



emerging

the newsletter of
Plexus Institute

Spring
2008



The Art of Complexity

Twelve artists. One bold idea. The result? A surprising new exhibit that vividly brings to life the human dance of complexity. Get a glimpse here.

[Click here or turn to page 12.](#)

Trust, Compassion, Connection

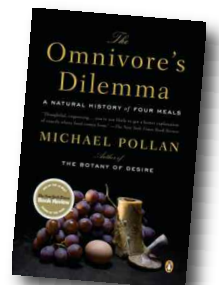
Discover how Tona Leiker is bringing the application of complexity principles into nursing... and passing on the learning to a whole new generation of students.

[Click here or turn to page 20.](#)

Eat Your Complexity!

In the bestselling *Omnivore's Dilemma*, author Michael Pollan traces the path of your food from the farm to your dinner plate, and explores the systemic implications. We've got a review of the book here.

[Click here or turn to page 2.](#)



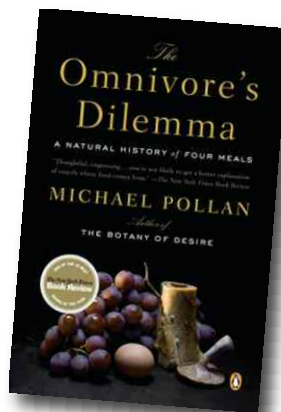
plus

“Emergence” defined • Members • Healthcare Conference •
2008 Plexus Summit • Plexus Calls • We've Moved!

The Omnivore's Dilemma: A Natural History of Four Meals

Ever wondered about the story behind the food on your dinner plate? In his bestselling book, Michael Pollan offers astonishing insights.

Students of complexity science will find much, might as well say it, food for thought in Michael Pollan's new book, *The Omnivore's Dilemma*. In this rich and highly readable book Pollan examines what he calls our "national eating disorder" by tracing the natural history of four meals he actually consumes. The first is classic McDonalds fast food at the end of the modern industrial food chain, then "big organic" purchased at Whole Foods, a chicken dinner produced by Polyface Farms, an intensive grass-based farm in Virginia, and finally a hunter/gatherer meal that took the book's urban author out of his comfort zone to experience the "omnivore's dilemma" first hand.



The phrase used as the title of this book was coined in 1976 by Paul Rozin to contrast the omnivore's "existential situation" with that of animals that are genetically hardwired to eat a limited number of foods. While the ability to derive nutrition from many different sources gives omnivores great flexibility and enables survival in many different environments, it is accompanied by the problem of having to determine what is safe and good to eat. According to Pollan, "Many anthropologists believe that the reason we evolved such big and intricate brains was precisely to help us deal with the omnivore's dilemma." As omnivores, humans experience two competing impulses. Neophobia, the fear of eating new foods keeps us eating foods we know are safe, and neophilia, the attraction to new foods which keeps us experimenting to expand our possible food sources and thus our ability to thrive in changing circumstances. Pollan

explores how this problem has played out in human history resulting in the development of agriculture, cuisines, diet fads, and ultimately our modern industrial food chain.

The star of the first part of the book is *Zea mays*; corn. Pollan traces the development and domestication of this highly successful plant and takes the unconventional view that “Corn is the hero of its own story, and though we humans played a crucial supporting role in its rise to world domination, it would be wrong to suggest we have been calling the shots, or acting always in our best interests. Indeed, there is every reason to believe that corn has succeeded in domesticating us.” He then details how corn has become a globally traded commodity, how agriculture and industry have used the highly subsidized production of corn to alarmingly decrease the complexity and variety of the foods we consume and at the same time create massive environmental and human problems that range from antibiotic resistance to feedlot waste to production of greenhouse gasses. The McDonalds meal he and his family consume is mostly corn: soft drink 100%, milk shake 78%, cheeseburger 52%, and even the french fries at 23%! It required 9 calories of corn to produce each calorie of meat, and production of it consumed 1.3 gallons fossil fuel.

Pollan devotes considerable attention to the history of modern agricultural science. In 1840 a German chemist, Barron Justus Von Liebig, described plants’ requirement for three essential elements: nitrogen, phosphorous, and potassium (NPK, the three letters still used today on every bag of fertilizer). This changed the understanding of soil from a complex living system to a chemical formula. Before the turn of the 20th century all of the nitrogen used by living things had to come ultimately from the bacteria that live symbiotically with the roots of plants. Fritz Haber changed all that in 1909 with his discovery of a process for fixing nitrogen that enabled unlimited production of the N of the NPK formula. Sir Albert Howard, an English agronomist, mounted a passionate and articulate challenge to the chemical concept of soil and agriculture. He lost, but his book, *An Agricultural Testament*, published in 1940 is considered the cornerstone of the organic food movement.

Pollan describes how the food industry is faced with the simple biological fact that people can only eat so much. If it is to grow faster than the population (about 1% a year) it has two options: “figure out how to get people to pay more for the same three quarters of a ton (per year) of food, or entice them to eat more than that.” The more processing steps to get food (read cheap food, i.e. corn and soybeans) to the table the more profits for the companies. This has fed into a reductionistic view of nutrition that started with the discovery of the basic macronutrients; fat, carbohydrate, and protein in the 19th century. Since then we have been on the trail of the “right” combination of micronutrients from vitamins to polyphenols. This led a food additive company in the

“There is every reason to believe that corn has succeeded in domesticating us.”

—Michael Pollan

1970s to “explain why we were better off eating synthetics. Natural ingredients, the company pointed out rather scarily, are a ‘wild mixture of substances created by plants and animals for completely non-food purposes – their survival and reproduction.’ These dubious substances ‘came to be consumed by humans at their own risk.’”

This leads into what for me was the most fascinating part of the book; the description of Polyface Farms, an intensive “grass farm” located in Virginia. Joel Salatin has dedicated his life to farming in a way that causes virtually no damage to the environment, and produces premium food products. His deep understanding and respect for the complexity of the living systems he manages allows maximum transfer of energy from sunlight to human food through an intricate, carefully timed dance of grazing and rest. When the grasses are at their peak growth his cows get one pass to graze a particular field. Allowing more would ultimately lead to overgrazing and a decrease in the health and diversity of the pasture. The cows leave their manure behind when they move on. It lies undisturbed for three days allowing the maggots to hatch out. At that point his chickens, in their coop on wheels, are brought in to feast on the grubs and other goodies all the while laying eggs, putting on muscle, and making their fertilizer contribution. The pasture then rests until the next accelerated growth phase when the cycle starts all over again. This is just an example of a few of the many “holons” that make up the farm. “Holon” is a term coined by Arthur Koestler because “English lacks a word to express the complex relationship of part and wholes in a biological or social system. An holon... is an entity that from one perspective appears a self-contained whole, and from another a dependent part.” This certainly is a useful word for complexity science.

As opposed to industrial farming which sees unlimited increases in scale of production as desirable, if not essential, Joel Salatin recognizes that if he challenges the natural limitations of the living systems he manages, his products and the sustainability of his farm will be compromised. “It’s all connected. This farm is more like an organism than a machine, and like any organism it has its proper scale. A mouse is the size of a mouse for a good reason, and a mouse that was the size of an elephant wouldn’t do very well.”

Pollan discusses the contributions and compromises of the growing organic food industry. There is a detailed description of industrial farming and processing of ready-to-eat salad greens, very timely in light of the recent tainted spinach incidents. He explores what it means to kill what you eat and describes

“This farm is more like an organism than a machine, and like any organism it has its proper scale. A mouse is the size of a mouse for a good reason, and a mouse that was the size of an elephant wouldn’t do very well.”

– Joel Salatin, Polyface Farms
as quoted in *The Omnivore’s Dilemma*

the anxieties and joys of gathering mushrooms. The book is full of fascinating nuggets of history, science, anthropology, and philosophy.

