

## Engineering the Shift in Consciousness

Alberta T. Pedroja, Ph.D. and Arete Brim

Have you ever wondered how we are ever going to see the implementation of a Neohumanistic society? Given where we are, how is it likely that there will be a shift in consciousness great enough to support such a change? How do we develop ourselves and enable our children to bring about this goal? Is there a mathematical model that demonstrates how the shift in consciousness occurs? These are the questions to be explored.

Consider the most basic of everyday problems. You have a variety of tasks that need to be completed, an estimate of how long each task will take, and a known quantity of time. Now you have a list and a schedule. How often in the course of completing these tasks or following this schedule, does some unanticipated event occur, requiring you to shift your priorities and reorganize your day? If you are like most people, this occurs with great frequency. Do you greet these distractions as part of the great adventure of life? As a learning opportunity? A challenge? Or, do you find these things to be an inconvenience, even a great inconvenience? All of the above, perhaps?

Admittedly, meditation and yoga will help you center yourself after a particularly stressful day, but the Neohumanistic educator uses spiritual practices to develop the characteristics that will limit stress in the first place. Resilience, flexibility, vision, discipline and the ability to learn from experience are likely to stand you in good stead in these circumstances. These qualities developed through meditation are also the ones that help us prepare for the unexpected.

However you greeted these interruptions, **they are always a learning opportunity.** They add to your fund of knowledge and experience. And, they provide practice for the

development of resilience. In fact, your ability to adjust to them determines, in part, the quality of your life. The inability to adapt to the unexpected events of the day is what we call stressful. The inability to complete your stated goals is what we call incompetent or unreliable. Neither is appealing. How do we prepare for a world that demands competence and reliability without acquiring stress-related diseases?

The work of Complexity Science offers a worldview that balances these polar opposites. Complexity Science holds that we exist as part of a **complex adaptive system**, a network that learns from itself. From the Neohumanist perspective, we might describe this network as the interconnectedness of the whole of creation. Notice that a mechanistic system, referred to as “clockware” in the Complexity world, is far more likely to complete its tasks in the allotted time; however, a machine or a mechanistic approach does not learn from its mistakes. In fact, these systems often grind to a halt or even create new problems when unexpected interference arises, unlike systems consisting of human beings. **Humans may falter, but they can learn** from their experiences and derive heretofore unimagined solutions to address the new problems. Plants and animals, too, “learn” from their environment and adapt.

Despite this, the mechanistic or clockware view persists today. In this paradigm, we believe that events proceed linearly---one event follows from another. Despite multiple examples every day of the insufficiency of this explanation, we adhere to it like a drowning person to a life raft. Nassim Nicholas Taleb has written extensively about the fallacy of this approach in his best seller, *The Black Swan*.<sup>1</sup> According to Taleb, 9/11 was a Black Swan, a highly improbable event that changed the face of society. Other

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<sup>1</sup>Taleb, N. *The Black Swan, The Impact of the Highly Improbable*, Random House, NY, 2007.

examples of Black Swans were the wildly popular Harry Potter series by J.K. Rawlings, the death of Betsy Lehman who died from a medical mistake at the world-renowned Dana Farber Institute, and the Internet. All these precipitated a shift in consciousness. None of these events could have been predicted from what came before it, and all had a massive influence. It is not too far afield to imagine that some day P.R. Sarkar and Neohumanism will be thought of as a Black Swan.

### **The Shortcomings of Traditional Mathematics**

In recent years, statistical analysis has been a major driver in business and education to set goals, measure progress, and evaluate success. In addition to profitability, stock prices, customer satisfaction, cycle times, defect rates, and a host of other data elements are part of the dashboard that executives use to keep their hand on the pulse of business. Educators measure reading ability, native intelligence, mathematical reasoning, reading preparedness, and many others too numerous to name. These measures support our decision-making and influence our thinking.

Statistical analysis began in earnest during the Second World War when W. Edwards Deming developed statistical process control.<sup>2</sup> The basis of statistical process control is the Central Limit Theorem. This principle states that in a sample of 30 cases, randomly selected, the mean of the sample is normally distributed about the mean of the

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<sup>2</sup>In order to speed war production, Deming, an employee of the Census Bureau, abandoned the traditional use of government inspectors in favor of statistical process control. Rather than inspect everything produced for the government, his inspectors selected a random sample of each lot, presuming they were all identical. If the defect rate of the sample was acceptable, he accepted the entire lot. In this way, arms and war material were sped across the sea to support the Allies in a fraction of the time anticipated by the Axis Powers. It is thought that the Japanese bombed Pearl Harbor believing that it would take years for the US to convert to a wartime economy. Thanks to statistical process control (SPC), it was months, not years. After the war, the Japanese were first in the world to make wide use of this method in manufacturing believing that it was responsible for their defeat. "Made in Japan" went from shoddy goods to high-quality products in less than a decade. SPC itself is a Black Swan.

