## From the Editor:

In the world of public education where no child is to be left behind, I have been wondering about what is the "behind" we are admonished by President Bush to help children escape and where is the "where" we are going.

We think in these linear terms as if we are all on the same train going somewhere over which we have no control. Even those of us who are clamoring to get off the train are imprisoned in our subconscious metaphors.

This predicament has made me aware that it is when I am with colleagues such as at the recent American Society for Cybernetics conference in Urbana, Ill, last March that I am with people who are thinking "off the tracks" and gain hope that the proverbial "light at the end of the tunnel" is not just another same old train heading toward me. That's what thinking cybernetically does for me.

And yet, when someone asks, "What is Cybernetics?" it is difficult to find an answer. The easiest answer I have found is that it is "the science of control in machines and animals" and I usually refer to how Norbert Weiner copied the natural ability of hawks to track a moving target by using information gathering feedback loops to catch its daily food. From this, Weiner and others developed technology to do the same. For example, we developed the same technology in machines to prevent the Nazis during World War II from bombing London into the dark ages. We were able to track the movement of incoming German bombers in order to shoot them down before they could accomplish their mission. On the elemental level, this circular information loop connecting to the target of interest is the basis for thinking cybernetically and is at the bottom of all the complex innovations in our present electronic technological age. This is called "first order cybernetics."

The cybernetics of interest in PATTERNS is called "second order cybernetics" which concerns the circular thinking rather than linear thinking in social interactions including politics, education and management.

## EDUCATION AS A WAY OF LISTENING

A conversation with Robert Martin

*Robert Martin, PhD. is an Educator and Psychologist in the Department of Education at Truman State University in Missouri. He was an undergraduate at the Biological Computer Laboratory at the University of Illinois, Urbana Champaign. I was curious to find out how his background in the study of Cybernetics has influenced his practice working with student teachers today. (Ed.)*

**Barbara:** I am very happy to have this chance to hear about your experience with future teachers at Truman State University since you have studied with Heinz von Foerster and Herbert Brun in the Biological Computer Lab at the University of Illinois. What led you to get involved in the BCL?

**Robert:** I was studying with Herbert Brun in the music department and one day he came in and said, "There's this professor in electrical engineering who writes papers that can be read by anyone who wants to take an interest in them and they are about subjects having to do with what we are doing here and we're going to do a course together. That was really the beginning of the Heuristics Seminars with Heinz and Herbert basically team organizing, rather than team teaching.

**B:** What years were you involved in the BCL?

**R:** It involved the heuristics class and with Herbert and with Heinz from the fall of 1967 to the spring of 1972 and then when I came back later on a visit I went up to Heinz' office and he was in the last stages of closing down the BCL office. That was about 1978. He had retired at that time. He gave me one of the copies of the book, Cybernetics of Cybernetics., ... the students had put this together after I left in 1972. They did this in the heuristics seminars that continued to meet every semester. You could sign up for it for as many semesters as you wanted.

**B:** What struck you as different in the heuristic seminars?

**R:** Right at the beginning we had the consideration of what do the students want? I remember one time I was visiting with Herbert Brun at the time his two sons were in high school. He said, "I spent time with their teachers and these people are good people. They're very caring and concerned but why do they never listen to the students?" This was, for him, what made education in the United States.

Mark Enslin told me that when they were setting up the School for Designing a Society in Urbana and they were talking about goals, Herbert said ."Leave that open. Let the students figure out what they want as their goals." This was about 20 years after the Heuristics Seminars but they pinpoint another approach to education and also a critique of what goes on in schools. That is, the students are not really part of the decision-making. It's considered to be impossible because the state and the local school board and all the other organizations decide what must be taught.

The Membership Handbook for the ASC states, *"Beyond its scientific and transdisciplinary orientation, cybernetics has profound philosophical and religious implications.Thus there are many definitions for the word, Cybernetics."*

Personally, I prefer the definition of cybernetics from the Neuro-biologist Humberto Maturana who says, "Cybernetics is the science and art of understanding." It is "understanding" that I hope is the "where" we wish our selves and our children to go. And there's no train track that will take us there.

Particularly referring to the United States, David Simpson in his book, "9/11: The Culture of Commemoration" (University of Chicago Press 2006) sees 9/11 as the defining moment in our present century where the apparent helplessness this horrendous event created should not be seen as a measure of our confusion, but of our determination not to settle for easy answers. For me, thinking cybernetically allows us to move into this age of complexity. In a review of his book, Julia Keller notes that Simpson bemoans the "resistance to complexity" that he perceives in many knee-jerk responses to 9/11, "from jingoistic artworks to the war in Iraq." He sees the cultural response as more than just a catalog of items that mention the event...The response is also a fundamentally altered world view, a new way of being in, responding to and defining the world. Simpson writes, "The event [9/11] has been and will be made to mark a new epoch and as such it is generating a mythology and a set of practices of its own." (Chicago Tribune, September 17, 2006)

I see the germs of a trend toward cybernetic thinking in the popularity of the film, "What the Bleep Do We Know" (which leaves the popular saying of the 1960's, "Question Authority," behind and suggests on bumper-stickers I've seen lately that we "Question Reality" instead.) Now we have the more recent video and book, "The Secret," which insists that we actually invent that reality by focusing on our intentions. These are concepts imbedded in Second Order Cybernetics and Radical Constructivism developed in the Biological Computer Laboratory at the University of Illinois, Urbana-Champaign. *(see page 6)*

In her article, Keller also notes that Michael Clarke, in a recent essay in the London Times, points out the devastating visual effect of the use of the weapon chosen in the 9/11 attack. "Commercial aircraft represent globalism and high technology; they shrink the world

# EDUCATION AS A WAY OF LISTENING *(continued from page 1)*

**B:** I entered the field of education through the free school movement just because of this. I kept wondering what's the sense of educating for Democracy when we refuse to let students learn to live it?

**R:** Of course it's possible to do both. They don't have to be opposite.

And I do know teachers who do this but it takes a lot of courage and a lot of skill. I think the other thing that came out during those first Heuristic seminars was the idea of "Desire." That was something that came out of Herbert Brun and over the years worked itself into the fabric of what was going on in the heuristic seminars and then later on also into the fabric of what happened with the Cybernetic Society.

Herbert came in with an assignment where everyone was asked to make a list of their desires to be ordered from the more general desire to the less general. If a desire could be subsumed under another desire that could be met first, then that desire would be at the top of the list.

It sounds like a very easy idea but it forces you to evaluate what your desires really are. Also the idea was that these desires should be the necessary conditions for you to live in a world that you wanted to live in. It puts you at the center and provides the need to communicate with others and to find out what their desires are. That becomes the foundation for something that Heinz talks about and that is, "At every moment we are free to move in the direction of the world in which we want to live."

**B:** Yes. Learning how to take responsibility for our desires and our own freedom is not easy. You are preparing new teachers at Truman University now. How would you define the word 'education'?

**R:** Let me start with learning, rather than education. We are all learners and each of us must learn for him/herself. A famous philosopher once said, no one can die for you. This was parodied by another philosopher who pointed out that no one can take a bath for you. We might further add: no one can learn for you. Piaget said it best: To understand is to invent. And I would add that we invent everything individually and collectively: our thoughts, perceptions, language, actions.

When Heinz von Foerster was asked if he saw himself as a discover or an inventor, he replied: Always an inventor. This is how I see learning: we are always inventing ways of perceiving and acting that enable us to make sense of our experience. Teaching is the process of helping others invent ways of understanding their experience. Teaching is helping others to become inventors of their own understanding through conversation, reading, writing, designing, and making things. Teaching includes inventing assignments, having conversations, and structuring experiences. I see myself as an inventor of language, music, presentations, activities, and performances. All of these involve learning.

