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# SECTION ONE

## EDITORIALS, PAPERS AND CORRESPONDENCE

**INCOMING PRESIDENTIAL ADDRESS**  
**Tokyo, August 2007**

### **RIGOR AND RELEVANCE IN SYSTEMS WORK**

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There is no more fundamental idea within systems work than the concept of a boundary. It is that which differentiates the phenomena of our interest from the rest (usually termed the environment) and allows us to isolate aspects important to our study from extraneous ones. In simpler and more practical ways, boundaries differentiate *us* from *them*, what is ours from what is not, and so forth. The drawing of boundaries, then, is not only useful, but necessary. As Bertalanffy (1969) explained, “Any system as an entity which can be investigated in its own right must have boundaries, either spatial or dynamic” (p. 215.)

So we work from the assumption that even very complex phenomena operate according to fundamental principles which can be discovered if we can isolate the right variables and study them in the right way. We do not have to understand every aspect of the subject, and in fact would be hard pressed to identify every possible characteristic of any particular subject. What we need to understand are the fundamental characteristics, or the factors most relevant to our study, and how those operate. To borrow from Gregory Bateson, we are looking for the “difference that makes a difference” – those things that are meaningful enough to try to understand. As Simon (1996) describes this, “The first advantage of dividing outer from inner environment in studying an adaptive or artificial system is that we can often predict behavior from knowledge of the system’s goals and its outer environment, with only minimal assumptions about the inner environment” (p. 8)

By describing a system only in terms of essential properties we create (or at least approximate) what Robert Rosen termed a *formal system*, which he expressed in mathematical terms. In essence, through any attempt at isolating phenomena for the purpose of studying and understanding them, we create – consciously or not, formally or informally – models containing the elements and aspects that we believe to be of importance. The advantage of using formal systems, or models, in order to describe the natural systems that we seek to understand is accuracy of the model itself, which theoretically leads to predictability. As Rosen (1985) explains:

Now the whole point of making models, i.e. of encoding natural systems into formal ones, is to enable us to make specific predictions...about natural systems, utilizing the inferential structure of the model as an image of the processes occurring in the natural system itself (p. 215)

The more rigorous the model, the more accurately it should describe the phenomenon to which it refers, and the more defensible it should be in terms of theory. Rigorous models are also simpler and based upon the fewest necessary variables. When a model is more precise it is more likely to generalize to similar phenomena, if not in exact detail then at least in approximation.

What we know but often fail to recognize is that the systems that we create (or distinguish) by using boundaries are, by nature, abstract and artificial. They contain only the elements that we choose to include; those that we deem to be of significance. As Rosen (1985) explains:

A model by its very nature is an abstraction, in the sense that any encoding must necessarily ignore or neglect qualities which are present in the original natural system. To that extent, a model represents a subsystem of the original system, rather than the system itself (p. 277)

Or as Bertalanffy (1969) describes the larger dilemma:

Conceptual models which, in simplified and therefore comprehensible form, try to represent certain aspects of reality, are basic in any attempt at theory; whether we apply the Newtonian model in mechanics, the model of corpuscle or wave in atomic physics, use simplified models to describe the growth of a population, or the model of a game to describe political decisions. The advantages and dangers of models are well known. The advantage is in the fact that this is the way to create a theory – i.e., the model permits deductions from premises, explanation and prediction, with often unexpected results. The danger is oversimplification: to make it conceptually controllable, we have to reduce reality to a conceptual skeleton – the question remaining whether, in doing so, we have not cut out vital parts of the anatomy. The danger of oversimplification is the greater, the more multifarious and complex the phenomenon is. This applies not only to “grand theories” of culture and history but to models we find in any psychological or sociological journal (p. 200)

Rigorous methods and tools for observation and experimentation, combined with mathematical calculations, led to astounding discoveries in astronomy and physics. These allowed for discoveries in chemistry, biology, and the many expanding fields of science, along with applications in medicine, engineering, technology, and other areas. Did this progression imply a natural hierarchy, though? Was physics the basis for all science (the *reductionist* point of view) or were there boundaries between different realms, to which different principles applied?

Later discoveries suggested that the Newtonian view of science, at least, did have limitations. While it was sufficient for properties of matter, from atoms to solar systems, new theories were needed at the quantum level. Additionally, many biologists (Maturana, Rosen, et al) have not been satisfied with a physics-based explanation of life, nor have social scientists generally accepted explanations which reduced all phenomena to the level of matter. This has certainly not resolved questions of boundaries and relevance between disciplines, though. More importantly, for those who work in the fields of systems, it leaves many questions about the search for overarching principles which apply across disciplines.

The issue then becomes one of relevance. Once we know something for certain, how much do we really know? Basic statistics teaches that findings can be generalized to populations for which a sample is representative. In practice, we use what we know in order to explore the unknown. Accepted theories become the tools for new discoveries, both inside and outside a given realm of knowledge. A model or pattern at one level or in one realm becomes the template for understanding phenomena in another. For centuries, the universe was thought to operate like a machine, or clockwork. Today the brain is explored as a sophisticated computer. This creates potential pitfalls, though, as Bertalanffy (1969) describes:

After having overthrown the mechanistic view, we are careful not to slide into “biologism,” that is, into considering mental, sociological and cultural phenomena from a merely biological standpoint. As physicalism considered the living organism as a strange combination of physico-chemical events or machines, biologism considers man as a curious zoological species, human society as a beehive or stud-farm (p. 88.)