The breadth of his topic and the way the book integrates Mr. Pollan's personal experiences with a journalistic approach can sometimes seem disjointed but I guarantee that you will learn much from this book and it will challenge and change the way you think about the everyday experience of eating dinner. It is an eye-opening view of how industrialization has dramatically reduced the complexity of our diet and agriculture with devastating consequences to our human health and the health of our planet. ■

By: Diane M. Pittman MD, Clinical Director
Cass Lake Indian Hospital, Bemidji, MN

What is “emergence”?

In which we clear up the confusion and misconceptions and take a closer look at an idea whose time has come.

Background

Among the many intriguing phenomena investigated in the study of complex systems, *emergence* stands out as salient for both its unexpected manifestations and the far-reaching implications drawn from it. To name just a few examples of phenomena labeled “emergent” in recent years: the coherent structures observed in various kinds of phase transitions such as ferromagnetism and ice formation; the novel hexagonal convection cells exhibited in the self-organizing Benard liquid; the rhythmically changing patterns and colors of the Belousov-Zhabotinsky reaction; the arising of multi-cellular organisms consisting of a stalk and a cap of spores out of one cell amoebas in the cellular slime mold (*Dictyostelium discoideum*); the organic-like patterns found in such artificial life simulations as cellular automata and multi-agent models; collective level behavior arising in net-



The "vortex" structure that is associated with hurricanes is one commonly cited example of emergent phenomena

worked systems, whether social, technological, or computational; and the “quantum protectorates” investigated in solid-state physics, for example, the fractional Quantum Hall Effect (Laughlin, 2006).

It is from his research into the last example, along with other instances of emergence in physics, that the Nobel laureate solid-state physicist Robert Laughlin has declared science is now leaving the Age of Reduction and entering the Age of Emergence. The intensive study into emergence now underway across many sciences has been prompted not just by the startling nature of emergent phenomena but, more important, because they are thought to add greater functionality and adaptive capabilities to those complex systems in which they occur. Yet, in spite of all this fascinating research, the idea of emergence has shown itself to be tenebrous and thus hard to pin down due mostly to the great deal of metaphysical freight that has accrued to the idea over the years. Hence some clarification is in order, starting with a few remarks on the historical background of the idea.

History

Generally unknown among complexity devotees, the actual term “emergent” in its modern sense was coined as long ago as 1875 by the American/British philosopher and man of letters G. H. Lewes (1875):

...although each effect is the resultant of its components, we cannot always trace the steps of the process, so as to see in the product the mode of operation of each factor. In the latter case, I propose to call the effect an emergent. It arises out of the combined agencies, but in a form which does not display the agents in action. (pp. 368-369).

This early usage of the term reflected a growing conceptual sophistication in the sciences, particularly in regard to the role of causality in explanations, a shift that continued into the twentieth century.

Several decades after Lewes’ definition, his nascent notion of “emergent” was extended into a new view of evolutionary processes by the members of a loosely joined scientific and philosophical movement called “Emergent Evolutionism” (Blitz, 1992). Such eminent philosophers and scientists as Samuel Alexander, C. L. Morgan, C.D. Broad, R. W. Sellars, W. Wheeler, A. N. Whitehead, J. Boodin,



A magnet levitating above a superconductor cooled with liquid nitrogen – another example of an emergent phenomenon.

A. Lovejoy, G. H. Mead, and others promoted emergence as a supplement to Darwinian evolution in which the emphasis was on the arising of new “collocations” or “integrations” with new properties on a new “higher” emergent level out of “lower” level components. This enriched concept of emergence was offered as a counter to the incrementalist view of evolution that was criticized for being couched within a purely mechanistic framework. Emergent Evolutionists held that a scientific and philosophical perspective founded on emergence was capable of steering between the extremes of mechanistic reductionism on the one side and an ungrounded vitalism on the other (Goldstein, 1999).

Although Emergent Evolutionism as such had died-out in the mid-nineteen thirties, by then the idea at its heart proved to possess staying power by being heralded, in one form or another, in several burgeoning arenas: the philosophy of science; Whitehead’s process philosophy and process theology; theoretical biology; and the growing field of neuroscience. Proponents of emergence in these fields believed it could defend what they held to be the *sui generis* nature of “higher” level phenomena against mechanistic and reductive explanations (Goldstein, 2000). These same associations have continued to accompany emergence as it has become an essential tenet in contemporary research into complex systems.

“Nobel laureate solid-state physicist Robert Laughlin has declared science is now leaving the Age of Reduction and entering the Age of Emergence.”

– Jeffrey Goldstein

Properties of Emergent Phenomena

Because early emergentism was essentially a speculative activity, any actual processes involved with emergence remained inside a *black box* in that, although one could discern both lower-level inputs and higher-level outputs, exactly how the lower was transformed into the higher stayed opaque. In complexity theory, however, because of its foundation in the laboratory as well as its establishment by way of cogent mathematical and scientific constructs, the black box of emergence is being pried open. Accordingly, the idea of emergence has moved from armchair speculation to a key thema in modern science.

In complexity theory, when the term “emergence” is used, it typically refers to the coming into existing of phenomena sharing a family resemblance with the following features (see Goldstein, 1999):

- **Higher, macro-, or global level.** This level is understood in contrast to the micro-level locus of components. The emergent level is not an arbitrary designation such as found in the idea of scale. Instead, it is *privileged* in the sense of just being that level where the emergent phenom-

ena are observed. Explanations employing the idea of emergence then elicit special laws operative at this higher-level. It's important to note, therefore, that by consisting in an appeal to shift to the macro-level with its unique dynamics, laws, and properties, the construct of emergence is only a beginning, not the terminus of an explanation.

- **Coherence, organization, or integration at the higher level.** The construct of emergence is appealed to when the dynamics of a system seem better understood by focusing on across-system organization than on micro-level parts or dynamics.
- **Radical novelty of the higher level phenomena.** That is, the emergent level is understood as unpredictable, nondeductible, and irreducible to lower level components. In other words, emergent level phenomena are not self-similar with respect to scale but rather are *self-dissimilar* (Wolpert and Macready, 2000).
- **Ostensiveness.** Emergent phenomena show themselves as the system evolves, and are not knowable ahead of time.
- **Dynamical.** The qualities of emergent phenomena do not preexist in the system but instead arise as a complex system evolves over time. As dynamical, emergent phenomena appear to have a dynamical “life” of their own (hence the term “artificial *life*”).

“The black box of emergence is being pried open. The idea has moved from armchair speculation to a key thema in modern science.”

– Jeffrey Goldstein

There is a controversial claim at the heart of modern emergentism, namely, that nature has the capacity for generating processes powerful enough to bring about outcomes characterized by these properties. This new view of nature contrasts sharply with how causal determinism was traditionally understood.

Issues

Because of its challenge to mainstream reductionist perspectives, it is not surprising that criticisms of the concept of emergence began right on the heel of its early conceptualization (see Goldstein, 2004; 2006). A common tack taken among these objections aims at demonstrating that emergence does not amount to anything significantly different from the type of discontinuity accompanying ordinary change, and, therefore, just as the latter can be explained by lower level causal mechanisms, so can the former. A related crit-

icism of emergence has contended that at best it is merely a *provisional* construct of a theory, an epistemic and temporary recognition of the inadequacy of a current theory in deriving macro-level properties from micro-level determinants. But when a better theory does come along, appeals to emergence will no longer be necessary since this better theory will be able to predict, deduce and reduce emergent phenomena to micro-level processes.

As a matter of fact, a better theory did come along to explain a prototypical example of emergent phenomena by the protoemergentists, namely, the properties of chemical compounds resulting from a chemical reaction (McLaughlin, 1992). This better theory was that of quantum bonding which explained the new properties of compounds in terms of the micro-determinants of their reagents. One might argue here that what was problematic with the early views on emergence was not the process of emergence *per se* but rather the specific example which the proto-emergentists used for emergent phenomena, namely, chemical properties. However, as stated above, the early emergentists had very little to say about the processes of emergence so criticisms of its examples of emergents was a strong blow against its major tenet.