population. Thirty subjects can provide a fair approximation of the population. This tool is so powerful that the normal distribution, the bell-shaped curve, dominates our analytic thinking, but sometimes it is presumed to be representative even when it may not be the best depiction of reality. It has relevance for conditions that are incremental in nature, that change by degree. The normal distribution provides a remarkably accurate semblance of physical characteristics---height, weight, and native intelligence---but it does not provide an accurate portrayal of socio-economic behavior. In these matters, the skewed distribution is more likely to tell the story i.e., the vast majority of the population grouped together in something of a bell and a tail in which the highly improbable lives.

Some solutions do not manifest incrementally, but rather all at once. For example, a computer programmer writes hundreds of lines of code. Seven errors prevent him from realizing his goal. Not until all seven are fixed will the program work. A telephone repairman is sent to address a problem in the town where the telephone wires are down and the central station has been hit as well. This is another all-or-nothing solution. Conversely, all is going well in the labor and delivery unit of a hospital even though it is way too overcrowded. Can we admit another mother and safely care for her? Perhaps not, because it is possible that just one more patient will cause the system to collapse. A child focuses intently on the jigsaw puzzle on the dining room table and finally places the piece that reveals the image is a barn with corral nearby. Focusing on incremental progress can mask the progress that is actually occurring. Feedback provides us with some comfort that we are moving toward success---profitability, test results, weight loss---but if we demand feedback to reassure ourselves of progress, we may miss a whole range of solutions that promise to change the world---all-or-nothing solutions are often non-incremental and non-linear.

## **The Skewed Distribution**

Ironically, the technological age and the one-world society are exacerbating this trend away from the normal distribution toward the skewed distribution. Singing ability, a biological trait, is presumably distributed normally in the population. On one side of the curve are those that are tone deaf. The other tail contains the enormously talented opera stars. Success as a singer, based on societal norms, is non-normal. Relatively few attempt to be successful and very few of those who do become highly successful. In the past, each town might have a few talented singers that the townspeople would hear at the local pub on Saturday night or in the Church choir that sang on Sundays, enjoyed by everyone in the town. Everyone would know them. While that exists today, a greater number in the population are likely to listen to a CD of the few singers we have “agreed” are great singers and, as a result, have become popular. Thus, we have many reasonably talented singers who are not very popular and a few who are extremely so. There are a few superstars and less local talent, a skewed distribution.

In the tail of the distribution are the miracles and disasters---the oddballs and the geniuses---and a few of them have enormous influence. These are people and events about whom we are likely to say, “That changed my life forever.” People can readily tell you the natural disasters they experienced, the cataclysmic events that occurred that created a shift. People can tell you where they were when the planes struck the World Trade Center in New York City or when the Berlin Wall came down. These events have no warning and what we already knew could not account for them.

So in addition to calamities, the tail also contains unique and creative solutions that “stick.” The Innovators and Early Adopters in what is known as the Rogers change

model were originally in the tail. The trend-setters live here, too. These occurrences are likely the ones that will usher in the new dawn.

## **Mathematics Curriculum**

The unfortunate reality of high school mathematics is that it presumes we can derive what we don't know from what we already know. Algebra and Euclidean Geometry are powerful tools. Algebra has been added to the list of required courses for high school graduates, including those in vocational training, and this is how it should be. The problem is that our minds come to believe that if we try hard enough, think about what we know, we will eventually derive that which we do not know, and this is patently untrue. Further, this subliminal message suggests that Science and Technology, the twin pillars of the Industrial Age, will solve all problems.

Science and Technology rely on complicated solutions. *Boids*, a classic Complexity exercise, provides only three instructions which, taken together, enable a flock of birds to fly south for the winter.<sup>3</sup> For twelve planes to fly south in a "V" to a selected location takes far more than three instructions. That's because science and technology create complicated, not complex, solutions to problems.