### **Everything in the Universe is Connected, But it is Not All the Same**

How, then, do we determine useful or important distinctions? Boundaries between scientific disciplines are certainly not absolute, as they have evolved over time. In fact, while boundaries are not

unique even to humans (e.g. the marking of territory by animals) it would be hard to identify any boundaries that could be considered universal. Without boundaries, though, we tend to flounder in chaos, as expressed in the axiom that “a theory of everything is a theory of nothing.”

In the sciences, physics has historically set the standard for rigor, to which other specialties have been held or have aspired. Disciplines such as chemistry, biology, and economics have developed basic tools, practices, and concepts, appropriate to their realms of study, through which their associated professionals operate. Rigor, then, becomes the adherence to a given set of standards, typically defined by a profession or realm of practice.

In this way, boundaries are used in a double sense. They distinguish a subject of interest, but they also distinguish different ways of understanding that subject. These differences are most easily captured through the concept of cultures, both professional and ethnic. They often distinguish both what is seen within a boundary and how it is seen. A physicist, for instance, might view a body of water in terms of volume, molecular content, hydraulic properties, etc. A biologist would very likely view the same body of water in different ways, yet equally valid and accurate from a biological viewpoint. An economist would see the body of water in terms of quite different principles, as might a member of a native community, a farmer, or a sportsman. (Any one individual might well fall within multiple categories, too, of course.)

In systems work, we search for basic principles (*isomorphies*) that apply to a range of phenomena across professional or disciplinary boundaries. Rosen (1985) referred to such principles as homomorphisms, meaning that two or more natural systems (things we perceive in the world) could be described using the same formal (in his work, mathematical) model. The same growth curve can be plotted for a biological population as for an economic market. Inception, growth, maturity, decline and ending seem to apply organizations as much as individuals and societies. Rashevsky (1951) used mathematics for models ranging from neurology, to social hierarchies, to human motivation and learning, to socioeconomics. Forrester (1989) applied his knowledge of feedback loops for servomechanisms to management (*Industrial Dynamics*), urban planning (*Urban Dynamics*) and population and environmental studies (*World Dynamics*).

The tension between rigorous, exacting models and the applicability of models and theories in systems is as prevalent as in other areas of science. Bertalanffy (1969) attempted to straddle this division:

The term “general system theory” was introduced by the present author, deliberately, in a catholic sense. One may, of course, limit it to the “technical” meaning in the sense of mathematical theory (as is frequently done), but this appears unadvisable in view of the fact that there are many “system” problems asking for “theory” which latter is not at present available in mathematical terms. So the name “general system theory” is here used broadly, similar to our speaking of the “theory of evolution,” which comprises about everything between fossil digging, anatomy and the mathematical theory of selection; or “behavior theory” extending from bird watching to sophisticated neurophysiological theories. It is the introduction of a new paradigm that matters (Bertalanffy, 1969, p. xix).

At the time of Bertalanffy’s writings, systems concepts were making great strides, with programs and courses being established in universities. With that acceptance came less need for self-justification. Since then, though, holistic approaches have been overtaken by narrower, more isolated ideas, which have influenced not only academic arenas but the development of professions in general.

### **Application to Professions**

According to Schön (1983), “The systematic knowledge base of a profession is thought to have four essential properties. It is specialized, firmly bounded, scientific, and standardized” (p. 23.) The explanation for this, as he elaborates, is rooted in Positivism.

How comes it that in the second half of the twentieth century we find in our universities, embedded not only in men’s minds but in the institutions themselves, a dominant view of professional

knowledge as the application of scientific theory and technique to the instrumental problems of practice?

The answer to this question lies in the last three hundred years of the history of Western ideas and institutions. Technical Rationality is the heritage of Positivism, the powerful philosophical doctrine that grew up in the nineteenth century as an account of the rise of science and technology and as a social movement aimed at applying the achievements of science and technology to the well-being of mankind. It became institutionalized in the modern university, founded in the late nineteenth century when Positivism was at its height, and in the professional schools which secured their place in the university in the early decades of the twentieth century (pp. 30-31)

Professions become more rigorous through increasing adherence to the four properties and in this way take on the characteristics of formal models. Unfortunately, this also creates, in the professional realm, the dilemma of rigor versus relevance. The accuracy of abstract models allows us to create internal balance and coherence. That requires, though, that we ignore many messy variables in the real world of applications. It is this dilemma that has most divided the disciplines of research and application; of academia and business, and so on. As Schön (1983) explains:

This dilemma of "rigor or relevance" arises more acutely in some areas of practice than others. In the varied topography of professional practice, there is a high, hard ground where practitioners can make effective use of research-based theory and technique, and there is a swampy lowland where situations are confusing "messes" incapable of technical solution. The difficulty is that the problems of the high ground, however great their technical interest, are often relatively unimportant to clients or to the larger human society, while in the swamp are the problems of greater human concern (p. 42)

While the intended distinction by Schön is mostly between research and practice, it also describes much of the dilemma faced by systems professionals in all areas of work. If rigor is defined within a discipline or profession, then work across those bounds is either seen to be without rigor, or principles and approaches must be assumed to apply regardless of the bounds. Many systems professionals have found themselves quite frustrated, attempting to gain credibility within professional realms for their often important work, but lacking easy ways to show relevance contained within a given discipline.

