

Complexity on the Indian Reservation



The life work of Dr. Diane Pittman has been to bring health and healing to the impoverished Ojibwa indians of northern Minnesota. Today, complexity principles are giving her a whole new lens to think about what she has done intuitively for years... and to move forward into the future.

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Coming to Terms: What is “Self Organization?”

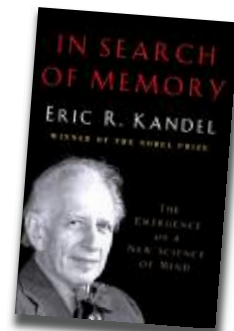
There’s a lot of vernacular surrounding complexity science. Every now and then we need to stop, look at the terms, and ask ourselves: *so what does this mean, anyway?* In this issue, we look at the term *self organization*.

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In Search of Memory

A moving new memoir by Nobel Prize winner Eric Kandel takes readers on an unforgettable journey into the biology of *memory*.

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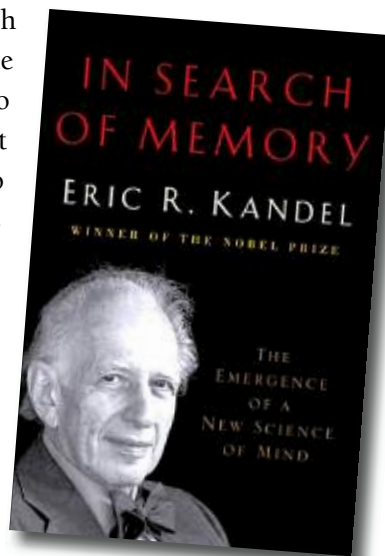
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The Biology of Memory

After escaping the horrors of the holocaust, Nobel Prize winner Eric Kandel became driven to understand the science of memory. This moving book combines memoir and science to present profound new understandings.

How does the brain create memories? As with most aspects of human consciousness, the answer is unknown but science has started to unravel the mystery. Eric Kandel, a researcher at Columbia University, has devoted his life to understanding the biologic underpinnings of this question. In his fascinating autobiography, *In Search of Memory*, Kandel explains the revolutionary landmarks of modern biology and illuminates how behavioral psychology, cognitive psychology, neuroscience, and molecular biology have converged into a powerful new science of the mind. Kandel's contributions towards understanding the molecular and cellular processes of memory led to his being awarded the Nobel Prize in 2004.



Kandel's lifework was motivated by searing memories of his youth in Vienna, Austria. As a nine year old in 1938 his Jewish family was abruptly dispossessed of all their possessions and his father disappeared into a prison camp. The young boy endured a year of humiliation, poverty, and constant fear. Then inexplicably his father reappeared. His family managed a harrowing escape out of Europe and ended up, as if in a dream, in Brooklyn. Life resumed, outwardly normal, but the memories remained. Inspired by Sigmund Freud, Kandel attended Harvard Medical School, and then pursued training as a psychoanalyst. At age 36 he was invited to become the Chairman of the Department of Psychiatry at Brigham and Woman's Hospital in Boston. He

declined. He realized that his chosen field, in the 1960s, was an arena of competing beautiful ideas, but not one of elegant science. The mind was considered a magical entity that was beyond biologic analysis. But the 1960s was also the dawn of molecular biology. Kandel, in an immense leap of faith, abandoned a career in psychiatry to pursue a career as a basic scientist in neurobiology. He was driven by his need to understand why his brain retained his childhood memories so vividly.

Understanding memory implies an understanding of how the brain works, and here is where Kandel's story intersects with complexity science. The challenge of neurobiology is the immense complexity of the human brain. Surprisingly few proteins are unique to the human brain, and no signaling systems are unique to it. It is composed of the same building blocks as most other life forms. The complexity, and the magic, comes from the number of interconnections. There are about 100 billion neurons. Each one has about 1000 connections, or synapses, with other neurons. That's one quadrillion interconnections. Furthermore, these are not strictly electrical connections as in a computer...they are electrochemical. The message from one neuron to the next is carried by a chemical transmitter. There are many types of these neurotransmitters and they add another layer of complexity to this vast informational network. Neurotransmitters act to further modulate, amplify, or 'color' the signal from one neuron to the next.

Kandel's career is distinguished by his unerring instinct to make the right decision at the right time. The first was his trust in the nascent science of molecular biology 10 years after Watson and Crick as he began his scientific journey in 1964. The second was his comfort with an interdisciplinary approach. His unorthodox career path, moving from psychiatry to basic research, helped him recognize that blending perspectives and skills from multiple fields was essential when studying complex systems. Many of his most original contributions were a direct outcome of his positioning himself at the interface of related disciplines. He had rich collaborations with biochemists, mathematicians, physicists, sociologists, and between sociologists and behavioral psychologists. The third decision, crucial early in his career, was his recognition that the mammalian brain was simply too complex to study with the tools at hand in the mid 1960s. Therefore he deliberately adopted a reductionist approach. He turned his attention to more primitive organisms and found a willing subject in the invertebrate world. He discovered the giant sea slug, *Aplysia*. *Aplysia* has the advantage of having only 20,000 neurons, and large ones at that, suitable for probing with microelectrodes. It also can be trained through standard conditioning methods to adopt certain behaviors. This learning capacity implies a memory capability and hence provides a proxy neurologic system to study to provide insights on the memory process.

“Kandel was driven by his need to understand why his brain retained his childhood memories so vividly.”

Kandel's most singular contributions relate to the molecular and cellular processes behind both short term and long term memory. Short term memory lasts for a period of minutes. Long term memory can last from hours to decades. Short term memory can be converted to long term through repetition. Both types of memory involve changes at the synapses, or interconnections, between nerve cells. Kandel found that short term memory involves a strengthening of existing synapses and long term memory involves the construction of more synapses. In short term memory a neurotransmitter from the upstream neuron stimulates the repetitive production of a protein messenger (cyclic AMP) within the downstream neuron. As long as this protein messenger is produced the signal is maintained. This dynamic provides an elegant solution whereby a stimulus from the upstream neuron leads to an echoing signal within the downstream neuron that remains for a matter of minutes. It's akin to someone repeatedly ringing a single doorbell many times over. Long term memory involves a different dynamic. The learning process converts short term memory to long term by activating DNA within the nerve cell nucleus to produce messenger RNA. This RNA travels to the terminal ends of the nerve and triggers the construction of new synapses. Where there were one or two synapses there now may be 10 or 20 synapses strengthening the relationships between neurons. Anatomical change accompanies long term memory so it's as if 10 to 20 doorbells go off at once to amplify the signal.

Learning selects among a large repertoire of pre-existing connections within the brain and alters the strength of a subset of those connections. Short term memory leads to a change in function. Long term memory leads to a change in structure. The number of synapses is not fixed – it changes with learning. Synapses can be lost with lack of use whereas repetitive use results in new ones being added.

Kandel's work and those of his colleagues in neurobiology over the last 40 years have positioned science to provide meaningful insights into mental functioning – from perception, thought, emotion, and memory to depression and memory loss. These contributions enhance the possibility of more effective healing. *In Search of Memory* is a deft mixture of memoir and an informative review of the science of the mind. ■

By: Robert Lindberg

Dr. Lindberg practices internal medicine in Darien, CT, and is on the teaching faculty at Columbia University School of Medicine

“Short term memory leads to a change in brain function. Long term memory leads to a change in brain structure.”