Does a similar fate of provisionality also threaten the examples of emergence in complex systems recounted in the first paragraph above? That is, will better theories come along that obviate the need for a *sui generis* emergent level? Complexity researchers answer “probably not” since complexity theory possesses a crucial factor that “protects” emergence: the intractable complexity of such systems found, for example, in their high degree of algorithmic complexity which Darley (1995) has demonstrated leads to the curious situation where the running of the simulations becomes the only way to “predict” them—the property of ostensiveness mentioned.

Furthermore, I (Goldstein, 2004; 2006a) have suggested the various repudiations of emergence can be taken instead as indicating the nature of the conceptual hurdle that a viable doctrine of emergence must pass if it is to amount to a cogent possibility for nature. That is, processes of emergence must possess a potency for issuing forth in outcomes that cannot be reduced to something cognate with the outcomes of ordinary change. Moreover, if indeed there are natural processes with this power, then the implication is that emergence is bringing with it a radically new conception of nature.

Another issue often disregarded amidst the enthusiasm for emergence is that emergence can be constructive as well as destructive. An example of the latter is the emergence of a social and institutional network scientists researching biological warfare in the Soviet Union during the nineteen seventies and eighties (Bella, 2006).

Conclusion

Conceptual constructs loosely resembling emergence can be found in Western thought ever since the time of the ancient Greeks. However, emer-

gence is emerging today as a new natural kind construct; it is parsing regularities observed in nature in revolutionary new ways. As such, it is a pointer signaling where the dynamics and laws of those dynamics need to be investigated. In my opinion, our great-grandchildren will just accept emergence as a matter of course, as simply what happens when nature takes its evolutionary course and they will probably be amused by all the brouhaha concerning emergence that they will read about in their history of science books. Of course, there will be controversy as to whether to count some phenomena as emergent or not. But the controversy will be solved by careful attention to the phenomena in question. ■

By: Jeffrey Goldstein, Ph.D, Adelphi University, Garden City, NY

References

- Bella, D. (In Press). Emergence of Evil, *Emergence: Complexity and Organization*
- Blitz, D. (1992) *Emergent Evolution: Qualitative Novelty and the Levels of Reality*, Dordrecht: Kluwer Academic Publishers.
- Darley, V. (1995). Emergent phenomena and complexity. In R. Brooks & P. Maes (Eds.) *Artificial Life IV: Proceedings of the Fourth International Workshop on the synthesis and simulation of living systems*, pp. 411-416. Cambridge, Mass: MIT Press.
- Goldstein, J. (2000). Emergence: A Construct Amid a Thicket of Conceptual Snares, *Emergence: A Journal of Complexity Issues in Organizations and Management*, 2 (1): 5-22. (2000).
- Goldstein, J. (1999). Emergence as a Construct: History and Issues, *A Emergence: Complexity Issues in Organization and Management*, 1(1) (1999), pp: 49-62. (Basic). (2/1/1999).
- Goldstein, J. (2004). Emergence Then and Now: Concepts, Criticisms, and Rejoinders: Introduction to Pepper's 'Emergence,' *Emergence: Complexity and Organization*, 6(4): 66-71. Goldstein, J. (2006). Introduction to Baylis's Article, *Emergence: Complexity and Organization*, 8(1): 67-70.
- Goldstein, J. Introduction to Stace's "Novelty, Indeterminism, and Emergence," *Emergence: Complexity and Organization*, 8(2): 67-70. Laughlin, R. 2006. *A Different Universe: Reinventing Physics from the Bottom Down*. NY: Basic Books.
- McLaughlin, B. (1992) "The Rise and Fall of British Emergentism," in A Beckermann, H. Flohr, and J. Kim, *Emergence or Reduction: Essays on the Prospects of Nonreductive Physicalism*, pp. 49-93. Berlin: Walter de Gruyter.
- Wolpert, D. and Macready, W. (2000). Self-dissimilarity: An Empirically Observable Complexity Measure. In Y. Bar-Yam (Ed), *Unifying Themes in Complex Systems: Proceedings of the International Conference on Complex Systems*, pp. 625-643. Cambridge, MA: Perseus Books.

For further reading on emergence:

Examples of emergence throughout modern life:

- Johnson, Steven. (2002). *Emergence: The Connected Lives of Ants, Brains, Cities, and Software*. NY: Scribner.

Technical and mathematical treatment of emergence:

- Holland, John. (1999). *Emergence: From Chaos to Order*. NY: Perseus Books.

When Twelve Equals One

When individual artists collaborate, the result can be an unpredictable beauty that is surprising even to its creators.

“It’s like being in a choir,” says artist Pam Lindberg. “We needed every voice to make this work of art, but if any one person had been shouting above anyone else, it would not have been harmonious.” “In a surprising and wonderful way,” she adds, “collaboration made each of our work more unique.” As her fellow artist Karen Neems puts it, “This helped us define ourselves. If you are defining yourself in relation to other people, you have to have a strong sense of yourself to know what is yours... but you also honor and respect the talents of others.”

Ms. Lindberg and Ms. Neems are among twelve women artists who collaborated in *12=One*, an exhibit of more than 50 art works shown recently at the Flinn Gallery in Greenwich, CT. Most of the works are done in acrylic paint, though a few used other materials and collage technique. The works range from small visual jewels and delicate pattern to powerful presentations of form and color and the impression of glorious abundance.

An ancient tradition made new

Researching the concept of collaborative art, the artists discovered examples dating back to cave paintings in Spain and France, where contemporary and successive creators added to the scenes depicted on cave walls. Ancient Egyptians worked together building tombs for their pharaohs and filling them with dazzling artifacts, and several generations of artisans and artists pooled their



Self portraits “Seeing Ourselves” from the top:

Mary Whalen	Carol Conze	Jane Lubin
Mindy Green	Pam Lindberg	Lisa Thoren
Donna Collins	Anna Varnauskas	Ethel Renek
Karen Neems	Cate Leach	Constance Kiermaier



“12=One” at the [Flinn Gallery, Greenwich](#)

efforts to complete Buddhist shrines and the Gothic cathedrals of Europe. Both Ms. Neems and Ms. Lindberg had been taking a class with Constance Kiermaier, whose work has been widely exhibited in the Northeastern US.

About two and a half years ago, members of the class visited the Aldrich Museum of Contemporary Art in Ridgefield, CT, and were inspired by the Karkhana project created by six Pakistani artists. Karkhana is an Urdu term for the workshops where cooperating artists each contributed their own styles and skills to traditional court paintings crafted for the sovereigns who once ruled the present-day territories in Afghanistan, India and Pakistan.

The six modern Pakistani artists, who lived in different cities around the world, each began two new paintings on wasli, or rag paper. Each work was then sent to another artist in the group, who applied his or her own imagery. The works circulated among the group until each artist had contributed to each of the paintings. A *New York Times* reviewer said the work “sparkled like champagne.” Benjamin Genocchio wrote “They are a collection of near irreconcilable opposites—detailed figuration muddled with intuitive abstraction ... But a rambling magical unity materializes as you look.”

Under the mentorship of Ms. Kiermaier, students in her class began to envision ways they could work together to combine their ideas and talents. Unlike the Pakistani artists who exchanged their works by mail and courier and communicated from a distance, the twelve Connecticut artists are long time colleagues who have studied together with Ms. Kiermaier. Still, much of their project was designed to cultivate communication through visual art more than words or personal familiarity.



The Red Line

Exercises in collaboration

In their first work, *The Red Line*, each member of the class had a twelve-inch square canvas. They agreed to feature a red line on each piece, and they chose a color palette of soft golds, browns and grays, as unifying elements. Each person could paint whatever she wanted within these parameters. In the finished piece, the red line suggested a surprising journey through twelve fields of varying place and design.