If anything, this dilemma is getting worse with the increasing fragmentation between specializations. A recent search on the Web site of the American Medical Association, for example, giving information for prospective medical students, listed 52 separate specialties, and another 97 areas of sub-specialization in which fellowships could be done. As many people with health problems are aware, this situation is a double-edged sword. On the one hand, a specialist is likely to be better informed and more able to treat a specific malady than a generalist. On the other, the specialist is likely only to see what is familiar and within his or her area of practice, and therefore to miss or misdiagnose something unfamiliar. In addition, the proliferation of specializations creates more and more referrals and appointments, driving up medical costs, while also creating more problems with lack of communication between treating professionals.

In effect, each area of specialization becomes a new model, which often becomes a way of seeing. Once a model accurately describes some phenomenon of interest, it becomes a new lens through which other parts of the world are viewed. Rosen (1985) expands the implications of this problem even to a societal level.

We cannot in general hope to reconstruct the properties of the predictive models embodied in a fully adapted system by considering the corresponding models generated in subsystems... Since each of the subsystems sees only a fragment of the total situation, it can only form a model of that fragment through the selection imposed on the whole system. We can see this most clearly from our own experience, considering ourselves as subsystems of an evolving social structure; thus each of us generates predictive models about the structure as a whole and utilizes them for generating his behavior. These models are all different, and depend at least in part upon the information we



receive about the overall behavior of the structure; since our positions in it are generally different, so too will be our information, our models and our behavior (p. 392)

Given the tremendous proliferation of data, noise, and sensory stimulation with which people are faced each day, it is no surprise that we find ourselves forming narrower and narrower models through which to filter it all. It is hard to fathom the number of potential choices with which the average person is faced, creating ever more potential differences. The corresponding dilemma, of course, is how to find connections – and even more importantly, the “patterns that connect” at a larger level as described by Bateson (2002).

For many people, the choice of connecting to some model seems to be through simplification, which today often ends in one of many forms of fundamentalism. In this context, fundamentalism is not just religious or ideological. It can take personal, professional, and philosophical forms as well, and has implications for individual and family relationships as well as for political, economic and societal systems. It is meant here as a fixed, rigid viewpoint through which the world is interpreted – essentially, a closed model.

As best described by Bohm (1996), most of the beliefs that make up such models are not consciously chosen by individuals but rather are inherited through socialization. Not being recognized, such beliefs are rarely if ever questioned. Maybe most importantly, the boundaries of these models are more felt than consciously understood, that is, when basic tenants of the model are violated or challenged it is experienced as a threat. The models contain what Bohm described as necessities, meaning beliefs considered absolute and unquestionable.

### **An Example: Complexity in Government Leadership**

As part of my professional work I teach, with a colleague, a course in leadership for US Federal executives – the career civil servants who run the agencies of the Federal Government. The goal of the course is helping these executives better understand and address the complicated and complex issues with which they are faced on a daily basis.

The work of Federal executives has become much more complex in recent decades. Not only do they have enormous areas of responsibility, they work realms where communication is often intentionally vague and competing agendas constantly push for differing priorities about what should or should not be done. They are challenged with most of the same organizational changes as large private corporations: technology, competition for skilled employees, and so forth.

In addition, there have been strong pushes for change by the administrations to which the agencies report. Mostly notably, since the Reagan administration in the 1980s, there has been a philosophical shift away from government services in the US, and towards models of privatization. Essentially, government agencies were considered to be inefficient, wasteful and unnecessary bureaucracies who mostly needed to be eliminated. At the same time, the actual size of government and government spending has continued to increase. According to a report in 2003, based on a Brookings Institute study:

While the number of official government employees declined slightly after President Bush took office...the number of full-time employees working on government contracts and grants has zoomed by more than one million people since 1999, bringing the overall head count to more than 12.1 million... The report finds that the growth is happening entirely outside traditional civil-service hiring channels. «The Bush administration is overseeing a vast expansion of the largely hidden federal work force of contractors and grantees» (Hamburger, 2003, p. 1)

The work of many government agencies is based on scientific research, such as the Environmental Protection Agency, the Food and Drug Administration, and so forth. In addition, many agencies rely on research for applications in their work. It is quite common, therefore, to find executives with scientific, engineering, and other technical backgrounds in senior positions. The difficulty that this presents for many is their certainty about the basis of decision-making.

For centuries now, scientists have been refining their methods of discovery in order to determine the most accurate answers to questions and problems. A rigorous process should arrive at the best solution. So why would anyone question scientific evidence? The shortest answer is that science is only one way of viewing an issue.

In the course, we use an article by Snellen (2002) as the basis presenting a model of multiple rationalities. The model in the article uses four rationalities: professional (which includes scientific), legal, economic, and political. Each rationality, in essence, is a model of viewing the world. Each has its own criteria for what is considered legitimate information, and for using that information to arrive at conclusions. The work in the course is to help the executives learn to step in and out of different models in order to understand how to frame the same issues based on the same basic data in different ways.

Global climate change, for instance, affects the work of many, many agencies in different ways. After decades of work, scientists seem to be getting closer to some consensus about evidence that the phenomena even exists (though this is still not universal) and some idea of the extent of the changes. Translating that information into policies about food supplies, energy resources, disaster preparedness, etc. and etc. is not just a matter of science, though. Almost every policy has many implications that have to be considered from the four rationalities presented, and often from others not described in the initial model, as well.

Most of the executives who take the course can grasp, at a general level, the idea that information can be seen and understood in different ways. Most also have some notion about complexity and the concept of systems, but only some at a level of rigor. For most, they are metaphorical concepts.

When asked, though, to describe situations or information or to develop sample policies using different rationalities, some executives are able to do this quite quickly, and others simply don't seem to understand. Some are able to shift between conceptual frameworks, and others use varying ways of describing things within their own framework, without any apparent understanding of the alternatives. A few seem to reach at the edges, understanding that there may well be alternative ways of interpretation, but needing to make whole-scale shifts. If their way of seeing is not the right way, then another single framework must be, as there can only be one really right way.