To know what teaching is, it can be helpful to understand what it's not. When we speak, nothing other than pressure waves is transmitted through the air. No meaning is transmitted, yet each of us somehow creates meaning from these pressure waves. It follows from this that it is always the listener who determines the meaning of a message. It is the student who determines the meaning of what the teacher says. When I understand this, it becomes very important for me to listen to students to find out what they are understanding. This seems obvious enough; the not-so-obvious part is realizing that the teacher transmits no knowledge to students; every student must invent the meanings the teacher's words will have themselves. Once we understand this, we have the opportunity to change how we think about teaching. Facilitating this change in other teachers

(including future teachers) is what interests me.

My experience as a graduate student with Heinz von Foerster and Herbert Brun and then, over the last three plus decades, has been very helpful in balancing the nature of understanding as something invented and the nature of language as something that tends to perpetuate ways of thinking and acting. Heinz emphasized our role as inventors responsible for our language, and actions. Herbert emphasized the need for vigilance in how we use language because of the tendency of language to perpetuate ways of thinking and acting which we may find undesirable when we think about it.

How does your understanding of constructivism and second-order cybernetics affect your practice?

**R:** Constructivism is simply the word we give to the understanding that we are continually inventing the world of our experience. Once we realize that knowledge cannot be transferred from one person to another, our ideas about teachers and teaching change. We begin to understand that teachers are facilitators of learning, not information givers.

Learning begins with confusion. Human beings construct their knowing from their interactions with themselves, their interactions with others, and their interactions with the world. If the learner hasn't had relevant experience, she isn't going to understand. When I/we talk about how we have to create our own understanding, I have to try to find ways to give students experiences that will create a space for learning to take place. Telling them the idea doesn't work.

Once we've eliminated our confusion by inventing new ways of seeing and understanding, we use them until we find that they don't work and, once again, we feel confused. We don't like feeling confused, but it's a necessary condition for inventing a new understanding to resolve our new confusion. Before I can talk about this idea with my students, I need to connect with their experience. One of my favorite activities with my undergraduate class is to throw and receive an eccentric ball about the size of a soccer ball. I bring it to class, we form a circle and we toss the ball to one another. With a little spin on it, the ball is difficult to catch. The receiver finds it difficult to predict where it will go, and so he/she finds it difficult to see the ball and to coordinate actions which result in catching it. The confusion is perceptual and physical, an important point for me because I want us to become aware of the confusion (Piaget calls it disequilibrium). We are then able to talk about our individual experiences and understandings about how new ways to think and act emerge from confusion. My hope is that the teachers and future teachers I work with will teach differently as a result of understandings that they have invented in the process of dealing with eccentric balls and other discomfiting experiences.

Constructionism is not a belief, it is a practice.

One of the interesting things about seeing the world in the way I have described is that I find it difficult to separate my personal life (as a friend, parent, child, partner) from my professional life (as a teacher and psychologist) and from my creative life (as a composer, piano player, and actor). My practice continues to deepen. Constructivism is not a belief, it's a practice. You look at yourself as the inventor of your perceptions and actions, an inventor who has responsibility for those perceptions and actions. The same is true of second-order cybernetics: it's not a set of truths: it's a practice. You understand that you are an observer who invents the descriptions you use and that the systems you describe are your way of understanding. This can be very helpful by making us more open to different ways of understanding.

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and threaten cultural conservatism... "Thus the arts," she writes, "still our chief means of engaging ideas, even the heinous ideas of terrorists, must grapple with technology's double-edged sword: Some of us see it as redemptive and positive, while others see it as threateningly negative....."

*"In the shuffle play that constitutes the modern age, that blends sentences and ideas and images, the tragic and the uplifting, we move to a rhythm both enormously complicated and beautifully, blissfully simple. Separate, but bound together: such is the fate of our words. And hopes. And pictures. And people."*

Returning to our concern with the state of our educational system and the No Child Left Behind legislation, we are aware that statistics give us a limited picture of our world and certainly, no instructions for how to use the information. Every year the United Nations Human Development Report looks for a new way to measure the lives of people. Putting aside faceless statistics like per capita gross domestic product, the report burrows into the facts about what children eat, who goes to school, whether there is clean water to drink and so on. This year, Kofi Annan shows what proportion of the worlds goods and services are consumed, comparatively, by the rich and the poor. The report notes that Americans spend 8 billion a year on cosmetics which is 2 billion more than the estimated total needed to provide basic education for everyone in the world. This is trivial information. Everyone can *see* that the rich are getting richer and the poor are getting poorer. The problem is that we are seldom given the cost/benefit for noting problems and gathering statistics vs doing something to alleviate the immediate on-the-ground situations. This is also the problem with the "No Child Left Behind" initiative. This expenditure on gathering information is seen in bureaucratic systems where we objectify and, in turn, complexify problems by building cadres of problem-definers/solvers who develop systems which insure the need for their on-going, well-paid services. This was exposed in a recent news release citing a Congressional hearing which probed the $6 Billion reading initiative at the center of the NCLB. There appears to be a financially lucrative "closed loop" connecting those who develop the tests and those who develop the learning programs to be able to pass the tests. As in the popular song, "Love and Marriage..You can't have one without the other," we yearn for a simple view.

In the interest of encouraging readers

to get involved in exploring a more "cybernetic" view of society through active participation in the positive politics of change, we are suggesting a regular column in PATTERNS to help us recognize and understand pathogenic social systems. In the Winter issue of PATTERNS we addressed the criminal justice system. In the Summer issue we will address the health industrial system.

Having just returned from the American Society for Cybernetics Conference in Urbana, Ill. where the Biological Computer Laboratory was created in the Departments of Electrical Engineering and of Physiology and Biophysics at the University of Illinois, a pioneering experiment in education, inspires us to focus on the question of what is meant by "education today" as the theme for this issue of PATTERNS.

We have a conversation with Robert Martin, who was an undergraduate at the Biological Computer Lab from 1967 to 1972. It was here where Heinz von Foerster, and many of the seminal thinkers in Second order Cybernetics contributed to the understanding expressed by Ron Miller, PhD, leading activist and scholar in the emerging field of holistic education since 1988 when he founded the journal, *Holistic Education Review*. Robert Martin prepares would-be teachers at Truman State University in Missouri.

As background information, Ron Miller gives us this history of the Elementary and Secondary Education Act adopted in 1965 as part of President Lyndon Johnson's "war on poverty." in the Spring 2007 issue of Education Revolution. The law needed to be authorized by Congress every five years, and as this has taken place ESEA has reflected the changing political realities of the last forty years.

Still imprisoned in the linear way of thinking, we accept (without thinking) the idea that development means improving. In 2002, the Bush administration persuaded Congress to infuse ESEA with the "draconian standards-and-testing agenda of No Child Left Behind. By dictating that schools must demonstrate 'adequate yearly progress' as measured solely by standardized test scores, NCLB effectively saddled the schools with a pedagogy of "transmission"—the authoritative transfer of approved knowledge. Standardization chokes off creativity, imagination, exploration, and teachers' professional as well as intuitive judgement."

This bill eliminates the chance for inventive teachers, parents and students to do anything to alleviate diverse on-

## EDUCATION AS A WAY OF LISTENING - *(continued from page 3)*

**B:** The world is so dangerously polarized today it would be a great help if we learned this quickly.

**R:** Heinz has said., "Act as to always keep open the number of choices."
I think the first thing to realize is that you cannot teach these things. All you can do is to keep open a space for students to explore the environment in which these experiences arise and then to come to their own conclusions.

