

Christ and Chaos Theory By Caleb Rosado

In this article, the basis of a devotional, I want to address the topic of “Christ and Chaos Theory.” The dictionary definition of chaos is turmoil, turbulence, primordial abyss, lack of order, and undesired randomness. Chaos Theory describes how order (complex events and systems) can come out of chaos, undesired randomness. One of the most interesting questions of science is whether or not the presence of chaos may actually produce ordered structures and patterns on a larger scale. Or to put it bluntly, can order come out of chaos? Nathaniel raised that question long ago: “Can anything good come out of Nazareth?” (John 1:46). Traditional Newtonian physics with its Principle of Determinism, the belief that every action is the result of preceding actions, said, “No.” The Second Law of Thermodynamics made it very clear, systems progress in a manner that lead from order to disorder. It is called Entropy, and it states that things will dissipate in time. Clean your house, and then take off on vacation for a whole summer and you will come back to a dirty house. How so? It is the Law of Entropy—from order to disorder.

However, Dr. Ilya Prigogine, the 1977 Nobel Prize laureate in chemistry, showed the reverse was also true, that complex structures could come from simpler ones. This is like order coming from chaos. How so? The answer has to do with something that scientists call *sensitivity to initial conditions*. The slightest variation in data, in adjustment, though unperceived by the human experience can eventually lead to major events and changes.

The idea for Chaos Theory came about as a result of experiments by Edward Lorenz during the 1960's. Edward Lorenz was a meteorologist at MIT and working on a project to simulate weather patterns on a computer. Lorenz concluded that it is impossible to predict the weather accurately. However, he accidentally stumbled upon “The Butterfly Effect,” after deviations in calculations, off by thousandths, greatly changed the simulations. The Butterfly Effect shows how *sensitivity to initial conditions* can affect things on the large scale. And the example given was how a butterfly flapping its wings in Hong Kong could change tornado patterns in Texas. It is the classic example of chaos, as small changes lead to large changes.

The flapping of a single butterfly's wing today produces a tiny change in the state of the atmosphere. Over a period of time, what the atmosphere actually does diverges from what it would have done. So, in a month's time, a tornado that would have devastated the Indonesian coast doesn't happen. Or maybe one that wasn't going to happen does. (Ian Stewart, *Does God Play Dice? The Mathematics of Chaos*, pg. 141)

The effects of Chaos Theory have been around since creation. Yet why have we not studied Chaos Theory earlier? The answer can be given in one word: computers. The calculations involved in studying chaos are repetitive, boring and number in the millions. No human is stupid enough to endure the boredom; however, a computer is always up to the challenge. Computers have always been known for their excellence at mindless

repetition; hence, the computer is our telescope when studying chaos. For, without a doubt, one cannot really explore chaos without a computer.

The Butterfly Effect was vaguely understood centuries ago, however, and is still satisfactorily portrayed in folklore:

For the Want of a Nail

"For want of a nail, the shoe was lost;
For want of a shoe, the horse was lost;
For want of a horse, the rider was lost;
For want of a rider, a message was lost;
For want of a message, the battle was lost;
For want of a battle, the kingdom was lost!"

Small variations in initial conditions result in huge, dynamic transformations in concluding events. This is to say that as a result of a missing nail, the kingdom was lost.

Missing Nails

What nails are missing from your life? What small factor that should hold things in their place is missing? What small variations, choices, are you making today that will alter your life tomorrow? Maybe the nail is still in place, but is *loose*. What are you doing to tightening it? "Just one look, that's all it took." Remember that song? But years later a respected citizen is convicted of Internet child pornography. Just one look. *Sensitivity to initial conditions*.

When is the best time to stop a boulder from rolling down a hill, at the top or at the bottom? Leonardo da Vinci (1452-1519), the quintessential Renaissance man: a painter, an engineer, a musician, and a scientist, answers the question. "It is easier to resist at the beginning than at the end."

Every day we are faced with many small decisions, the responses to which will set in motion patterns of development that will alter your life, days, months, years later, without ever knowing how it all happened. Therefore, choose wisely for if you play... you pay. Think about it, next time you are tempted to say, "Hey, its no big deal; it won't make the slightest difference anyway." *Sensitivity to initial conditions*.

The research of Ilya Prigogine takes chaos further by focusing on the principle of "self-organization." What Prigogine says is that states of chaos are not end-states in themselves. In reality they are the states of upheaval, what he called "dissipative structures," just prior to a system undergoing a radical transformation to a higher level of organization, as a result of infused new energy through *sensitivity to initial conditions*. If you are experiencing chaos in your life right now, you are probably in the throes of a major change in your life. Therefore, seek to understand Chaos Theory. For natural systems flow from stability to chaos to a re-ordering to a higher state of self-organization, or sometimes to a lower one, depending on the response to life conditions. It is the way of nature. Thus, systems tend to seek self-organization, moving from one level to a higher level of development. Prigogine viewed chaos as a precondition stage prior to the activation of the self-organizing process inherent in all living systems. For the Christians, of course, things don't just happen by coincidence or chance; everything is

interconnected and interrelated as God is at work achieving His purposes. It's called *synchronicity*—there are no casual connections only meaningful relationships. Thus, “nothing, absolutely nothing happens in God's world by mistake” (*Alcoholics Anonymous*, p. 449). Isn't that the message of Romans 8:28? “We know that in all things God works together for good for those who love God, who are called according to his purpose.” We need to learn to *accept* instead of *expect*, for our serenity in life is directly proportional to our level of acceptance. When we accept this truth we will live at peace. Thus, entropy can be both: a sign of decay, the last stage of an old system dying, as well as a sign of creation, the first stage of a new system reorganizing.

Think of how *sensitivity to initial conditions* impacts domestic relations? Think of those first flaps of the domestic butterflies that can create chaos or a re-ordering of conditions in the home? Think of the ones in the workplace, the classroom, the dorm room, the playing field. How about while you are driving? Are you aware of the influence of the *small variations in initial conditions*?

Think now of the missing nails in the lives of the young people that you work with. Think of all the chaos in their lives. How will order ever come from that? The answer is found in *sensitivity to initial conditions*, the ones that you will affect in their lives. That's how God did it 2000 years ago, when He infused the world with “new energy,” in the person of His Son, “the true light, which enlightens everyone” (John 1:9). “But when *the fullness of time had come*, God sent his Son, born of a woman...in order to redeem those who were under the law, so that we might receive adoption as children” (Galatians 4:4,5).

What *sensitivity to initial conditions* did God set in motion when His son, Jesus Christ was born in a manger in some unknown cave in Palestine? No one had any idea of what was happening, except for some foreign emissaries. Yet human history has never been the same as a result. What are the *small variations in initial conditions* in your own life, the missing or loose nails, which will eventually result in God's Kingdom being won or lost?

That is your assignment, if you chose to accept it, for reflection this day. Choose wisely, for if you play, you pay.

Sources are from online papers:

1. Jonathan Mendelson and Elana Blumenthal, Chaos Theory and Fractals.
<http://www.mathjmendl.org/chaos/>
2. “An Introduction to Mathematical Chaos Theory and Fractal Geometry.”
<http://www.duke.edu/~mjd/chaos/chaos.html>
3. Chaos Theory: A Brief Introduction, <http://www.imho.com/grae/chaos/chaos.html>

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