At present, those who see the world in more complex patterns seem quickly to grasp the value of tools that help to identify and shift between varying viewpoints and paradigms. This, in my experience, though, remains the minority – though maybe a critical minority in terms of their potential impact on policies and decisions.

### **Implications for Systems**

As systems professionals we understand the importance of context, and the fact that boundaries are not absolute or universal. As many of us struggle between the gaps of professional recognition and rigorous work at a systemic level, though, we find ourselves dealing with limited, rigid world views which are difficult, at best, to influence.

The good news is that while many people continue to see the world through very narrow models, there is often recognition at a deeper, possibly less conscious level, that the world is complex and involves many different ways of understanding. While the population at-large may not understand chaos and complexity the way that scientists or mathematicians use those terms, many do have a sense that someone is working on those ideas. Unless there is some translation of the ideas into issues of relevance or applications of some importance, though, the ideas remain vague and esoteric, with no need for attention or support.

The same is true for systems. The term has been used in various ways in the public domain for years, but rarely with any sense of clarity or rigor in the way that systems professionals would use it. Until it makes a difference for people, with relevance to their own domains of functioning, there

is no particular need to pay attention to it and certainly no reason to study it seriously, much less to consider it for a degree or profession.

There are strong voices within the systems communities that have called for greater rigor in our work in order to increase its credibility. Many of these same voices have also called for work in systems to clearly be directed towards the development of systems science as a discipline. The question this raises in the context of this paper is just what that actually means. Does systems science imply working within the existing bounds of science, and therefore adhering to its prescriptions for rigor? Or does it imply that systems might introduce a new set of principles for rigor within science (and knowing what we do about the nature and functioning of systems, is such a thing really feasible?)

Leaving aside the issue of science for a moment, there is clearly a need for paying attention to the quality of the work and research that we do as professionals. If we allow ourselves and each other as peers to promote vague and general notions with no foundation, in our writing or presentations or applications, then we bring questions about credibility onto ourselves. To address this problem, though, requires establishing clearer standards about what we mean by systems, and what good work within those boundaries requires. This also implies being clear about how we distinguish our work in systems from work in other disciplines. Bluntly, if someone were to randomly read an article from a systems journal and not be able to tell that it came from a systems journal, rather than from a journal in any of a hundred more specialized disciplines, we have a problem. At the least, we need clarity between developing systems principles per se, and applying systems principles to other disciplines of research or study. In this way we need both more rigor within our own discipline and greater internal relevance to clearer concepts.

On the other side, though, it is important that we not shackle ourselves to the idea that all rigor reduces to mathematical equations. There absolutely are realms where mathematics represents the most accurate descriptions of the elements or characteristics in question. Mathematical expressions are not the only way, though, in which to be clear, accurate, or exact, and in many realms it becomes an artificial way of attempting to give an aura of clarity where none exists.

Most importantly, it may be time that we rethink exactly what we mean by systems, and what value this discipline and way of thinking offers to whom. While systems work has strong roots in science it also has much broader connotations, as described by Bertalanffy's (1969) catholic sense of the term. Science and its many applications in technology, engineering, medicine and so forth have brought incredible changes to the world in the last few hundred years, especially. There are new challenges to face, though, some of which science and technology have helped to create, and many of which are beyond the bounds of science, as such, to solve.

Two societal trends which have already been noted may be of significant concern for the future. One of these is the ongoing process of specialization and fragmentation. The other, which may be somewhat related, is the increasing presence of fundamentalism in societies. There are probably few disciplines which could capture and address these processes as well as systems, and there would seem to be great opportunity in doing so.

For creating greater relevance by systems, across boundaries, researchers seem naturally to gravitate to information and communications technologies these days. Rather than creating new tools, though, it might be helpful to take several giant steps back and consider the larger context of human communication and history. We marvel at the developments of the printing press, the telephone, and the Internet. Yet there are much older ways in which humans captured, shared, and made sense of information, and which continue today. The use of stories, as an example, crosses boundaries in ways that media and technologies do not. As Bateson (2002) explained, "a story is a little knot or complex of that species of connectedness that we call relevance... Connectedness [occurs] between people in that all think in terms of stories" (p. 12).

This is not to contradict earlier statements about rigor, and certainly not to trivialize the importance of any of the issues about systems. It is rather to suggest new ways to think about old dilemmas.

By example, in my work with graduate students, I became quite frustrated with the lack of coherence and the general level of interest of most dissertations. Not surprisingly, most dissertations only get read by the students' committee members, and maybe a few interested colleagues, friends or family members. Beyond that, they simply fulfill academic requirements and create storage problems, despite the months or years of agonizing work that they represent.

My counsel to students was to think about their dissertations as stories, not as fables or fiction, but in the form and structure of narratives. The simplest outline, by chapter, would then be:

- This is what I was interested in, and why.
- This is what was already known about the subject.
- This is what I planned to study of the subject, and how.
- This is what my my research / investigation showed.
- This is what I learned, and what I can now add to the topic.

Such an approach does not preclude quantitative analysis or mathematical representations, or other specialized ways of representing ideas. It does suggest, though, that by the end of the process the student should be able to explain the process and findings just this simply. If so, there is no reason that their work should not be fully accessible and possibly relevant to people outside their own disciplines.

