

**EMBRACING INTEGRATED COMPLEXITY:
INTEGRATING INNOVATION AND PERFORMANCE IN HUMANE
ORGANIZATIONS**

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ABSTRACT

Total quality management, reengineering, downsizing and benchmarking have frustrated more organizations than they have helped. They have failed where management has not taken the whole organization and its environment into account. Instead, they tried to improve the performance of parts of their businesses as though they were mechanisms; a 400-year-old perception of human organizations. For years, we've struggled to find a more holistic perspective. It's now beginning to emerge.

In the past 10 or 15 years, leading thinkers in physics, economics, biology, philosophy and social sciences, among other disciplines, have been developing an integrated and organic approach to organizations and the people in them. These activities were often pursued in isolation of each other but last years' establishment of the Integral Institute marked a milestone in the joining of these perspectives and disciplines in generative and exciting new ways. One aspect of the emerging understanding of systems and structures, called "complexity," provides a useful inroad and powerful insights into organization in the natural world (Sherman, 1998; Kauffman, 1995). Like other systems-thinking approaches, it has had great difficulty in bearing fruit in human organizations. That is because it has lacked, until now, the integration of the human interior experience. Introducing developmental psychology and spirituality, along with an understanding of shared cultural models provides the missing element to making complexity-based systems thinking fuller and more useful to those organizations and individuals who have intuited its value all along.

Albert Einstein once said: "Without changing our pattern of thought, we will not be able to solve the problems we created with our current patterns of thought." This describes the best way to make use of integrated complexity. Applying it to organizations is most powerful through the use of a theoretical framework that uses complexity as the systemic framework to inform decisions and actions. Understanding the perspective of complexity will help an organization not only to improve its existing processes and systems, but also to encourage the innovation that it needs to adapt to changing business landscapes or in some cases create new environments. We can start with an exploration of complexity, to which we will add missing dimensions.

A working definition: Because there are so many excellent resources for exploring the depth of complexity (Sherman, 1998; Kauffman, 1995), there's no need to go into great detail here. A

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working definition will suffice to explain the framework illustrated in Fig. 1 (Sherman, 1998; Kauffman, 1995):

- A complex adaptive system is made up of interacting, interdependent agents following simple rules to influence one another and their environment. These interactions cause the agents involved to co-evolve along with their environment.

