

Learning from Complexity Theory: Is Strategic Planning Obsolete?

During the last few years, twentieth century scientific thinking has been creating ripples and raising questions in the business world. These ripples, in the form of complexity theory (which includes chaos theory) have challenged the notions of scientific management, including strategic planning. Complexity theory suggests that a predictable, orderly universe is over, and with it strategic planning. Scientific management, as a discipline, began with theorists like Taylor and managers like Fayol who saw strategic planning as predicting the future, setting goals, and describing how to get there. This orderly process corresponded to Newton's laws in which he applied the principle of gravity and laws of motion to predict an orderly and controlled universe. In both, the ability to predict and control the future is paramount. In today's world, the ability to do either is impossible.

Trained originally as a biologist, I believe that fundamental laws governing natural and human systems have practical and important significance for family business consultants. In this paper, I will discuss complexity theory and explore its application to our work and its relevance to strategic planning. My conclusion is that strategic plans are not obsolete if they are dynamic and reflect an adaptive readiness to whatever the future may bring, a readiness that requires the capabilities of building connections and competencies, encouraging systemic rather than reductionistic thinking, and stimulating quick responses to events as they unfold.

What is Complexity Theory?

Complexity theory, a way of understanding complex systems, is complicated and includes chaos theory. Unfortunately, its puzzling terminology has discouraged some from tackling its exciting and useful concepts. It has evolved from studies in physics, mathematics, computer sciences, and biology. One helpful way to conceptualize complexity theory is, as Kevin Kelly, author of *New Rules for the New Economy*, says, "to think nature." Another is captured in this adage: "You can't make a plant grow." (You can, however, provide the necessary ingredients for optimal growth, but, even then, it may not thrive, for who knows what the weather, or other random events, will be?)

Complex systems are non-linear. Non-linear dynamics refers to systems whose change is not in a straight line, is disorderly. Input is not necessarily proportional to output. Huge events can have negligible effect and small events can have huge effects. (This is referred to as 'sensitivity to initial conditions,' also as the 'butterfly effect,' as in, 'if a butterfly flaps its wings in Tokyo, will it cause a blizzard in New York?')

Complex systems are always considered in relation to the larger systems outside and the smaller (sub) systems inside. They cannot be understood otherwise. As the system changes, it, in turn, changes the environment. In neo-Darwinian fashion, both species and environment are in the process of adaptation and change in reaction to each other. The question is not nurture or nature but creative emergence as systems

Complex systems are capable of self-organization, a creative process that usually occurs at the 'edge of chaos,' often around an attractor. (Attractors are like magnets in the complex systems—they attract behavior—cause it to be repeated.) Chaos in the modern sense is not the same as disorder but a delicate balance between order and disorder. Real change occurs when attractors are changed, or when the system moves toward strange attractors which reveal an orderly pattern within the chaos. The most useful way to think of attractors is to imagine them as the family's and business's core values.

How does Complexity Theory differ from General Systems Theory

General systems theory includes both simple systems (for example a thermostat and furnace which is a closed feedback system) and complex systems (the family). Simple systems have little or no interaction with other systems and they change in a linear way—predictable and in a straight line. Complex systems interact with other systems constantly and change is non-linear and unpredictable. Complexity theory and general systems theory differ in several important respects:

- **Homeostasis**

According to general systems theory, equilibrium is a desired state. Although family therapists have shifted toward increasing complexity, most are still, however, convinced that stable, steady, homeostatic states are desirable. By contrast, complexity theory holds that the real world has little to do with equilibrium. Equilibrium means death. The very essence of life is change and transformation. Change is all there is. “Life is always poised for flight. From a distance it looks still. . . but, up close, it is flitting this way and that, as if displaying to the world at every moment its perpetual readiness to take off in any of a 1000 directions.” (*The Beak of the Finch*, Weiner)

Entropy, in closed systems, is a dissipation of energy, and means decay and certain death. In open systems and complexity theory, however, when the environment is included in the system, nothing is isolated. Therefore, the energy flow between the systems can lead to reorganization. Entropy can signal the beginning of a new life. Related to the notion of constant change are two other theories: Heisenberg’s Uncertainty Principle, that states that the act of measuring a system brings about change in it; and the Hawthorne Effect, or the behavior and production changes in a group when it is aware that others are taking an interest in it.

- **Boundaries**

In general systems theory, boundaries define units of systems; they are fixed in their structure, although the level permeability, or flow of information, can change. In complex systems, the boundaries are continually changing and always permeable, with critical exchanges between the inside and out. A desirable condition, ‘bounded instability’ is a state between rigidity and chaos, which readies a team or family for growth and creativity. (*The Complexity Advantage*, Kelly and Alison)

- **Hierarchies**

General systems thinking considers hierarchies in terms of power, age, size, and formal position. The parents are at the top of the family hierarchy. Complexity redefines what those with formal authority should do: be role models as well as create the environments for possibilities in interactions, learning and growth. In the Newtonian model an individual would remain inert until pushed, pulled, or otherwise moved. In the complexity model, individuals grow and change continually, with or without bosses or parents.

