A Working Leadership Model for Rapid Response in Organizations Facing Complex, Dynamical, Discontinuous Change

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Abstract: Today’s business world has become complex to the extent that being “flexible” is no longer sufficient. Organizations must be agile and able to move resources quickly to content specific situations. While many organizations have become proficient as to internal and external environmental sensing, the ability of leadership to adapt in the presence of rapid, large-scale dynamical and discontinuous change is lacking or too slow to be effective. Organizational leadership – especially global leadership – needs to develop a different approach to structure and quick response systems that is a paradigmatic shift from previous leadership models.

Nearly all the challenges confronting leadership with respect to adaptive, quick response systems are amplified in a global context. In addition, the rapid proliferation of technology has blurred the definitions of “global”, as small virtual organizations can also have a global presence, and their need for a new leadership model may be even more imperative.

This paper describes a working leadership model based on an understanding of rapid, complex, dynamical, and discontinuous change. The model derives its infrastructure from a variety of theories and models, including catastrophe theory, chaos theory as well as leadership studies of agile organizations. The model is a working model and this paper describes both the theoretical development as well as its application to leadership in real-world organizations.

Keywords: Leadership, Agility, Management, Tempo, Complexity, Change, SWOTT, Values.

Introduction

The goal of this paper is to present a working model that is understandable for today’s leadership in global organizations – particularly high tech and IT organizations. This model provides organizations a means by which leadership can respond to complex, dynamical and discontinuous changes in near real time, giving them an adaptive advantage over competitive organizations or allowing them to be adaptive to environmental changes in such a way as to make organizational performance more effective and sensitive to both internal and external environments. The model uses a three-dimensional tracking system that provides metric outputs that quantify organizational stability and tension (resistance to direction).

Leadership Challenges

Management of complex organizations is always a challenge, even at the local level. When you add additional layers of issues such as distance and local value systems, complexity is increased significantly. Distance is probably the easiest of these issues to understand. It is an axiom of international management that complexity and difficulty in management increases with the square of the distance from corporate headquarters.

Nearly all the challenges confronting the creation and leadership of adaptive, quick response systems are amplified in a global context. Representative additional factors include in-country political destabilization, global terror, legal nuances in other nations, disruptions of raw material and sourced goods, and company personnel put in harm’s way. Once more, the impact of high-speed, unanticipated change from afar is very difficult to calculate. The question is therefore asked: how can a congruent adaptive systems model be designed that is functional at the global level?
Designing the Model

The primary goal here is articulating and designing an effective model that allows for an adaptive strategic action and leadership direction. In such a model, competition is a critical issue. In the past, organizations could typically travel with relative ease between branch offices. Cultures within organizations were more homogeneous. Technological needs were simpler, as was communication. Competition tended to be more localized. None of that is true anymore. Many organizations (even small companies) can easily have offices all over the world.

An important consideration behind the creation of this model is an understanding of how work is being restructured. We see a continuing move away from formal offices in the new transnational structure. Crandall and Gao (2005), describe the issue of workers telecommuting as an emerging issue with global concerns. In line with this growing path to work are management concerns and methods of dealing with virtual teams around the world. Kerber and Buono (2004), present an interesting case study as to how virtual teams might be effectively managed on the global stage. These discussions and issues do not affect only the private sector. As noted by Kouzimin and Hayne (1999), there are some very difficult choices that need to be made by public sector organizations as well – issues such as unemployment and immigration – an issue of high concern all countries. The model being discussed seeks to maximize this new perspective on how work is structured.

While many organizations struggle with adopting these new approaches, Knight & Cavusgil (2004), discuss the phenomenon of “early adopters” – organizations “born” into this new transnational environment. These are companies who, from the beginning, start with the global mindset that gives them an advantage over companies that must adapt from older models. Their case study provides some interesting insights as to how older organizations might need to change their focus.

Kaounides (1999) goes more deeply into how technology offers competitive advantage at the global level and what the implications are in regards to competition. While Kaounides discusses several important technological trends affecting the global environment (including the rapid growth of transnational pharmaceutical companies), discussion around information technology and “technoglobalism” is key. Development of knowledge-based economies is now possible, which is a key cause of much of the change we see today.

It is easy enough to discuss the root causes, and the list goes much further than this short paper. How does one deal with all these issues, especially as many are transpiring simultaneously? That is a pivotal discussion point.