By the way I don't think it is at all necessary or even desirable for the world to accept the constructivist point of view. I like Heinz' formulation that there are inventors and discoverers...two different ways of looking at the world. The idea that we should make everyone constructivists is very dangerous because it becomes a kind of truth. And what he points out with Maturana in the video, Truth or Trust, is that truth always leads to violence and war.

**B:** Yes. It imposes the idea that everyone basically can (or should) be the same. Would-be teachers realize that they will be required to teach certain material so that their students do well on standardized tests and so they want to learn methods for doing this so they don't lose their jobs. And I hear you say they are also helped to be reflective, use collaborative groups, and be creative. No wonder they "burn-out"! I'm reminded of Elliot Eisner, in his book "Cognition and Curriculum Reconsidered" (1994) who pointed out that would-be teachers have been trained in the profession from the age of five and they learned from their own teachers just as we did. There's a common language that engenders a deep inertia in many of us concerning how to do schooling.

**R:** Yes, and what Heinz suggested was that discoverers, those who experience themselves as discoverers, meaning those who are realists, believe that the world they experience is a representation of the world as it is. But we are not talking about "what is" we're talking about what the description is.

**B:** But when Piaget says, "To understand is to invent." Would that mean that the discoverers don't understand?

**R:** No. They wouldn't describe themselves as inventing, I would describe what they do as inventing. We're in the realm of descriptions here. How do I describe myself, how do you describe me, how do you describe yourself? In the past if we didn't have the same descriptions that would be cause for burning people at the stake. And, of course, we're not talking about what is, we're talking about what the description is.

You asked how I would describe the idea of Education. I would say that education is helping people to make meaning. You can't force it. For example, I teach a course on creativity and we talk about all these ideas we've just been talking about here. Then I get people to get involved in writing papers about their desires and everyone makes a video on the topic of what they are doing. So, regardless of what their description is, they're involved in doing something that is meaningful to them. They are inventing.

**B:** You commented earlier about Herbert Brun's concern that in schools, students aren't listened to. In what you are describing it seems you are training teachers to help students find something meaningful for themselves, and in sharing and in learning to listen to each other, they become conscious of how that feels, to discover the diversity of the perspectives of others. That strikes me as deep understanding. There seems to me a thread running through this conversation; understanding education as a way of listening instead of teaching.

**R:** The point I'm trying to make here is that when I say 'education' I'm talking here about University education in some cases and public school education in some cases and both in some cases. We haven't really differentiated that in our conversation.

**B:** But is there a common thread through it all?

**R:** Absolutely! And the thread is that we are having conversations, that we're creating performances, not teaching everyone to think in the same way. We're not teaching people to be constructivists or not to be constructivists. We're giving them experiences and conversations which ......

**B:** Which gets to the title of your power-point presentation at the ASC Conference in Urbana last March. "Creating a Reality One Conversation at a Time" That might be a good description of "Education."

**R:** Exactly. What you have to see is that if you're going to teach in a different way that means you're not teaching Constructivism or Second Order Cybernetics or whatever. You're rather using Second Order Cybernetics and Constructivism to do something different with the students. Something that enables them to do something different. Something which they want to do, which they find meaningful, which involves them in inventing their own meaning, which involves them in having meaningful conversations and so on.

**B:** Sounds pretty liberating to me.

**R:** When you teach this way then you're always learning at least as much as students are. Everything that's happening is happening for the first time.

The key thing is to dissolve your own certainty and to help learners to dissolve their certainty. Learning begins with confusion and you have to be willing to be confused and that's very difficult for teachers.

**B:** Thanks for sharing that. It seems to me that out of the chaos of confusion, new ways of learning are emerging. That makes sense in helping us adapt to our changing environment. For example, we don't necessarily have to teach evolution, we are learning that we *are being* evolution.

*Robert J. Martin is a licensed psychologist in the state of Missouri and a professor of educational psychology at Truman State University. Dr. Martin has a life-long interest in the study of creativity, learning, psychotherapy, constructivism, and cybernetics. He has a PhD in educational psychology from the University of Illinois at Urbana- Champaign where he completed an interdisciplinary thesis with Heinz von Foerster and Herbert Brun. He has two published books with Prentice Hall and is an active writer, presenter, and composer. He can be contacted at: martin@truman.edu*

Ed. Note: The video mentioned, *Truth or Trust*, is available for sale on the ASC website: www.asc-cybernetics.org

> Learning begins with confusion and that's very difficult for teachers.

the-ground situations. Miller notes that, *"This year, ESEA/NCLB is due to be reauthorized again, and both supporters and opponents have mobilized to influence the nation's lawmakers. The differences between them reflect radically different educational paradigms. On one side, political and corporate leaders, the media, major foundations, and most state education officials believe that schools need to "produce" workers who are prepared to compete in the global economy....They are concerned, to the point of obsession, with "accountability," which is demonstrated through test scores."*

He points out that opponents have given a different name to the NCLB initiative, "Childhood Left Behind," because "the natural ways in which young people experience the world and make sense of it (through free exploration, play, and self-motivated curiosity) are throttled by the consuming regimen of standardized curriculum and relentless testing. (Here, I believe, it is relevant to reflect on the fact that the break-through in technology which has changed our *social* environment was based on the hungry hawk's *natural* circular, not linear, ways of thinking.)

Miller has founded the Educator Roundtable. (See www.educatorroundtable.org) where they propose 15 steps toward an alternative educational universe and a healthier society. They also present a petition on their website which states, in part, *"We, the educators, parents, and concerned citizens whose names appear below, reject the misnamed No Child Left Behind Act and call for legislators to vote against its reauthorization. We do so not because we resist accountability, but because the law's simplistic approach to education reform wastes student potential, undermines public education, and threatens the future of our democracy."* (see also PathsOfLearning.net and edrev.org/ aeromagazine.html and great-ideas.org)

The ASC conference in Urbana was attended by several people who had been undergraduates or graduate students in the BCL program so the perspective on education that was emphasized in the conversations was not learning as an act of receiving knowledge, but learning as invention. We explored the experiential involvement in learning

inventively. This was particularly evident among the younger members present at the conference who were attending or had attended the School for Designing a Society. (the hosting group for the conference) Their message was vital, not only in their dialogue but in their theatrical presentations as well. Andy Trull and Sailor Holladay contribute a description of the dynamics of the conference along with descriptions of their desires. *(See page 11)* They found *"the ASC conference to be a place to temporarily leave our individual things and come play "in between" worlds as our world together. We want more of this and don't yet have enough. This is community."*

Along with the current news from ASC, we include a bit of history in the form of the originating ideas by Heinz von Foerster which lead to the BCL and a description by Stuart Umpleby, Department of Management Science, George Washington University, who was also a student in the BCL program. It is my impression that the energy and the impact of ideas presented here are emerging in the present alternative programs of education and the social action initiatives for change in society that are gaining momentum around the world. **The PassageWorks Institute** is an example *(see below)*. For those who are in need of a sense of hope in these dark times, we suggest taking time to explore the internet where an emerging pattern of inventive ideas in education can be seen.