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<sup>3</sup>Complexity Science offers minimum specifications as the starting point for problem solving, presuming that participant will self-organize and create. The computer simulation "Boids" is perhaps the most dramatic example of this. Developed in 1987 by Craig Reynolds and now available free on the internet (<http://www.red3d.com/cwr/boids/>), he simulates the flocking of birds. The three instructions are: (1) **Separation**: steer to avoid crowding local flockmates, (2) **Alignment**: steer towards the average heading of local flockmates (3) **Cohesion**: steer to move toward the average position of local flockmates. The "Boids" model has become an oft-cited example of *emergence*: where complex global behavior can arise from the interaction of simple local rules. They stand in contrast to an outside agent controlling normative behavior. Simple rules commonly held maximize the flexibility, adaptability, and creativity of the individuals in the system.

Zimmerman et al,<sup>4</sup> categorize processes as simple, complicated and complex. A simple process is one that requires little skill, has few steps and produces a reasonably consistent outcome. An example of this type of process is baking a cake from a recipe. Most people able to read can accomplish this without too much difficulty. A complicated process is one that has many steps, all of which must be executed in exactly the same way every time to effect the desired outcome. The quintessential complicated solution is putting a man on the moon. A complex process operates differently. This is one that operates from a few general principles that grow and change because the system learns from itself. The seminal example here is raising a child. Here we use our best judgment which may work in some instances, but in another situation or with another child, this principle may be wholly inadequate to meet the challenge. The wise parent modifies his/her stance and, hopefully, does better next time. Only organic systems behave in this manner.

While science and technology have demonstrated their ability to address many of the world's problems, they have caused many problems, too. And, it is unlikely that they will solve the problems they create. For these, we need new tools, new approaches, and new ways of thinking. Thus, alongside of Algebra and Euclidean Geometry belong Sacred Geometry and the mathematical tools associated with Complexity Science like nonlinear dynamics, fractal geometry, fuzzy logic, and Chaos Theory. These offer ways in which we understand that there is some degree of predictability in the unpredictable, but that we may not always see the order in the chaos.

### **Preparing for the Unexpected**

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<sup>4</sup>Zimmerman, B., Lindberg, C., Plsek, P. *Edgework: Insights from Complexity Science for Health Care Leaders*, VHA, Inc., Irving, TX, 2001.

Since the unexpected is inevitable, it behooves us to develop characteristics that are best able to face the unexpected and adapt or adjust to the new reality. Resilience, flexibility, mindfulness, vision, discipline and the ability to learn from experience are the intrinsic characteristics that begin to address this new reality.

**Resilience** is the ability to bounce back after an untoward event. It is this quality that enables the system to keep functioning.

**Flexibility** enables the individual to see a situation from several perspectives.

**Mindfulness** offers situation awareness and the ability to respond to weak signals. Typically, weak signals engender weak responses, but some weak signals are portents of things to come and the wise person can discern this.

**Vision and discipline** are characteristics that work together. The ability to hold a goal in mind and then stick to it regardless of distractions is another characteristic that enables the individual to find his/her way out of the weeds.

Finally, **the ability to learn from experience** is key. We will be looking for individuals that can incorporate new ideas and learn from experiences especially those that contradict previously held notions.

### **Living in the World of Surprises**

There are three kinds of unexpected occurrences.<sup>5</sup>

1. Events that you expected to occur but did not such as the arrival of your friend at the appointed hour.

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<sup>5</sup>Weick, K & Sutcliffe, *Managing the Unexpected: Resilient Performance in an Age of Uncertainty*. Wiley & Sons, San Francisco, 2007, pp 28-31.



2. Events that you knew to be possible but did not necessarily expect such as inclement weather in the summer.
3. Events that you never imagined---Black Swans.

Number three is the issue for us to contemplate. In the first two instances, your view of the world is confirmed. The first situation is the one on which we base our habits, patterns and routines. Contingency plans are born out of the second situation. The weather is cloudy so we bring an umbrella along. We might be gone a while so we take a lunch in case we get hungry. In the third, your worldview changes. You are no longer in control. What will it take to create a world in which we feel safe despite the large shifts precipitated by Black Swans and radical changes in our world? Here is where the shift in consciousness is required. To be ready for these situations we need resilience, the ability to adjust to new situations, and flexibility, the ability to change patterns and habits to adjust to the new landscape.

The Santa Fe Institute<sup>6</sup> has brought forward some very creative curriculum offering students the opportunity to react to computer-generated simulations. Royal Dutch Airlines developed scenario planning where the leadership of the organization refashions the company based on a variety of plausible and implausible futures. These are but two of many examples of Futures Thinking, in which people first consider various radically different possible futures, then choose their preferred future, and finally choose a new course of action to bring that preferred future about. The goal is for individuals to both learn from experience and unlearn from experience, depending on the situation.