In dealing with organizational dynamics, or the ability of organizations to adapt, there are three things that have increased the complexity of the process: geography, technology, and tempo. From the standpoint of emerging managerial practices, dealing with these three issues has redefined expectations as regards management skills.

Geography is actually the easiest issue of the three with which to deal. It becomes an area of complexity; that is certain. Technology is more complex as it evolves very quickly, and the rate of change itself continues to increase. However, organizations do not have to have the “latest and greatest” in technology, and prudent selection and application of technology for business applications is an important construct for the Chief Technology Officer and executive management in general.

Tempo, however, may be the most difficult of the three, and it affects everything else. From the standpoint of adaptation, tempo can be a killer. For example, look at the example of NASA and their failure with Challenger and Columbia. Both technology and geography were relevant issues in the complexity of the events surrounding these two disasters, yet both likely would have been resolved, given enough time. Tempo was the problem. Enron is another appropriate example. While I am uncertain as to the intent of the drivers of this situation, given time, they might have been able to work through their schemes and have avoided the catastrophe that fell upon the organization. The tempo of the stock market, for one, increased literally hourly during the last days, driving them past the point of no return faster than anyone could accommodate.

In catastrophe models (an important part of this working model), events cascade in a certain direction and, once you pass a certain point, catastrophe is inevitable. However, with enough awareness of catastrophe models, one can become sensitive to the chain of events and stop progress towards the catastrophe — given enough time. In fact, an organization can use that energy to stay focused, being continuously sensitive to the issue of tempo.
Organizational Adaptability

Much of our awareness about organizational adaptability comes from our study of ecological systems and how they evolve. When the theory of evolution was first described by Charles Darwin, the idea was that organizations evolved over millions of years, natural selection slowing bringing about the demise of those organisms that could not adapt. However, we have since discovered that evolution is not always slow. Sometimes it is “episodic” (Aris-Brosou & Yang, 2003). Evolution can almost literally explode with a series of rapid-fire changes and events that can extinguish a wide range of organisms forever almost overnight. This takes us back to tempo – timing – the ability (or lack thereof) to have the time necessary to make the adaptive change. However, it should be noted that it is not just fast change. It is intermittent change, episodic change, and discontinuous change that continuously varies the tempo, as well as the overall acceleration of time.

Weick and Quinn (1999) make an important distinction here in that what you see as far as the rate and type of change may also be relevant to your “position” in relation to the change. They suggest that, from a distance, at the macro level, the change may look smooth and continuous. However, when you move in at the micro level, you see the rapid change and discontinuities for what they are. This is actually a key element of consideration in emerging managerial practice. Where does the change take place?

In the past, change was only “allowed” to take place at the top of the organization. What we have learned is that, if we allow change to happen at the boundaries of the organization, we can adapt more rapidly. The fear is whether the boundaries (frontline workers), have the skills necessary to make the discontinuous changes and episodic changes necessary for organizational adaptation. Therefore, a rapidly adaptive complex organization makes changes quickly and effectively at the front interface where they are constantly in touch with the external environment (competition and clients), passing that information back to the nucleus (executive management), who can then incorporate the new change, or reject it.

Tempo and the ability to handle rapid, episodic, intermittent, and discontinuous change require every bit of a leader’s skills. The new manager and organizational leader must also be aware of the focus, as noted above (macro versus micro). Both levels of focus are directed by the organizational vision, a tool of significant power when applied appropriately.

In complexity theory, it has been suggested that these peaks do, in fact, represent evolutionary points of optimization. Stuart Kauffman, in a discussion with Roger Lewin, described these interrelationships as “coevolving systems, working as complex adaptive systems, [that] tune themselves to the point of maximum computational ability, maximum fitness, maximum evolvability” (Lewin, 1992, p. 62).

Kauffman’s comments are both a hint and a warning to those of us who work as leaders and managers. The peaks, as shown above, are areas that require huge organizational energy to
maintain position. These are also the areas where the organization is “optimized” and the most focused. The organization at this level is also easily pushed over the edge, back into the “valley”, where focus is less and the current of our dynamic world has its way more easily with us. This is a dynamic process. Energy is involved. To be the best an organization can be requires significant effort to achieve and maintain that level. Any slacking will bring the organization back into the valley.

Complex, Adaptive, Dynamical Systems

Part of the problem with the descriptions above and in dealing with chaotic, complex, adaptive, and dynamical systems is the terminology. A common definition, for examples, of chaos is “confusion” or “instability”. In terms of dynamic systems, however, chaos and instability are “…not the same at all. A chaotic system could be stable if its particular brand of irregularity persisted in the face of small disturbances” (Gleick, 1987, p. 48). Gleick described them as locally unpredictable, but globally stable.

