characteristic of any living systems is **autopoiesis**, which refers to its self-organizing and self-producing properties. According to Capra and Peter Luigi Luisi, from their book *The Systems View: A Unifiying Vision,* "*It can be defined as a system capable of sustaining itself due to a network of reactions which continuously regenerate the components — and this from within a boundary 'of its own making.' We can say, in other words, that the product of an autopoietic system is its own self-organization. We can also say the scheme corresponds to a cyclical logic, the cyclical logic of the self.*" (10)

Regeneration

As indicated above, through self-organization living systems are **regenerative**. Resource surpluses are reinvested into the system itself, driving growth. Carol Sanford provides a definition of regeneration on her website:

> Regeneration is a paradigm and accompanying set of capabilities based on the awareness that every life form is unique and nested within other, larger living systems. Every life form grows and expresses itself in order to benefit the living wholes within which it is embedded and receives benefits from these wholes in return. It is capable of regeneration only to the extent that it is part of a larger, value-adding process. (11)

Purpose through Value-Adding Relationship

We can see that the regenerative property also relates to the purpose of any living system: to create value for the systems in which it is nested and with which it has established mutually beneficial, or **symbiotic relationships**.

Structural Coupling and Co-Evolution

Because these relationships are dynamic, or continuously changing, a living system is **adaptive** as it manages these changes. It does so through a process called **structural coupling**, which is closely linked to self-organization and autopoiesis. Through structural coupling, a living system's components are continually produced and transformed in two ways. The first is a cyclical, regenerative process of self-renewal. The second is developmental, where new structures and new connections are created in the network.

Therefore, a system is **co-evolutionary**: co-developing with both its own components, the other components within its environmental system, and the environment itself.

Autopoiesis and structural coupling are two major themes in the *Santiago Theory of Cognition*, developed by two Chilean biologists Humberto Maturana and Franscisco Varela. According to the theory, all living systems couple to their environment structurally, through continuous interactions which trigger changes in the system. An important insight here is that these **changes are not produced by the environment, only triggered**. If and how this happens, and the result of it, is a product of the system's structure and ability to adapt. (12)

Capra and Luisi reflect on this process:

> As a living organism responds to environmental influences with structural changes, these changes will in turn alter its future response, because the organism responds to disturbances according to its structure, and that structure has now changed. But this process — a modification of behavior on the basis of previous experience — is what we mean by learning. Continual structural changes in response to the environment — and consequently **continuous adaptation, learning and development** — are key characteristics of the behavior of all living beings. (10)

Dissipative Structures

Living systems are organized by the pattern of **dissipative structures** — thermodynamically open systems that are typically operating far from equilibrium, yet in a stable state. In such systems linear relations, identifiable in systems operating close to equilibrium, cannot be found in the same way. There is a higher degree of complexity and uncertainty.

Cognition

We cannot direct a living system; we can only disrupt or disturb it. Ultimately it is the system itself that specifies which perturbations from the environment will trigger changes. This process of specification is, according to Maturana and Varela, what makes every living system **cognitive.** They call it "bringing forth a world." As Capra and Luisi write, "Cognition, then, is not a representation of an independently existing world but rather a continual bringing forth of a world through the process of living" (10).

The mechanical worldview is highly influenced by the work of Rene Descartes, who famously divided the universe into mind and matter. The living systems view, on the other hand, challenges this by seeing Mind not as a thing but as a process of cognition, which is the process of life itself. Mind and matter are united.

This also has implications for our relationship to language and sense of identity. If we, as living systems, are more process than thing, how do we identify ourselves? Here language must be recognized as the approximate distinction of something with a fuzzy border — something that is continually in a state of transformation as it interacts with its environment from which it is not separate. Maturana and Varela highlight the difference in views by

identifying two constructed worlds that are brought forth: "objectivity-without-parenthesis" and "objectivity-in-parenthesis."

Bringing Forth Worlds

Jane Cull, in her book *Living Systems: An Introductory Guide to the Theories of Humberto Maturana and Francisco Varela,* describes how these worlds appear:

> These worlds appear in what we do, recursive, repetitive patterns of distinguishing in language either in thinking or in human relations, conversations. We constitute, bring forth objects, things, experiences, realities and worldviews into existence through distinctions in language. No thing pre-exists until we distinguish it in language… The process of distinguishing in language, perception, flows according to our emotioning, i.e., our patterns of distinguishing and general behavior follow the patterns of our emotioning, cyclical processes of biological activity (13).