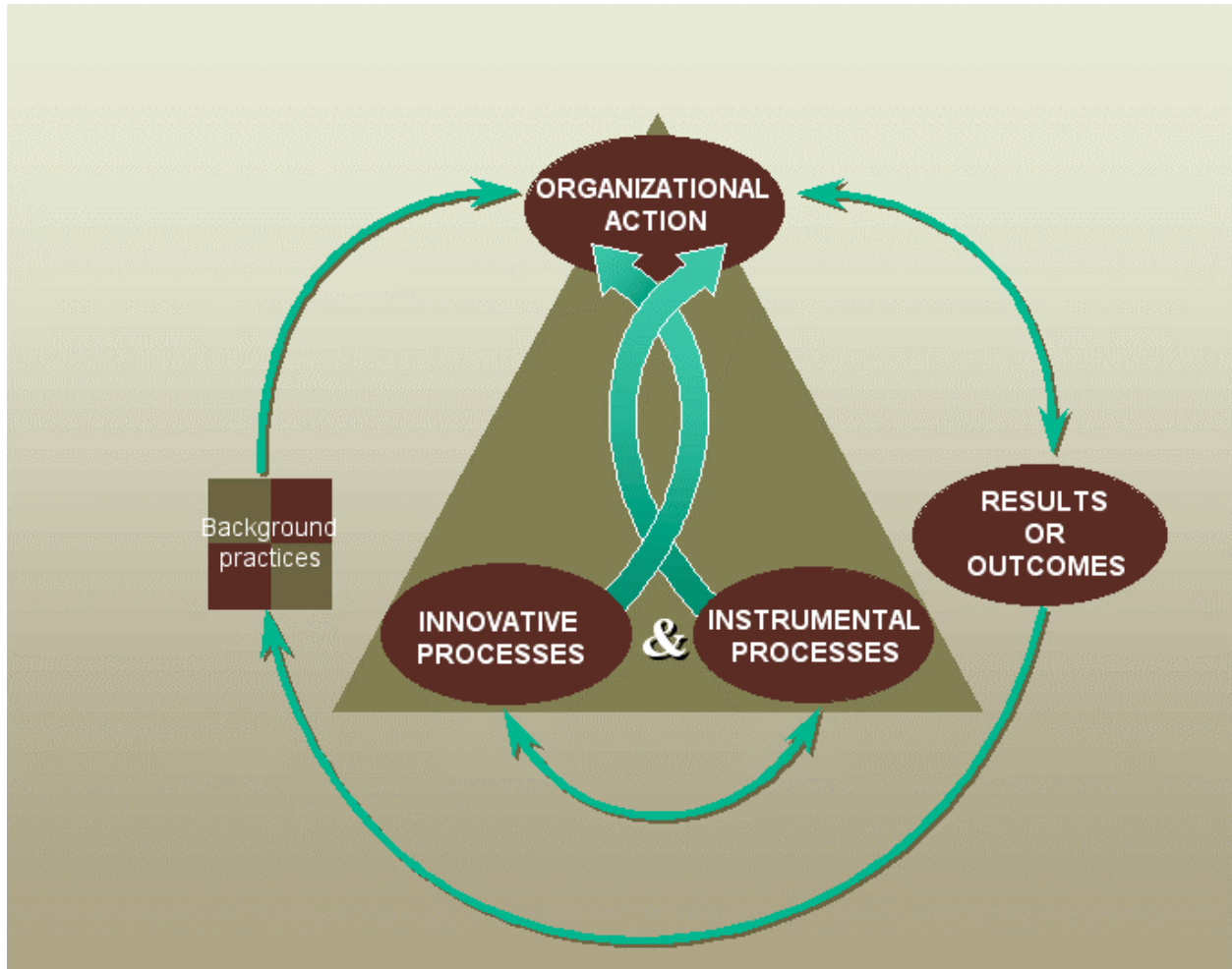


Figure 1

To start working with this definition, it helps to know briefly what we mean by some of the terms.¹ Think of an “adaptive system” as one that senses, acts and learns. “Agents” can be employees, boards, suppliers or customers, and “rules” can be values, ethics, social agreements or laws. “Influence” can be money, goods or ideas. “Environments” may involve markets or economies.

Now we can start to explain how complex adaptive systems interact with their environments, seek patterns and evolve based on the information they gather. Keep in mind that the framework

¹ For example, “complex” does not mean complicated; it refers to those systems that self-organize and exist in the boundaries of chaos and order. For more, see Kauffman 1995.

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we are describing is not just an analogy: all human organizations are, in fact, complex adaptive systems. What makes complexity useful is that the dynamics we are about to describe go on whether we think about them or not. Those organizations that do think about them are just likely to be more fit than those that don't.

The idea of "fitness" is notoriously difficult to define specifically, but we can generally think of it as a relative property that is realized through interactions. In spite of the way most people think of evolution, the drive is not really "survival of the fittest" so much as it is survival of the "fit enough." The point of trying to understand complexity in a business setting is that it helps maintain this "fit-enough-ness" by intentionally integrating creative innovation and day-to-day performance with a deeper awareness of our connectivity.

A Context for Integrating Actions

"...interacting, interdependent agents..." All aspects of an organization interact with their environments and with each other. The most adaptable, efficient and enlightened businesses interact through genuine dialogue; a powerful tool. But people in all organizations interact one way or another with other people and organizations, and they do so from varying levels of personal and group development based on different individual and shared sets of values specific to the situation at hand.

This makes it possible to consider the qualities of those interactions as well as their focus.