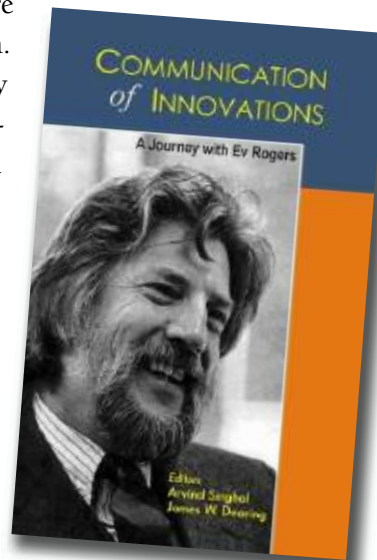
Remembering a Scholar

A new collection of essays offers intimate insight into the legacy of Everett Rogers — renowned scholar on the subject of diffusion, and a deeply missed friend of Plexus Institute.

When Bob Dylan wrote “The Times They Are A-Changing”, he was describing diffusion. When Amazon.com invested in a new inventory control system, it was adding to a product’s diffusion. When the Centers for Disease Control and Prevention launched a campaign against obesity, it was practicing diffusion. And when big Colombian coffee growers decided not to plant low-yield, shade-grown, high-quality coffee, they were limiting diffusion.

James W. Dearing and Arvind Singhal cite those examples to help explain the many facets of diffusion in their illuminating essay that begins the book *Communication of Innovations: A Journey with Ev Rogers*. “Diffusion,” they write, “is a social process by which an innovation is communicated over time among members of a communication network, or within a social sector.” An innovation, they say, can be an idea, knowledge, belief, product, service, technology process, or even a culture, as long as it is perceived to be new.

Everett Rogers spent a lifetime observing and studying diffusion. Growing up in a farm in Iowa, he was curious about why farmers responded in differing ways to new agricultural products and practices. His curiosity, diligent research and insights led him to become the foremost scholar of diffusion. His 1962 book *Diffusion of Innovations* is one of the most cited references in social science, and he completed a revised fifth edition before his death in 2004. A prolific author, Dr. Rogers wrote hundreds of journal articles and published books



on a wide range of topics, including communications networks, communications technology, entertainment-education, social change, and the communications revolution in India. His 2003 book *Combating AIDS: Communication Strategies in Action*, written with Dr. Singhal, presented extraordinary narratives that humanize the grim statistics of the illness and dramatically illustrate how effective communication tools can foster prevention. In teaching and research on near every continent, Dr. Rogers left a legacy of scholarship, insight and fond memories among those he met briefly as well as those he mentored. Dr. Dearing and Dr. Singhal were students and colleagues of Dr. Rogers, and their book *Communication of Innovation* celebrates Dr. Rogers' intellectual legacy with ten essays by individuals he influenced.

Thomas Valente, Director of the Master of Public Health Program at the University of Southern California's Keck School of Medicine, describes how Dr. Rogers' early work in communications and social networks helped inspire later scholarship that has extensively developed network theory and its applications. Albert Bandura, professor of social sciences and psychology at Stanford University, spices his discussion of social diffusion theories with affectionate stories of a creative and endlessly energetic individual. After buying a house on the Stanford campus, he reports, Dr. Rogers worked the hard Santa Clara clay with compost until it supported a blooming vegetable garden. He also had chickens and a rooster with macho morning call, and he placated neighbors with the fruits of his farming.

Corinne L. Schefner-Rogers, Dr. Rogers' colleague, wife, and companion in many geographical and personal journeys, tells stories from Dr. Rogers' family farm and his voracious reading and early scholarship. She describes how he immersed himself in Spanish for a year, becoming fluent enough to conduct classes in Spanish at a college in Colombia. He was energized by travel, gardening, scholarship, and people, she writes, and he loved to travel, always observing details of lives and cultures. When he learned he had cancer in 2002, she writes, his response was to study the illness, the treatments and the people who had survived it.

Dorothy A. Leonard, once a student of Dr. Rogers, is now a professor at Harvard Business School. In an interesting chapter on the generation of knowledge and its transfer to others, she has this to say about her former teacher: "Everett Rogers embodied the communications of innovation theory he taught, gathering and diffusing knowledge like an intellectual Johnny Appleseed. He was ahead of his time in understanding the power of personal networks and the role of serendipity in innovation." ■

“Everett Rogers embodied the theory he taught, gathering and diffusing knowledge like an intellectual Johnny Appleseed.”

By: Prucia Buscell

Complexity and Change on the Reservation

The work of Dr. Diane Pittman offers inspiring insight into the ability of one life to bring holistic change to an entire community.

For Diane Pittman, a particularly chaotic, stressful day at the Cass Lake Clinic provided unexpected inspiration. As two ambulances delivered critically injured patients to the two-bed emergency room, an inpatient suffered a heart attack. The injured had to be stabilized quickly and taken by helicopters to different hospitals 150 miles and 200 miles away. The heart patient needed immediate care. Someone had to get on the intercom and get people to move their cars fast, because the parking lot is the only place a helicopter can land.

“Everything went incredibly well,” she realized later. “Everyone got focused on the job. Everyone put down all the little boundaries and borders, and rose to the occasion and performed to the max. Things happened beautifully, without a policy, without someone directing. We saved lives and everyone felt good about what they did. It hit me that this was complexity in action.”



Chippewa Indians on shore of Cass Lake near Walker. Photograph Collection, Postcard, 1900, Minnesota Historical Society

Welcome to the Reservation

When she accepted the job of Clinical Director of the Cass Lake Indian Hospital and Clinic at the Leech Lake reservation in northern Minnesota five years ago, Dr. Pittman, a family physician who devoted her energies to patient care, had no prior interest or experience in administration. The manuals she inherited weren't much help. "The level of responsibility was terrifying, and I didn't have command over anything I was responsible for," she recalls. "The system is filled with situations for which you have responsibility but no authority. As a physician, you learn to do what you need to do, and you don't pay attention to what's going on around you. I didn't have that luxury any more." One day she found a management journal with a summary of *edgeware, insights from complexity science for healthcare leaders*. "It was a revelation," she says now. "It blew my head off."

She fired off a memo inspired by that "crazy day" in the clinic and what she had just read accompanied by a chapter from *edgeware*. Self organization had been the magic ingredient, she realized, and that launched Dr. Pittman on a serious study of complexity science, and the ways it applies to leadership, human interactions and how organizations work. She also began short talks with staff about complexity. It was a new turn in a journey that started as a teenager, when Dr. Pittman's hero was Tom Dooley, a deeply religious Catholic doctor whose goal was to bring medical care to people in war-torn parts of Southeast Asia. She didn't adopt Dooley's missionary style, but his commitment to overcoming obstacles to serve pressing human needs stayed in her thoughts. Exploring complexity concepts in the context of

"From the late 1800s through the first half of the last century, Native American children were routinely taken from their homes, placed in distant boarding schools and taught to demean their own heritage."



The entrance to the Cass Lake Clinic. Photo courtesy of Charmaine Barranco.

her own organization and community, she began to see something more: those same complexity science principles were also a way to take a new look at health, illness and medical treatment.