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**The PassageWorks Institute,** founded and directed by Rachael Kessler, is dedicated to transforming the culture of classrooms, schools and districts so that the inner life of students and teachers is safe, nurtured and welcomed. By "inner life" we refer to that essential aspect of human nature that yearns for deep connection, grapples with difficult questions about meaning, and seeks a sense of purpose and genuine self-expression. For twenty years, our model for supporting these yearnings in young people has fostered the development of

# Cybernetica at Illinois

By Heinz Von Foerster

These are the originating ideas for what later became the Biological Computer Laboratory (BCL) established at the University of Illinois. This appeared in the ASC FORUM, A Publication of the American Society for Cybernetics Volume V1, Number 2_Summer 1974, as part one of a series on Cybernetics at the University of Illinois by Richard H. Howe and Heinz Von Foerster. Heinz describes the course, called Cybernetics of Cybernetics.

## CYBERNETICA

The departments of Electrical Engineering and of Physiology and Biophysics offer to their undergraduate and graduate students each semester general topic courses (EE 272, 490, and B.PH. 199. 491) Since on earlier occasions a fusion of my sections of these courses into one class worked well, I contemplated offering for the Academic Year 1973/1974 a two-semester compound course for these Departments with a subject -matter that would not only have ramifications in the biological and the engineering sciences, but also perform an integrating function on these sciences as well. Cybernetics appeared to me as an appropriate subject matter. Particularly, thanks to Norbert Weiner's explanatory clause for cybernetics as "Communication and Control in the Animal and the Machine." I could pacify - though not enthuse - my colleagues in the life sciences and in engineering, for there appeared in the contemplated title the words "animal," which would satisfy the former, and "machine," which would persuade the latter. Moreover, a course on cybernetics would give me an opportunity to celebrate Norbert Wiener, this kind and competent man, by observing through this course the 25th birthday of his most beloved brain child.

However, unlike other disciplinarians who may not - even should not - apply their competences to themselves (pyrotechnicians, analytic chemists, surgeons, etc.) the cybernetician must apply his competences to himself lest he will lose all scientific credibility. What if the "expert" on communication and control cannot communicate, or excuses his irresponsible acts by claiming that he has been controlled by someone else? He will be placed among the fakes of whom there are enough without him. Consequently, a course on cybernetics must be conducted cybernetically.

This appears to be more than a Herculean task, for it seems that the entire "educational machinery," from an infant's way of learning how to walk and to talk, through institutionalized forms of instruction as in kindergarten, grade and high schools, to institutions of higher and continued adult education, this machinery is attempting to do just that, and has failed: the gap is growing wider and wider.

We submit, again without poof, that this is so because of an almost universal confusion in which "knowledge" is seen as a commodity, i.e., is identified with substance rather than with process. We hear from distinguished speakers; "Universities are Depositories of Knowledge that is handed down from generation to generation.." but-alas- A's nervous activity is just A's nervous activity and not B's. An educational system that confuses learning with the dispensing of goods called "knowledge" may cause some disappointment in the hypothetical receivers, for the goods are just not coming: there are no goods.

We are not proposing to aid this machinery by introducing still another device that is based on this delusion; instead we propose to provide the "initial ignition" to get the primary process going again. We allude here to the second order concept of "learning of learning" in which "subject matter" assumes the role of an arbitrary vehicle, a means for locomotion.

While cybernetics began by developing the epistemology for comprehending and simulating first order regulatory processes "in the animal and the machine," cybernetics today provides a conceptual framework with sufficient richness to attack successfully second order processes (e.g. cognition, dialogue, socio-cultural interaction, etc.).

We propose to make this conceptual framework accessible to a large and diversified audience by a publication whose design is the short range goal of this effort.

*(Ed.Note: This publication became the book, Cybernetics of Cybernetics, "invented" by the students (see page 9) thus involving Heinz' "constructivist" view of education as well as an evolving holism in the process.)*

First of all, such a course should have at the outset, visible to all participants, a tangible primary goal that may, through interaction by the participants, evolve into others with

conceptual ties to the first one; second, the topic should serve as a vehicle for an understanding of how the topic is understood; third, it should transform an accidental assembly of anonymous students into a group of interacting individuals; and, finally, it should account for this transformation. In search of an appropriate tangible goal for a course of cybernetics, friends suggested to me that a need in the scientific community could be fulfilled if the class creates a collection of up-to-date Cybernetica. This, however, would require material support beyond providing an instructor.

Although this concept of a course as outlined before does not fit precisely the conventional image of an engineering class in a Midwestern University, I found moral encouragement in my departments, which was, because of the present state of financial affairs in institutes of higher learning, all I could hope for. Moreover, since this program proposes not to proceed along a path that has been demonstrably trodden before by many others, Governmental Agencies that support basic research today will ipso facto dismiss it as worthless, because its worth has as yet not been proven.

At that point, Point (a foundation on the West Coast) came to our rescue and bestowed the Biological Computer Laboratory with a grant. Since one of the rules of Point is not to respond to a proposal requesting a grant, we submitted our proposal after having received one. Here are some (modified) excerpts:

## PROPOSAL

There is a hiatus between what is known and "common knowledge." In developing countries like, for example, the United States, this hiatus is widening at an accelerating pace. We shall not waste ink, time and patience to prove there is such a hiatus, nor are we going to argue that this is "bad." We shall simply address ourselves to the problem of how to narrow this gap.

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"First-Order Cybernetics" developed the epistemology for comprehending and simulating biological processes as, e.g. homeostasis, habituation, adaptation, and other first-order regulatory processes. "Second-Order cybernetics" provides a conceptual framework with sufficient richness to attack successfully such second-order processes as, e.g., cognition, dialogue, socio-cultural interactions, etc.

It is the purpose of this course to make this conceptual framework accessible to a large and diversified audience (from high school students to university professors, from local organizers of voluntary action programs to administrators of large civic systems), by a publication whose design should be accomplished on or about midterm of the Spring Semester, 1974. The book to be designed will be a thousand (1000) page volume, 8 1/2" by 11", to be run off on rotary presses. Moreover, besides its internally fully interacting organization by means of cross-referencing, concordance, glossary, and newly to be developed graphic means, this volume is to be abundantly illustrated, comparable to McLuhan-Fiore's The Medium is the Massage or the Whole Earth Catalogue, so that going through this volume should be an intellectual as well as a visual feast.

Students who wish to participate in this course should be prepared to meet exacting production schedules and a considerable workload. Last day for dropping this course will be the date as posted in the University Calendar. Only those students should apply who believe in learning by doing.

This description sufficed to discourage about thirty-four thousand potential participants (about the student body on our campus), for only 29 came and signed up for this course. In the beginning some of these students left us, but others came to join us and our group grew to 45. All years of academic progress, from freshmen to Ph.D. candidates, were represented with a tilt toward the younger generation. Despite his own stringent schedule, Professor Herbert Brun from our department of music joined me in this venture, participated in almost all sessions, saw to it that our dialogue did not degenerate into monologue, and kept us alert to the crippling effects of language when it controls - instead of being created by – our thoughts. Kenneth L. Wilson played his double role as student and T.A. to perfection. He threw all his energy and empathy into this class, and that a tangible result indeed emerged goes to his credit.
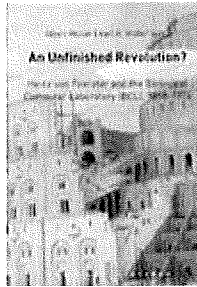
### An Unfinished Revolution?
### Heinz von Foerster
### and the Biological Computer
### Laboratory (BCL), 1958–1976

By Albert Müller & Karl Müller, eds.
(Vienna: Edition Echoraum, 2007)

