



Selected Proceedings from the 2003 annual conference of
the International Leadership Association,
November 6-8, Guadalajara, Jalisco, Mexico

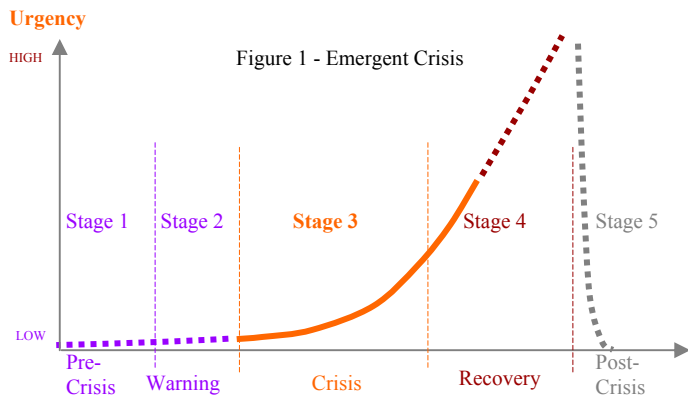
Turning Chaos into Potentials in An Aerospace Company
By Caroline Fu, Antioch University

Abstract

Caroline Fu shares her personal experiences in one of the worlds largest aerospace companies, establishing a Quantum-Shift-Learning (QSL) team charged with building leadership capacity for change and navigating through a merger of cultures. This paper discusses how the team conducted leadership learning for organizations helping them to better manage reactions to uncertainty, dealing with change and uncovering new opportunities. This paper discusses the applications of systems thinking in crisis management preparation.

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Before I plunge into my experiences, I would like to show you what Rich's ("Y2K: Leadership in an Emergent Crisis"; Richard Bergeon) stages of Y2K crisis looked like (Figure 1.) While most crises exhibit multiple stages, the durations of each stage varies. Y2K took about 10 years; NASA's Columbia tragedy, from warning to crisis stages were only a few days and the recovery stage may still not be over. However, crises share the same behavioral pattern.



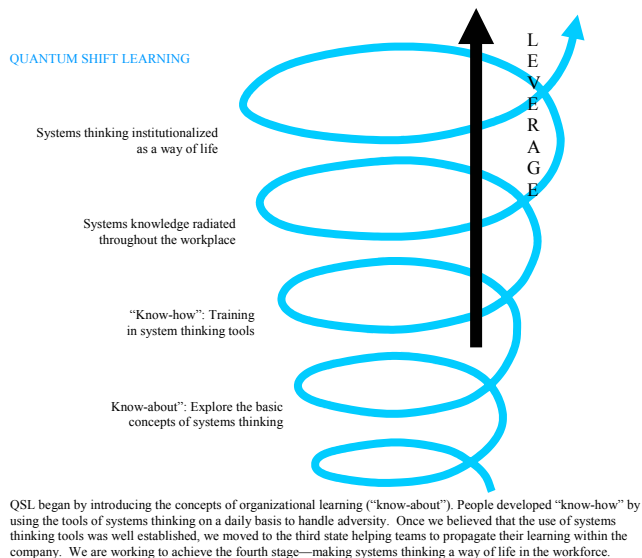
My experience with crises in aerospace companies are similar, in many instances a company's stock performance can be used as an indicator of the company's health within the economic long wave (Forrester, 1961, 1999). We often see that frequent crisis are incidences of various sizes and durations occurred in a company's recent history.

How do we prepare leaders to deal with the stages of crisis?

There are many books and periodical articles by theorists and practitioners to guide us through us what to do at each stage of a crisis. Many tell us that planning for crisis makes leaders more confident and less likely to lose control. Some suggest training for crisis, but companies direct training at only those expected to be on the firing line during those crises. Rarely do we see these articles talk about making an organization able to respond to crisis and turn crisis situations into potentials for a more desirable future as we heard that some did in turning their Y2K preparatory work into benefits such as advances in technology.

Making the right decisions, when managing crises and uncertainty, is highest among all leaders' adaptive challenges. The aerospace company I worked for created the Quantum Shift Learning (QSL) team with the belief that by training managerial leaders to think systemically they would be more capable of meeting the demands for change in an increasingly turbulent environment. It was believed that managers needed to learn the balancing skills as they were called upon to walk the fine line of leadership (Heifetz, 1998). The organizations leaders also recognized that managers who tried to fix a crisis situation without considering long-term implications could actually perturb the system more, making the situation worse (Wheatley, 1992).

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The company chartered the QSL team to train technical managers in an information technology division. These managers, beset with rapid change caused by technology shifts, corporate downsizing, leadership changes, and reorganization – you name it – were enmeshed in a series of local crises.

QSL began by training these managers to think systemically. We did this by coaching them to “know-about”, or to understand, systems thinking

and then the “know-how” to use systems thinking to sort out their own thinking and shift their paradigms when making decisions. Using systems thinking causal loop analysis (Senge, 1990) and system dynamics modeling tools (Sterman, 2000), we helped these leaders to examine their mental models and the paradigms used in decision making.

The team, recognizing that the capacity building process is non-linear and circular, developed a spiral metaphor as our capacity-building model (Figure 2). As time went by, experienced managers – by word-of-mouth – caused this systems knowledge to radiate throughout the workplace. Our hope was that eventually, systems thinking would be institutionalized, practiced as a way of life.

The QSL team used Systems Thinking diagrams in building leaders capacity for dealing with crises. Here are some examples of what these high-level diagrams look like in the crisis situations we just discussed.