## Conclusion

In conclusion, we as communities of researchers and practitioners have tremendous potential to offer in our work. We see things differently than most people, which can be difficult to explain, or to help others understand. That should not diminish the value of what we do, though, in our own eyes most importantly. If we fail to find recognition within traditional disciplines, it may just be that we are looking in the wrong places. Having access to resources and work is critical to individuals and organizations, and that involves achieving credibility. But finding where we are the most relevant may require rethinking the boundaries within which we see ourselves.

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## SYSTEMS AS QUANTIZED ACTUALITY, APPLIED TO HIERARCHIES

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What can quantum mechanics tell us about systems? The following thoughts were enabled by Gell-Mann and Hartle, (2007).

Systems appear to our thought only when we disregard most of the innumerable details we are capable of perceiving in the world. That is, they become definite only when all the complex ground the evidence for them is entangled with is ignored by thinking. The act of thinking enacts a 'coarse-graining', whereby unentrained details are transcended, falling away, revealing what evidence there is for the systems theory that provoked our thought. In this process potential information related to other possible systems models are lost. Sequences of such cognitive acts of imagination and comparisons with perceptions gradually refine our system model.

Each enactment of thought is like the 'collapse of the wave function' in quantum mechanics, or, more simply, like a choice being made from a list of possibilities. Such a choice, since we would know how long the list is, would allow us to measure how much information was lost by making it. This is like the revelation of the state of a particle after a previously coherent quantum wave function collapses. In this case, defining possible states in advance will have allowed us to derive experimentally a probability for each of them -- providing there are not too many possible states allowed, in which case entanglement among them during decoherence could often generate many 'illegal' states, and our probabilities would be off the mark. If we do know the probabilities in advance we could calculate the amount of information lost with each choice. That would be an 'entropy' caused by choosing, or in imagining systems by minding. But in the entangled world of the mind, no such entropy could be calculated -- unless, as an interesting possibility, the choice of possible systems models are really rather restricted by (we could say, having been 'quantized' by) previous discourse. This raises the question: given the history of systems discourse, could we estimate how many different systems models there might be?

In a physical sense, any aspect of nature that might be subjected to systematizing (call it a putative 'natural system') could in principle have a fine grained description, say, at the atomic level, but this is not often feasible. In order to capture it in discourse, we must coarse grain our description, using previously constructed categories. We must then choose among these, losing in that choice potential information about the natural system dealt with by other models. As well, because of the possibility of interference between concepts in the entangled state in the mind, no fine grained, global description of any putative natural system would any longer be possible.

Being able to estimate the amount of information lost upon decoherence of the wave function assumes that the previously established probabilities of different possible coarse grained states have exhausted the possibilities. This assumption would be invalid if the entangled state was not 'mixed', but instead vague. In thought, previous discourse would have established separate 'channels' for different systems models. And the same is true of the quantum situation as well. Previous discourse will have established, by definition, the set of possible states for any experiment, and any result not fitting that format can be attributed to interference between entangled states during decoherence. Thus, nature, when subject to discourse, cannot be vague. And mental activity will always be channeled into already known alternatives.

An interesting case of the result of entanglement in systems thinking is the not uncommon conflation between two known hierarchical formats -- the compositional and subsumptive hierarchies (Salthe, 2002). Consider the example of the relations between macromolecules, living cells and organisms. Since their rates of change are orders of magnitude different, these can be modeled as a compositional hierarchy -- [organism [cell [macromolecule]]], with [bigger, slower [smaller, faster]]. At the same time the relations here are between ecological, biological and chemical realms, shown as {{{organism} cells} macromolecules}. Here the relation is two-way, with chemistry subsuming the others, and ecology integrating the others under its systemic organization. The logics of the two hierarchies are very different, yet either might be applied to a given system. But mixing

them up results in confusion. In thought, the two models are like two alternative, quantized states -- on/off, spin up/spin down, dead cat /live cat. They cannot be melded, even though in this case interference between states, Hsc/Hsp, has apparently been very tempting.

So, any putative natural system can be subjected to different coarse grainings by way of discourse. Take a weasel, and using the subsumptive hierarchy -- we can place it in a physical model by noting its thermodynamic aspects. Thus, {dissipative structure {small body size {of a given age}}}. Or we could place it in an ecological model by noting that it is a predator, with {high on the food chain {generalist {active at dusk}}}. Again, we could place it in a biological systematics model by noting that it is a mustelid or an animal, as in {animal {mammal {mustelid}}}. The most general category in each case (the lowest level in the hierarchy) is the result of a sequence of decoherences, finding the weasel separately to be animate, a dissipative structure, active at dusk. This does not pinpoint the weasel very well by itself. Further discriminations in the realm of thought are required to home in on the squiggly little thing itself, but these do not exhaust the possibilities of making further classificatory categories.

Going the other way, the weasel gets captured into systems in thought by entrapping it in increasingly more general categories, each one enacting a decoherence from the others, which at some point in the procedure disentangles the weasel into separate coarse grained systems. Document shredding is often taken as a canonical physical example of coarse graining, so we can note that the procedure here cuts our perceptions of the actual animal up into different models, and, again, none of them deal with the fine grained, whole thing.

It could be possible that different discursive models give rise to descriptions that may be incompatible. In practice we weed out models, retaining only those belonging to a compatible family, as in the above physical, ecological and taxonomic ones. Then, again, the coarse graining of classifications like these discards large amounts of potential information.