“One of the powerful things about complexity is that you begin to understand complex behavior in groups of organisms,” she says. “You see it in birds flocking, in fish schooling, in the smartness of geese. There is no one smart goose that gets everyone together and says ‘let’s fly south’. They have this incredibly complex adaptive behavior, attuned to the environment and each other. With small rules they do something incredibly complex that makes the group function well. I have real faith in that, and in the people I work with.

“The beauty for me,” she continues, “is that I realized I didn’t have to be the smart goose. I started to understand my role as trying to create a milieu where healthy interactions could happen among people in the system.”

That goal comes with daunting challenges. The structure that houses the US Indian Health Clinic and Hospital was built in the 1930s. The 13-bed facility is staffed by four nurse practitioners who work in continuity of care, and four who work in emergency treatment. The six physicians are also on the medical staff of the larger North Country Regional Hospital 20 miles away in Bemidji. Some 13,000 people are served by the clinic, and it’s not a healthy population. Dr. Pittman estimates one third of the adults have Type 2 Diabetes. There is a high prevalence of community acquired MRSA (Methicillin Resistant Staphylococcus Aureus) and alcohol and drug abuse are common.

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Pain, Dependency & Medicine

Most of the Native Americans at the Leech Lake Reservation are Ojibwa—they are sometimes called Chippewa, and they call themselves Anishnabe. The reservation covers four counties, including Cass County, its population center, and Beltrami County, which has some of the poorest people in Minnesota. Poverty alone brings poor health. Cultural legacies have additional impact. From the late 1800s through the first half of the last century, Native American children were routinely taken from their homes, placed in distant boarding schools and taught to demean their own heritage. Cass Lake’s elders endured that experience. “When you grow up in a situation where you don’t learn parenting—and no one was parented in boarding schools—you don’t have those

skills to bring to your own children. We don't yet know how many generations that effects," Dr. Pittman observes. "But I believe it feeds into problems such as alcoholism. We are seeing second and third generations with posttraumatic stress disorder. We are very familiar with what happens when someone has a war experience, or a jarring violent experience, and that's what the boarding school experience was. It caused many Native Americans to lose understanding of their place in the world, through dislocation and abuse."

Consider the difficult matter of pain. Cancer, diabetes and accidents cause pain for clear reasons. "Then there are complicated pain problems, such as fibromyalgia and restless leg syndrome, where we don't understand enough about the physiology, but we can treat symptomatically," Dr. Pittman explains. "We also have people who are in real pain, that is not the physical kind, and we don't have the mental health services or the physical therapy, or the tools people need to manage chronic pain. What we do have is poverty, and the fact that a few Vicodin can be turned into cash in the parking lot. We prescribe opiates for a person with cancer, and then the person's children take them, and sell them. Sometimes the patient will take some and sell some, because people are desperate. There are things we can do to control diabetes and high blood pressure, but doctors are less effective dealing with chronic pain."

Dr. Pittman calls it "the triumvirate" – three conditions exacerbated by economic adversity and addiction that can eat up as much as 50 percent of doctor's time: chronic pain, chemical dependency and diversion of addicting medicines. Sometimes the same person has all three conditions. Patients suffering pain want Vicodin, and doctors don't want to prescribe it.

"We are spending a lot of our resources having the wrong conversation," Dr. Pittman says. "I'm interested in deeper learning that will help us find the right conversation. We ask them where they are on a pain scale. Often the pain people experience is related to social conditions, maybe second and third generation post-traumatic stress, and asking about a pain scale misses getting into the really human issues involved."

A System Ripe for Reform

Pain treatment also raises tangential but deeply emotional issues. "There is a strong and legitimate sense of entitlement in our community," Dr. Pittman says. "Native people gave up their lands (Most of the Leech Lake reservation land is not owned by Native Americans, which is typical of reservations gener-

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Indian woman making birch bark containers for sap. Photograph Collection, 1925, Minnesota Historical Society

grossly under funded,” she adds. “About 30 cents on the dollar.” She sees this long dysfunctional system as ripe for major change, and she thinks complexity principles and Positive Deviance (PD), a social change process, provide ways to do more with less, and to build on the exceptional strengths the community already possesses.

Doctors in inner cities treat poverty’s ills, but to Dr. Pittman rural poverty in some respects seem less bleak. For one thing, there is human connection to the natural world. “That’s a source of strength and groundedness, for patients, people in the community and those who serve them,” she observes.” When you get up in the morning and see an eagle soaring overhead as you drive to work, or you see spider webs covered with dew on all the trees, you connect to the world in a different way than you do in a city.”

Being part of nature’s rhythms fosters community. “I enjoy gathering wild rice in the late summer. And maple sugaring is fascinating. You hear patients talk about how the sap is running and you hear leaders talk” about collecting sap in baskets made of birch bark, which were traditionally used as vessels suspended over a fire to steam away fluid and leave maple sugar. While maple sugar is associated with New England, Dr. Pittman says sap is sweeter the further north you go, and northern Minnesota trees have concentrated sweetness.

Then there are the benefits of family. “I grew up in a pretty conventional mom, dad, three kid family,” she muses. “Everyone was independent, and it was important to be self sufficient. One of the things I’ve learned to appreciate here is the extended family, and its great flexibility. If a parent isn’t functioning well, a grandparent steps in, or an aunt, or cousins do. It’s very fluid. That kind of structure offers care and support, and in a difficult situation, it tends to make things better than they otherwise would be.”

ally.) Part of the deal was that they would get health care. It has always been inadequate, has not met expectations, and has sometimes been culturally insensitive. That sets up a difficult dynamic.”

Dr. Pittman says the Indian health system has deep and entrenched problems arising from government bureaucracy, challenged leadership, tribal politics and scarcity. “We’re



Maple sugar in birch bark container. Photograph Collection, 1925, Minnesota Historical Society

A Spiritual Tradition

As a youngster growing up in Vermont, Dr. Pittman's dreamed of being a missionary. She is till moved by deep Christian faith, which she embraces along with abiding respect for many different spiritual traditions and which she integrates easily with her scientific knowledge. "Much of what I encounter in nature and Native American spirituality is very compatible with Christianity," she says. "In Indian spirituality, drum and dance are a very powerful and organic way of getting into your own physiology. Getting back to normal physiological rhythms has mental and spiritual benefits. We miss that in Western culture—we do everything so fast, faster than our bodies were designed to go. There is also a connection with plants. Tobacco, for instance, is important in native tradition. We have horrible problems from smoking, cardiovascular issues and lung disease. We try to encourage people to use it in a respectful, traditional way, not in a habitual way."

Dr. Pittman describes an extraordinary gift of kindness, tobacco and spirit. A two-year-old girl died in the emergency room, despite desperate efforts to save her. Spiritual leaders gathered the family and medical staff in a circle, and conducted a ceremony with a traveling song accompanied by a drum for the child, whose body was still present. All held out their hands to receive tobacco from the leaders. "The leaders recognized that we too had been wounded by this experience, and the family empathized with us and made us part of their circle," Dr. Pittman says. "It was a powerful experience." Handfuls of tobacco used ceremonially, she notes, may be burned, smoked, or scattered on the ground in a place of prayer.

Dr. Pittman went to medical school at Tulane University in New Orleans, and did her residency a Central Maine Medical Center. Her medical school tuition was paid through the National Health Service Corps, which obligated her to four years of practice in an underserved area. "I had always been interested in cross cultural experiences," she recalls, "Then I became interested in Indian health." She came to Leech Lake, and it seemed the right place for her to be. That was 21 years ago. "People used to say you're just practicing now, and when you get good, you'll leave here and make lots of money," she says. "I wanted to prove them wrong. Besides, I was delivering a whole lot of babies, and I wanted to see what happened to them." Like so many things in Leech Lake, blessings and tragedies are never far apart. One baby she delivered is now 17 and in custody for killing another child she delivered.