One useful set of distinctions involves the tendency in all complex adaptive systems to have both innovation or diversity generators as well as instrumental or conformance generators. These are inherent in each of the agents composing the system, but in varying degrees of agency and influence. More concretely, those interactions focused primarily on innovative processes are where the business seeks and pursues new creative patterns. By innovative processes, we mean the various ways that people make new connections with ideas, customers, technology, other organizations and so forth. This is where the entrepreneurial spirit of an organization finds expression.

Interactions focused on instrumental processes involve the various ways that an organization does what it does for a living. There are always opportunities for improvements and even innovations here as well, but these are not usually the same processes as the ones that create whole new products, services or relationships.

While these abilities inhere to varying degrees in each agent, different specific people or even parts of the organization can be primarily responsible for the innovative and instrumental processes, and where that's the case, it makes sense to manage them with slightly different emphasis. But regardless of the specific organization, it's essential that people interact with each other appropriately to consider these two focuses and that a mix of these sensibilities that is appropriate to the surrounding conditions and circumstances prevails throughout the organization.

"...following simple rules..." In talking about interactions, we've already introduced some of the various "rules" or strategies that businesses follow as complex adaptive systems. "Tend to both the innovative and the instrumental processes" is but one. Another is that genuine innovation and organizational renewal result from human interactions. A third: connections and relationships are as important as the "agents." These connections must be just enough of the right kind. This is naturally achieved in many complex adaptive systems, but must be consciously

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tended to in human organizations because humans introduce psychospiritual dynamics to what is otherwise primarily a biological process. Another rule is that diversity in the agents and in the relationships is absolutely essential: it fosters innovation while it challenges structure, which can be a useful tension if it is understood.

These are some of the rules for organizations that cover systems, processes, resources and so forth. But, again, because organizations are made of human beings with hearts, minds and souls, we can't talk about a genuinely holistic perspective without integrating people's interior experience as well. These are integrated with the systemic "rules" in the "background practices" or communicative actions of the organization.

Background practices include all the systems and assumptions with which we make decisions and coordinate actions, individually and collectively. These include our personal and shared purposes, principles and emotions as well as our cultural models or worldviews -- conscious or otherwise -- as well as social rules of engagement and the observable manifestations of our organizations, from products to facilities to behaviors. They are our business goals and missions, as well as the processes that we choose to allocate resources and measure our progress both subjectively and objectively. (Ken Wilber has synthesized a powerful integrated approach to understanding these elements and dynamics (Wilber, 1995 and 1998.)) Moreover, they include the interobjective and intersubjective spaces in which these dynamics interact and influence each other. Unless we intentionally explore why we do what we do and how we think about what we do, our background practices will influence our actions transparently. Properly understood, we can influence our background practices. These must be considered in the context of the environment and life circumstances in which they occur as well, as we each have differing sets of mindsets, capabilities and practices available to us depending on the issue at hand. Developmental psychologist Clare Graves launched an exceptionally insightful body of work, now called Spiral Dynamics, that provides the context not only for understanding these dynamics but for designing helpful interventions, especially if they are created with consideration for each of the four quadrants (Beck and Cowan, 1996; Wilber, 2000).

Examining background practices requires varying levels of abstraction and the use of appropriate disciplines and is most useful when done in an integrated fashion. When making a decision, in other words, it is best informed when we consider principles, culture, social norms and resources together. The greatest contribution to the organization of an increased awareness of background practices is not that it necessarily provides answers, but that it provides questions of greater clarity, depth and span.

This area is the key to organizational integration and the richest area for interventions. Powerful and useful technological applications are already emerging from complexity, but these will always be artifacts of the human mind and spirit. Far more useful is the transcendent perspective that considers human imagination, thought and spirit as well as their artifacts, systems and physical realities.

"...to influence one another and their environment..." Understanding the qualities and types of internal and external interactions is important because it is through them that day-to-day and long-term strategies emerge, and these become the actions that a business takes. Business actions produce measurable results, and feedback that can be interpreted and assimilated. These outcomes are well known and tended to in most businesses. This is the point, for example, where a business gets reactions to the cost of its products or other information about how well

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they performed for a customer. Here again, a full understanding of this feedback necessitates both intersubjective and interobjective dimensions. But equally compelling...