In another work, *Point to Point*, each artist divided her square in half diagonally, and completed her own painting on one half. Then each covered her finished work with brown paper, leaving only a quarter-inch square of her work visible. Each would give the work to another artist who would have only that tiny visual clue to try to produce a new painting on the other half of the canvas that would complement the first in aesthetic tone and feeling.

“When we brought them to class, it was exciting to find what others had done, and how we communicated with each other and related to each other’s work using that tiny bit of knowledge from the exposed quarter inch,” Ms. Lindberg says.



Point to Point

“We knew each other well, so we knew the person who had done the covered side,” Ms. Neems adds, “And that influenced cohesiveness. But no one had an overpowering ego. No one was trying to outdo anyone else. I remember seeing just a few tiny black dots with some color and thinking I just have to take a chance with what I am going to do on the other side. It’s a nice way to work, seeing how things work together. It’s an amazing process, to see what can result from just the few parameters we gave ourselves.”

The twelve artists decided jointly on how the most harmonious presentations should be assembled. In *The Red Line*, for instance, all twelve canvases created their dramatic blend of pattern and color. Sometimes the artists chose not to use all twelve canvases. In *Point to Point*, just nine canvases were placed diagonally so that tantalizingly subtle images in rainbow hues are offset by empty space. Do those patterns invoke intimations of stars and clouds, distant magical castles or mysterious marine life under turbulent seas? The forms and shapes are abstract, Ms. Lindberg says, so they may inspire any number of interpretations.

In the joyfully emphatic *Numbers Game*, the artists selected canvases created with horizontal design, and arranged them in a vertical exhibit. They decided in advance to work with bright color on a bold red oxide background, with a number disguised or embedded in each separate design.

Artists see more than is visible to the ordinary eye, and they can evoke altered mood and consciousness with the tools of their trade. Consider the *Unmade Bed*, a vertical 88 inch by 44 inch acrylic where soft shades of white are collected in 32 squares that become geometric boundaries for dreamy folds and shadowy rumped chaos, delicate pattern and an occasional distinct demarcation of shade or shape. Instead of household disorder, Ms. Neems sees the unmade bed as a mutable idea that elicits a range of feelings and intimations of human presence. “I find a sense that someone has been there, the concept that there was a life there, a story. You think of the person in the bed, the feel-



Numbers Game

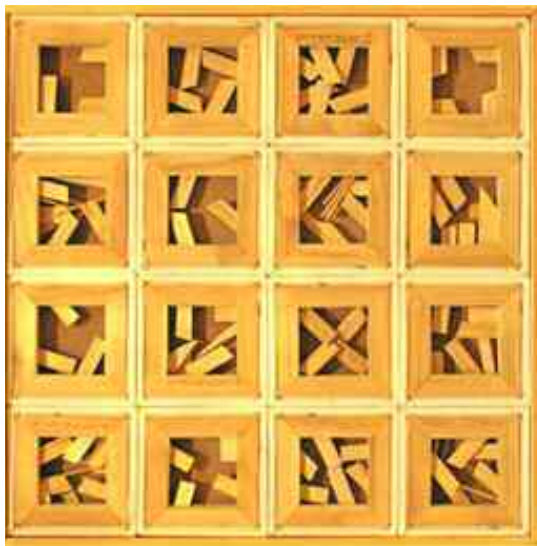


ings, the surroundings,” she says. “Last year I worked on a photo essay on the unmade bed, and I did a whole series of photos—I went into my neighbors’ houses, I took photos in my sister-in-law’s home, my nieces, children’s and adult’s beds. Some people thought it was strange, but others were very open to it. I found a real beauty in

unmade beds.”

When the group decided the unmade bed would be an interesting collaborative project, they brought sheets and pillows to class and set up a bed on the floor. “We worked on paper, because it has a softer feel, like a sheet, and a temporary feeling, like the unmade bed, and we used muted tones,” Ms. Neems says. “We took a long time composing it, to come up with what we had in the gallery, and we pinned it directly to the wall to add to the temporary, fragile concept of the unmade bed.”

In another set of six horizontally arranged canvases, the artists used the words of other artists to inspire a collaborative visual response using printed words and personal reactions. Artist Mindy Green chose the observation of the abstract impressionist painter and printmaker Robert Motherwell, “We understand the universal through the personal”, to create a canvas that combines clear printing with abstract vision. (top left)



Backstage



Natural Realm



Free Form Consequences



Small world

Anna Varnauskas embedded the words of Paul Klee, “Art does not reproduce what we see, it makes us see,” in an abstract creation of striking deep hues. (top right) Ms. Neems was inspired by the words of Twyla Tharp, the American dancer and choreographer, who said “Art is the only way to run away without leaving home.” She used collage technique to create a dream-like distant tree. (Left middle) Carol Conze used bursts of color to present the concept that “Art is the language for the eye.” (middle right) A bright painting (on the bottom right) shows art through the eyes of a child while a colored geometrical canvas (on the bottom left) suggests a maze.

Ms. Conze and Ms. Lindberg created the intriguing *Backstage*, in which the back of a canvas sets off sixteen unusual squares containing pieces of wood. The wood strips, normally used to stretch a canvas tight, function themselves as intricate design. In *Natural Realm*, Ms. Lindberg and Cate Leach collaborated on a painting of complex textured background and sweeping red arcs.

In a jewel-like 12 inch by 16 inch creation, *Small World*, all the artists collaborated in a work that uses paper images collaged on twelve two inch square tiles. The result is bright, delicate miniature representational images





Meet the artists

Back row: Anna Varnauskas, Lisa Thoren, Carol Conze, Cate Leach, Mindy Green

Front row: Mary Whalen, Ethel Renek, Jane Lubin, Constance Kiermaier, Donna Collins, Pam Lindberg, Karen Neems

of people and animals and things. The decorated tiles stand out in relief from a black background on which they are mounted.

Free Form Consequences is a collaborative effort at the opposite end of the scale in terms of size and style. The irregularly shaped six foot by six foot abstract work in brilliant colors was born on a day when Ms. Kiermaier, the teacher, was ill. Members of the class decided upon a few limitations, which began with a blue gray background, and the idea that the work was to combine visual abundance and simplicity that were both different and related. The artists did their individual pieces at home, and brought them to class the following week. “The actual composition took many forms,” Ms. Neems recalls. “We played around with moving the pieces, we decided to stack some of them, and part of the collaboration was in the dialogue amongst ourselves about how to put it together.”

The only collaborative sculpture on display at the Flinn Gallery was a striking pyramid that stood in the center of the exhibit. Ms. Kiermaier had planned it as her own work. Ribbons spiraling from bottom to the top were to symbolize the concept of something sprouting, and growing, and personal change. With her blessing, the class adopted the piece, then adapted it, with a staircase that featured the name and birth date of each artist on the stair risers.

Ms. Lindberg and Ms. Neems both are accomplished photographers. Ms. Neems says she often uses altered photographic images as inspiration for her

work. “Sometimes an image that is not distinct, or something that makes a viewer questions what it really is, can be a way to go on and create more mystery in a painting,” she says. Ms. Lindberg observes that artists often use photos as reference material, with intimations of colors, shapes and abstractions that can come alive in art. “Taking photos is like taking notes,” she says.

Ms. Lindberg is a graduate of Syracuse University with a bachelor’s degree in surface pattern design from the College of Visual and Performing Arts. She has worked in New York for the JP Stevens Co., and Fieldcrest, Inc., and freelanced for Marimekko, a company known for distinctive fabrics and interior design. She has been painting and exhibiting in shows for more than 20 years and has been awarded several prizes for her work.

Ms. Neems is a graduate of the University of Rochester, where she majored in art history and psychology. She was recently accepted into the Mamaroneck Artist’s Guild for her print making and mixed media, for which she has received several awards. Her work has been featured in several exhibits, including a solo show at the Westport Art Center, Westport, CT. She was also among the award winners at the Darien Public Library. ■

By: Prucia Buscell, Plexus Institute

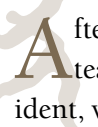
Photos: Curt Lindberg, Pam Lindberg, Karen Neems



Unmade Bed

A Generous Healer

For Tona Leiker, “complexity in nursing” is not an abstract or theoretical pursuit. It informs every aspect of her work and life... and now she is passing it on to the next generation of healers.

