

COMPLEXITY: THE CHALLENGES YOU DON'T SEE

William M.
Duke

COMPLEXITY: THE CHANNELGES YOU DON'T SEE

How often do you use the word 'complex?' Think about it. Do you know what it means? Ask most people to define complex and you'll get a response like "well, it means something that's like 'really complicated,' right?" If that is something like the definition you have in your mind, then you're on the right track, but you have no idea just how enormously challenging complex things really are. And, you probably don't realize just how pervasive complex behavior is and how it affects your life, your family, your team or your organization.

The Oxford English Dictionary has three separate entries for the word complex. But, in general use it is defined as: intricate, not easily analyzed or disentangled. In science, 'Complexity' is a relatively new field of study. And, even though you may not know the scientific definition, rest assured you are probably using it correctly whether you realize it or not. That is because most everything around us is complex.

We live in a highly complex world. Unfortunately, our human brains are not wired to comprehend it. We have a great intellectual capacity to recognize cause and effect and plan our actions to create effects we desire. But, we are predominately blind to the complex nature of cause and effect. We like to see things in terms of linear, domino-effect cause and effect relationships. The real world, however, is complex which means that causes and effects rarely have simple relationships. The real world is non-linear. So, we have to adopt a new way of thinking in non-linear terms to master the complexity of our world.

The worst news about complexity is that if it weren't for Complexity, all our challenges and problems could be reduced to manageable and highly predictable processes that we could shape to yield the results we desire.

COMPLEXITY: THE CHANNELGES YOU DON'T SEE

The good news, however, is that if it weren't for Complexity, we wouldn't be here. That is because all living organisms and social organizations demonstrate high complexity. Complexity is an integral aspect of life itself.

IBM conducted a survey of over 1,500 global CEO's and other leaders. In 2010, it produced a report entitled *Capitalizing on Complexity* in which the first of its four primary findings concluded the following: "Today's complexity is only expected to rise, and more than half of CEO's doubt their ability to manage it." So, what is Complexity and why is it such a problem? *Capitalizing on Complexity*. IBM Corporation 2010. Pg 8.

In the scientific sense, our bodies, our companies, our communities and political systems are all complex. For the most part, any interaction between one system and another is complex. But does it really tell us anything? What does it really mean? And, if we understand what Complex means, what good is that understanding?

If the science of complexity teaches us one thing, it is that our 'human' world remains, and will always remain, unpredictable. Furthermore, as the level of Complexity increases, as it has in recent history, the rate of change increases. It is the speed of that change that both confounds and excites organizations all over the world. It confounds because only highly energetic and creative organizations can keep up with the pace of change. It is exhausting and worrisome. But, constant and rapid change also means that there are more and more opportunities available to those ready to seize them and take action – to execute.

Will and Ariel Durant, Pulitzer Prize winning authors of the 11-volume *Story of Civilization*, a 10,000-page history of Western Civilization, grasped the complexity of human social systems. They wrote, "A Pasteur, a Morse, an Edison, a Ford, a Wright, a Marx, a Lenin, a Mao Tse-Tung are effects of numberless causes, and causes of endless effects."

“There is a tendency for people to see the world in just such a linear fashion. But that is wrong. The world is not like a line of dominoes in which one topples to cause another to topple, then another and then another. The real world is non-linear. By that we mean that the chain of cause and effect feeds back upon itself to perpetuate more change.”

Most of us, when we were taught history in school probably took away a very linear view of history. That is, we saw human history as a sequence of causes and effects. There is a tendency for people to see the world in just such a linear fashion. But that is wrong. The world is not like a line of dominoes in which one topples to cause another to topple, then another and then another. The real world is non-linear. By that we mean that the chain of cause and effect feeds back upon itself to perpetuate more change. Foreseeing the ultimate ends of such non-linear cause and effect interactions is either impossible or simply exceeds our human capacity to comprehend. Every cause is the sum of countless effects and every effect is the sum of countless causes.

Cause and effect become indistinguishable from one another. We must relinquish our linear view of the world and embrace its complex wholeness. We must view the world as a complex interdependent system.

Peter Senge, in his groundbreaking management book *The Fifth Discipline*, challenges us to see the world as a whole, to see the “subtle interconnectedness that gives living systems their unique character.” He challenges us to see our world, our businesses and organizations, as part of systems and as systems themselves. The interplay of cause and effect in complex systems are dizzying. In our limited comprehension, they appear chaotic and have far-ranging consequences.