The objectivity-without-parenthesis world could be equated with the mechanical view and the dualism of Descartes. This world is experienced as being separate and independent from the perceiver. According to Maturana and Verela and as described by Cull, seeing the world in this way both produces and is produced by the emotioning of fear. The perceiver sees a fixed reality onto which experiences are projected, onto other objects they have distinguished.

In the objectivity-in-parenthesis world, by contrast, distinctions do not become objectified. This world both produces and is produced by the emotionings of trust, love and acceptance. The perceiver does not see themselves as being isolated, but rather as part of an integrated system. "They live in the awareness of bringing forth a world together, a shared or relational world in languaging." (13).

Emotioning and languaging have important implications for organizational learning and behavior that go beyond the scope of this document. They are introduced here to highlight the important shift that must take place for one to have the experience of living systems thinking. We can see that it goes well beyond becoming familiar with a set of terms or concepts — it requires a fundamental change in our relationship with terms and concepts themselves. It is a shift in language's relationship to the world that we perceive.

Unique Essence

Carol Sanford writes, "*Qualitative distinctiveness is the basis for evolution, allowing a product or species to move into a new niche*." (7) She identifies **unique essence** as a fundamental characteristic of a living system. Each system is by nature one-of-a-kind. The essence of a system — such as an individual, organization or community — is impossible to truly define. Yet with the understanding that all language is an approximation, language can be used to explore essence, knowing that there is no existing distinction for something that is the first and only of its kind.

This limitation of language is important for learning and development strategies because it points to other forms of knowledge-making and sharing. If essence cannot be captured by language directly, how can it be communicated? The answer to that question points to a form of communication that is older than the written word, and is fundamental to the human experience: storytelling.

We will explore storytelling and its implications for organizational learning in a later section. For now, there is one more characteristic of living systems we will articulate here — and perhaps the most fascinating. That is the property of **emergence**.

Emergence

Going back to the core idea behind systems thinking, that "the whole is greater than the sum of its parts," we could ask ourselves: what is that 'greater'? 'Greater' emerges as a result of the workings of the system — a property that does not exist within any of that system's parts but comes into existence through their collective interactions.

There are two types of emergence found in nature: weak emergence and strong emergence. Weak emergence can be predicted with the right amount of information (even if this amount of information is only theoretically possible to obtain). Strong emergence, on the other hand, is irreducible — it cannot be traced back to the system's constituent parts and cannot therefore be predicted or created intentionally with any amount of information.

In a highly complex system, problems and solutions often co-emerge through a process of inquiry and interaction. This is relevant to systems of learning and development, which are ultimately charged with supporting us to find our purpose within the context of living systems and help us evolve toward our value-adding potential.

In the next section we will explore more in-depth how emergence and the other characteristics of living systems can be applied to learning and development systems and strategies.

Applying the Patterns and Principles to Organizational Learning

We have seen that learning and development is a central trait of all living systems, from cells to organisms to organizations and communities. In non-human living systems, this is not something set off to the side to be accessed periodically — it is fundamentally integrated into all processes.

In human systems this is also the case, yet we are also unique in that we have explicitly designed systems of learning and development — education, training, coaching, etc. The vast majority of these systems have been developed from the mechanical worldview, as factories or shops in which machines are programmed and tuned up.

As machines we go through an extensive period of this programming, called our education, before we are released into the world to do meaningful work. We might then join an organization and be periodically 'tuned-up' via a learning and development program or human resources department that functions like a machine shop.

As we have mentioned, we are seeing more and more how this approach is failing us — and in so many ways. Ultimately, it is dehumanizing. The world is also changing so quickly that by the time we finish with our traditional schooling much of what we have learned is obsolete. Organizations are struggling to fill the gaps with training programs and other types of learning interventions, and as a result are struggling to keep up with changes in their environment.

Why Do Learning Initiatives Fail?

Many learning initiatives do not produce the results they intend for two primary reasons:

> 1) They do not address developing the learning process (or, the learner) itself — they are mechanical "information dumps" where lots of information is unloaded onto the learner in the hopes to improve their ability to perform. This approach often relies on the learner memorizing large amounts in a short, intense period of time. This results in the inability to recall most of the material later on.