“These interactions cause the agents involved to co-evolve along with their environment.” Business actions (like all other biologically-based actions) also produce, to varying degrees, changes in the environment in which the actions took place. Sometimes these changes actually create a whole new environment and other times they are simply noticeable. Most frequently, they are barely discernable ripples in a larger pattern. Federal Express, for example, created an environment in which businesses expect to be able to ship packages all over the world by the next morning. But more importantly, Federal Express was then one of the businesses within that environment, and consequently has had to adapt to this newly changed landscape with all of its new competitors, increased speed and demands. While most organizations don't create that dramatic a change, the actions they take in an environment lead to changes in the business itself as well as in the other organizations with which it interacts. Many of these influences are perceived and “measured” intuitively or emotionally rather than quantitatively, but awareness of them is just as important to the fitness of the organization as the outcomes that can be measured objectively.

Complex adaptive systems and their environments co-evolve through “emergence.” Encompassing properties arise from the interactions of agents. Emergent properties can be structures, behaviors, ideas or characteristics, but their specific details could not have been predicted based solely on knowledge of the individual agents. Most importantly for organizations, emergent properties interact with and influence the components and the dynamics from which they emerged. (Fig. 2)

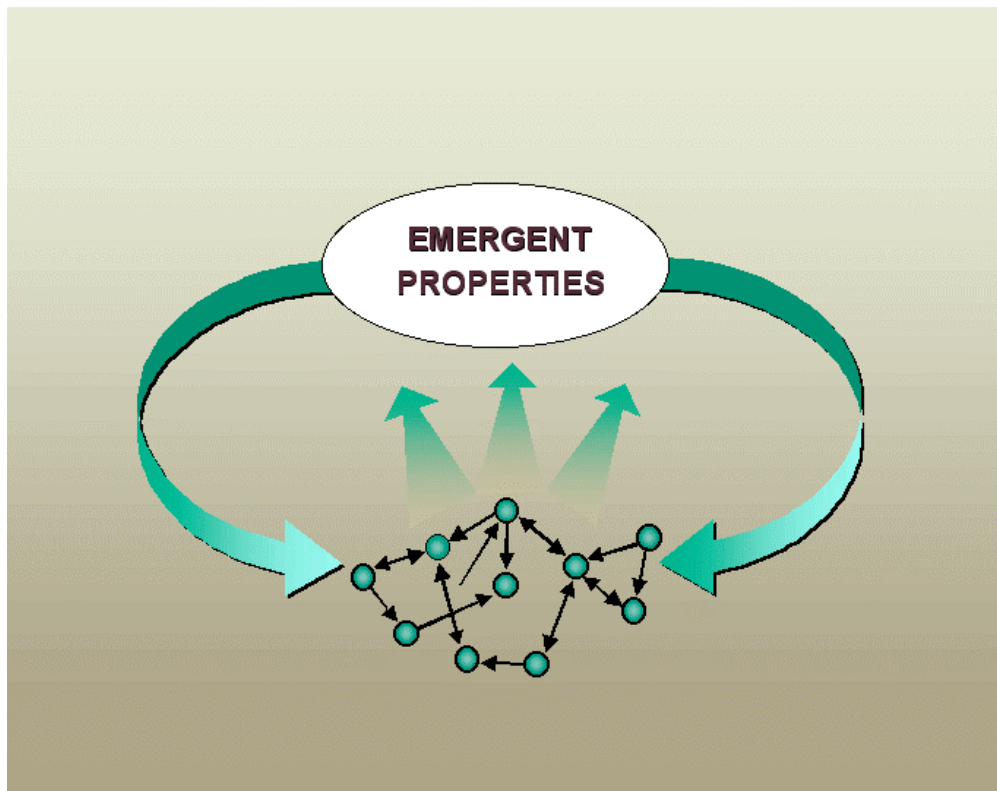


Figure 2

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We can further illustrate the natural process of emergence through another simplified story like the Federal Express example. Businesses learned to use the PC and its various software products as a routine part of their lives, adjusting their business practices with each upgrade. The general public used similar products and services primarily because of their pervasiveness. Over time, the public and businesses began to explore the Internet -- a fairly obscure vehicle that university professors and graduate students used to exchange research and opinions with each other. As computing power became cheaper, faster and more powerful, more businesses came on-line to sell their products and services to the general public, which in time resulted in the arising of a whole new commercial structure. While I have omitted a slew of other agents, interactions and patterns, the point is that what we now know as on-line commerce is an emergent property created by the interactions of businesses and their customers, along with the computer industry, “following simple rules and exchanging influence.” On-line commerce now influences the actions of nearly all businesses, whether they were an intentional participant in its creation or not.

The Appearance of Paradox

The human experience, collectively and individually, includes sets of what appear to be paradoxes. We are, after all, individuals whose existence has an impact in an encompassing collective existence that contains other reverberating foci. Our history and tendency, especially in Western society, seems to be to oscillate between positions of these paradoxes rather than to integrate them in something that can contain them both. The purpose of understanding one’s self and the specific collective entities of which we are a part is to help us to learn the art of co-creation, which consists at heart of being one’s self in awareness of the interconnection that laces the space into which we evolve: agency in communion.