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*This is a fascinating analysis of the scientific agenda of Heinz von Foerster, clearly one of the major scientists of the twentieth century. No one did more to create a revolutionary transdisciplinary research program involving biology, the cognitive neurosciences, cybernetics, and the social sciences. Von Foerster was one of those scientific minds so far ahead of his time that even today scholars in all fields of scientific inquiry should study his programs so that we might eventually realize his objectives. This is a splendid collection of essays that challenges us to look back on von Foerster if we are to advance our efforts to learn more from others in diverse fields of inquiry.*

    —J. Rogers Hollingsworth,
    University of Wisconsin

*The Biological Computer Laboratory at the University of Illinois at Urbana-Champaign, led by Heinz von Foerster, was the nexus of Cybernetics and the point of origination of Second Order Cybernetics in the 1960s and 1970s. Here in this book, in these articles, drawings and photographs, it all comes back to life with a lucidity that belies the passing years and shows that this theory of feedback process and awareness indeed shares in the living world of the eternal forms.*

    —Louis H. Kauffman,
    University of Illinois

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Order from Echoraum
www.echoraum.at/wisdom.htm

# A Brief History of the BCL
### Heinz von Foerster and the Biological Computer Laboratory
*By Albert Müller*

BCL (Biological Computer Laboratory) was the name of an independent division within the Department of Electrical Engineering at the University of Illinois, Urbana-Champaign. The BCL was founded in 1957/58 by Heinz von Foerster, who at that time was Professor of Electrical Engineering in the department, and was closed after his retirement. The hypothesis thus suggests itself at once that the fate of this institution was closely connected to that of its founder and director.

*"Heinz, where would a historian have to begin if he wanted to tell the story of the BCL?"*
*"He'd have to start with the Macy Conference."*

Before following this thoroughly sound piece of advice, I would like to briefly describe the goal I have set for myself here. I am attempting a preliminary interpretation of a small and, as I believe, unusual chapter of the history of science from the late 1950s to the mid-1970s, one that has received little attention up to now.

And I am equally motivated by the fact that the BCL has very seldom been mentioned in the literature on the history of cybernetics, systems theory, bionics (now the subject of renewed debate), parallel computing, neurophysiology, bio-logic, artificial intelligence, symbolic computing, or constructivism as an intellectual tradition—and it would be possible to list even more areas of science that are renowned today—despite the fact that workers at this institution, the BCL, figure importantly in the literature on each of these domains. Is this an oversight specifically on the part of the history of science (the forgetfulness of science itself being well known)? I am not sure. Let me try to give an example from a specific field: anyone who takes even a passing interest in the history of cybernetics will immediately encounter the name of its founder, Norbert Wiener. At the same time, it will be learned at once that Wiener was active at the Massachusetts Institute of Technology (MIT). Soon afterwards, the interested party will encounter the name of W. Ross Ashby, the author of what is still one of the most important textbooks on the foundational principles of cybernetics—beautifully written and still worthy of study today. Our interested party will further learn that Ashby was an English psychiatrist. However, he probably will not learn that until 1972 Ashby held a long-standing professorship at the BCL. Among other things, such small details are what have led me to work on a preliminary short history of the BCL.

tuart Umpleby was a graduate student at BCL from about 1969 to 1975. He is now a professor in the Department of Management and director of the Research Program in Social and Organizational Learning (www.gwu.edu/~rpsol) at The George Washington University in Washington, DC. He is a past president of ASC.

One way to evaluate the success of a research center is by how often its work is cited after the center closes. By this standard the Biological Computer Laboratory (BCL) at the University of Illinois in Urbana-Champaign was an outstanding success. BCL operated from 1958 to 1975 under 25 grants and produced 256 articles and books, 14 masters theses and 28 doctoral dissertations in the fields of epistemology, logic, neurophysiology, theory of computing, electronic music and automated instruction. (Biological Computer Laboratory, 2004) Thirty years after it closed, its work is increasingly cited in publications in several countries. The director of BCL was Heinz von Foerster, an immigrant from Austria. What did von Foerster do to create and sustain such a highly productive research team?

# The Biological Computer Laboratory

## by Stuart Umpleby

*umpleby@gwu.edu*

*Interdisciplinary Research:* The research at BCL was an extension of the Macy Foundation meetings that were held in the late 1940s and early 1950s on the subject of ‚Áúcircular causal and feedback mechanisms in biological and social systems. (Heims, 1991; Pias, 2003) Accordingly, the research agenda at BCL included control and communication processes in any field. The result was a highly interdisciplinary group of faculty members and students. They came from engineering, the biological sciences, mathematics, music, and the social sciences.

*Art and Analogical Reasoning:* BCL was unique in the attention paid in a scientific research laboratory to the visual and performing arts. This orientation seemed to be the result of von Foerster's upbringing in the artistic community in Vienna between the two world wars. The effect of combining mathematics, science, and art was to stimulate analogical and metaphorical reasoning. By looking at examples in very different fields, students could appreciate the very general nature of the circular and self-referential phenomena being considered.

*Many Modes of Learning:* The literature on learning styles suggests that some people learn primarily from reading, some primarily from listening, some primarily from working with their hands, and some primarily by working with other people. BCL used all modes of learning. There were people building various kinds of electronic devices, people doing mathematics, music composition and dance, and the usual academic work of lecturing and writing and publishing papers. As one example, the construction of the book Cybernetics of Cybernetics in 1974 employed all learning styles and the book itself makes possible the use of most learning styles. (Von Foerster, 1974)

*Involvement of People at Several Levels of Education:* Von Foerster's classes were always about some new area of research, for example bionics, heuristics or cybernetics of cybernetics. The class was a learning exercise for all concerned – faculty as well as students. As a result the class attracted participation from people at many levels – undergraduates, graduate students, post-docs, and faculty members. The students usually did literature searches and worked on producing the final document. Graduate students and post docs explained basic concepts

to the undergraduates. The faculty gave purpose to the enterprise by describing the historical context of the new ideas and explaining the significance of the current research.

*A Large and Grand Vision:* The goal of von Foerster's research was to include the observer in the scientific enterprise. This goal required a fundamental change in the philosophy of science. But the appropriateness and reasonableness of the idea was readily apparent to anyone who had encountered cultural differences. Nevertheless, most of the research at BCL approached the task through neurophysiology and mathematics. The work at BCL was aimed not at making an argument for a plausible idea but rather at constructing a scientific proof for the necessity of including the observer based on an improved understanding of the nature of cognition. Hence, the idea was to transform the philosophy of science, and assumptions about human relationships, by doing leading edge research in biophysics, engineering, and communications.

*Support and Encouragement for All Contributions:* Von Foerster believed in the self-evaluation of learning. Students were invited to suggest the grade they should receive based on how much they felt they had learned in the course. All contributions, no matter how strange or unusual, were greeted with a smile and praise. Ideas were evaluated through a sense of play rather than whether they were "correct." Since all ideas revealed something about an observer and all observers were "legitimate" all ideas were part of an on-going conversation. Each expression of an idea was an opportunity to adjust the conversation to the needs of the participants. If some people needed background information, for example in a discipline other than their own, someone would meet with that person or persons after class. The purpose of the course was to invent new ideas or interpretations rather than to communicate accurately already accepted ideas.

Furthermore, von Foerster maintained that there are two kinds of questions, "legitimate questions and illegitimate questions." Legitimate questions are questions to which answers are NOT known. Illegitimate questions are questions to which the answers ARE known, for example the questions in textbooks. Von Foerster's classes were aimed at answering legitimate questions.