2) There is not sufficient context — the relationships between the skills/knowledge, the learner, and the systems in which the learner is living and working are not sufficiently explored. There is little or no focus on discovering one's essence or purpose within and in relation to these larger systems. The result is a lack of engagement, motivation and inspiration to develop and evolve, and therefore a system that does not progress well toward its inherent value-adding potential.

Learning as Living Systems

What might a learning and development system built on the principles of living systems look like? Let's explore:

— It would see learning and development as a fundamental and continuous process rather than a resource used to get 'tuned up.'

— It would focus on creating interactions and co-evolutionary relationships — between individuals, teams, departments as well as between organizations, organizations and communities, etc.

— It would be more than a separate department or institution, but would inform the design of how teams, organizations and communities work together to allow for self-organization and emergence. It would play a key support role in a transition to dynamic governance — away from rigid hierarchical decision-making structures and toward self-organizing structures that distribute cognition across the system.

— It would help the system and its parts develop out from unique essence, discovering purpose in the context of value-adding relationships with nested systems as they support those systems to also evolve toward their inherent value-adding potential. It would provide personalized learning experiences and support structures, rather than one-size-fits-all information dumps.

— It would function regeneratively — cycling back resources and knowledge to evolve the subsystems and their capacity to learn, adapt and evolve. It would develop life-long learners who become highly motivated to keep advancing their skills and knowledge as well as their role in the system.

The shift in this direction is already underway. The concept of the 'learning organization' has been on the radar of organizational leaders for some time. Many organizations and

communities have shifted towards structures that allow for more distributed decision-making, following models like Holocracy and Sociocracy. The need to become more adaptive in the current and rapidly-changing climate is clear.

Yet, there is much work to be done. The majority of organizations and their leaders continue to operate from the old paradigm. They rely on top-down decision making that struggles to keep up with environmental changes. Many learning initiatives are still mechanical, impersonal and are largely one-way exchanges of information. Learning is seen by most as something 'off to the side' — not as something intimately connected to the process of life itself, which it is.

Integrating Design Thinking

As we build our capacities to see the world in terms of the complex and dynamic relationships of living systems, arises the question of where we as human beings fit into the picture. Having evolved into an awareness of these systems and how they function, what is our role?

Design thinking typically refers to a way of approaching problems and challenges through a process of design. The term 'design' has been used in a growing number of contexts — for products, services, enterprises, organizations, communities, experiences, spaces, systems, solutions, information and even lifestyles. Design thinking, then, simply points to a strategic creative process used to transform these things from ideas into realities.

The evolved abilities of the human being for imagination, foresight and creative, strategic thinking put us in a unique position within any living system. There is something uniquely human about thinking and acting as a designer. This points to our essence as a species, and our role on Earth.

We are beginning to learn that our decisions and actions as a species have important consequences — and with this realization comes a profound sense of responsibility to make these decisions intelligently.

Living Systems Design Thinking

Living Systems Design Thinking focuses on making strategic interventions that trigger structural changes and guide systemic evolution. These interventions are **nodal** — they are implemented at the nodes of the system, which are key points where large amounts of energy and resources pass through and small changes have a large impact on the

rest of the system. Nodal points could be likened to acupuncture points — where a well designed intervention affects profound changes with minimum energy input.

Referring back to our living systems model, we will here postulate that the organization is a key nodal point within community and global systems. Within government, business, educational, and non-profit organizations key decisions are made about how resources are to be allocated and used. These decisions have wide ripple effects.

Within the organization there are also key nodal points. We could continue to ask: where are decisions made and by whom? What influences those decisions? Often those in leadership positions will be responsible for making decisions. These decisions will be influenced by a range of factors, but of particular interest are organizational learning and development systems that support leaders in their roles.

As we know, each living system is unique in its essence — this is a critical insight as we prepare to make any type of intervention. There are many existing one-size-fits-all programs that ignore this and assume what has worked for one organization will work in the same way for another. When it doesn't, the organization is left wondering why.

Conversely, when an intervention works outward from a system's unique essence, emerging from the context of its current states of relationships with its parts and with bordering systems, those relationships can be strategically strengthened and the systems co-evolve toward inherent potential.

