



The New Sciences and the Learning Organization Part 6B: Thriving at the Edge of Chaos!

by Marilyn Herasymowych, MCE,
and Sonia Herasymowych, PhD
“The density of interactions has increased, because our systems now have many more entities — including people, groups, organizations, and technologies — and these entities have more links to each other. The intensity and pace of interactions have also increased, because these entities are more powerful, and because they pass materials, energy, and information among themselves in greater quantities and more quickly.”
— Thomas Homer-Dixon, **The Ingenuity Gap: How Can We Solve the Problems of the Future?** (2000)

According to Thomas Homer-Dixon, there are six key features of complex adaptive systems:

1. There are a large number of parts and entities in the system. For example, within an organization, there are large numbers of people, in various offices and locations, working with all types of technology.
2. There is a dense web of connectivity between each part and entity in the system. For

example, each person within the organization has a set of tasks that he or she performs daily. These people interact with other people from both within and outside the organization. There are a number of technological systems that these people use (e.g., computers, networks, software, internet, e-mail, phones, letters).

3. The parts and entities of the system are highly interdependent.
4. The system is open to the external environment. The result of being an open system is that it can be affected quite profoundly by the external environment. For example, a team in an organization is an open system because connectivity (e.g., information) flows in and out of the team from a variety of sources. Organizations are open systems for the same reasons, and can be affected dramatically by external changes. For example, the current downturn in the tech stocks rippled through the entire tech industry, even through those companies that were doing quite well.
5. The parts and entities interact in such a way that the system produces synergy. Synergy is often described as *the whole is greater than the sum of the parts*.
6. The system exhibits unpredictable, non-linear behaviour. Homer-Dixon describes nonlinear behaviour thus: “a change in the system can produce an effect that is not proportional to its size: small

changes can produce large effects, and large changes can produce small effects”. The unpredictable nature of complex adaptive systems results in *emergent properties* (see **InfoMine**, Vol. 8, No. 3). According to Pascale et al., emergence is the “sweet spot of productive change”.

Unlike traditional industrial approaches that focus on increased predictability and stability, complex adaptive systems approaches focus on moving the system closer to the *edge of chaos*. It is at the edge of chaos that you get the greatest chance for *emergence*. It is also the state in which a system, such as an organization, is working at its greatest potential. It is tempting to think of this as a wonderful state in which people are happy and work runs smoothly. In fact, this is not the case. At the edge of chaos, everything is changing all of the time, creating a difficult workplace riddled with ambiguity and uncertainty. We label the feeling we get at the edge as *being overwhelmed*. However, it’s what you do with this feeling that determines the ultimate result. Most people in organizations *are overwhelmed* by ambiguity and uncertainty, and succumb to that feeling. The ones who thrive at the edge of chaos are not overwhelmed. Instead, they accept the discomfort and anxiety as a characteristic of the learning process. They also create areas of stability at the edge. For example, one team we work with conducts a morning meeting every day for 15-20 minutes to make sure that people have a chance to share information and to discuss possible problems and opportunities.

At the edge of chaos, people are inspired by their work. They tap into

their passion for doing the work that they enjoy. They are self-managing and highly accountable to everyone with whom they interact. They understand that messiness is part of the system as it is changing and developing. They struggle together to work with the untidy nature of continuously expecting the unexpected. They see connectivity and healthy relationships as the most valuable common resource. In fact, without this attention to maintaining healthy relationships, they know that the system would collapse, moving quickly away from the edge of chaos.

This is not a place for the faint of heart. Living at the edge of chaos requires courage and fortitude. However, it can be a state in which people learn to develop the courage and fortitude to thrive. To do this, people need to learn how to balance the tension between stability and chaos, and to manage the anxiety that is a constant companion. This is where the new sciences of genetics, cognitive science, and evolutionary psychology can help (see previous **InfoMines** in this series). We are convinced by our research that when people know why they experience change the way they do, they make better choices of what they want to do with that experience. This accelerates their ability to learn at the speed of change. Ultimately, it makes it much easier for them to thrive at the edge of chaos.

At the edge of chaos, people watch for emergence to occur, because emergence provides the greatest possibility of creating something new. It is only at the edge of chaos where emergence is possible. For example, instead of looking at problems as *things needing to be fixed*, people who work at the edge

look at problems as *noise* in the system. Noise is a strong indicator of *emergence*. According to Pascale et al., “The capacity to spot what is *emerging* (before it unfolds) is the acid test of how well one grasps the concept of emergence. Without hindsight, it much harder, of course, but the exercise sharpens the mind. The key is to focus on arenas where there is a lot of *noise* or *heat*, and where conversations and structural inconsistencies resemble interstellar debris that hasn’t quite coalesced into a planet or star.” In other words, complaints, irritation, frustration, and mistakes are possible indicators that emergence is close at hand. Instead of trying to shut down or ignore this noise, people who work at the edge listen carefully to what this noise tells them about the health of the system.

What you do with the noise in the system determines what will happen to that system. Anyone can push a system to the edge of chaos. All you have to do is disrupt the system enough to cause a high enough degree of uncertainty and confusion. As a matter of fact, leaders do this all of the time, especially when they want people to change what they are doing. Indeed, most organizations are in the midst of experiencing the edge of chaos right now.

Being pushed to the edge, and living there, are very different states of thinking and acting. Something happens when a complex adaptive system is pushed to the edge of chaos. The system will do one of two things: it will either *break through* or *break down*. In most cases today, when leaders push their organization towards the edge of chaos, they do not know how to keep the system at the edge. As a result, the system breaks down, the change effort fails, and you get more of the same old system, with one difference. People become even

more frustrated and demoralized, and less likely to be open to the next push for change.

Breakthrough happens when a system is thriving at the edge, and there is a lot of emergence going on. This state requires a very different form of leadership from the traditional industrial model. In our research, we found very few leaders who understood both how to push an organization or a team towards the edge, and how to keep it there. In each case, the leaders who knew how to thrive at the edge understood complexity and complex adaptive systems. They used this knowledge to support people in *learning* how to live at the edge. The key word here is *learning*. In the next and final newsletter in this series, we will examine what these leaders did to create the conditions for living and thriving at the edge of chaos.

“The edge of chaos is a condition, not a location. It is a permeable, intermediate state through which order and disorder flow, not a finite line of demarcation. Moving to the edge of chaos creates upheaval but not dissolution. That’s why the edge of chaos is so important. The edge is not the abyss. It’s the sweet spot for productive change.”
— Richard T. Pascale, Mark Millemann, and Linda Gioja, **Surfing the Edge of Chaos: The Laws of Nature and the New Laws of Business** (2000)

MHA Institute Inc.
Unit 248, Suite 205
259 Midpark Way SE
Calgary, Alberta T2X 1M2 Canada

Phone: (403) 257-4597
Fax: (403) 257-4649
E-mail: info@mhainstitute.ca
Web: www.mhainstitute.ca