Dr. Pittman has been inspired by Jerry and Monique Sternin, pioneers of Positive Deviance, the change process that identifies strengths in a community then amplifies them. She first encountered them at a Plexus conference. "What resonates with me," Dr. Pittman says, "is that they discover and treasure and

"I rescue old bicycles that people aren't using. We work with kids, and teach them how to fix bikes, and when they've done that, they earn a bike."

encourage the wisdom that already exists. They find what is valuable and functional and offer it up in appreciation, and that is what accomplishes the change.”

Dr. Pittman initially thought of the clinical director’s job as a short-term thing. Now she is excited about it. She credits the new CEO, Jennifer Jenkins, with being savvy about bureaucracy as well as dedicated to purpose and accountability. And Dr. Pittman has boundless enthusiasm for putting PD to use. The process helps focus on things that are working well—like that bad day that was also good day, the doctors who are able to see their patients on time, the nursing care that exceptionally effective, and the patients who are very satisfied. “Those are the pockets of success, the people are the positive deviants and we can come together and understand what’s going on, then take the behavior strategies the positive deviants are using and apply them elsewhere. We know we can do really good work because we have done it. ”

Complexity principles and PD concepts are already having a local impact, she says. A common language is evolving. Transparency is valued over secrecy. All parties are expected, and encouraged to participate. Identifying positive deviant practices among patients, she elaborates, “can help us engage people in a new way to get what they want, as opposed to complaining and waiting for us to give them what they want.”

“We are tired of seeing our children die.”

Change via Positive Deviance... and Bicycles



Dr. Pittman in her bicycle shop – part of her Shifting Gears program. “When people get out of treatment, or doing time, they need work and they need transportation.”

One thing community members want is to stop youth violence and drug abuse.

“We are tired of seeing our children die,” Dr. Pittman declares. The woman mayor of Cass Lake, a Native American who is also a respected elder and spiritual leader, recently led a “festival of life” walk tough town. “We walked by several houses where people are known to sell drugs, and invited them to come and walk with us,” Dr. Pittman says. “We want to do something different. We had signs, and our position is we see you, and we know what is happening, and we won’t be

a whole community until you are with us. We are trying to build a movement, and it is interesting that people came out and watched us. Pretending something isn't there doesn't work. Bring afraid doesn't work. And if you think you can get rid of a few bad apples and everything will be OK, that just isn't true. There is no 'us and them' It's all us."

Dr. Pittman explains that she and other members of the community have been reading *Murder is No Accident: Understanding and Preventing Youth Violence in America*, by Deborah Prothrow-Stith and Howard Spivak. Dr. Prothrow-Stith's work in a Boston emergency room in the 1980s led her to research youth violence and conclude that like physical illness, much violence is preventable. The book's message is that no single part of the community causes violence, and no single part can prevent it. Community wide effort is needed. The broad, collective—and complexity oriented—public health approach known as "the Boston Model" is credited with dramatically reducing Boston's juvenile homicide rate.

Combining philosophy and action has been a life-long habit for Dr. Pittman. She is part of a cross cultural ministry at the People's Church in downtown Bemidji, a neighborhood home to Native Americans, Hispanics, African Americans, and some people who are poor, homeless and mentally ill. In addition to serving a meal a day to all comers, the church also supports a special project Dr. Pittman founded. It's called "Shifting Gears". It's about promoting bicycle transportation, doing a lot of with little, lending a helping hand, and having fun.

"I've been passionate about bikes since I was a kid," Dr. Pittman says. "I rescue old bicycles that people aren't using. We fix them up, and give them to people who need them. When people get out of treatment, or doing time, or whatever, they need work and they need transportation. We work with kids, and teach them how to fix bikes, and when they've done that, they earn a bike. This started independently, then folded into church work. It was a natural fit."



The open invitation of The Festival of Life walk was extended even to the town's known drug dealers. "We see you, and we know what is happening, and we won't be a whole community until you are with us."

Photo courtesy of the Cass Lake Times

Dr. Pittman herself has been known to travel with a folded bicycle, which she can quickly unfold for a fast efficient ride through busy traffic.

For years, Dr. Pittman made an annual trip to Guatemala, where she volunteered at a women's cooperative. UPAVIM is an acronym for the Spanish words that mean *United to Live Better*. It was founded by another of Dr. Pittman's heroes, Barbara Fenske, who had been a Washington, DC realtor until a visit to Guatemala transformed her world. She went to nursing school, learned Spanish, and with the help of church groups and Maryknoll nuns, founded the center and clinic in a squatter settlement outside of Guatemala City. "We would participate not so much to bring or do, but to encourage women in their own interests, their own empowerment." Dr. Pittman says of her own efforts. "Eventually, it grew to include a scholarship program where kids could get money for books and uniforms, a breast feeding clinic, child nutrition, and a craft project where people are employed and the profits go to support the program." Dr. Pittman hasn't had time to go to Guatemala in the last four years. But she knows the program is still thriving, despite Barbara Fenske's return to Washington.


Dr. Pittman's idealism is strengthened by a sharp eye for reality, humor and a keen ability to find strengths in those around her. She keeps a bulletin board of ever-changing quotes, poems, and quirky cartoons. One quote she never wanted to remove is written on a piece of paper taped to her file drawer. It's a compassionate, wry, and Biblically harmonious observation by Nelson Mandela: "Thinking too well of people often allows them to behave better than they otherwise would."

Dr. Pittman and her husband, Lawrence Krantz, a retired nurse, live in a home in woods between Bemidji and the reservation. She initially hadn't liked the huge shed he wanted to build on the property, but he persuaded her with the offer of space for a bike shop. "I've taken it over," she admits cheerfully. "He doesn't have room to put anything in there now." ■

By: Prucia Buscell

Images from the Minnesota Historical Society:
<http://www.d.umn.edu/cla/faculty/troufs/Bufalo/PB06.html>

What is “Self Organization”?

The physicist Richard Feynman once described how aliens from outer space looking at the earth would, to their astonishment, see a thin vertical line of millions of people brushing their teeth that rotated around the earth every 24 hours. This line of toothbrushers, just on the bright side of the line of dawn that separates day and night, is not created by a single tyrant that orders each of those people to brush their teeth at the just the right moment. Rather it is formed by the individual actions of millions of people who have each independently decided to brush their teeth in the morning. Nobody has ordered them to form a line, yet each acting independently has generated a distinctive pattern in space and time. This line and its motion around the earth is an example of “self-organization”, that is, when a global pattern emerges from the rules that govern a large number of individual units. What has fascinated scientists most about self-organization is that these beautiful global patterns can rarely be anticipated from the simple rules that govern the behavior of the myriad of their individual units.

There can be many different types of individual units. The rules that control them can be mathematical rules, physical laws, or biological behaviors. Yet, under these rules, the individual microscopic units can paint beautiful global patterns across space and time. Let's see some examples of self-organization from biology, physics, and mathematics.

How the Leopard Gets its Spots.