For this reason a personalized learning experience is so important. It must help the individual learner find their purpose by aligning their own developmental trajectory with those of the teams, organizations, communities and ecological systems with which they belong. Through this context they can begin to build the skills and knowledge they need to form value-adding relationships with these other systems.

This process begins with the exploration of essence — but what exactly is essence? A definition is provided in *Regenerative Development and Design* from the Regenesis Group, talking specific about the essence of place, though this could work for any type of living system:

> Spirit has to do with essence, soul, defining attributes, live-giving principles, underlying animate structure. What gives a place its core and center of gravity? That which, if altered or taken away, would change the place fundamentally into something else. That which permeates and infuses place. What embodies place spirit? Represents or holds its essence? What stands for the physicality, materiality of place but its people and activity? (14)

As we mentioned earlier, essence is not something that can be defined directly, but is captured in our stories.

Storytelling

"If history were told in the form of stories, it would never be forgotten." — Rudyard Kipling

The oldest discovered cave painting, depicting an interactive scene between animals, is approximately 30,000 - 35,000 years *older* than the oldest evidence of written language. This points to the idea that our evolution as a species was largely driven by storytelling. It continues today with books, movies, theater, TV shows and of course, in casual conversation as we share our experiences with one another.

There are several reasons why stories are such good vehicles for sharing and creating knowledge. They evoke emotion, connecting us to context and making the information relevant. In doing so they make us care. Think about finishing up a great book or movie — how do you feel? Have you had the experience of wanting to improve yourself or your own life afterwards? Storytelling is a powerful tool for motiving others to evolve toward their own inherent value-adding potential.

In the same way, stories can help us discover our essence, identity and purpose. By exploring the main themes and patterns in our own stories, we begin to get a feel for our own essence. Through essence, put in context, we find our calling and our purpose. Good stories about others allow us to make pattern connections to our own story and learn in this way as well.

Every living system is a story in itself. And just as living systems are nested within one another, so are their stories. Our stories as individuals are nested within those of our families, neighborhoods, organizations and communities. All of these stories are nested within the story of our species and that of our planet as a whole.

Ultimately, good stories are about transforming relationships — between someone and themselves, someone and another, between groups of people, between people and the land. It's difficult to gain a deep understanding of dynamic relationship in any other way.

The Story of Two Things

The mechanical paradigm is often connected to the 'Cartesian Split' — Decartes' idea that mind and matter are separate from one another. This has had a major impact on the narrative that gives us our sense of who we are. Charles Eisenstein refers to this narrative as "The Story of Separation" (15)

We can witness the effects of this story through the quality of our relationships with ourselves and others: depression, drug addiction, violence, environmental degradation, the list goes on. These are all products of unhealthy relationships, which are not merely products of our stories — they *are* our stories, perpetuated often unconsciously.

This dualistic worldview can be linked to the view of 'objective-without parenthesis' — where reality is seen as being fixed and objectively identifiable. Through this lens we see the world through the distinctions we have created in language. Objects, people, cultures, and nature itself become trivialized and objectified under the label we have assigned to them. We accept things as they are given to us, believing that they are what we have been told they are. We accept the story that we are told, not really believing that we have much power to change it.

Developing Story-makers

As human beings, most of us have not learned to tap into some of our most human gifts. We are not only storytellers by nature, but story-makers — we have evolved a level of consciousness that gives us an opportunity to deliberately shape our stories as they are happening. Our ability to imagine the future and strategically create what we have imagined gives us a unique role — and responsibility — amongst the other species on the planet.

The emerging paradigm of seeing the world through the lens of dynamic living systems, of objectivity-in-parenthesis where our understanding of reality is not tied down by the limits of our language, represents a new relationship to narrative itself. Instead of seeing individuals, organizations and communities as machines waiting to be programmed from above, controlled by a story decided upon by a select few, it looks to rewrite our stories from the bottom up by developing story-makers who bring forth worlds and narratives that resonate from their own unique essences.

The study of living systems also teaches us the ways in which we are connected to these other systems and stories. It exposes the myth of the separation that drives the old story, giving us an opportunity to re-create and co-create new narratives that lead to healthier relationships at all levels.