 After an elderly nursing home resident fell in her room, an interdisciplinary team gathered to try and re-enact what had happened. They found the resident, who was relatively independent, had landed on the floor after lifting herself out of a wheelchair to reach for clothing in the closet.

“It wasn’t blood pressure, or a heart condition or electrolytes, or any of the things that we in healthcare might think of,” says Tona Leiker. “It was clothing that was placed too high, and a maintenance person said ‘I can fix that’. It was an incredible healthy solution. But there is no rule or regulation that will achieve that.”

Thriving organizations that achieve excellence tend to come up with healthy, cost-effective solutions, Mrs. Leiker says, and that happens when people from diverse backgrounds with different mental models come together with a shared sense of trust and enthusiastic commitment to a strong, coherent organizational mission. Mrs. Leiker, MN, ARNP-CNS, APRN-BC, who was recently named [dean of the Tabor College School of Adult and Graduate Studies](#) as well as being chair of the school’s Nursing Department, has honed and researched those elements of excellence in her academic and nursing career. She has also thought deeply about the philosophical and practical interpretations of the nature of trust.

One recent project was an intensive study of how leadership, communication, and teamwork impacts the care residents receive in nursing homes. The resulting article “High-performing and low-performing nursing homes: A View from complexity science”, published in the October-December 2007 issue of *Health Care Management Review*, describes the research. Mrs. Leiker, and co-authors Dr. Sarah Forbes Thompson, a professor of the University of Nebraska Medical Center College of Nursing, and Dr. Michael R. Bleich, professor at the University of Kansas School of Nursing, examined four nursing homes—two identified as high performing, and two identified as low-performing based on

state evaluations—using a complexity lens. In more than 120 hours of observations, dozens of formal and informal interviews and document reviews, they found that flexible rules, free-flowing communication, diversity, attention to relationships and the inclusion of all disciplines in problem solving and decision making led to the best care as well as the best financial outcomes.

In the low-performing homes they found that the dichotomy between the stated mission of excellent patient care and the “lived mission” of ensuring economic profit created staff tensions and anxieties. Decisions were imposed by leaders, not generated by staff. In one low-performing home, for example, management decided to remove the dining room doors without consulting staff who worked directly with the residents. The open doors had been a clue for residents to enter during meal times. Without the doors, residents wandered in and out throughout the day, causing confusion.

In the high-performing homes front line staff participated in decisions and, they wrote, “the congruence between stated and lived mission ...serves as an attractor, a term used in complexity science to capture the essence and meaning of an oft-intangible set of values, sense of purpose, or higher calling that binds and sustains individuals and teams around an organization’s purpose.”

In the low-performing nursing homes, studies showed that decisions were imposed by leaders, not generated by staff.

A Career in Creating Trust

For Mrs. Leiker, living the mission is central—in nursing, teaching, and administration, and in organizational and personal life. “Living the mission and keeping it balanced goes back to the notion of trust within an organiza-



Passing it on: Tona Leiker frames her decades of nursing experience in complexity terms for one of her students at Tabor College

tion,” she says. “When staff feel empowered to do their work, you lower turnover, and when you lower turnover, you have more economic resources. Thus, you can do more in the organization, whether it’s to reward or recognize staff, improve their salaries, or repair things that need attention.

“When leadership is connected to the staff, and staff is connected to residents and families,

that's when you see congruence of stated and lived mission," she continues. "It's staff, residents, families and leadership together, cooperating, creating trust."

As a doctoral student at the University of Kansas School of Nursing, Mrs. Leiker is now studying high performing nursing education programs. "This is exciting—it's seminal work," she says. "No study has been done on the culture that exists in high performing nursing programs." Using qualitative case study methods, similar to those used in the nursing home research, she will look at how such programs emerge and what characteristics define them.

Mrs. Leiker was interested in complexity before she knew the term. When she began to think deeply about trust, her experiences and reading led her to complexity science. She had been impressed with Meg Wheatley's analysis of organizations as living, dynamic entities where people create context. "Trust is multi-dimensional," she says, reflecting on 30 years in healthcare and education. It means, she suggests, that people at all levels of an organization cooperate and communicate in a spirit of truthfulness and good will, across disciplines and boundaries, with mutual respect and shared goals.

Mrs. Leiker earned bachelor's and master's degrees in nursing at Wichita State University. She is an advanced registered nurse practitioner, as well as a certified alcoholism and drug addiction counselor. She was a school nurse for nine years. "In middle school and high school, I worked with some difficult students," she recalls, "but when they knew they would be heard, and they had a safe place to regroup and calm down, they'd be back to class in 10 minutes." The importance of listening was reinforced again in her later work. She has held several positions in nursing mental health, counseling and administration in Via Christi Health System and other hospitals in Kansas.

She started at Tabor in 2001 as an adjunct faculty member. As an innovator and scholar, Mrs. Leiker has been interested in qualitative and quantitative research as applied to leadership development and outcomes assessment. She led the nursing program at Tabor in developing an RN-BSN accelerated nursing program, using pioneering principles of adult education and complexity sciences. She has been working for the last several years to introduce complexity science into the curriculum and life at Tabor College.

Tabor is a small, private college founded in 1908 by the Mennonite Brethren. While many faiths are represented in today's student body, the environment, according to the web site, is "decidedly Christian." Mrs. Leiker says spirituality is purposefully incorporated in course work. In addition to a long-standing tradition of relationship-centered education that seeks to bring out the best in every person, Mrs. Leiker thinks the size of the school—there are

"When leadership is connected to the staff, and staff is connected to residents and families, that's when you see congruence of stated and lived mission."

—Tona Leiker

just under 600 students—created a natural fit for the infusion of complexity-based practices. Tabor President Jules Glanzer sees adult and graduate programs as a way of expanding the school's services, and he says Mrs. Leiker has the ability to accomplish that mission. "The adult programs allow people to see their dreams fulfilled," he says, "and Tona has the vision, passion, energy and leadership skills to help our programs serve the Wichita community and the entire state of Kansas. She is one of those people you want on your team."

Complexity Inspired Instruction

Mrs. Leiker keeps the community and the individual in mind, and complexity thinking has already influenced the structure and organization of the nursing program, as well as faculty development and administrative practice. "I think there is more collaboration among work units than there used to be; less silo-ing, and more intentional conversation on how we impact each other in our work," she explains. "With the intranet, when any of us change one area, we check with each other, ask how does it look, and how does it impact both traditional and adult students, and we consider whether we should have com-



"Decidedly Christian" – Tabor College, where Tona Leiker serves as Dean, School Of Adult & Graduate Studies/Chair, Nursing Department

mon pages or separate pages. We just have increased awareness of when we need to work as a team and in concert with each other."

Another principle is administrative flexibility. She recalls three potential graduate students, already working as nurses, who were eager to start the RN-BSN nursing program already two weeks underway. The administration in a conventional linear program would have encouraged them to wait until the fall, Mrs. Leiker says, but she recognized that the students were highly motivated adults ready to start their education. She invited them to start class the next day, be conditionally admitted (and meet all admission requirements of the College), as

long as they pledged to make up all the work, and complete their applications the following day with a specially-designed orientation. The students are doing well and stepped up to the challenge. Teachers and students welcomed them and created space for their learning needs.