## Social Activities

At least once or twice a year Heinz and Mai von Foerster would invite the "friends of BCL"to their home for an evening. These occasions, which were delightfully lively with von Foerster as master of ceremonies, were very helpful in promoting informal communication among the students and researchers in BCL. The office itself was also a place of activity, excitement, and friendliness with people engaged in tasks ranging from engineering to graphic arts and with blackboards filled with diagrams and mathematics.

## Transparent Information

As a student, one of the features of BCL that I most appreciated was how easy it was to find out what was going on there. The secret to information sharing was remarkably simple. In the

front office where the receptionist's desk was, von Foerster had put a board on top of a radiator. On the board were small stacks of recent publications. From time to time while walking across campus, I would make a slight deviation from my usual path and pass through the front office of BCL. I would look at the papers on the board on the radiator and take a copy of those that looked interesting. If there was something in a paper that I did not understand, I would ask someone for an explanation.

## Research on Several Levels

One feature of von Foerster's classes that made them much more interesting than the usual class is that they involved questions on several levels, practice, theory, and philosophy. For example, machines built in BCL to demonstrate some aspect of perception, would inform theories of cognition, which would be used to question propositions in the philosophy of science. In the early 1970s Stafford Beer (1974) published Platform for Change which uses different colored paper for explanations at different levels of analysis. After reading this book, von Foerster gave a lecture in which he used different colored cards hanging around his neck to indicate the level of analysis of the different parts of his lecture. I found it surprising how often he had to change the card that was visible.

As this description indicates von Foerster's style of teaching was different in many ways from the usual required and elective courses. People sometimes ask how he got away with offering such unusual courses. Occasionally he had to smooth some ruffled feathers among administrators and once he was summoned to the state capital in Springfield, Illinois, to answer questions by legislators. But usually there were few problems. The courses were offered as "special projects courses." Students could receive either undergraduate or graduate credit. The courses were offered only one semester. Each semester there would be a new course on a new topic. Most universities in the US now have "special projects courses." But they are usually used to develop new courses for the catalogue rather than to conduct research by a group of faculty members and students.

## A Different Approach to Conferences

After BCL closed in 1975 conversations among the previous members of BCL continued both on-line (Umpleby, 1979, 1983) and at meetings of the Society for General Systems Research in the late 1970s and the American Society for Cybernetics in the 1980s and 1990s.

Von Foerster's approach to conferences was also quite different from the usual academic conference. Most academic conferences consist of carefully scheduled presentations of research results with a discussion following each presentation. Von Foerster's idea of a conference was more like a conversation among friends who do not often see each other. His presentations were intended to arouse interest, raise questions, and create doubts about current beliefs. He did this by presenting research results about perception or cognition which challenged prevailing assumptions.

The purpose of the conference then was to use the gathering of people to raise new questions, to create new understandings, and to define new directions for research. (Umpleby, 1987)

## Conclusions

Research and innovation have a profound impact on organizations and society. High performance research teams can contribute greatly to the competitive position of their organizations and to societal progress. These teams are characterized by skilled collaborative team members willing to work with people of different styles and cultures with mutual respect. They operate in a collaborative environment with committed senior executive support, and effectively use facilitation processes. As we learn more about how to effectively organize and support research activities, how to collaborate among various types of organizations, and how to create innovative research teams, the rate of innovation can be expected to rise.

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We need to remember
That we are created creative
And can invent new scenarios
As frequently
As they are needed.

---Maya Angelou

# A trace of a conversation between two participants who were participants in conversations at the ASC conference 2007 in Urbana, IL

*Sailor Holladay & Andy Trull*

## Who are we? What are we doing in the world?

**Sailor:** Amidst other less interesting socially constructed identities, I am joyously a teacher and a learner. While I am about to graduate from UMASS Amherst with a Master's degree in Social Justice Education, I am first a popular learner and educator excitedly re-engaging in community struggle and resistance to the currently oppressive system. My interests during my time at UMASS have included developing strategies for working with other poor and working class white people to end racism and white supremacy and co-creating theories of liberation to sustain and deepen collective action pointing towards social transformation.

**Andy:** My background is working with small grassroots organizations focused on ecological and artful approaches to social change. I have learned from the wisdom of my peers and mentors a deep confidence in people's ability to create a world that we all truly desire. I have taken this confidence with me to graduate school (M.A. in "Human Systems Intervention" at Concordia University) where I have been increasing my skills in using practical methods for collaborative planning and participative organizational design.

### What brought us to the ASC conference and what were we looking for?

**S:** I am a student of the School for Designing a Society; an ongoing experiment in making temporary living environments where the question "What would I consider a desirable society?" is given serious playful thought, and taken as an input to creative projects. My interest in 2nd order cybernetics is progressively establishing itself in conversation with the School For Designing A Society. Coming to this conference I was looking for fresh ways to articulate and work the social problems and environments I am a part of. I observe educators exhaustively describing what is wrong with the world and giving little time to envisioning something different and desirable. Often when time is taken to envision something "less oppressive," the language of the current system is used.

In Urbana, I was looking for conversation with others problematizing a paradox we are in: existing in the current system where limited roles are offered to us, that of oppressor/oppressed, victimizer/victim, privileged/disenfranchised, and wanting a different way of relating, perhaps one that reiterates our humanity through interaction. I was hoping to acquire new frames and languages to talk about the same old situation so that it's not the same old situation anymore. Or rather, so I'm not the same old responder. I want to respond toward who I want to be and what I want in the world. And then, I was looking to make something about what we want with other interested-in-wanting makers.

**A:** This is the 4th cybernetics conference I've attended. I'm now 28 and began coming when I was 22 years old. This means ASC conferences have been a formative part of my brief "adult" life. I come to these conferences because I find it an opportunity to be surrounded by thoughtful people who are looking towards creating another world. I am also a student of the School For Designing a Society. One of my teachers and collaborators with this school is Susan Parenti who was also present at the conference. Susan speaks of "Cognitive Activism"; the way we "consensually perceive the world" "as a form of activism." An intervention into how things are and could be different.

This is why I come to the ASC conference, to nourish myself as a "cognitive activist"; attending to language as a manner of living with each other. This means realizing that small conceptual and behavioral acts invite different realities as temporary constructed social environments. So this really has to do with "cognition". 2nd order cybernetics and the ASC provide a linguistic playground to be able to experience "cognition" in ways that invite me to create the world I want with others.

### What did we find at the ASC conference?

People learn in community. This means being a group of people who are looking out for each other as a whole. This is not the usual set up for an academic conference, where each person comes as an individual with his or her own ideas and concerns. But what made a really wild combination were two things:

1.) The School for Designing a Society, a school for desiring and designing alternatives hosted the conference.

2.) The ASC is a group of people who gather to think and act differently together.

So there was a strange twisting and turning of worlds, between academia and intellectual prowess/property, activism/art/social change, and people who really want a space to be under continuous social reconstruction.

The hosts encouraged this tension to exist. This began as soon as we stepped into the Independent Media Center, also home to the neighborhood post office in Urbana. Those of us accustomed to academic environments mingled with those of us used to resisting traditional institutions. This convergence gave an opportunity for attendees to meet the edges of their own and other's identities and choose to enter a domain of play. Scientific, artful, managerial, theatrical, radical, cybernetics, and 2nd order edges met. Statements were questioned. Disagreements were demanded. The Ensemble for Experiments in Theater and Music from Olympia, WA made staged performances happen often.