It is interesting to note that there seems to be a growing body of literature supportive of the idea that chaotic systems are also reversible. The process of moving a system from a dynamical stage back into a periodic stage is known as destochastization (Kiel & Elliott, 1996; Romeiras, Grebogi, Ott & Dayawansa, 1992; Yu, Shishmarev & Shishmarev, 1994). This newer research promises a rich set of varying models for organizational change in a time of significant paradigmatic events.

“What is unique about chaotic transformations is that the dynamics that assure system stability and order are the same as those which, under special conditions, can suddenly precipitate disorder and change. Hence, the appropriateness of the oxymoron ‘deterministic chaos.’” (Harvey & Reed, 1994, p. 385).

All of this is relevant to understanding of organizational dynamics and that understanding will heighten the ability to understand and deal with organizational complexity and adaptability. As noted by Weick and Quinn (1999), we are dealing with “…dense, tightly coupled interdependencies among subunits; efficiency as a core value; a preoccupation with short-run adaptation rather than long-run adaptability; constraints on action in the form of the invisible hand of institutionalization; powerful norms [values] embedded in strong subcultures; and imitation as a major motivation for change.” (p. 372).

Strategic Planning

The model under discussion works hand-in-hand with strategic planning. The reason for creating a strategic plan is simple enough. We want to be able to not only prepare for the future, but also to be in the best possible position to take advantage of our environments (internal and external) for maximum gain. [Gain being anything we use to measure success.]

We want to create a strategic plan that is forward looking which is adaptive to internal and external environmental changes which will maximize our organizational gain for the longest possible period of time. This is the purpose of strategic planning.

As noted by Ashkenas and others (1995), leaders in an adaptive organization must manage towards a destination that is unclear and constantly changing, dealing with unpredictability and constant disruption. Leadership strategy needs to drive the design of structure, and structure is built around its ability to support the strategic plan.

In creating a model to accomplish our strategic planning goal, it is common to use the infrastructure of a cybernetic model, as feedback is something that seems to be imperative. Our infrastructure for this model can be a simple SWOTT model (Strength, Weaknesses, Opportunities, Threats, and current Trends). Such an evaluative process provides us information. The best models for adaptive organizations show increased internal and external environmental sensitivities to all five of the factors noted above.

These five general categories are out variables. “Objectively speaking, causal empiricism points to a world that is increasingly interconnected and in which the pace of technological change has been accelerating.” (Biosot, 2000, p. 114) Biosot continues,

“As a result, corporate and business strategists are today expected to deal with ever more variables and ever more elusive, nonlinear interaction between the variables. What is worse, in a regime of ‘time-based competition,’ they are expected to do so faster than ever before” (pg. 114).
The Model

The model used is a three-dimensional construct that describes a tool used to capture an organizational moment in time at any time desired. That "snapshot" of organizational trajectory allows leadership to know with great detail where the organization stands in relation to both its internal environment and to its external environment.

The Cultural Plane

One plane of this model involves "culture". Culture, in this example, is a mixture of individual and organizational values. Individual values are measured quantitatively, using a specific survey tool. This is done at specific time intervals (typically every six months). Individual values are then grouped and combined to make various subjects used in the metrics of this model.

Individual values are based, at least in part, on hereditary, presented here as IH. The individual also has some degree of cognitive choice (IC) as to when or whether a value will be the operational. The working set of individual values is designated here as the individual’s operative values (IO).

Operative values are context sensitive because the individual can change cognitive reference points based on context (i.e. whether the individual is at work or at home, etc.) Operational values are also affected by societal and cultural norms (SN and CN respectively). Cognitive decisions about personal values versus social and cultural values become operational at the IO, which is the point of expression for personal behavior. It is not critical, however, where societal and cultural norms interact within the individual's consciousness. The important consideration is that the individual has a multifaceted set of values that are affected by pressures of social and cultural norms. The individual’s operational values can also shift in expression based upon the context for expression. This relationship is shown in the following figure:

![Figure #2: A 3-Dimensional Model for measuring the ability of an organization to be adaptable.](image-url)
These values can be measured quantitatively. If all variables are identical (i.e. $I_C$, $I_H$, $S_N$, and $C_N$), then the value of $I_O$ is equal to 1. Such a condition would indicate complete harmony between cultural, societal, and individual values.