In addition to bringing complexity science to the curriculum of nursing classes, Mrs. Leiker encourages learning through dyadic relationships, which she considers essential for building trust among faculty and students, and among students discussing reading assignments and academic questions. Mrs. Leiker had come to value diversity when she worked as a school nurse and in hospital mental health programs. Diversity isn't just about gender and ethnicity, she notes, it's about viewpoint, outlook, age, training, level of experience and area of specialty. She observed that the most diverse groups tended to come up with the best solutions, and that people learn most from things they actually do. She began studying "situated learning" and "legitimate peripheral participation", concepts developed by Jean Lave, a social anthropologist and Etienne Wenger, an educator with a doctorate in artificial intelligence. Their idea is that learning isn't just the accumulation of knowledge. Highly dependent on context, learning, in their view, is a more encompassing social process of people participating in the practices of social communities. And as they gain experience in those practices, they move from the peripheries to full participation at the center of their communities.

“My grandmother wandered away from her nursing home at sundown and was later found dead. This is something I carry within me. I am interested in creating effective organizations where people are safe.”

—Tona Leiker

Connections at Plexus: “Fully Human”

In the fall of 2004 Mrs. Leiker attended a Plexus Institute conference, “Creating Healthcare Organizations Where Nurses Thrive” at Hunterdon Medical Center in Flemington, NJ. “It was an ‘aha’ experience,” she recalls. “There was a sense of people coming together, and there was a sense of trust that was in the white space of the organization. The conversations I heard struck me how important it was for me as a leader to work hard to create that trust.” Her nursing home and doctoral research examines the kinds of organizational contexts that foster trust and allow individuals to blossom while acting upon a deep inner sense of purpose, and she finds trust and community equally essential in learning.

“Because all our students are practicing nurses, their own experiences provide rich examples on complexity at work—of nonlinear relationships, of the impact of small changes and the need to adapt and function in an environment that can become chaotic,” she says. “One of the classic problems in nursing is

that we hoard linens and supplies so that we have what we need when we need it. Nurses spend huge amounts of time hunting for things. Students relate to these stories. When RN students study the context of nursing, they begin to feel empowered, they learn to identify what they need, how to make small changes at work, and thus create a more accessible context. It's part of the mission of our educational process."

She has used the book *edgewise, insights from complexity science for health care leaders*, by Brenda Zimmerman, Curt Lindberg and Paul Plsek, to introduce complexity language and basic concepts. She also started using conversation cafes instead of classroom lectures and allows students to self-organize for the purpose of exploring academic topics of contemporary urgency.

"I love nursing," Mrs. Leiker says. "I've been able to do and learn so many things in my *spiral career*. My practice experience built my educator role, which enhanced my administrative experiences. Every experience built on another, but not only professionally. Some of my most poignant learning has occurred from being fully-human with my family and community."

For example, many years ago, her grandmother, who had dementia, wandered away from a nursing home 26 hours after she had been admitted. "She just wandered away at sundown and she was later found dead," Mrs. Leiker remembers. "I remember my mother's overwhelming grief. After that, a lot of alarms were installed and changes made in nursing homes. And this is something I carry within me. I am interested in creating effective organizations where people are safe."

In April 1991 a violent outbreak of 58 tornadoes swept through Kansas, killing 24, injuring hundreds and causing millions of dollars in damage. The Leiker's home in Andover was gone. "We lost everything," she says. "We were having dinner at a Pizza Hut not too far away. We went to the basement, and when we came out, we saw what had happened to our community. But we learned so much too. We lost all the material things, and yet our family remains very close after all these years, and perhaps stronger because of it. You have to rebuild, physically, spiritually and emotionally. I learned the value of charitable organizations and how much they help people. You learn the importance of family and community relationships. And, I came to understand for me how prayer and humor 'lightens the load' in the midst of chaos."

"I learned what it's like to have nothing, and to stand in line and wait—these were important life lessons.... when you work with vulnerable populations, people who are sick, and families who have lost their resources."

The Leikers let their children, Hauna, now 27, and Kyle, now 24, make the decision to rebuild their home in Andover. It was where they wanted to live

“One of the classic problems in nursing is that we hoard linens and supplies so that we have what we need when we need it. Nurses spend huge amounts of time hunting for things.”

—Tona Leiker

and go to school. And the experience shaped their values, too. “After the tornado, we were still living in a rented house, trying to get ourselves back together, and some children we knew lost their home in a fire,” Tona recalls. “Our kids packed up the few toys they had to give to that family. They knew people had helped us, so they wanted to do the same for others.”

Mrs. Leiker and her husband, Ron, enjoy hiking, trips to the mountains, and visits with their young adult children. She enjoys listening to her husband, a talented musician, play country, blues, religious and rock guitar. They are celebrating 30 years of marriage and enjoy their dyadic relationship.

In 2007, Mrs. Leiker was the Tabor College Richard G. Kyle Distinguished Faculty Lecturer. In 2006, she received the Sigma Theta Tau International Epsilon Gamma Chapter-at-Large Exemplar Award for leadership in nearly three decades of nursing. She has received several other nursing awards, and served on regional and national boards, including the National Advisory Council for the Center for Substance Abuse Treatment. She is a past president of the National Nurses Society on Addictions and served as a member of the American Nurses Association Congress of Nursing Practice. In March, she represented the University of Kansas School of Nursing in the 5th Annual Capitol Graduate Research Summit presenting the nursing home research. ■

By: Prucia Buscell, Plexus Institute

Meet Our Members

Stephen Van Roper

I am employed as a family nurse practitioner at Fronske Health Center at Northern Arizona University in Flagstaff. I am currently PhD candidate studying in a nursing research PhD program with the University of Arizona in Tucson. My research interests are in underserved populations, tribal health, rural health, evidence based practice, electronic health records, and healthcare provider decision-making processes. My current focus includes the information being processed by evidence based research and provider use of this information. The volume of information can be overwhelming for the individual healthcare provider, and presents many obstacles to not only access this information but to critic and assimilate this information into their current healthcare practice. In order to evaluate the entire spectrum of the translation of this research into improved quality healthcare outcomes, it is important to research the individual provider level processes. My intent is to better understand the process of placing EBR into practice, evaluate the provider decision process, and improve the potential for quality healthcare outcomes.

I believe that complexity science represents the essential functions of nature and life. The dynamic and fluid processes that complexity science tends to describe and research are congruent with our understanding of how our universe lives and evolves. Human function is an excellent micro example of how this process is both dynamic and often not entirely predictable. This is the dilemma that is presented to the healthcare provider in participating in healthcare. Complexity science allows for these dynamic and sometimes unknown processes to be understood within a reasonable logical framework: Sometimes an understood process does not equate to a predictable outcome, or a predictable outcome may not have a seemingly logical process. Complexity allows me to include such unknowns and not toss them out when issues do not fit the current paradigm.

I am not currently processing any literature specifically on complexity but am utilizing readings including a Health Affairs journal from Jan/Feb 2005 and others that contain numerous articles relevant to evidence based practice.

e-mail: v_roper@hotmail.com

Peter Dodek

I am an intensive care physician and researcher who spends about 20% of my time taking care of critically ill patients in a medical-surgical Intensive Care Unit (ICU) within a tertiary care teaching hospital. The remaining 80% is spent conducting health services research related to outcomes of critically ill patients. I enjoy this mix of activities because the experience of clinical work often generates questions that I can attempt to answer in my research work. My current research activities span from understanding the relationship between organizational culture and family satisfaction in the ICU to developing a measurement infrastructure for patient safety outcomes in the ICU to understanding differences in access, utilization, and outcomes of critical care between men and women at different ages. In addition, I am a co-investigator in several investigator-initiated clinical trials in the ICU.



I am most intrigued about how complexity and complex systems are displayed in both biological systems (such as the critically ill patients who I care for) and organizational systems (such as the hospital that I work in). Keeping in mind the interplay between various cellular and organ systems is key to understanding and treating critical illness. As a participant in an organizational system, I am constantly reminded about how mechanical or Newtonian solutions are rarely effective or durable. Rather, paying attention to “good enough vision” (rather than detailed strategic planning), “cooperation and competition” (rather than management by objective), and “the shadow system” (rather than executive meetings away from the workplace) are much more appropriate and sensible approaches.