How does an embryo of identical cells form itself into a human being of so many different cells shaped into so many different parts? Alan Turing was a genius who invented a machine that in principle could solve any mathematical problem and helped to break the German codes during World War II. In a seminal article in 1952 he showed that molecules alone could form patterns in



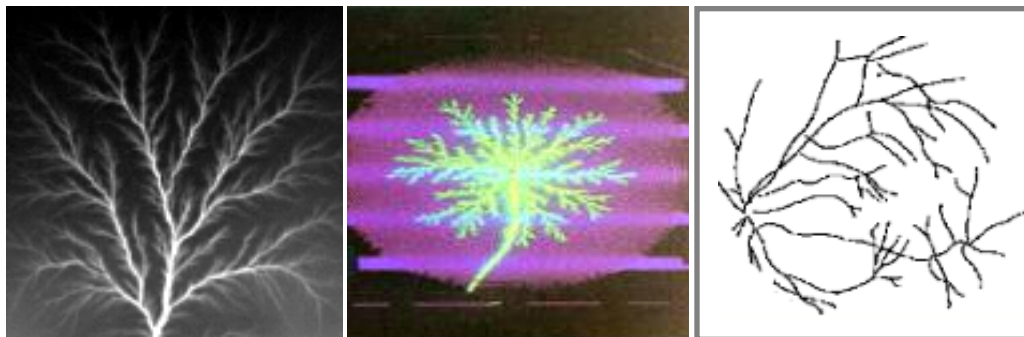
Leopard spots are an example of self-organization.

space. If the fate of the cells depends on their position in these patterns, a human being could be formed. How can molecules form patterns? Let's say the molecules chemically react with each other, but in a special, though still pretty simple way. Over small distances the chemical reactions enhance each other so that their chemical product builds up to high levels, but over long distances the chemical reactions inhibit each other, so that their chemical product is scarce. Small disturbances will enhance themselves and grow large, inhibiting the spaces between them.

Depending on the geometry of where the molecules react the high levels of chemical product can form spots or bars. James Murray (1988, 1989) showed that if the chemical product results in skin pigment this could paint the stripes of the zebra or the spots of the leopard. His calculations also showed that the markings on the tail of an animal must always change from spots where the tail is thick near the body to stripes where the tail is thin at the tip, just as is found in nature. The independent chemical reactions of a trillion trillion molecules (approximately) can self-organize to form the patterns on the coats of cats and goats.

Lightning, Water, and Blood.

Many different physical, chemical, or biological mechanisms can self-organize microscopic pieces into strikingly similar global patterns. How can this be? How can electricity sparking through an insulator, water being pushed into oil, and blood vessels growing in the retina of the eye all self-organize into similar patterns? The answer is that the equations that describe each of these different processes all have the same mathematical form, even though the symbols in the

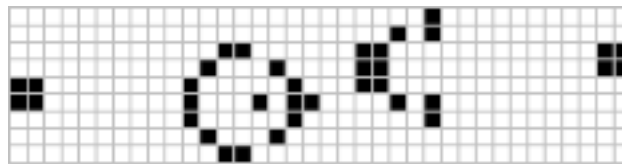


From left: Electricity, oil in water, and blood vessels all self-organize into strikingly similar patterns. How does this happen? It's all simple math.

equations represent different natural things in each case. The pattern is produced by the mathematics. In each case, as represented in the equations, the flow of electricity, the push of the water, the growth of blood vessels is strongest where the pattern is sharpest, which is at its tips. So the tips grow, until by chance they divide, and now the growth is strongest at each new tip, so now they both grow. Each tip grows and branches, branches and grows. No hand paints the overall pattern, it is the self-organization of many racing electrons, pushing molecules of water, or growing cells that self-organize into the extensive and delicate and ever branching tree.

Pure Thought and Endless Motion.

Perhaps the purest and most surprising forms of self-organization are seen when we ourselves make up the simple rules and we then marvel at the unanticipated patterns that they produce. An example is the “game of life” formulated by the mathematician John Conway (M. Gardner, 1970). On an endless piece of graph paper each box can be “alive” or “dead”. At each play of the game, every living box with two or three neighboring boxes that are alive survives; every living box with four or more neighbors dies from too many greedy neighbors; every living box with one neighbor or none dies from isolation; and any dead box adjacent to exactly three neighbors gives birth to a living box. With these few simple rules, and some starting boxes that are alive, patterns ebb and flow, explode, travel to infinity, or form complex structures than continue to grow or slowly die into emptiness. Play for yourself using the Java applet at the website <http://www.bitstorm.org/gameoflife/> . These boxes are technically called *cells*, and with the rules that animate them they are called *cellular automata*. The game of life is only one set of such rules. So complex are the results of such simple rules that Stephen Wolfram (2002) has proposed that the laws of nature can be represented by these cellular automata, rather than the equations of calculus that we have used to represent them over the last 300 years. He argues that the complex patterns of the entire world around us are the result of the self-organization of many tiny cells each independently following their own quite simple rules. ■



In Conway's famous "Game of Life", a set of simple rules produces striking and complex animated patterns.

by: Larry S. Liebovitch, Interim Director,
Center for Complex Systems and Brain Sciences at Florida Atlantic University
<http://walt.ccs.fau.edu/~liebovitch/larry.html>

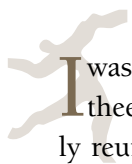
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Images:

- Leopard image from J. D. Murray, 1988,
www.resnet.wm.edu/~jxshix/math490/murray.doc
- Lightning image from <http://www.sgsmp.ch/lichtenberg.htm>
- Oil image from E. Guyon and H. E. Stanley, 1991, Plate 12
- Blood vessels image traced from M. R. Tetz and D. J. Apple, 1990
- Game of Life image image from
http://en.wikipedia.org/wiki/Image:Game_of_life_glider_gun.png

Featured Member: Meet Kees Groot



I was born in Indonesia and lived there until the age of 17. After surviving three years in Japanese concentration camps on Java my family was eventually reunited after the end of the WW II and we left for Holland. In Holland I completed my schooling and obtained BSc and MSc degrees in Biology from the Universities of Amsterdam and Leyden, respectively, specializing in Animal Behaviour or Ethology. With my new wife I immigrated to Canada in 1956 and a year later joined the Fisheries Research Board of Canada (now the Department of Fisheries and Oceans) as a fish behaviourist (ethologist) at the Pacific Biological Station in Nanaimo, British Columbia. There, I worked on problems related to a major threat to Fraser River salmon because of a proposal to build multiple dams on the main stem of this river for the generation of hydroelectric power. After this multiple dam construction plan was abandoned because of the high likelihood that migrating salmon stocks would be destroyed, I concentrated my studies on long distance migration, orientation, and navigation of Pacific salmon and used the data of these studies to obtain a Ph. D. degree at the University of Leyden in Holland in 1965.

Soon after receiving my doctorate degree, I returned to Holland to become the Biological Director of the Netherlands Institute of Sea Research. However, the bureaucracy in Holland was more than I was willing to cope with and when I was invited to return to Canada in 1968 to again join the staff of the Pacific Biological Station at Nanaimo, I jumped at the opportunity. My studies then have centered on 1) problems of Pacific salmon migration, specifically on how these fish find their way during long distance journeys, 2) on problems related to salmonid enhancement, and 3) on the potential effects of global climate change on Canada's west coast fisheries resources.