Practical Applications

Time and Patience

As advisors, we fail if we search for order too quickly or if we jump to solutions too fast. We must understand that to enter a system means to change it. If we offer canned assessments or cook-book solutions, we will not get full ‘buy-in’ for change, nor will the changes last.

Participative Leadership

Those in positions at the top of a hierarchy do serve important functions. However, in family businesses, too often, we see a 'command and control' approach to leadership. We should help to improve the capabilities for collaborative decision-making and high functioning teams in families, the boards, family offices as well as businesses. The more the centralized thinking (older generations, owners, managers) is clear, simple, understood, the more the decentralized thinking (younger generation, employees, work teams) is efficient and effective. Collaborations, with parameters, increase speed, flexibility, creativity and resilience. In his book, *Young Men and Fires*, MacLean dramatically connects the failure of leadership, communication and process to the deaths of 13 men in the Mann Gulch fire of 1949, although the skills were there.

Change Begets Change

The family and the business, like Darwin's finches and the islands of the Galapagos that they inhabited, evolve in interaction with each other. Think of the changes that occur, either sudden growth or stagnation, and how this can affect a family, which can, in turn, affect the business, and vice versa. For example, a serious family conflict can affect the market share of a family business which will affect the competition, which will, in turn, affect the family and so on. Cause and effect are intertwined.

Sensitivity to Initial Conditions

As advisors, we need to be sensitive and strategic about our small and large interventions. For example, in the middle of a family retreat our advisory team was leading, an accountant, not part of the advisory team but long time confidant to the parents, asked what appeared to be a 'simple question' of the thirty-year-old middle child in the family. The question referred to his plans for the future. The son was suffering from a clinical depression, and, consequently, could not imagine his future. His response and his parents' reaction changed the course of the engagement that was initially about succession planning. This simple event had significant effect. Mistakes can lead to profound changes and chains of events can magnify small changes. (This incident also demonstrates the challenge of multi-disciplinary teams and the critical need to pay attention to the collaborative process in them.)

In Praise of Paradoxes

Complexity is often defined as the study of how complicated systems generate simple behavior while chaos theory describes how simple systems generate complicated behavior. So, when you see order, look for complications. When you see chaos, look for patterns and structure. Always keep this in mind when working with family businesses.

Limitations of the Three Rings

The 'three ring' graphic of family businesses, including the circles representing the family, the management, and the ownership is useful for teaching but does not accurately portray the complex interactions in the family business system. A more representative picture would include: both positive and negative feed back loops: the functional interplay of the many parts of the systems including the larger environment; the energy spaces and the paradoxes embedded in the family business functions, goals, rules and roles. Draw on with the family that depicts their family and business.

Remember Heisenberg and Hawthorne

Whenever we enter the family business system (phone calls, letters of engagement, meetings), we influence it and become part of the interplay of 'adaptation and creation.' Stability and order are only temporary and

illusions in both families and business. We should always be aware of our impact on the system. In fact, it is not unusual to see shifts (either toward health or dysfunction) in a family business, after we have only completed the assessment phase of engagement. The process of these shifts provides many clues strengths and weaknesses in the system and which way to go next and we need to prepare the client for this possibility.

The Attraction of Core Values

Advisors need to help the family and the business identify and articulate these core values which can permit change along their magnetic pull. If real change is needed, as during major larger systems changes (a good example is the fundamental shifts occurring in the 'economics of information,' as described by Evans and Wurster in *Blown to Bits*), then the core values need to be evaluated. As advisors, we can steer the family business to the necessary 'bounded instability' by simultaneously developing core competencies and creating sturdy, permeable boundaries.

Conclusion

There is no accuracy in long term predictions where complex systems and a complex set of equations are concerned. But, as Wheatley states, "We don't have to know the future to prepare for it." Quantum shifts in economic, informational, and social conditions have changed the way people work, live, relate to one another, and the future. As advisors, we must:

- Sustain creative tension, provide a container and model a tolerance for an edge of chaos situation.
- Challenge the state of equilibrium.
- Facilitate energy flow and keep connections running smoothly by: managing conflicts; clarifying roles; creating bounded instability; surfacing assumptions; identifying and evaluating core values; enhancing opportunistic and flexible thinking; aligning formal and informal structures and processes.
- Understand and respect both the deeper order and disorder in the complex family business.
- Appreciate the parallel process work done by the advisory team and the family.
- Provide customized consultations that embody the understanding that we enter the system and co-evolve with our clients.
- Understand that strategic planning is a dynamic process to deal with an unpredictable universe.

April 2000

Jane Hilburt-Davis, Executive Director
The Collaborative for Creative Enterprise
40 Middleby Road
Lexington, MA 02421
www.FamilyBusinessConsulting.com