Dedication to a spiritual practice is an excellent strategy to develop mindfulness, vision and discipline as well as resilience and flexibility. Vision requires that we can create a

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<sup>6</sup><http://www.santafe.edu/>

picture in our minds and discipline enables us to hold it there. Thus, to realize a vision, both are necessary components facilitated by the strength of mind developed through meditation. Further, mindfulness and the ability to respond to weak signals are also enabled through the mental strength and intuition of meditation. So, it would appear that strong minds built through spiritual practice and experiences that examine the nonlinear nature of problem-solving in some situations are recommended for the coming age.

The characteristics of mind that we need to manage the unexpected according to Weick and Sutcliffe, namely resilience, flexibility, mindfulness, vision, discipline and the ability to learn from experience, are some of the qualities that are developed through meditation and other spiritual practices.

The mind churns through spiritual practices and through clash and cohesion transforms and expands, so that the more subtle layers of the mind (kosas) become accessible. The faculties of the senses (kamamaya kosa) and of intellect and reason (manomaya kosa) are expanded to include those of creativity and intuition (atimanasa kosa), subtler perceptions of universal oneness (vijinanamaya kosa), and spiritual effulgence (hiranmaya kosa). As the sound of the mantra strikes the mind, the homeostasis of the mind is broken up and the mind is reorganized in a subtler and more expansive state through a process that is reminiscent of the mathematical model of dissipative structures described by Nobel scientist Ilya Prigogine. This theory describes how ordered structures can develop from disorder in a nonlinear fashion. When systems are driven or perturbed far from equilibrium by events or forces (such as society-changing Black Swans), new systems of a higher order can then be formed. In a similar fashion, the meditation process moves us to subtler layers of the mind (kosas).

Accessing these layers of the mind, the meditator meets the challenges presented by the universe in a new way and through this process not only develops resilience but also

insight and intuition. The true nature of the universe is revealed. Thus, what appears as a weak signal to the scientific mind focusing on observable reality is of paramount importance to the Neohumanist who is touching the higher kosas of the mind.

Through meditation we have the ability to experience the higher kosas where intuition, universal love and compassion originate. We see with new eyes the effulgent oneness of all of creation. What may seem like a weak signal for some could be of great import for those who touch the vijinanamaya kosa. Admittedly, most of us only occasionally glimpse this reality; however, a spiritual practice helps us to recognize these small hints for what they are and take them forward. A Neohumanist is born once s/he experiences this glimpse as the heart is touched by this new sight and insight.

Neohumanist thinkers and educators understand fully that all beings are connected in a complex adaptive system. The hierarchical system is anathema because it freezes the system into a single operating system that works for the limited goal for which it was developed, but which will not necessarily grow and change as the environment does and the people do. It is widely recognized that today's problems are yesterday's solutions, but it is less clear that this would not have to be so were we to acknowledge the reality of complex adaptive systems. The problems of yesterday's solutions persist because our mechanistic view of the world freezes our institutions and our thought patterns. Were we to understand the connectedness of all beings, we would anticipate that our limited minds could easily develop solutions that would adversely affect some parts of the system, but our expansiveness of mind would soon learn from our mistake and broaden our approach to include the whole of creation.

The Neohumanist Educator will always maintain a vision for the highest potentiality of his/her student. This is a process guided by the teacher and experienced by the teacher as well. Thus, the teacher as student is fully realized. But the teacher has years of

experience supported by spiritual practice and by an environment that enables learning from experience. Ideally, the environment eschews the focus on reward and punishment over learning and growth, another problem associated with a hierarchical, mechanized view of the world. Doing it wrong may be just what we need to understand how it needs to be done!

Observable, mechanistic solutions provide feedback along the way that progress is happening---it either works or it doesn't. Continuous variables like test scores and profitability provide that feedback, but nonlinear solutions are often all or nothing and you don't know that you're getting there until you do. You have to take it on faith that you are headed in the right direction. In these cases it is your insight, the weak signals you perceive and your intuition that give you a deep belief that you will arrive safely or solve your problem. And, if you don't, you have the learning experience. In an educational context and for a spiritual aspirant, successes and failures are the stuff of growth and learning. They are of equal value and benefit in the journey of life. It's all One. In the end, we will leave the world that is characterized by an unbalanced scientific approach for one possessing expansive thought that will generate solutions to our world crisis.

*Author's Note: The paper was co-authored by Alberta Pedroja, Ph.D., who developed the portions on Complexity Science and Arete Brim, international expert on Neohumanistic Education, who contributed NHE. Both are meditators with over 30 years experience.*