I retired in 1993 at the age of 65, became scientist emeritus at the Pacific Biological Station, and started my own biological consulting business. I have done fisheries and fish farm related studies under contract with both government and private industry but most of my time is spent on preparing films and videos and writing two books on Pacific salmon biology. As a hobby I grow about 500 tropical orchids in a small greenhouse.

After my first wife died I married Donnie and we moved to the lovely island of Gabriola off the east coast of Vancouver Island. Donnie and I are involved in a number of artistic ventures, such as watercolour and silk panting, pottery, and woodcarving. We have travelled extensively during the last eight years, since we married. When possible while traveling I volunteer to give lectures or short workshops in the areas of my expertise. I like to think that I can leave something behind rather than just take.

Biology is a complex field and I certainly had a taste of that in trying to deal with and understand marine biological and oceanographic interactions. Things became very interesting when in the 1980s some marine animals were “telling” us, by changes in their behaviour and other biological manifestations, that large scale shifts were occurring in their physical environment. It became apparent that climate worldwide was changing and that it was important to pay close attention to this. However, adding another component, meteorology, to the mix of marine biology and oceanography, made the scientific soup considerably more complicated. It meant that we biologists, oceanographers, and meteorologists must learn to work together and find ways to jointly bring our expertise to bear on specific problem areas. This seemed too difficult to do within the government framework, so I began working together with univer-



The bird that I hold in the picture on the left is a peregrine falcon. We have had a pair breeding for the last eight years along the cliff in front of our house. It is really a riot when the young come out of the nest and try to learn the tricks on how to be a falcon from their parents. Then after two months or so, mom, dad, and the young ones fly off until next year. They do make visits to the nesting place several times a year for just a day or a few hours.

The Canadian Fish and Wildlife biologists catch the falcons in mistnets with an owl decoy behind it each year. The falcons get excited in seeing the owl and when they dive bomb it get caught in the net. They are then weighed, measured, and tagged and a blood sample is taken for analysis of toxic materials. Some falcons are given radio tags which via satellite tell us where they hang out during the year. There is a website on the internet which keeps track of the movements of all the different falcons that have been radio tagged. The bird I am holding is the male from our cliff nest just before he is released again after his ordeal of being investigated.

sity oceanographers and meteorologists from the University of British Columbia, primarily studying Pacific salmon migration.

In early 1990 I found Mitchell Waldrop's book on Complexity in a local bookstore (the book just about fell into my lap) describing the efforts of the Santa Fe Institute to come to grips with complexity in the universe. That was a real eye-opener and certainly stimulated the development of new ideas. Surprisingly, I could not get my scientific colleagues interested to explore some of the ideas that came from Santa Fe. Fisheries research continues in a very linear direction, whereas in nature animals live in multi-factorial ecosystems. Fish and other marine animals off the coast of western North America are doing all kind of strange things that are difficult to understand within the old frames of knowledge gathering and the present administration of both management and research departments appear unable to come to grips with the situation. Understandably, because it is very complex.

I heard about the Plexus Institute through my younger brother Nol who with Curt Lindberg is involved in the complexity program at Hertfordshire University in England. After making contact with Curt, he told me about the up-coming Plexus Summit Meeting in Florida in September 2005 and strongly advised me to attend. Well, once in I was hooked. It was exiting to meet people that were also trying to look at our complex world in different ways and I hope to greatly benefit from these contacts. ■

“In the 1980s some marine animals were ‘telling’ us, by changes in their behaviour that large scale shifts were occurring in their physical environment, that climate worldwide was changing, and that it was important to pay close attention to this.”

Meet Our Members

Barbara L. O'Brien

Barbara L. O'Brien, RN, MSN, is the President of Magnetic HealthCare Strategies L.L.C., a firm specializing in leadership and performance strategies. She received her Masters Degree in Nursing from Seton Hall University in South Orange, NJ and was certified in Advanced Administration by the American Nurses Association, Washington, D.C. for 15 years. Barbara became a Nursing Executive Wharton Fellow in 1999.

Before founding this company, Barbara was the Vice President for Patient Care Services at St. Joseph's Regional Medical Center, a leading teaching multi-hospital system. She is a Wharton Fellow, healthcare executive with experience in community, teaching, tertiary level, freestanding and multi-hospital systems. She has been responsible for perioperative services, nursing, respiratory therapy, education, case management, infection control, performance improvement, transportation, and phlebotomy. Barbara taught in a community college and private universities and applied for and secured grants. Her strongest asset is being a visionary, transformational leader who thrives on multifaceted challenges while providing a creative and innovative environment. This environment supports change, cost efficiency, and high quality patient care.

Barbara has been recognized nationally and internationally for her leadership outcomes and has published in a variety of nursing journals. She is an active member of several healthcare organizations and has presented on topics such as leadership, performance improvement, and community outreach.

The apex of her career was administering a nursing division in a greater-than-600-bed acute care, teaching hospital, from crisis to receiving the American Nurses Association's Magnet Recognition Award in less than three years. During this time, she also redesigned processes and flattened the management structure saving over \$3 million while increasing staff level, patient care providers at the bedside.

Barbara lives in New Jersey with her husband. They have three grown children. In her free time she enjoys creative cooking, reading, gardening and traveling.

She joined Plexus Institute to evaluate new practice models, stay current in her field and share and discuss with colleges information about the processes that work to improve patient care.

e-mail: barbaralobrienmhs@comcast.net

Diane L. Dixon

I am the Managing Principal of D. Dixon & Associates LLC, an independent consulting practice, specializing in leadership and organization development primarily in the health care sector. More than 20 years of experience working with corporations and not-for-profit businesses of all sizes and complexity has given me some interesting insights about organizational life and continues to raise many questions. In addition to consulting, I am a teacher, speaker, and writer. As



a faculty practitioner in the Business of Medicine Program at Johns Hopkins University, I teach Leadership and Organizational Behavior as well as an elective course, Leading and Managing Organizational Change. Teaching is a wonderful way to engage in an interactive learning process that sparks dynamic inquiry.

Another way to share knowledge and learn from others is giving presentations. I enjoy speaking about topics related to leadership and change in health care delivery systems to a wide variety of organizations and groups.

I have been writing a regular leadership column which is published in *Caring for the Ages* for several years. This is an official publication of the American Medical Directors Association targeted to long-term care physicians and other professionals in the field. My articles have also been published in *Leadership Excellence*, *Personal Excellence*, and *Hospitals and Health Networks E-Newsletter for Health Care Executives*. You can read my chapter on “Successfully Surviving Culture Change” in the book entitled *Culture Change in Long -Term Care*. Currently, I am beginning the challenging process of writing a leadership chapter for a new book series on the Business of Health Care.

I believe that my educational background helps be to do all the things that I do. Earning a Doctorate in Human Resource Development from George Washington University’s Executive Leadership in Human Resource Development Program has greatly enhanced my knowledge and enabled me to continue my quest for continuous learning in the field. The combination of a M.Ed. in Administration from Loyola College and a B. A. in Sociology with a Psychology minor from Howard University have given me a solid education foundation.

For several years I have been interested in how complexity science can help me explore new ways of thinking about change in health care delivery systems. Becoming an associate of the Plexus Institute is an exciting opportunity to network with other colleagues who have similar interests and to learn new ideas.

Email: Diane@ddixon.org

Traci Hoiting

I am Division Director for Critical Care and Cardiology and Nursing Quality at Providence St. Vincent Medical Center. I have been a registered nurse for 27 years. I am a member of the Clinical Nurse Leader Implementation Task Force. I like to bicycle in my free time.