As our life circumstances change, our skills for dealing with new challenges can become outmoded. Frequently, this is manifested in the arising of seemingly unsolvable paradox. If we have access to new ways to organize our thinking about these new challenges, and our biopsychosocial systems permit (in other words, sufficient support in all four quadrants), our understanding (and, with any luck, our wisdom) grows, causing our previously held fundamental concepts and processes to shift. Our participation in organizational life with newly shifted ideas leads to organizational “mutations” subject to all the rules of evolution in any natural system. This can be fairly automatic and largely outside our awareness, but we also have the inherent capacity to influence our organizational evolution intentionally, personally and collectively – again, assuming sufficient support from our contextual surroundings.

The ability to hold apparent paradox in mind emerges from the dynamics of transcendence. In short, to avoid worrying about “individual vs. communal” changes, we can consider both from a systemic perspective that includes both. We can adapt, not only to changes in our work, markets, organizations and technologies, but also to our deepest held values -- that which we treasure most – heeding the moral claim that our values make upon us and by coordinating our values with changes in our internal and external environments. More tangibly, there are processes for nurturing our development specifically in business environments based on genuine dialogues that include all four quadrants; from our behaviors, outcomes, data and products through the stages of processes, concepts and principles to arrive at a conversation about personal and organizational purpose or meaning in the largest conceivable context. The larger the perspective, the better your chances for fruitful, informed action. In conjunction with or as part of this dialogue, it is good to

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openly converse (not debate!) about individual life philosophies in search of interactions (not necessarily answers) about, for example, the historical process you are participating in; the significance of the organization and the people involved in the conversation; what each person feels they would like to leave as their legacy. This conversation helps reveal the values and passions that exemplify purpose as “meaning.”

From that point, the conversation can go just about anywhere: from close-held beliefs about the inherent worth of the individual to an outline of specific related principles, to concepts for a reward/compensation system that reflects those principles. From here, a set of processes for carrying out the system can be derived and practices put in place that are manifestations of the mutually expressed higher meaning.

Once in place, the organization and people it comprises has access to a remarkable conflict resolution resource as well. It is unnecessarily difficult, if not nearly impossible, to resolve conflicts at the same level upon which they are occurring. After plotting points of conflict on the graphic, it becomes apparent where a more fruitful conversation could take place. Specifically, for example, a conflict about how to order supplies (a process-level element) is better resolved by talking about what the supplies are intended to support (a concept-level conversation) or about the organizational principle behind why we order supplies rather than make our own.