COMPLEXITY: THE CHANNELGES YOU DON'T SEE

Managing complexity, though difficult, is not impossible, at least in the short range. At best, we can only anticipate change, plan for it, and respond wisely when it surprises us.

From our 'human' perspective simple and complicated things are things we create or conceive. A knife is simple. A bicycle is relatively simple. We can look at all its parts and see how it operates. You might need to understand some basic physics to understand how the gear shift works, but that is a relatively simple concept for humans to grasp. On the complicated scale, many things we've created are complicated. Computers are an excellent example. Most manufacturing processes are complicated. Even bureaucratic processes are complicated. Consider how complicated legal processes are. But, none of these simple or complicated things create anything greater than itself. The whole is only equal to the sum of its parts. Without a rider, the bicycle is just an organized set of parts. Without litigation and judgment, a legal process is nothing more than ink on a page.

The rule of thumb test for Complexity (and Complexity Scientists are the first to point this out) is that the whole, that is the whole complex system, is greater than the sum of its parts. And complex systems are what all human organizations are. Human systems create something greater than their individual components. Consider the global economy. It appears to be just billions of individual people toiling away in some haphazard manner. But, that global economy, as wildly unpredictable as it may be, enriches and enhances all our lives more than any single individual's contribution.

And yet, it's astounding how people tend to think businesses are linear processes. The near endless array of business books available on bookshelves today demonstrates this thirst for linear, computable certainty. It's as if the majority of people believe that there is some mystical set of rules that, if we knew them, we would all be guaranteed success.

COMPLEXITY: THE CHANNELGES YOU DON'T SEE

But, there can be no single process or set of rules that can guarantee anything in complex systems. At best, there can only be a set of process tools and principles that enable successful adaptation within unpredictable complex systems.

We need a simple holistic process to help us navigate the chaos of modern, rapidly changing, globally-connected systems. So, how do we even describe the kind of problem solving process that is needed? To answer that question, we have to first understand some of the fundamental principles of complexity science and the nature of complex systems.

Defining what complexity specifically means is not an easy task. Even scientists that work with complex systems do not agree on any single definition. They do however agree on several attributes that complex systems hold in common. But, before we attempt to define what complex systems are, let us first look at some things that complex systems are not.

This thermos on my desk is not a complex system, nor is my shoe. My telephone is not a complex system nor is the interstate highway system. Things, in general, that is physical objects, are not complex in themselves. Recall our rule of thumb about complex systems – if the whole is greater than the sum of its parts, then it is probably a complex system. So, living things are complex systems because they are more than a collection of cells or organs. I am a complex system and so are you. My business is a complex system. My Parent Teachers Association is also a complex system. The government of the United States is a complex system and so is the ecosphere of planet Earth.

One of the most important things to realize is that we, and the organizations we form, are constantly interacting with other complex systems. Complex systems are ubiquitous. And, as far as decision-making and problem-solving is concerned, this simple fact causes us some very serious problems.

COMPLEXITY: THE CHALLENGES YOU DON'T SEE

Defining what complexity specifically means is not an easy task. Even scientists that work with complex systems do not agree on any single definition. They do however agree on several attributes that complex systems hold in common. But, before we attempt to define what complex systems are, let us first look at some things that complex systems are not.

AFTERBURNER

ACCELERATING PERFORMANCE THROUGH FLAWLESS EXECUTION®

Afterburner Inc. is a performance improvement training firm that empowers organizations around the world with the simple, scalable methodology of Flawless Execution. A team of more than 60 current and former elite military professionals, Afterburner has ranked on the Inc. 500/5000 List of America's Fastest Growing Companies four times and has been featured in leading publications like *Forbes*, *The Wall Street Journal*, *Businessweek*, *Newsweek*, *Slate* and *Sports Illustrated*, and has appeared on CNN, ABC, CNBC, Fox News, HLN and Bloomberg News.

To learn more about Afterburner's innovative approach to building elite teams with Flawless Execution, visit www.Afterburner.com or call (888) 982-6764.

- ▶ High-energy Keynotes
- ▶ Team Building
- ▶ Seminars Strategic Workshops
- ▶ Leadership
- ▶ Training Onsite
- ▶ Consulting Executive Coaching