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**SYSTEMS THINKING IN THE POST MODERNITY ERA**  
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The concept of post modernity invites to the reflection about diversity, multidisciplinary and diverse interpretations of the vision of the world. According to diverse authors, (Anderson, 1998, Berman, 1998, Brunner, 1998, Habermas, 1998, Bauman, 2001, Lyotard, 1999 among others), post modernity could be visualized in different dimensions from the economic, politic, social and cultural. In the economic, the main idea is that the market rules the social relations. In politic it emphasizes the idea of democracy and citizen participation. In the cultural there is a tendency to homogenize some cultural forms and styles of life. The study of post modernity is boarded from different perspectives, Zubillaga, (2007) sustains that independently of the positions, it has a severe questioning to the universal narratives and the pretension to establish governing truths of the human life from the scientific paradigm. In the post modern culture, the Systems thinking should be directed to the coexistence of tendencies and thoughts. De la Reza, (2001) speak about it not as a unique set of abstract concepts, but as a scientific approach formed by numerous theories, concepts, techniques and methods of investigation, it represents a scientific paradigm

that in a complementary way raises a series of solutions to the diverse problems of the world. It is exactly this diversity the one that contributes to reach the objectives projected by a society, an organization or an individual. In words of Churchman, (1993) the systems approach occurs when one person begins to see the world through the eyes of the others and then is capable to extend the vision. The postmodern systems thinking must have present the paradigm of the complexity of the multidimensional knowledge where the theories can coexist with others making to a side the idea of experts where does not fit the knowledge of others, in other words the diverse currents of diversity are grouped in order to give new perspectives to the solution of problems. The systems thinker of the future will use two or more approaches for the analysis and solution of a problem or problem situation. The Systems Thinkers of the new century must develop new visions about the combinatorial use of Systems approaches. Taking as an example Psychology, there are many different theories, and when one speaks with many psychologists it seems that they believe that the only approach that works for psychotherapy is their own, for example that of Freud, Rogers, Ellis and so on, in fact there are a lot of therapies; some of these are idealistic, other realistic and normally psychologists tend to think that they can not mix two or more of these approaches. If we think about the development of the Psychology of the future, it is very likely that psychotherapists will need to manage several approaches in order to have more options in the treatment and curing of their patients, and it is also likely that in some very complex cases, they will mix or use in a combinatorial approach a Freudian approach in order to get information regarding the past and present circumstances of the case and then use another type of psychotherapy such as the behavioral approach, for producing rapid changes. With so many visions in psychotherapy a new wider approach or Meta methodology is likely to be produced.

The same situation can be expected in the Systems thinking of this new century, there is a need for a new complexity-based perspective of the Systems Thinking. At present it is possible to find cybernetic, critical, mathematical, soft, hard and many more systems approaches, then the future is in the line of integration of the incredible array of systems approaches developed around the world, specifically in England, the systems approaches were developed with the pragmatic accent of that country, or in Germany with the idealistic one, in the same way in Latin America it was developed with the humanistic dimension. Now the challenge to the systems thinkers is to integrate all this diversity in order to get universal approaches capable of being adapted to any culture in order to build a strong Systems Science.

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# GLOBAL PROBLEMS AND HOLISTIC EDUCATION TOWARDS INTERNAL HUMAN SUSTAINABILITY

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A new vision on sustainable (holistic) human development (with health as a principal goal) is proposed in this note. The internal human sustainability (mentality) is considered as its sufficient condition that can be achieved through appropriate integrated educational policy.

Nowadays, there are many sharp problems of humanity development which are vital globally and have very dangerous, systematically stable trends:

- Environmental - climate change (e.g. global warming, ice melting, extreme weather conditions, natural disasters) (IPCC, 2007), natural resources depletion (e.g. deforestation and fresh water deficit), biodiversity loss, pollution, wastes accumulation (UNEP, 2007);
- Social - epidemics (e.g. HIV/AIDS, tuberculosis), chronic diseases (e.g., cardiovascular, obesity, depression), suicides (WHO, 2006), poverty, hunger, weapon, people and drugs trade, escalation of conflicts (e.g. terrorism);
- Technological – arm races (e.g. nuclear weapon expansion), misuse of nanotechnology, biotechnology (genetically modified organisms), artificial intelligence, information technology (e.g. Internet viruses).

These problems are inherently interrelated and caused by:

- Extensive type of economic development (consumerism, profit motives);
- High population growth;
- Inadequacy of institutions, especially in the fields of environmental management and education (poor understanding of sustainable development principles by society), self-governance and civil control;
- Ego-centric competition for the limited resources (globalization) and
- Deep socio-cultural / ethical crisis - inter and intra-generational cultural, economic and ecological injustice of society (Gorobets, 2006).

However, the modern civilization believes in institutional and technological innovations, with their own limits for advancement and a risk of abuse, to cope with these problems instead of changing the philosophy of its development.

In contrast to dominating extensive economic growth, and consumerism development – that is unsustainable socio-ecologically and psychologically (health destructive) (Maiteny, 2000), sustainable development worldwide should be focused on the integrated harmonious (holistic) human development in the following basic dimensions:

- intellectual,
- physical,
- ethical,
- psychological and
- social.

It will allow to discover a personal natural talents and abilities for its further advancement and appropriate career development as one of the major factors of life satisfaction and social, physical and psychological well-being.

The integrated characteristic of human health (physical and intellectual capacity, life interval, sickness rate, psychological health) is proposed as the principal goal of sustainable human development as it depends on all dimensions of human life: eco-systems well-being, socio-economic development and lifestyle (WHO, 2006).