It also provides some guidance about who should worry about what. A CEO, for example, should not even be involved in conversations about your lending library’s daily activities but should have increasing involvement as you head up the abstraction ladder to conversations and decisions about the vision of an educated and informed workforce. She should not be concerned about whether Marketing should hire Hassan or Camilla for a specific job opening, but should embody commitment to diversity if that’s what the organization really believes to be valuable. Related to this is the indication of the kinds of minds, capabilities and backgrounds that might be most suited for a specific opportunity: a person capable of reflection at the highest levels (strategic thinking) is likely to be a better leader than one who is only capable of strategic planning, though this may simply be a learning situation.

During the discussion of higher values, certain recurring expressions, phrases and themes will arise. These can lead you to an awareness of the individuals’ and the group developmental level. These themes are manifestations of the organizing principles – the worldview – of the speaker and, if there is consensus, of the group. Specific to the issue at hand, these worldviews describe the developmental level to which you will need to respond. It will help you to discern and understand each individual’s and the group’s motivations, filters, rituals, decisions and so forth. (They are also likely to be describing their view of their current environment. Comments about these life conditions will include times, places, problems and circumstances and need to be understood as a related to but not equivalent to their developmental stage.)

As you can see, there are quite a few potential conversations available and you may have already had several, if not all, of these. The point is that you can use the process described above or one like it to follow any activity up to the largest context possible and then back down with some new perspectives. But it begins when we replace our exclusionary focus on isolated units with a variety of integrated holistic perspectives.

And because we co-evolve with the environment in which we operate, it’s also vital to look beyond the internal dynamics of ourselves and our own organizations through the same integral lens. (Fig. 3)

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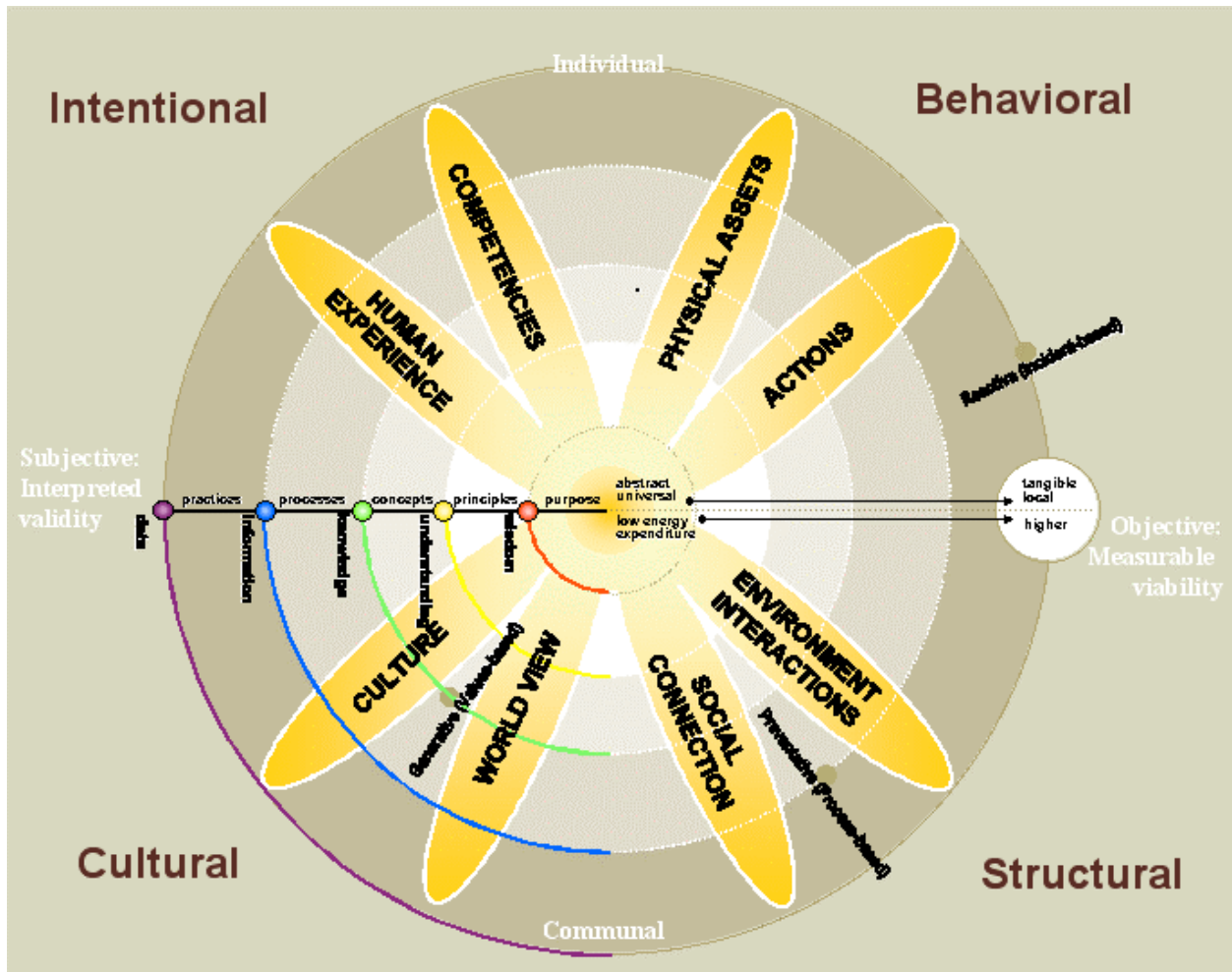