### What do we want more of in learning environments that we don't yet have enough of?

If we want learning environments then we have to create organizations and communities that defy dominance and inspire curiosity and mutual appreciation. Learning happens when we are "making something happen" - acting in some way to create what we want. We dream of education that is always connected to practically and imaginatively creating the world we are. And the world we are, is a shared world, not just mine or yours, but in between us. We want the shift to an in-betweenness world. Meaning happens in between each of us as we make it up. Not in you or me or it. We found the ASC conference to be a place to temporarily leave our individual things and come play in between WORDS as our world together. We want more of this and don't yet have enough. This want is community.

We want to be caring and cared for members of groups comprised of caring and cared for members. We want time extended to enjoy unknown information not yet integrated into known sets of experiences. We want learning environments where all involved including those in perceived positions of power (like teachers and speakers) revel in not knowing. Let's emphasize co-wondering!

*The authors can be reached by email at madprophetic@ yahoo.com & andytrull@gmail.com*

# Reflections on Now Activism

*Manish Jain and Bob Stilger, 2007*

*"I believe that we are at the point now in the United States where a movement is beginning to emerge. I think that the calamity, the quagmire of the Iraq war, the outsourcing of jobs, the drop-out of young people from the education system, the monstrous growth of the prison-industrial complex, the planetary emergency in which we are engulfed at the present moment, is demanding that instead of just complaining about these things, instead of just protesting about these things, we begin to look for and hope for another way of living...*

*I see a movement beginning to emerge because I see hope beginning to trump despair. I see the signs in the various small groups that are emerging all over the place to try and regain our humanity in very practical ways."*

With these words, Grace Lee Boggs, a 91-year-old activist speaking in a recent interview with PBS's Bill Moyers, described a movement that we call the Now Activism. This is the activism of today, of right now, and it shows up as people everywhere are stepping forward with the leadership they have to offer to make a difference in their communities and organizations. Writer Paul Hawken also explores this new movement in his most recent book, *Blessed Unrest.*

"I sought a name for the movement, but none exists. I met people who wanted to structure or organize it—a difficult task, since it would easily be the most complex association of human beings ever assembled. Many outside the movement critique it as powerless, but that assessment does not stop its growth."

We noticed this new movement as many friends from different parts of the planet began to ask similar questions: What new kinds of activism are required to face the crisis that threatens us today? What are the roots of this crisis? What gives us hope?

At Berkana, this movement reveals itself through the Berkana Exchange, a community of learning centers where people gather to develop their capacity as leaders of community change. In May 2007, nearly 50 people from 14 countries convened in Greece at the newest learning center for our annual Art of Learning Centering. We explored our identity as changemakers, our choices about language, the similarities and differences in our practices. We knew we recognized each other; how to name this recognition was elusive.

In support of this challenge of naming the movement, Shikshantar, one of the founding learning centers of the Berkana Exchange, took the lead in assembling a collection of more than 50 stories and essays which explore this Now Activism. Publication of this booklet comes as we begin the celebration of the 100th anniversary of Hind Swaraj, written by M.K. Gandhi in 1909. At its release, and still today, Hind Swaraj represented a significant effort to reorient the fundamental direction of the Indian freedom struggle. It offered to Indians and to the world a unique analysis of the crisis in India as a civilizational crisis, and it also suggested the deeper purpose behind the struggle to be free of British rule and institutionalization.

Several people have called Gandhi an "epochal man": that is, someone who was deeply concerned with linking his own life to the specific challenges of the age he lived in. His assumption was that each age has its own peculiar problems and opportunities. Gandhi dedicated himself to constantly engaging in personal experiments to deepen his understanding of truth. Indeed, Gandhi's activism pushes us to think in terms of both the Self and the System, as well as to make connections between our means and ends.

What are the peculiar problems and opportunities of our age? In service of this inquiry, we offered the following questions to circles of friends around the world:

1. What kinds of activism are needed now?

2. What inspiring examples of such now activism are emerging around the world? What are some of the key principles and symbols underlying these efforts?

3. In what ways should we now rethink "activism" and who is an "activist"?

4. What should we learn now from activist movements and freedom struggles of the past?

5. How do we need to now understand terms like power, freedom, justice and social change in new ways?

6. What do we need to unlearn for now activism to continue to grow?

7. What important questions do current activists need to ask themselves today to open up more possibilities for now activism to emerge?

8. What important questions can be used to invite and engage people who do not currently think of themselves as activists into exploring their roles in now activism?

9. How do you see yourself as a now activist?

Many people wrote their own responses, while others shared stories, essays and quotes that they found meaningful for this dialogue. This booklet is an invitation to join with us in an unfolding dialogue. We invite you to review the materials assembled so far and to make your own contribution. We know there are many stories from all over the world waiting to be told. Later in 2007, we will open an online discussion space to explore the ideas forming around Now Activism. You can download the draft, and make recommendations for additional materials in Berkana's NewWorkSpaces.

*Manish Jain, Shikshantar    www.shikshantarschool.com*

*Bob Stilger, The Berkana Institute    www.berkana.org*

### Author Information

Manish Jain is co-founder and coordinator of Shikshantar in Udaipur, India. He is one of the original "walkouts," having abandoned successful careers in international finance, global consulting on education, and service in a top UN agency because he believed none of these were places where he could create real change. Manish is also Chief Editor of Vimukt Shiksha, a publication dedicated to developing learning systems that liberate the full potential of human beings.

Robert L. Stilger is the Co-President of The Berkana Institute and co-directs the Berkana Exchange. Since the 70s, Bob has been a social entrepreneur and has launched and directed a number of nonprofit corporations. He has supported and mentored the development of six Leadership Learning Centers in Africa, Europe and India. These centers were the subject of his doctoral thesis at the California Institute of Integral Studies.

*This dialog was also hosted by CEDI/Unitierra and World Café.*

Letter from Ranulph Glanville, Vice President of the ASC

April 30, 2007

Dear ASC Member,

Following the successful conference in Urbana which strengthened the tradition of open conferences covering a wide ground and allowing spirited and challenging discussion, plus our long-term connection with the arts—for which we have to thank ASC member Mark Enslin and his team—I am writing with some news.

## New Secretary

At the conference, we were able to elect Mehdi Majidi as our new secretary. He replaces Jana Schilder who resigned. At the moment we are looking for a VP Membership, so if you would like to volunteer, we'd like to hear from you: write to our president, Lou Kauffman, at kauffman@uic.edu

Mehdi's biography appears at the end of this message.

**Fellows of the ASC:** The newly realised Fellow grade of membership was publicly promoted at the meeting, and the foundation Fellows are being appointed as I write. You may remember that I wrote to the membership about this new opening, in January. Once the foundation Fellows are in place, we will inform you and invite the promotion of others to Fellowship.

**Conferences:** We were also able to announce a lively conference schedule to last over the next 2 years. This includes 2 meetings held internationally. The first, November 16 to 19, will be the von Foerster conference in Vienna. This is a big public event, with the chance to make significant public presentations. The first conference lead to the recent publication of the book "An Unfinished Revolution? Heinz von Foerster and the Biological Computer Laboratory/BCL 1958–1976" edited by Albert Mueller and Karl Mueller, published by edition echoraum, Vienna.

This conference will be specially interesting to ASC members because it will involve a special session honouring our 2005 Wiener Medal winner, Ernst von Glasersfeld (which he expects to attend), and the public opening of the Gordon Pask Archive, which will also be the occasion for a special session.

The second, pencilled in for the week of 5 to 9 January 2009 is a working conference on the theme of Cybernetics Art, Design and Mathematics. This will be a small conference and we are looking to hold it in an English castle (with heating).

