



The New Sciences and the Learning Organization Part 1: Shake Up Your Thinking

by Marilyn Herasymowych, MCE,
and Sonia Herasymowych, PhD

“Every thought we have, every decision we make, and every act we perform is based upon philosophical assumptions so numerous we couldn’t possibly list them all. We go around armed with a host of presuppositions about what is real, what counts as knowledge, how the mind works, who we are, and how we should act.”

— George Lakoff and Mark Johnson, **Philosophy in the Flesh: The Embodied Mind and Its Challenge to Western Thought** (1999)

Since the latter half of the 17th Century, the time of Issac Newton, science has come to dominate our way of thinking. Whether you like it or not, you are living in the *age of science*. Almost everything you touch is defined by scientific principles: your computer, your television, even the language you use. For example, “Let’s *nuke* the pizza” means to put a pizza in a microwave to warm it up. The word *nuke* comes from *nuclear*, and the concept of a *nuclear reaction*, which is a scientific term. The news is filled with applications of science in the fields of technology,

medicine, and economics. This, in and of itself, is not an issue. What is an issue is that we can’t see how science is affecting our way of thinking, and how our thinking creates the reality in which we live.

Our current way of thinking is based in a science that was born at the time of the Greeks, around 500-400 BCE. The Greeks wanted to explain their world, and they did this through observation. This method caused them to focus primarily on the pieces, rather than on the relationships of the pieces to each other. Over millennia, this way of thinking evolved into our current way of thinking, which reduces everything to its parts. In science, this is called the *reductionist model*. It’s much easier to study parts of things, because it’s a less complex process. You don’t have to think about the whole and how everything is affected; you simply focus on the essential pieces. This creates a focus on efficiency, rather than on effectiveness. Efficiency focuses on the task at hand, or how to work with minimum waste and least effort. Effectiveness focuses on the outcome, or how to produce the results that you want.

Let me explain how efficiency and effectiveness can work in an organization. Let’s examine a company that’s downsizing to become more efficient. Most companies start the downsizing initiative by asking people to take early retirement and voluntary severance. This way of downsizing is quite efficient. It’s easy and doesn’t use a lot of resources. People choose either to leave or to stay. It may be efficient, but is it effective? If the company loses some of its most talented and experienced people, it may have downsized itself out of business. Being efficient is easy, as long as

you don’t look at the effect of your decisions and actions on the company. Being both efficient and effective requires a very different way of thinking, a way of thinking that considers the parts, how they are connected to each other, and the whole that they produce. This is called *systems thinking* (**InfoMine** Vol. 2, No. 10), and it’s a way of thinking that is foreign to most of us.

You might be asking: What is the issue with our current way of thinking in pieces, rather than in systems? After all, it seems to have worked so far. However, the issue lies in what it does to frame our thinking, and how it creates the reality in which we live. Let’s examine two examples and the consequences that result.

Corporate Example

Many organizations separate finance from operations. In this way, finance thinks about the numbers, and operations thinks about delivering products and/or services. When companies separate functions, such as finance from operations, they ignore the fact that these two functions depend on each other. Separation creates territories, which breeds discontent. For example, operations can blame finance for not understanding its needs; finance can blame operations for not understanding the financial restraints. **Results:** Departments don’t work together towards a common goal.

Educational Institution Example

Most Western schools separate learning into subjects. We test children on objects of knowledge, using multiple choice exams with a few essay questions that are subject-specific (e.g., English). Some subjects don’t even have essay questions (e.g., Mathematics). When schools separate learning into subjects, such as English from

Mathematics, they ignore the fact that these subjects are related. I bet that you're struggling to make a connection between Mathematics and English. Those of you who remember your Shakespeare realize that he wrote in a poetic rhyme called *iambic pentametre*. This is the mathematics of poetry. **Results:** Some subjects are more important than others, and thinking is about parts, not wholes.

Even though the reductionist model started with the Greeks, it is at its strongest today, especially in traditional science that separates the mind from the body. When science separates the mind from the body, it ignores how the mind and body are connected. This has wide implications throughout the Western world. The separation of the mind from the body allows us to separate humans from the rest of the planet, from the collective, and from ourselves. **Results:** We can think only in parts. The idea of systems thinking eludes us. We struggle with understanding how our actions affect those around us, and the planet as a whole.

There are a number of *new sciences* that are gathering evidence that puts the reductionist model into question. These sciences are called *new* because they add a new dimension to the way in which science has operated for many centuries. These new sciences have broad-ranging implications for how we live and work with each other, because they are *shaking up our thinking*. In this next series of newsletters, I focus on three of these new sciences, and what they have to say about organizational learning and change. Even though I can only skim the surface of these new sciences, I believe you will find these articles stimulating and provocative. The three new sciences are Genetics and Evolutionary Psychology, Cognitive Science, and Complexity and Chaos Theory.

Genetics and Evolutionary Psychology:

We now know that much of our behaviour is genetically based (e.g., intelligence, thrill seeking). This means that genes matter, and that environment plays a different role than we believed in the past. The debate between nature and nurture is now archaic and irrelevant. What is important is to understand how your genes are expressed within the environment in which you live. Evolutionary psychology focuses on the fact that we have evolved in a specific way, based on natural selection. From an evolutionary aspect, we're still hunter-gatherers, living in a world quite different from the one in which we evolved.

Cognitive Science:

This new science is exploding with new information on how humans think, and how our thinking gives rise to our behaviour. Cognitive science covers a broad area of science, including brain research, thinking, neurobiology, biochemistry, and psychology. The discoveries that are emerging from this science are rocking the foundation of what we believe as a Western culture, and what it means to be human. For example, we now know that our minds are directly connected to our bodies, that most of our thinking is unconscious, and that nothing we think about or experience is emotion-free. This changes how we think about our ability to exercise free will, and whether or not we can be rational without engaging our emotions.

Complexity and Chaos Theory:

Of all of the new sciences, complexity and chaos theory explains why change and surprise occur, and what we can do to create the future we desire. That's because everything is a part of a system, and systems are interconnected. What happens in one system affects what happens in

another system. This is often called the *ripple effect*.

Together, these three new sciences help us to understand why we have come to this place in our evolution as a species. More importantly, they provide guidelines for us to make conscious decisions about what future we want to create. Only through understanding how we function can we exercise free will.

I'm not suggesting that the new sciences have all of the answers. I am suggesting that the new sciences pose some intriguing questions that may lead us to realize that we have more control than we think. Without question, there are many ways of knowing, of which science is one. I focus on science because it is so strongly present in Western culture today.

"Our understanding of what the mind is matters deeply. Our most basic philosophical beliefs are tied inextricably to our view of reason. ... Reason includes not only our capacity for logical inference, but also our ability to conduct inquiry, to solve problems, to evaluate, to criticize, to deliberate about how we should act, and to reach an understanding of ourselves, other people, and the world. A radical change in our understanding of reason is therefore a radical change in our understanding of ourselves." — George Lakoff and Mark Johnson, **Philosophy in the Flesh: The Embodied Mind and Its Challenge to Western Thought** (1999)

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