I have done some reading about complexity and it makes sense. I am interested in learning more. The complexity of healthcare systems must be better understood in order to improve and/or build new systems.

Recently I have read *Executive Intelligence*, by Justin Menkes. It offers an interesting perspective on how successful executives make decisions and process through problem solving.

I learned about Plexus through the American Association of Colleges of Nursing.

E-mail: traci.hoiting@providence.org



Rich Lundy

I am currently the Director of the Heart Center at Wake Forest University Baptist Medical Center in Winston-Salem, NC. My wife Traci and I relocated to Winston-Salem from Billings, MT in late 2002. I am a registered respiratory therapist and acquired an MBA from the University of Montana. I have been involved in health care leadership at various levels for over 20 years.



The photo of me demonstrates my staff's "creativity and unpredictability", which I am proud to say they have learned from me! Every inch of my office was covered with post-it notes on a recent birthday.

When we are not working, Traci and I can usually be found sailing, fishing, or out on our Harleys.

I was introduced to complexity by Nick Wolter, M.D., CEO of Billings Clinic in Billings, MT. Several members of our Billings Clinic leadership team became involved in VHA's educational efforts surrounding complexity theory and its application in healthcare leadership in the late 90's. The concepts helped our organization work through a complex merger which has been well described in an article entitled *Merging, De-merging, and Emerging at Deaconess Billings Clinic* authored by Ken Baskin, Jeffrey Goldstein, and Curt Lindberg (The Physician Executive, May/June 2000).

I have found the science of complex adaptive systems helpful in better understanding and dealing with the complexities of health care systems and processes, responding to leadership challenges, and recognizing the unpredictability of the business I am in. I have enjoyed some success in employing these principles in promoting work environments that break down traditional organizational boundaries and encourage creativity.

I recently finished Philip Roth's novel, *The Plot Against America*. This story describes America evolving into a very different political climate during WWII as a result of Roth's changing the outcome of just a couple of historical events. The story makes one consider what some of today's world events might lead to versus what might have been were different strategies or tactics implemented.

I have been keeping tabs on Plexus events, articles, and conference calls for some time. A fractal network is being organized in central North Carolina. I thought it was about time I offer support to Plexus and hope to become involved in this regional network.

E-mail: rlundy@wfubmc.edu

Judith Rottkamp

Judith Rottkamp received her BS from Stockton College and an MA from Rider College. She is a member of the New Jersey State Nurses Association and the Organization of Nurse Executives, an Auxiliary Board Member of the Children's Home Society, a past member of the board of directors of the Trenton YMCA, a member of the Child Placement Review Board of Mercer County, the facilitator of "Future Nurses" Club of the Notre Dame High School, and a member of the Mercer County LPN Advisory Board. She lives in West Trenton. She is gratified that St. Francis Hospital in Trenton, NJ, where she now works, recently received the Magnet Nursing Award from the American Nurses Credentialing Center, the certifying body of professional nurses.



I heard about Plexus Institute from Velvet Miller, with whom I have a work relationship. She talked about it, and she sent me articles, all of which were interesting. When I heard about the conference at TCNJ, I knew I had to go. It was an eye-opener –informative, exciting and a new way to view things that apply to health care and nursing. Working in the healthcare setting you are always going 90 miles an hour, and you really need to slow down and look at what is going on around you. Complexity science seems to offer a framework to think things through, think differently, and come up with ways to do a better job. The speakers at the conference were great, and some of the material was over my head, so I had to really concentrate. But it was mesmerizing. It had my utmost attention.

I recently finished writing a chapter for the book *Medical Malpractice*, edited by Barbara Levin and Pat Iyer, and published by the Lawyers and Judges Publishing Company in Arizona. My chapter was on nursing, and it covered delivery systems, magnets and standards of care, management styles of shared governance. I also described responsibilities of the people in the system, from CNOs, staff nurses, LPNs, and secretaries.

I'm also very interested in the ocean, both the science of it and the beauty of it. I'm a swimmer, and I have been a life guard, so I love it, I am fascinated by it, and I also have a healthy fear of sharks and other things that can get you in trouble. I really enjoyed the PlexusCalls on the oceans.

E-mail: jrottkamp@che-east.org ■



Plexus Calls: Summer/Fall 2006

Bringing People Together in Conversation

PlexusCalls are scheduled for Fridays from 1 PM to 2 PM Eastern Time. Please check www.PlexusInstitute.org for further details, additions or changes to the schedule.

E-mail your questions before or during the call to PlexusCalls@Plexusinstitute.org

July 28, 2006

Complexity and the Body: New Frontiers in Medical Research
Guests: Dr. James Collins and Dr. Ary Goldberger

Dr. Collins is a professor of biomedical engineering at Boston University, the recipient of a McArthur Fellowship, and a pioneering researcher in bioengineering. Several ground-breaking discoveries have come from his Applied BioDynamics Laboratory at the BU Center for BioDynamics. Dr. Collins' "genetic toggle switch" promises to create programmable cells to fight disease or warn against environmental toxins, and his work in systems biology may lead to a new understanding of the causes of cancer. He is especially interested in noise-based sensory prostheses, and has developed vibrating gel shoe insoles that have been shown to improve the balance of elderly people and those who have suffered from stokes and diabetes. He discovered the sensitivity of nerves in the feet is directly related to a person's ability to maintain good balance and avoid falls. His research focuses on developing nonlinear dynamical


cal techniques and devices to characterize, improve and mimic biological function. In addition to noise-based prostheses, he is interested in designing and building synthetic gene networks, and reverse engineering naturally occurring gene regulatory networks.

Dr. Goldberger is a cardiologist who is a professor of medicine at Harvard Medical School and associate chief of the Division of Medical and Biotechnology at Beth Israel Deaconess Medical Center in Boston, where he also directs the Margret and H.A. Rey Institute for Nonlinear Dynamics in Medicine. In addition he is program director of the Research Resource for Complex Physiologic Signals of the National Institutes of Health. Dr. Collins and Dr. Goldberger are among the country's leading researchers on complexity and human health.

August 25, 2006

How Complexity Principles Align With Management

Guests: Marc Narkus-Kramer, Henri Lipmanowicz, Lisa Kimball

 **Marc Narkus-Kramer** began his career in the fields of energy and the environment, and has spent the last 20 years working on air traffic control modernization with the MITRE Corporation's Center for Advanced Aviation System Development (CAASD) based in MacLean, Virginia. MITRE is a non-profit corporation working in the public interest in partnership with government clients. It addresses issues of critical national importance, combining systems engineering and information technology to develop innovative solutions. Mr. Narkus-Kramer is now National Airspace System Architect with responsibility for integrating the work program across MITRE/CAASD. He was previously responsible for managing a \$6 million dollar project related to modernizing the air traffic control system with respect to navigation, communications and broadcast services. He has been involved in several management transformational activities in his organization and the aviation community at large.

Henri Lipmanowicz retired after a distinguished career at Merck, where he was president of the Merck Intercontinental and Japan Division and a member of the Management Committee. He is a student of complexity, one of the founders of Plexus Institute and serves as Chair of Institute's Board of Trustees. 2000.