In between these is our own ASC conference to be held in the summer of 2008. Unfortunately arrangements for this conference have recently had to be modified due to the award of a Fulbright Fellowship to Arun Chandra who had agreed to organise it. We are therefore again looking for an organiser and venue. If you can help us, please contact President Lou Kauffman (email above).

Finally, the BCL is also planning a conference to celebrate the 50th anniversary of the BCL, and are proposing a competition: the ASC is closely connected with these two BCL projects.

I hope you will agree, a rich menu of events is being arranged.

**Awards:** Also in Urbana, we made 4 Wiener Awards. This exceptionally high number was occasioned by the change in the rules that allows us to recognise that service to cybernetics need not always be through furthering theory in some radical and novel way. We awarded the Wiener Medal to Charles Francois for his enormous work in compiling and editing the International Encyclopaedia of Systems and Cybernetics, and former Presidents Pille Bunnell, Larry Richards and Stuart Umpleby who, aside from their own significant work, all brought life and health to the ASC at stages when it was in danger of dying. You can read the citations for them, and for Ernst von Glasersfeld (including a link to a video of the presentation made to him at his home, on our website

http://www.asc-cybernetics.org/organization/awards.htm

That's all the news I have for now. Don't forget to look out for your (now electronic) issues of Patterns, our official newsletter edited by Barbara Vogl, which has much more content. I hope to be able to make a major announcement there after the summer concerning membership benefits and a number of ASC-friendly societies.

Best Wishes,

Ranulph Glanville, Vice President, ASC.

Ranulph can be reached at:

ranulph@glanville.co.uk

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**Mehdi Majidi Biographical Sketch**

Mehdi is a university faculty and an international consultant. His main area of interest includes International Business Strategy, Cross-cultural Management, and Cultural Factors in Socioeconomic Development.

His consulting projects include industrial development, workforce development, implementation of information technology in education, engaging the private sector in socioeconomic development, and the design of a solution to measure, monitor, and evaluate the dynamics of the socioeconomic progress of a country based on international standards indexes.

Mehdi is also a university faculty member, designing and teaching graduate level courses and executive training workshops and presentations in international business strategy and cross-cultural management. He also serves on the MBA program's academic committees.

**European Meeting on Cybernetics and Systems Research**

**Vienna, Austria**

**University of Vienna**

**March 25 through 28, 2008**

Organized by the Austrian Society for Cybernetic Studies in cooperation with Institute of Medical Cybernetics and Artificial Intelligence, Center for Brain Research, Medical University of Vienna and International Federation for Systems Research

www.osgk.ac.at/emcsr/

George Swanson reports that we have been invited to conduct a second symposium on Living Systems Theory (LST) by the European Meeting on Cybernetics and Systems Research. The meeting is in Vienna, Austria, from March 25 through 28, 2008. The absolute deadline for paper submission is November 4, 2007. A preliminary general call for papers is attached. If you would like to submit a paper related to LST, please contact him as soon as possible at

gaswanson@tntech.edu.

An ever increasing number of research areas, including social and economic theories, theoretical biology, ecology, computer science, and robotics draw on ideas from second order cybernetics. Artificial intelligence, evolved directly from cybernetics, has not only technological and economic, but also important social impacts. With a marked trend towards interdisciplinary cooperation and global perspectives, this important role of cybernetics is.expected to be further strengthened over the next years.

Since 1972, the biennial European Meetings on Cybernetics and Systems Research (EMCSR) have served as a forum for discussion of converging ideas and new aspects of different scientific disciplines. As on previous occasions, a number of sessions providing wide coverage of the rapid developments will be arranged, complemented with daily plenary meetings, where eminent speakers will present latest research results.

The Austrian Society for Cybernetic Studies hosts the editorial office of *Cybernetics and Systems: An International Journal*

Editor-in-Chief: Robert Trappl

Associate Editors: Henri Atlan, Christer Carlsson, George J. Klir, Franz Pichler, Luigi M. Ricciardi, Stuart A.Umpleby, Tibor Vamos, Alexander Weinmann, Bernhard P. Zeigler

*Cybernetics and Systems* disseminates information about important methodological developments in cybernetics, enabling scientists from different areas to use these methods in their research; focusses on important new applications of cybernetic methods in different areas in order to encourage application of these methods to problems; and informs the scientific community of new books, ongoing research in specific institutions, forthcoming conferences, and institutional and personal changes.

Cybernetics and Systems appears in eight issues per annum and comprises appr. 800 pages per volume. It is published by Taylor and Francis, Philadelphia, PA.

# What is Cybernetics?
*by Louis H. Kauffman*

Cybernetics began with the study of biolgical and machine processes of feedback and control. How does accurate steering arise? How do organisms self-organize. How does consciousness become aware of itself? How does the study of concepts and ideas, itself become a concept and an idea? How do individual autopoetic entities become integrated into larger biological, social and ideational wholes?

It is Second Order Cybernetics that defines cybernetics itself and articulates a true meaning for the original cybernetics of Wiener and his colleagues.

DEFINITION: Cybernetics is the study of processes and systems that can act upon themselves as well as act upon other processes and systems.

I take this to be the present (open-ended) definition of cybernetics. This definition includes second order cybernetics as the Cybernetics of Cybernetics. A study of processes that can act upon themselves can ITSELF act (study, transform) upon itself. Cybernetics is a process that can act on itself and so we have the cybernetics of cybernetics, quite naturally in the course of our considerations.

This is the end and the beginning of the meaning of cybernetics. Once the definition of the second order is made, it is no longer "second order". One sees that this is what cybernetics always was, albeit with an initially special concentration of focus. To define cybernetics as the study of processes that can act upon themselves is to define cybernetics as a self-transcending Klein bottle or Mobius strip whose inside is its outside.

At the same time this definition is totally interdisciplinary, grounded in "real" questions at all levels and subversive to academic boundaries. It is NOT impossible that this definition of cybernetics could become well-known and begin to erase the stereotypes that presently obscure the light of the cybernetic attitude toward learning, knowledge and creativity.

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*A 25 minute slide show on the History and Development of cybernetics can be found at;*
*http://www.gwu.edu/~asc/slideshow/cybernetics_web/slideshow.html*
   *It is translated into Spanish, French, Indonesian, German, Chinese and Russian.*

*Announcing: The Third International Heinz von Foerster*
*Congress*

*16-18 November 2007*
*at the University of Vienna.*

*The overall motto will be "systems/systemics."*
*In addition, there will be two special sections, one on Ernst von Glasersfeld and*
*his work on the occasion of Ernst's 90th birthday, and one on the life and work*
*of Gordon Pask, on the occasion of the opening of the Gordon Pask Archive.*
*Details to be announced.*

*(Source: http://www.univie.ac.at/constructivism/HvF.htm)*

*Also see;   http://bcl.ece.uiuc.edu/News/HvFCongress.htm*
*Albert Muller's contact information can be found at:*
*http://www.univie.ac.at/heinz-von-foerster-archive/*

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**EDITORIAL NOTE:**

We are very happy to make this transition for the quarterly publication of PATTERNS from a printed format to a much more ecologically-sound digital format.

Without the help of Pille Bunnell and Rhan Wilson it would never have been accomplished. I would like to thank all the members of the ASC for their contributions and patience and look forward to any comments, contributions, and corrections.

The Fall 2007 issue will be out in October and will feature an examination of the Health Industrial System from the perspective of Kathy Long's model of pathogenic systems. (see PATTERNS Winter 2007)

We suggest that by searching for the "patterns which connect" our human-made systems and by inviting dialogue around what we find, we might become a part of a universe that is working for all.

Barbara Vogl.

Editor