Proportion of healthy population (with no mental and physical diseases) is proposed as the indicator of sustainable human development (SHDI):

$$\text{SHDI} = \frac{\text{HealthyPopulation}}{\text{TotalPopulation}} = 1 - \frac{\text{SickPopulation}}{\text{TotalPopulation}}$$

Therefore, theoretical values of SHDI are varying in interval [0; 1] and its optimal value should approach the upper limit, i.e. 1, that means nil proportion of sick population.

The following policy tools are developed to achieve a high level of population health:

### **1) Integrated legal and institutional responses:**

- the reform of institutional decision-making to establish sustainable scientific and ethical control of eco-centric rationales (Gorobets, 2006) and socio-ecological economics (Brown, 2001, Costanza et al., 1997);
- creation of the institutes of civil control – community participation in decision making at all levels to achieve transparency and avoid corruption;
- development of appropriate eco-centric institutions to integrate human activity within natural cycles (e.g. eco-villages and eco-cities);
- changing production and consumption patterns through legal regulation, price controls (setting right prices, incl. environmental costs), eco-taxation, adoption of the ‘polluter pays’ principle instead of the ‘consumer pays’;
- obligatory incorporation of environmental auditing in all business sectors (especially industry and transport), and the adoption of international standards ISO14000 and ISO9000.

### **2) Integrated economic (technological) responses:**

- restructuring the economy from industrial to knowledge based socio-ecological economics (e.g. producing bicycles, renewable energy industry – solar, wind, hydrogen, bio-fuel, recycling, organic agriculture and information technologies) by “green” taxation - heavy taxation of natural resources use and no taxation on intellectual products (Brown, 2001);
- priority of investments in science, education and cultural institutions oriented on the integrated harmonious human development;
- transition to a service-sector oriented economy with low material-energy throughput, including green efficient public transport system (fueled by biogas, hydrogen, ethanol). However, these institutional and economic (technological) responses are only the necessary conditions of sustainable development while the internal human sustainability (mentality) based on the eco-centric rationale and holistic human development (instead of material economic growth) is considered as its sufficient condition (Gorobets, 2006). This can be achieved through appropriate integrated (holistic) social and educational policy:

Development of Educational institutions for local communities to change people’ values, mentality and behaviour from anthropocentrism and consumerism which are unsustainable socio-ecologically and psychologically (Maiteny, 2000) toward eco-centrism (socio-ecological well-being), humanism (altruism) and personal physical, intellectual and ethical development by:

- upbringing of ethical humanistic culture with emphasis on versatile personal development, individual responsibility and active civil position for promoting sustainable lifestyles and widening the network of concerned people (by joining appropriate parties and NGO’s);
- raising awareness about the critical socio-ecological state of the world and showing the multiple advantages of new, green lifestyles (particularly, stronger health and eco-systems well-being);
- using the mass media to influence individual and community mind-sets toward issues of the environment and sustainable behavioral patterns.

Reorienting existing education programmes. Rethinking and revising education from nursery school through university to include more principles, knowledge, skills, perspectives and values in

all dimensions of sustainability – social, environmental, and economic should be done in a holistic and interdisciplinary manner (the United Nations Decade of Education for Sustainable Development) (UNESCO, 2003).

The advantage of proposed policy tools is that they are universal for application in every specific country, although every community around the Globe must find its own way of sustainable living depending on its local environment, cultural traditions and socio-economic development.

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## PAIN, CREATIVITY AND THE URBAN ECONOMY

Ade Tugbiyele Sedita

This paper explores the relationship between pain and creativity from a social perspective. Pain is an honest reminder of death, but it can also be a window into other forms of existence throughout life. Physically, we understand pain as a barrier to efficiency and seek medical treatment in order to maintain our quality of life. Emotionally, pain is more complex – changing meanings through different stages of life and representing different ideas from one culture to the next. Pain can also be analyzed through geographical lens. As we shall see, those who live in suburban settings experience pain in a drastically different way than city dwellers. The former seeks comfort, safety and privacy and the latter leans more towards spontaneity, risk and possible danger.

Some believe that it is difficult to research pain because of its subjective, private and puzzling nature. They tend to use language that describes this intangible sensation and emotion in neurological terms. In *Man and His Symbols*, C.G Jung describes four distinct types of human behavior – sensation, intuition, thinking and feeling. Pain can either be a sensation or a feeling depending on whether we mean it in a physical sense or as an emotion. I am concerned with emotional pain, defined herein as a feeling of emotional stress, discomfort or tension that persists over an extended period of time. More so, this study views pain as a close friend; a guide that, when listened to, can provide insights into who we are and what our purpose is. It is a position that requires a certain level of comfort with mystery or the unknown.

Creativity is defined here as the physical realization of the desire for change, with the understanding that our aspirations continuously change over time. It is the process of coming up with ideas and putting them into action. Creativity is present when one no longer feels stuck, similar to when

a writer finally crosses over that treacherous road of writer's block, however, creativity is not an arena meant just for writers, visual artists, designers, and musicians. Real creativity may or may not be found among a "creative class," and so-called non-creatives can exhibit creativity in ways we don't necessarily classify as a creative act. In other words, the potential for creative breakthrough is just as present in a drummer's studio as it is in a teacher's classroom or a doctor's office.

Research on pain and creativity reveal how creative projects can help alleviate pain, but less attention is given to how embracing pain can inspire creativity. The former view accepts the epistemological position that pain, regardless of its degree of intensity, is a bad thing, while the latter sees great possibility in how our tolerance of pain can lead to transformation – what Ariel Glucklich, in his book *Sacred Pain*, describes as *the phenomenological power of pain*. Given the highly subjective natures of pain and creativity, we can only compare the perceived level of pain, or pain type, against the level of creativity the individual desires to achieve at a particular point in time and space. Time and place are important because they provide the historical and environmental contexts in which the two variables, pain and creativity, can be analyzed.