I enjoy reading “Emerging” and other resources about complexity because I often get good tips about books and articles to read. One of the books that I have found from these sources is “Managing the Unexpected” (by Weick and Sutcliffe). The principles outlined in this book are very pertinent to the biological and organizational systems in the ICU.

Peter Dodek M.D., M.H.Sc, Center for Health Evaluation and Outcome Sciences, St. Paul's Hospital

e-mail: pedodek@interchange.ubc.ca

Penny R. Williamson, ScD

Penny Williamson is an internationally recognized facilitator, organizational consultant, educator and coach. She is a founding consultant for Relationship Centered Health Care, a founding facilitator and mentor for the

national Center for Courage and Renewal, and Associate Professor of Medicine (Part Time) at the Johns Hopkins University School of Medicine. Dr. Williamson works with leaders in healthcare and other serving professions facilitating personal/professional development retreats on finding meaning, courage and heart in one's life and work; coaching leaders to enhance their effectiveness; and helping leadership groups, working teams and organizations to build sustainable capacities in collaborative learning and relationship centered practice. She also teaches clinical communication, teaching and leadership skills to physicians and other medical educators.



Dr. Williamson received her doctorate in Behavior and Ecology from the Johns Hopkins University. Following ten years of academic endeavors at Johns Hopkins and the University of Washington, she was a founding director and Executive Vice President of the American Academy on Physician and Patient, (now, American Academy on Healthcare and Communication) a national organization devoted to enhancing doctor-patient relationships through improved teaching of communication and relationship skills and the promotion of research. For 23 years Dr. Williamson was a senior faculty member in The Johns Hopkins Faculty Development Program, a longitudinal program to enhance physicians' teaching and leadership skills.

In 1994 Dr. Williamson expanded the scope of her work from patient-clinician and student-teacher interactions to include whole organizations. She and her colleague Anthony Suchman, MD have been involved in a six-year staff development initiative at the American Board of Internal Medicine to build sustainable capacities in relationship-centered work and collaborative learning. They were also the external consultants in the Relationship Centered Care Initiative, a five-year endeavor at Indiana University School of Medicine to improve the teaching of professionalism by positively influencing the "hidden" curriculum (the organizational culture) of the entire medical school (i.e., the ways faculty, students, patients and staff relate to each other in informal encounters).

Drs. Williamson, Suchman and a third colleague, Diane Robbins created Leading Organizations to Health, now in its third year. LOH is a one-year leadership institute for healthcare leaders who wish to create and sustain relational cultures in their organizations. Drawing on her work with the distinguished educator Parker Palmer, Dr. Williamson has also created and leads a series of 18 month, 5- retreat programs for health care leaders "The Courage to Lead." Penny Williamson, Sc.D., Relationship Centered Health Care

e-mail: pwilliamson@rchcweb.com

web: www.rhcweb.com

Jeffrey Goldstein, Ph.D.

Dr. Jeffrey Goldstein is Full Professor, School of Business, Adelphi University, Garden City, New York USA where he has been on the faculty since 1989. Prof. Goldstein specializes in the application of complexity theory to organizations. His book of 1994 on this subject, *The Unshackled Organization*, was hailed by Industry Week as a “fascinating vision.” Prof. Goldstein is co-editor-in-chief of the journal *Emergence: Complexity & Organization*, the only journal currently devoted to the applications of the sciences of complex systems to organizations. Over the past two years he has co-edited the following books: *Complex Systems Leadership Theory*; *Classic Complexity: From the Abstract to the Concrete*; and Volumes 6, 7, and 8 of *Emergence: Complexity & Organization—Annual Volumes*. His new book, *Flirting with Paradox: The Self-transcending Constructional Logic of Emergence* will be published in 2009.



Prof. Goldstein is a trustee of The Society for Chaos Theory in Psychology and the Life Sciences which publishes the prestigious journal *Nonlinear Dynamics, Psychology, and Life Sciences*. He is also a member of the Science Advisory Board of the Plexus Institute and is a fellow of the Institute for the Study of Coherence and Emergence. Dr. Goldstein has given presentations and/or workshops to leading universities, businesses, and institutions in such countries as England, Ireland, Italy, Norway, Sweden, Russia, Greece, Austria, Canada, and Brazil as well as all over the United States. He has also functioned as a consultant to leading medical centers, investment banks, high technology firms, and other public and private organizations. Just this past April 2008, Prof. Goldstein hosted, at his university, “The First International Conference on Social Entrepreneurship, Systems Thinking, & Complexity“ with participants representing over 29 countries.

e-mail: goldstei@adelphi.edu

Faye Anderson

I am Associate Dean for Graduate Programs and Assistant Professor in the College of Nursing at the University of Alabama in Huntsville. I teach courses in the Leadership in Health Care Systems master’s degree program. I have over 20 years experience in leadership positions in home health and acute care hospitals and am an appraiser for the American Nurses Credentialing Center Magnet Recognition Program. In addition to enjoying the beautiful area of north Alabama, I am able to be close to three grandsons and be a part of their activities

For many years, I have had a special interest in leadership and how leaders influence others. In my work as a Magnet appraiser, I have had an opportunity to meet outstanding nurse leaders who are influencing change in positive ways, and my appreciation of the impact of the leader has grown. When I heard about complexity science, I became intrigued about the application to organizations and leadership.



I learned about the Plexus Institute at a Clinical Nurse Leader conference sponsored by the American Association of Colleges of Nursing. I also began reading Roger Lewin and Birute Regine's book, *Weaving Complexity and Business: Engaging the Soul at Work*, and my interest in complexity science increased. I joined the Institute to learn more about complexity science and to gain insights into how to incorporate the concepts into practice and teaching.

e-mail: andersof@uah.edu

Bonnie R. Armstrong

I'm from Southern California and have also lived in Florida, Washington D.C., and years ago as a student in Sweden, Germany and Mexico. I have been working to improve conditions for children and families since 1972 and have seen health, education and human service systems from many different angles over the years, including the federal, state, county, municipal and school district levels. Over time, I have played a variety of roles, including elected and appointed policy-maker, philanthropic leader, advocate, author, and consultant – with the common thread of being a change agent in each setting. Currently, I am with Casey Family Programs, working toward the goal of reducing by half the number of children in foster care in this nation by 2020. I believe that every child needs and deserves a safe, nurturing and enriching environment in which to develop, and that we as a society must build communities and networks that support families in providing it.

Having worked so long with large systems, it is no surprise that I was drawn to complexity theory when I first heard about it from Neal Kaufman several years ago. Now, I have finally joined the Plexus Institute through my studies with Rita Saenz and Maria Nemeth at the Academy for Coaching Excellence, where they apply complexity principles in the training program for Organizational and Life Coaches – from which I have recently graduated. I look forward to joining all of you in further explorations.

e-mail: armstrongjoy@sbcglobal.net

Anthony L. Suchman, MD, MA, FACP, FAACH

Anthony Suchman is a practicing physician and organizational consultant, and Clinical Professor of Medicine and Psychiatry at the University of Rochester. His work draws together a diversity of interests and experience to focus on the process of partnership across all levels of healthcare. After earning his BA (psychology) and MD degrees at Cornell University, he completed a residency in Internal Medicine and fellowships in General Internal Medicine (clinical epidemiology and health services research) and Behavioral and Psychosocial Medicine (mind/body interactions and medical interviewing), all at the University of Rochester. Dr. Suchman studied patient-clinician relationships, medical decision-making, physician satisfaction, and the spiritual dimensions of medical care. Through his teaching and writing (more than 80 articles and the book *Partnerships in Healthcare: Transforming Relational Process*) he has become known as one of the leading proponents of a partnership-based clinical approach known as Relationship-Centered Care.