Lisa Kimball, PhD, is executive producer and owner of Group Jazz, an organization devoted to supporting the efforts of teams task forces, communities and organizations. She earned her doctorate in educational psychology, cognition and learning and is active in on line community work, organizational development and is skilled in using complexity-inspired principles. She is also a Plexus Trustee.

September 1

Distributed Computing Brings Dramatic Advances in Research


Guest: **Dr. David Anderson**

Dr. David Anderson is a research scientist at the University of California Space Sciences Laboratory. He pioneered “voluntary computing”, a paradigm in which members of the general public volunteer their PC’s idle time to science research projects in a variety of areas. The best known is SETI@home, which analyses radio waves in search of synthetic signals from space. More recent projects do simulations of complex physical systems at scales ranging from the molecular to the global. Volunteer computing can provide vast amounts of computer power. Dr. Anderson studies the technical problems that arise in volunteer computing, but is equally interested in the social and motivational processes that govern participation, and the political ecology of scientific computing. Dr. Anderson earned a doctorate in computer science at the University of Wisconsin, where he also earned a masters degree in mathematics. He earned his bachelor’s degree in mathematics at Wesleyan University. Dr. Anderson is principal investigator and director of [Berkeley Open Infrastructure for Network Computing](#), which develops software for volunteer computing and is used by projects that include Climateprediction.net and Einstein@home. He has written 69 papers on computer science, and is the sole inventor on two pending patent applications for technology related to MediaNet, a parent related to distributed computing, and a patent for an invention involving 3-D interactive television.

September 8, 2006, 1-2 PM ET

Lessons from Hurricane Katrina and its Aftermath: A Complexity View

Guests: Shelia Webb, Roland Anglin, Catherine Dunham

 **Dr. Shelia Webb**, the former director of health for the city of New Orleans, is now director of the Center for Empowered Decision Making (CEDM), an organization focused on community capacity building, leadership training and development, public policy advocacy and community mobilization. In her city post, she successfully supported increased funding for health services for medically underserved populations. She helped implement formation of organizations that worked for health care for the homeless, school based clinics, AIDS prevention, and EXCELth, Inc, a federally qualified health network. When Katrina struck, Dr. Webb emphasized CEDM focus on organizational capacity building, and expanded its activities to include the Baton Rouge area. Working with EXCELth Inc. the center is working to improve health care for Katrina evacuees. Dr. Webb is also working with local and national initiatives for rebuilding the city. Dr. Webb is a clinical nurse specialist in psychiatric mental health nursing. She earned a bachelor of science degree in nursing from Dillard University, a masters in nursing from the University of Southern Mississippi at Hattiesburg, and her doctorate in nursing from Southern University and A&M College in Baton Rouge, Louisiana.

Catherine Dunham is direct or of community health leadership project at a Robert Wood Johnson sponsored program in Boston. She is also co-author of *The Real Clout Workbook*, a companion work to *Real Clout: A How-To Manual for Community activists Trying to Expand Healthcare Access by Changing Public Policy*.

Dr. Roland Anglin is executive director of the New Jersey Public Policy Research Institute. He has strengthened the organization's mission to conduct research useful for policies and programs designed to improve quality of life in New Jersey's minority communities. He was formerly a Ford Foundation officer responsible for funding community development initiatives, including faith based community development organizations.

Weaving Smart Networks: Building Capacity for Positive Change in Organizations and Communities

October 12-13, 2006. Location: National Center for Higher Education Conference Center, Level 1B • One Dupont Circle NW, Washington DC 20036

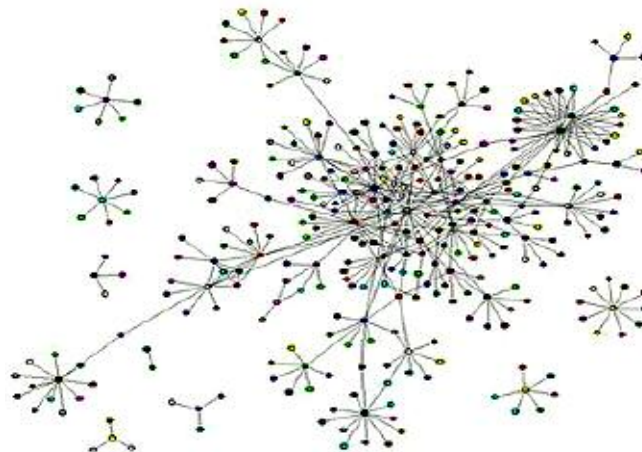
**Co-Sponsored By CFED (the Corporation for Enterprise Development)
The Aspen Institute Communities Strategies Group**

The Barr Foundation: Using Knowledge, Networks and Funding to Build a Better Boston for All

Networks are big news: maps of Al Qaeda networks have hit the front pages of newspapers, online social networks such as MySpace have become big business and the use of network analysis to track our phone conversations has become a national controversy.

All networks are not the same. Some networks, such as “old boys” networks limit the benefits of their resources to a small group. Others, called deficit networks, actually drain energy and resources from participants. Instead of these, we need networks that help us innovate and solve problems, make complex systems work more effectively, speed learning and help people work together more effectively. We call such networks *Smart Networks* and people who nurture them Network Weavers.

Smart Networks—networks that embrace diversity and encourage quality relationships in such a way that innovation and collaboration blossom—are emerging throughout the world, as people cross traditional divides to create healthier communities.



Smart Networks have helped Appalachian entrepreneurs move out of poverty, Boston sports and arts organizations provide after school options for inner city children, West African leaders join together on innovative solar energy projects, and Cleveland's environmental businesses find creative ways of working together.

Smart Networks have the potential to help hospitals diffuse innovative practices and to help health care systems work with families and communities on new approaches to providing vital health services. Smart Networks can help large corporations enhance the productivity and innovation of their internal networks and build peer-based relationships with their customers.

If you are interested in change or innovation or seeking ways to address challenge, this session is for you. People in hospitals, corporations, social services, nonprofits and other organizations can increase the impact of their efforts using network strategies

For more information about the conference, the faculty,
and registration,
[click here](#) or visit www.plexusinstitute.org.



Creating Interdisciplinary Cultures:

**American Academy on
Communication in Healthcare**


Better Communication.

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Better Care.

Insights from Complexity Science & Relationship-Centered Care

Save the Date! • November 17 – 19, 2006
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Are you meeting the Institute of Medicine's challenge of interdisciplinary collaboration as a core competency for quality and safety?

In its 2003 report, *Crossing The Quality Chasm*, the IOM wrote:

The current system shows too little cooperation and teamwork... Patients suffer through lost continuity, redundancy, excess costs and miscommunication... In the new system, people will understand the advantage of high levels of cooperation, coordination, and standardization to guarantee excellence, continuity, and reliability. (p83)

How are **you** doing with this competency? What have **you** done to improve interdisciplinary work? What skills do **you** need? Is it easier to **act** your way into a new way of **thinking** than to **think** your way into a new way of **acting**? Make plans NOW to attend this "different" learning experience.

Plexus Institute and the American Academy on Communication in Healthcare are pleased to offer a unique program that combines their areas of expertise; the application of complexity science to healthcare and the enhancement of communication skills, self-awareness and relationship process. Join us to advance your skills and to learn state of the art approaches to interdisciplinary collaboration, communication and organizational change.

“In organizations, real power and energy is generated through relationships. The patterns of relationships and the capacities to form them are more important than tasks, functions, roles and positions.”

~ Margaret Wheatley