Figure 3

A Context for Action

Integrated complexity provides a remarkable perspective for all of our activities, but focusing on one area may bring some pragmatics to light. Let's consider the business environment – the market -- from this new perspective, starting from the premise that human organizations are, like all other biological organizations, organic and not mechanical.

When we thought of our organizations and interactions more mechanically, it was easy to slip into the trap of thinking of market cycles as a given process of birth, maturation and decline. We envisioned these phases to be somewhat continual, smooth and directional. In periods or pockets of market stability, this may still be a useful description; however, most businesses are not experiencing reality this way. Because landscapes in a more volatile environment don't really cycle so much as shift, often quite suddenly, it may be more useful to think in terms of market states. These might be labeled innovative, "stable" and declining states. Each state has characteristics that add to our understanding of its patterns and there are state-specific business actions that work only within their appropriate market state. Most organizations find themselves in combinations of these states and many are in transitions.

Innovative market state An innovative market state shows evidence of an economic environment of increasing returns, where those who start with any kind of a lead are likely to continue to gain

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(Arthur, 1994). In this market state, different technologies, products or services are competing for dominance but, because of the dynamics of emergence, there's no predicting which will come out on top (although we can be sensitive to emerging patterns). Another sign is high organizational "metabolism": higher employee turnover, increased pressure on speed to market, increased demand on financial resources for innovation and exploration. Networking increases within the enterprise and with organizations not previously associated with the enterprise.

Organizations in this state emphasize their creative and innovative people and processes as they seek to establish some kind of lock-in. Management is most useful when it emphasizes the creation and maintenance of a creative environment, and hiring generative staff. Scenario planning makes sense in an innovative state, but strategic planning will be a waste of resources and energy.

The enterprise should be organized in a way that poises people for emergent opportunities. In other words, it might be fairly loosely connected and freed from bureaucracy as much as possible. Don't confuse bureaucracy with hierarchy so that you can nurture or allow a natural hierarchy to self-organize organically in response to the specific situation. One way to do this is to let people respond to numerous inexpensive ideas or opportunities by presenting them without laying out specific procedures for involvement. As each person contributes a new element or layer, the opportunity becomes more visible to the rest of the organization and to the marketplace. They develop the idea, product or service just enough to provide something for the market to consider, and then allow the market to co-create specific development details. The product or service that emerges from these interactions will then fit with the metrics of the instrumental side of the organization as the new product or service begins to shift into one of the other market states.