The principal context for the cultural plane of this model is how the measurement of individual values affects and are affected by organizational values. Formula 1 must then take into consideration the values of the organizational key decision-makers as well as the values of defined sub-organizational groups in which the individual might find membership. The following diagram represents the individual in an organizational setting.

The following formula defines the adjacent diagram:

\[
I_O = I_C + I_H \\
\frac{S_N + C_N}{S_N + C_N}
\]
Cultural Norms ($C_n$)

Societal Norms ($S_n$)

Individual Operational Values ($I_o$)

Hereditary Values ($I_h$)

Cognitive Values ($I_c$)

Decision Point (Nexus)

Operational Organizational Values ($O_o$)

Sub-Orgnaizational Values ($SO_1$)

Values of Key Decision Makers ($KV_o$)

Sub-Orgnaizational Values ($SO_x$)

Cultural Norms ($C_n$)

Societal Norms ($S_n$)

Figure 4 -- A Field Representation of the Interplay between Individual, Organizational, Cultural, and Societal Values (Davidson, 1997)
The organizational value fields shown in figure three demonstrate the complexity involved. Only two fields are presented to represent sub-organizational groups, but an individual could easily belong to more.

Note that societal norms and cultural norms feed into the construction and maintenance of the organizational value structure as well as providing a pattern of norms to the individual. The organization itself is directed by the values of the key decision-makers (KV), whose values impact the values of the sub-organizational groups and, to some extent, is impacted by the sub-organizational values. The resultant operational organizational values provide input to the individual and point N.

Point N is the area of focus. This point represents the nexus – the decision point – where genetic history, social and cultural norms, plus pressures from the organization and its sub-units provide the data from which an evaluative decision will be made and a behavior will result. This is where the action will take place.

Expressing this in terms of a formula:

\[ \text{Formula 2: } N = I_O / O_O \]

Where N is the point of decision (nexus), I_O represents the operational values of the individual, and O_O represents the operational values of the organization. When N=1, the individual and the organization are in harmony and there should be no conflict.

There are three additional factors that must be considered. Where does a value sit on the values hierarchy (\( \lambda \)), what are the value preferences (\( p \)), and what is the strength by which a value is held (\( \sigma \))?

Each of these three variables has something to do with the strength with which a value is held. Its position on the values hierarchy has to do with the ability for a value to be extinguished. For the sake of your leadership model, we monitor “N” and \( \sigma \) on a regular basis (Typically every six months). That is a satisfactory timing as this plane does not change as fast as do the others.

The SWOTT Plane axes

**Strengths** are what you do well – that which sets you apart. It could be your image ("Brand"), it could be your positive customer focus, and it could be almost anything. The point is that is puts you ahead of the competition. A real strength is not just a little bit better, but significantly better. People will look at you and say, “That company really walks their talk.”

**Weaknesses** frequently get overlooked. One weakness can be the absence of strengths. Organizational weaknesses could be products priced out of the market, poor customer service, or a tarnished organizational image. Weaknesses might include a corporate infrastructure that cannot support new technologies needed for success.

**Opportunities** can come from an examination of our weaknesses. Frequently we discover opportunities by scanning our external environment, and finding “holes” we can fill with our products and/or services.

**Threats** can be internal or external. A company divided against itself may be the worst type of threat. We see this in organizations with poor leadership and management. Threats can certainly come from outside as well, from competitors who desire what you have.

**Trends** were added to the original SWOT analysis a couple of years ago. Trends map the environment over time. It is important to incorporate trending into your corporate SWOTT analysis as all four of the original aspects (SWOT) will change over time, based on trends.

SWOTT analysis is not new. It is a relatively simple process of dissection, and involves all aspects of the organization. Each of the five categories is detailed, and each detail is measured on a 1-5 scale, 5 typically being the strongest in each category. In our leadership model, strengths and weaknesses are input on one axis (the Y-axis in figure #1), and opportunities, threats and trends on the third axis. It has been found through practice that limiting each category to the top five elements is sufficient. Previous attempts to enlarge the number and then weighting each element did not add significantly to the value of the data collected. Prioritizing the top five elements in each category, and assigning a value to each was the easiest and showed no significant degradation in input data to the organization.
These five factors can change quickly. It is essential that they include all organizational elements from Information Systems to Marketing to Sales and Administration. Typically, inputs of data for each factor occur once a week, and this has proven to be effective. The Information Systems group plays a key role in the “collector” and provider of this information to executive leadership.