Storytelling has become a popular focus in organizational development and leadership for its power to teach, motivate and create a shared sense of purpose. Yet this is nothing new, only something that we as a culture are rediscovering. Author and business consultant Peg Neuhauser writes, "*No tribal Chief or Elder has ever handed out statistical reports, charts, graphs or lists of facts to explain where the group is headed or what it must do.*"

Conclusion

There is a major shift currently underway, fueled by the need to adapt as individuals, organizations and communities to an increasingly complex world. The tools that have served us well, highly influenced by reductionism and analysis, are in many cases falling short. The time has come to develop new ways of approaching complex problems — a process that begins with shifting the ways we think about and see the world.

Living Systems Design Thinking helps us to explore our relationships to our teams, families, organizations, communities and ecosystems, strategically learning and developing to strengthen these relationships and to increase our capacity to create value on multiple levels.

Taking insights from the study of living systems in nature, and seeing nature as our greatest teacher, we look to apply principles such as emergence, distributed cognition, self-organization and co-evolution to human-designed systems. These systems are not seen as fixed entities, but as continuous processes — ultimately, processes of learning and development.

This changes the way we interact and participate in the world. Knowing that living systems cannot be controlled, we look to work with existing patterns as we make strategic interventions at specific nodal points, like acupuncturists finding the sweet spots where small changes can result in large, system-wide effects. We create fertile space around a system that allows it to thrive as we guide, nurture and support. We become more like gardeners than engineers.

These interventions follow a new approach to design — they are implemented as small experiments, fueled by continuous feedback and development. As our interventions evolve, so do we as designers, and so do the living systems in which we are intervening in co-evolutionary relationship.

Our assumptions are tested, and either validated or invalidated, early and often. We do not fear failure. We look to create it as soon as possible, on a small scale so that we can adjust and grow beyond it.

The living system designer mindset is something to be cultivated throughout an organization or community. In this complex environment more than ever, the ability of a system to thrive is directly related to its ability to continuously learn and adapt. Effective learning organizations and learning communities are ones in which all members are themselves listening, observing, experimenting and learning. Not at times, but as a way of being, a way of living, a way of working and relating to the world. This is our task at hand, as the co-creators of stories, together bringing forth a more abundant, more resilient, and more beautiful place to call home.

Resources Cited

1) Meadows, D. (n.d.). Leverage Points: Places to Intervene in a System. Retrieved from http://donellameadows.org/archives/leverage-points-places-to-intervene-in-a-system/

2) Douglas, N., & Wykowski, T. (1999). *Beyond reductionism: gateways for learning and change*. Boca Raton: St. Lucie Press.

3) Driss, B. (2010). Neuroplasticity and learning. *Frontiers in Neuroscience, 4*. doi:10.3389/conf.fnins.2010.12.00027

4) Bertalanffy, L. V. (1972). *General Systems Theory*. Maryland: Univ.

5) Senge, P. M. (1990). *The fifth discipline: the art and practice of the learning organization*. New York: Doubleday/Currency.

6) Miller, J. G. (1978). *Living systems*. New York: McGraw-Hill.

7) Sanford, C. (2011). *The responsible business: reimagining sustainability and success*. San Francisco, CA: Jossey-Bass.

8) Holiday, M. (n.d.). The Patterns of Living Systems. Retrieved from https://www.youtube.com/watch?v=RUIStx-nZ3I

9) Capra, F. (1996). *The web of life: a new scientific understanding of living systems*. New York: Anchor Books.

10) Capra, F., & Luisi, P. L. (2014). *The systems view of life: a unifying vision*. Cambridge: Cambridge University Press.

11) Sanford, C. (n.d.). What is Regeneration? Part 1. Retrieved from http://carolsanfordinstitute.com/what-is-regeneration-part-1/

12) Maturana, H. R., & Varela, F. J. (1980). Autopoiesis and Cognition. *Boston Studies in the Philosophy of Science*. doi:10.1007/978-94-009-8947-4

13) Cull, J. (2013). *Living systems: an introductory guide to the theories of Humberto Maturana & Francisco Varela*. Lieu de publication inconnu: Éditeur inconnu.

14) Mang, P., & Haggard, B. (2016). *Regenerative development and design: a framework for evolving sustainability*. Hoboken, NJ: Wiley.

15) Eisenstien, C. (n.d.). The Story of Separation. Retrieved from https://www.pachamama.org/blog/charles-eisenstein