"Stable" market state The temporarily stable but coherent market state has its own indicators and appropriate actions. The supply-and-demand economics at play in this state are more familiar to most people. Organizations in this state focus primarily on the improving the quality of services, processes or commodities. Experience counts, but low cost has become central. This state tends to exhibit a somewhat slower metabolism for those organizations with decent margins. Clearly understood hierarchies or self-directed work teams can work well in this state, but this is also the state where many are tempted to downsize or reengineer, when what they really need is to get into or create innovative states.

Appropriate actions in this state include differentiating with relationships and technology, organizing for efficiency and looking for opportunities adjacent to existing services or products. Strategic planning and going for volume are useful in this state.

Declining market states In a declining or constrained market state, cost has become paramount and experience irrelevant. In this state, strict boundaries form with their attendant rules and procedures, but fiddling with organizational structure is mainly a distraction from the real need. Tactical planning is useful for short-term maneuvering, but more to the point, the organization in this state is no longer fit and either needs to build a good exit strategy or look for emergent opportunities in the fertilizer of the decaying organization.

Where Systemic Rubber Meets Organizational Roads

This integrated perspective allows an organization to make more informed and confident decisions. Using a systemic understanding of complexity informed by various developmental

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psychosocialspiritual disciplines as the context for understanding informs decisions about hiring and growth, mergers and acquisitions, strategic partnering, community relations, communications efforts, career programming, and everything else that an organization does. Specifically, for example, understanding this dynamic begins to explain why “team-building” can produce only isolated success and a great deal of discord within the organization, and why “empowerment” looks so much like delegation in others. These result when one organization tries to transplant only the apparent outcomes that another organization created instead of approaching their own organization and its environment holistically so that a more genuine outcome could emerge.

This framework opens the potential for powerful insights into organizational interests and opportunities because of the human capacity to consider and direct their interactions. Understanding the interior and intersubjective exchanges and systems will help to illuminate questions of purpose and intent, as well as what values are informing an organization’s actions and their consequences. Framing problems or opportunities from this perspective opens new avenues for creative resolution or exploration with a more holistic awareness of the systems, assumptions and agents involved, as well as the dynamics at work between these elements.

An integrated enterprise can use more comprehensively adaptive systems (budgeting and resource allocation, for example) and decision-making processes to create new paths to market-fitness that incorporate customer, shareholder and employee satisfaction. And between these systems and processes, it can foster dialogue where it is appropriate and insert “command-and-control” intervention where it is appropriate.

Awareness of its background practices helps an organization see how its history and mythology are influencing current and future strategic results and options. Explicit conversations about background practices can help an organization to intentionally choose to pursue rule-based behavioral control or principle-based alignment, depending on which will make them more fit in a specific environment with the awareness that the environment itself will change in ways that are not completely predictable. Once this greater perspective is in place, seemingly disparate options can be pursued constructively in different parts of the same organization.

Any human organization can continuously infuse innovation into itself and its environment as it tends to the harvest provided by established services or products, which in turn provide the resources to pursue innovation. This interaction is the nexus for organizational fitness and evolution. Natural or imposed hierarchies with codes of conduct have their place, while other elements are structurally flattened as appropriate to their purpose in the service of the organization’s higher purpose. Talented individuals have a place alongside self-directed work-teams, and neither has primacy except specific to the moment.

Embracing an integrated complexity helps make sense of the properties and interactions of whole entities, not just the parts. But the real power and beauty is that this awareness leads to whole new patterns of thought when we do consider the different parts and aspects of our organizations. These new patterns allow us to create solutions and approaches that we could not have imagined before and that we can implement throughout an entire system because of our deeper understanding of the connections and interactions of the systems and the people who use them. Living into and learning from this new understanding allows organizations, and the people they comprise, to pursue fitness and evolution in an integrated way that not only brings our humanness along with us, but that embraces and nurtures it in all its light and shadow.

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