After 15 years of academic pursuits, Dr. Suchman became interested in healthcare organizations, particularly how the values expressed in administrative processes and in the behavior of leaders affect processes of care. To explore the potential of integrated healthcare systems to engage patients as active partners and provide coordinated, effective and humane care, he helped to found the Highland Physicians Organization and was its first Executive Director. He subsequently helped to establish the Strong Health Managed Care Organization and was its first CEO and Chief Medical Officer. He earned an MA degree in Organizational Change, studying with Ralph Stacey at the University of Hertfordshire's Complexity and Management Centre, and for 8 years served as the Board chair of the American Academy on Communication in Healthcare.

Currently Dr. Suchman is working with clinicians, administrators and board members in health systems in the US and internationally to advance the practice of Relationship-Centered Care. With his colleague Penny Williamson, he recently founded Leading Organizations to Health, a leadership institute on organizational change in healthcare. He and his wife, artist Lynne Feldman, have two grown children and are enthusiastic urban dwellers. He enjoys folk music, yoga, books, computers, art, travel and hiking – especially in the Finger Lakes region of New York State and the White Mountains of New Hampshire and Maine.

e-mail: asuchman@rochester.rr.com ■

On the Edge: Healthcare in the Age of Complexity

August 3-5, 2008

The [Unity Village](#) in Kansas City, MO

Join us to explore how views through a complexity lens can help discover solutions to complex issues facing healthcare today, and how nurses and other healthcare professionals can harness the power of complexity in their work and in leading the way to change.

The event will also celebrate publication of the book - *On the Edge: Nursing in the Age of Complexity*, written by members of the Plexus Nursing Network and the Plexus scientific community. Many chapter authors will serve as faculty.

[Visit the website](#) to learn more about the book, the conference, and the implications of complexity principles for practice, education, leadership, research and policy.


*Whenever you read a book or have a conversation,
the experience causes physical changes in your brain.*

—George Johnson



Plexus Institute 2008 Summit

Complexity Science and Coordination Dynamics
October 3-5, 2008 • Philadelphia, PA

 Join the Plexus community for an exciting two-day exploration of complexity science and coordination dynamics, the intriguing field of study that may open new understandings of emergence, nonlinearity, interaction and context and the shared principles at work in all living systems. J.A. Scott Kelso, PhD and Thomas Smith, PhD will be among the distinguished faculty members.

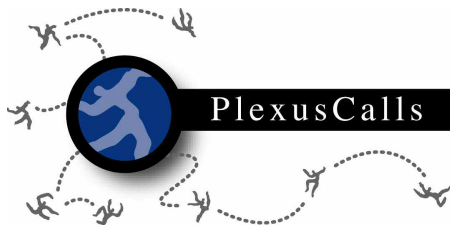
Dr. Kelso is a pioneer and leading scholar in coordination dynamics. He has written that coordination dynamics may be the conceptual and methodological foundation of “a science that bridges mental, brain and behavioral events,” and that it helps people in different fields deepen their understandings through their connections with each other’s work. He is the author of *Dynamic Patterns: The Self-Organization of Brain and Behavior*, (MIT Press, 1995)

Dr. Smith is a professor of sociology at the University of Rochester. He is the author of numerous scholarly articles and books, including his theoretical monograph *Strong Interaction* (Chicago 1992) which critics praised as a “book that jolts us into new ways of seeing and thinking about human life.” Smith’s more recent work uses computational methods to explore innate mechanisms active in attachment behavior and has opened up, within in his own discipline, a new field that is an outgrowth of the important discoveries in social neuroscience.

The Summit will offer new insights into the concepts of how patterns of coordination form, and a multidisciplinary examination of the complexity principles that underlie the behavior of complex systems across all scales, from cells to humans to communities. It will also offer a chance for members of the Plexus community to come together, identify and investigate topics of mutual interest, and experience interaction and connection with people who share similar and different professional and personal backgrounds. ■

Plan to join us... and stay tuned for more details!





PlexusCalls: Summer 2008

Bringing people together in conversation

Positive Organizational Scholarship

Guests: Kim Cameron, Horacio David Hares,
Sharon Benjamin

Friday, June 6, 2008 • 1-2 PM Eastern Time

641-715-3300, access code 485743#

Positive Organizational Scholarship (POS) is concerned with the study of positive outcomes, processes, and attributes of organizations and their members. The focus on positive phenomena includes community psychology, humanistic organizational behavior, organizational development, pro-social motivation and citizenship behavior and corporate responsibility. Scholarship provides a theoretical framework for why the positive processes succeed.

- **Kim Cameron, PhD**, is professor of management and organization at the Ross School of Business and professor of higher education in the School of Education at the University of Michigan. He is the author of more than 2100 scholarly articles and eleven books, including *Competing Values Leadership*, *Developing Management Skills*, and *Making the Impossible Possible*.
- **Horacio David Hares, MD, MBA**, studied medicine in Argentina. He graduated from the University of Buenos Aires in 1996, and completed his training in internal medicine in 2001. He has worked in quality management, with special emphasis in organizational transformations, change theories and positive deviance (PD).
- **Sharon Benjamin, PhD**, is principal of Alchemy, a Washington DC based management consulting practice. She is a seasoned organizational executive who has served as a CEO and directed institutional development and

finance. She earned her doctorate in organizational behavior from the Union Institute and University in Cincinnati OH, where she has co-taught three leadership seminars.

The Simplicity of the Complexity of the Credit Crunch

Guests: Jules Muis and Sharon Benjamin

June 13, 2008- 1-2 PM Eastern Time

641-715-3300, access code 485743#

This spring's credit crunch has taken many executives and venerable financial institutions by surprise. The extent of the damage is still unfolding, as vast numbers of people lose their homes. What happened, and what is the role of the regulators and gatekeepers?

- **Jules Muis** is a Dutch citizen and qualified Registered Accountant (Dutch CPA) who has worked with numerous national and international accountancy organizations with a focus on the potential and pitfalls of good governance, risk, and change management practices in the public and private sectors. He was the first director-general and chief internal auditor of the European Commission, and chaired the audit committee of the International Baccalaureate Organization, headquartered in Geneva. He also served as vice president and controller of the World Bank, playing a leading role in good-governance-inspired internal and external change initiatives.
- **Sharon Benjamin** is principle of Alchemy, a Washington-DC based management consulting practice, and a seasoned organizational executive, who has also co-taught seminars on leadership.

Communities and Workplaces that Work for All

Guests: Peter Block and Curt Lindberg

Friday June 20 • 1-2 PM Eastern Time

641-715-3300, access code 485743#

- **Peter Block** is an author, consultant and citizen of Cincinnati Ohio. His work is about empowerment, stewardship, accountability and reconciliation. His books include *Flawless Consulting: A Guide to Getting Your Expertise Used*; *Stewardship, Choosing Service Over Self Interest*, and *The Empowered Manager: Positive Political Skills at Work*. He also wrote *The*

Answer to How is Yes, and his newest book, *Community: The Structure of Belonging*, was due in bookstores in May. His websites are www.peterblock.com, www.designedlearning.com, and www.asmallgroup.net.

- **Curt Lindberg, D-Man**, is playing an important role in introducing complexity science concepts into health care thinking, organizational management and practice. He is the author of articles on complexity and co-author of the book *Edgework: Insights From Complexity Science for Health Care Leaders*. He is the president of Plexus Institute, and was recently awarded a Doctor of Management degree from the University of Hertfordshire, in the United Kingdom, where he studied with Ralph Stacey. ■

Recently completed calls, available as audio files
at www.plexusinstitute.org

Plexus Institute Makes Another Historic Move

Plexus Institute has moved from the landmark Olde Mill in Allentown NJ to a new location in another historic building.

The new address is Francis Hopkinson House, 101 Farnsworth Avenue, Bordentown, NJ 08505. The house, which has been designated a national historic landmark, is an 18th Century building once occupied by Francis Hopkinson, a signer of the Declaration of Independence and his family. Our new phone number is 609-298-2140. The new fax number is 609-298-2168.