Discussion

How the Model Works

Prahalad, Krishnan, and Ramaswamy (2002) bring forward the idea of corporate agility, and that is the primary purpose of this model. As these authors note, the need to acquire and access information quickly and *in context*, and to be able to take that information and create new knowledge and insights, quickly reconfiguring organizational resources to make the organization adaptive near real-time, should be the goal of an organization that seeks to be agile.

Agility data points are reflected in the SWOTT elements, which are the dynamic components of the model, whereas the cultural elements tend to work much more slowly. Resistance to change as well as organizational focus comes from the cultural plane. Strong attractors can be value sets from other organizations (as in acquisitions or mergers), which can pull the organization focus into the attractor loop (see figure #1). As this model is build on a catastrophe model foundation, the attractor loop in the figure demonstrates a place in time where the organization can no longer return to an earlier status due to significant changes in organizational values. The end state from this point forward is not pre-determined, but the organization cannot go backwards. They may be completely transformed into a different organization, or they may become extinct.

An Example of the Model in Action

A large organization in Australia, a manufacturer of consumer products that were sold and distributed around the Pacific Rim, was the largest organization to put this model into action. Upon entry into this process, individual values of key decision-makers were measured using a psycholinguistic survey tool. Values were measured for each “formal” organizational group, and these were plotted graphically to come up with the N and σ for the organization. This was done three times over an 18 month period. After the first measurement, changes were made within organizational personnel to bring both numbers into closer alignment with organizational goals. No other changes were made based strictly on values measurements during this 18 month period.

SWOTT metrics were mapped to each official organizational element. Each division manager and his/her team were tasked with creating a one sentence description of each element that fit into any of these five categories, and then measuring them on a scale of 1-5 (one being least important, five being very important). Each description was then mapped into a relational database, which would allow tracking of these items over time.

Because of the size of the organization and the wide geographic area covered, each local group was responsible for their own set of SWOTT data. Each was also responsible for input regarding any change in local cultural elements (the Sn for each group).

Timing is a critical element in this model. Battlefield simulation models (Ceruti, 2003, Matson, 2003) strongly support the timing and data distribution of the model used here. As Matson notes, “…it is crucial to retrieve a continual flow of information necessary to achieve information superiority.” (p. 46). As timing is critical and as we are dealing with data, it was decided that the Information Systems group would be responsible for collecting and disseminating the data without modification to the executive leadership team.

The number of data input points is also very critical. One point of data is of very little value, yet many organizations do exactly that, accepting the direction from one organizational leader. Multiple datasets from multiple locations, an important aspect of battlefield models, demonstrates significant increase in sensitivity and organizational adaptability.

Data cannot all come from one source if it is to be effective. “Threat assessments and real-time responses today depend on fusing data from disparate sources” (Ceruti, p. 72). The analogy to a battlefield here is not lost on most transnational and global organizations that are fighting for
their very existence. Data from multiple sources, therefore, adds to the accuracy of the model. In this specific example, someone from each of the specific departments updated these elements weekly, and that information was collected and monitored by the Information Services Director, who reported changes in regular meetings with the other executive leadership. The information collected provided a dynamic input in very near real-time. In one case, the information noted a significant shift in the local cultural norms (Sn), which provided an advance warning to the company, which was able to close and remove employees prior to riots in another country.

Output would be a specific set of two numbers (N and $\sigma$) which provided leadership with a snapshot of any current moment. The variation, while typically small, served as a tracking indicator for leadership, who could then quickly refer back to the weekly inputs and determine the cause of the variation.

**Summary**

The world today is complicated for a wide variety of reasons. Being aware of all possible reasons is a difficult task. Being able to track the effect created by variations in both the internal and external environments is equally complicated. Many organizations tend to look only at financial tracking as a sign of success or failure, and the result of doing so is that they become reactive rather than proactive, frequently becoming unable to deal with the world in real-time. In transnational and global organizations, this perspective and lack of adaptability can lead to extinction.

The model described in this paper is relatively simply to put into effect. The largest investment in time is in the initial stage. However, once that has been done, organizational direction, focus, and resistance can be tracked on a routine, time-sensitive basis. Elements creating changes in direction can be quickly determined and proactive action can then be taken to avoid significant alternations to the overall organizational goal and mission. Using battlefield models based on catastrophe structures, and using multiple datasets collected from multiple departments in multiple locations provide a simple set of metrics for determining organizational status and position in relation to its environment.