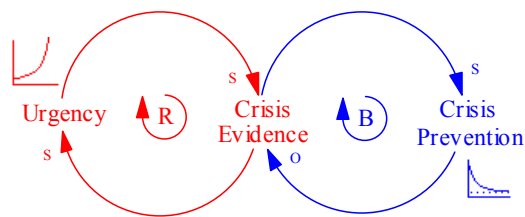


Figure 3 - Limits to Growth

When working with managers caught up in the warning stages the QSL team would use Figure 3, a “Limits to Growth” systems thinking archetype (Senge, Kleiner, Roberts, Ross, & Smith, 1994) to work them through an understanding of the situation. It is applicable to emergent crises, like Y2K, in their early pre-crisis and warning stages. The red circle on the left, indicates the growth pattern of crisis. As the evidence builds up, urgency increases; the urgency leads to higher awareness that leads to more reported crisis evidence. We see an exponential

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growth pattern similar to what we saw in Figure 1 for Y2K. The pattern shows that it is not noticeable in the beginning, but as time goes on, if we don't do anything, urgency will keep growing exponentially until it is too difficult to handle. So a crisis often happens because the leaders ignored the evidence or were in denial about the pre-crisis signals.

We see such examples in industry as we look at the experience of Atari. A firm that persistently follows the pattern of past success, ignoring those pre-crisis warnings, takes the companies down a destructive path. However, if warnings are handled early on, as it appears is now being done at Motorola, we might be able to avoid a destructive crisis, such as the ecoli disaster was for Jack in the Box. Pepsi Cola's aggressive response in dealing with claims of foreign objects in its products is one of many crisis handling success stories. Their leaders made good decisions before events became destructive. Successful leaders see a pattern emerging from just the first few reports, and they led a crisis prevention crusade (the blue circle). As a result, damage was avoided, managed or reduced.

A second example deals with stage 3 Crisis and stage 4 Recovery. The QSL team typically used the systems thinking archetypes. "Shift the Burden" or "Fixes that Backfire" to start a situation analysis with managers in these two crisis stages. The crisis size may be big or small, externally induced or internally perturbed – a computing system failure, a production machine halting, or a workforce reduction or ramping-up. They all seem urgent at the moment.

In Figure 4, use of the "Shifting the Burden" archetype raises manager and leader awareness of why their organization is constantly being bombarded with crises.

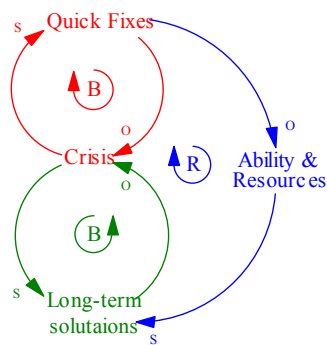


Figure 4 - Shifting the Burden

Managers have the tendency to apply quick fixes to relieve the burden and go back to business as usual. When quick fixes become a way of life, it consumes resources and depletes our ability to look for longer term solutions to fix the root causes of problems or crises. As a result, the system is always in turmoil. Y2K would have become destructive if everyone hadn't collectively taken the issues seriously and looked for long-term solutions.

Figure 5 is another systems archetype "Fixes that Backfire."

This one illustrates that sometimes quick solutions actually worsen the situation. This is what happens when managers try to fix the crisis using their heroic status to maintain control without looking for unintended consequences of their decisions. These consequences can intensify their crises or induce a different kind of crisis. For example, when companies trying to satisfy Wall Street analysts' calls for cost reduction, instead of looking for a long term strategy, they often take a dramatic route – workforce reduction. The unintended consequences are lost work knowledge and declining morale which affects both productivity and product / service quality. Over a

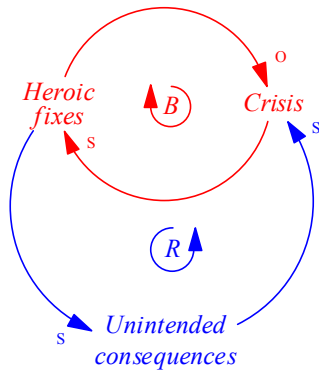


Figure 5 - Fixes that Backfire

long run, these induce more workforce instability and cause higher costs during recovery possibly sending them down a potentially destructive path.

Any of the three systems archetypes could be used as a starting point for those residing in stage 5 Post Crisis, depending on the learning intention. We can use the “Limits to Growth” to look for preventive actions and prepare for the future. The “Shifting the Burden” and “Fixes that backfire” are good tools for leaders and managers to use in reflection to analyze their own decision motives and improve their ability to deal with the increasingly complex future.

We can use system archetypes to further expand our view, or see the necessity for shifting our situation paradigms. turning the efforts invested in long-term solutions and crisis prevention into building safe guard capacity and creating growth potential for the organization.

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Narrative Bio: Caroline Fu has devoted her work in leadership transformation through theory-and-practice in system dynamics and systems thinking. She has 20 years of corporate management and leadership experience in aerospace, automotive, power generation, pharmaceutical, computer manufacturing, state-educational and not-for-profit organizations. She holds a BS in Applied Mathematics, Electrical Engineering and Physics, and a MS in Computer Sciences, both from University of Wisconsin, a MA in Whole Systems Design, Antioch University. Currently she is a Ph.D. student in Leadership and Change and an adjunct instructor for System Dynamics and Modeling at The Center for Creative Change, both at Antioch University. Her degree focus is on leadership transformation using systems dynamics modeling.

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