This paper contributes to research on creativity by analyzing the dynamics of individuation and ego development, using pain as a starting point. It helps leaders recognize when and how thought development *gets stuck*, the psychological effects that is produced by feeling mentally trapped and finally, how that situation prevents creative breakthrough. The results can be used by leaders who seek transformation in areas such as urban development, organizational design, entrepreneurship and policy making at all levels of government. The notion of 'pain' is introduced to represent a hidden factor which, when embraced or communicated, provides a clearer picture of who we are and what our purpose is. Finally, this paper contributes to literature on pain in the sense that (1) we can study the sensation and emotion of pain from a non-judgmental point of view – seeing pain not necessarily as a bad thing, but as a learning tool in the process of self-reflection; (2) pain influences our level of creativity and (3) creativity is a key component for renewing urban economies. Leaders who recognize this have a better chance at managing urban systems.

There are important implications herein for planning and urban development. Planning methods of the last century have been largely escapist. Escapist tendencies are built on the perspective that pain must be avoided at all costs, often leading to a decrease in levels of creativity. In contrast, those who choose to 'stay' put themselves in a position where they have no choice but to work with the contents of their environment, even when the process becomes confrontational or painful. Those who stay therefore tend to be more creative because everyday life becomes a lesson in problem solving. Planning cities as though we are staying requires an integral approach that forces us to reconsider the notions of space and time where we live. I argue that this is not enough. We need to delve deeper than that to reconsider what it means to live. Before we ask the question *where are things happening*, we can begin to ask *what is happening and what is my role in it*. The former represents the search for creativity outside of ourselves while the latter builds creativity within. This paper provides a framework for living.

# MEASURING CONTINUOUS SYMMETRY AND POSITIONAL ENTROPY

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## Introduction

A previous paper by the author [1] showed that it is possible to measure all different kinds of symmetry of a set of points through one calculation, namely finding the occupation numbers of the set of all distances from any point to any other point of the set. The goal here is to apply this idea to a continuous figure. A critical calculation is to measure the continuous entropy of the distribution (or density) of distances from any point to any other point. Then as a first result continuous symmetry can be set equal to the negative entropy or negentropy. It is important to distinguish between discrete entropy and a discrete approximation of continuous entropy. For example a discrete entropy based on two outcomes with probabilities .75 and .25 would have discrete entropy  $-(.75 \ln(.75) + .25 \ln(.25)) = -(-.215 - .346) = -.561$ . On the other hand a continuous entropy based on the function  $f(x) = 2x$  on the interval  $[0,1]$  would have entropy  $\int_0^1 -2x \ln(2x) dx$  from 0 to 1 or  $1/2 - \ln(2) = -.193$ . The approximation of this integral by a step function  $u(x) = .5$  if  $0 \leq x < .5$  and  $1.5$  if  $.5 \leq x \leq 1$ , would have a discrete approximation to the continuous entropy  $-.5 \ln(.5) + 1.5 \ln(1.5) = -.5(-.346 + .608) = -.131$ . The signs are not even the same. The symmetry of the continuous entropy would be .193 with approximation .131.

The continuous symmetry is based on the amount of "wobble room" within the figure at a given distance. As a limiting case, suppose a figure of length 1 is compressed like a ball of yarn until it occupies only one point. The discrete entropy of a density that has a delta function of height 1 concentrated at one point is  $0 = -(0 \ln(0) + 1 \ln(1))$ . However the continuous symmetry would be infinity, based on the infinite amount of information required to specify one-by-one the digits of the particular distance, in this case 0, since all of the points are at the same distance 0 from each other. The calculation would be based on the limit as  $c$  goes to infinity of the negentropy of the step function  $f(x) = c$  if  $0 \leq x \leq 1/c$  and 0 otherwise, or limit of  $(1/c) * c \ln(c) = \ln(c)$  as  $c$  goes to infinity.

## PDE Approach. Distance Wave

Applying partial differential equation (pde) theory may help to understand the setting. A couple examples are studied, based on a flat or planal figure of total length one.

The distance function  $u(x,y)$  of a straight line of length one is  $u(x,y) = 1 - x - y$ . Then  $\partial u / \partial x = -1$  and  $\partial u / \partial y = -1$  and  $\partial u / \partial x + \partial u / \partial y = -1 + (-1) = -2$ , a partial wave equation. The boundary conditions for  $u$  are the following:

$$u(x,0) = 1-x \text{ on } 0 \leq x \leq 1, y=0$$

$$u(0,y) = 1-y \text{ on } 0 \leq y \leq 1, x=0$$

$$u(x,1-x) = 0 \text{ on the line } y = 1-x.$$

Here the  $u$ -value at the origin is the distance 1 between the endpoints of the line and 0-values on the line  $y = 1-x$  represent the fact that the distance from a point on the line to itself is 0. Here  $x$  represents the a point on the figure starting from the origin going right, and  $y$  represents a point on the figure going down from  $x=0, y=1$ .

A clue to solve the partial wave equation  $\partial u / \partial x + \partial u / \partial y = 0$  can be found by separation of variables with  $u = X*Y$ , leading to  $X'/X - Y'/Y = \text{constant } c$ , with solution  $X(x) = \exp(cx)$ ,  $Y(y) = \exp(cy)$ ,  $u(x,y) = \exp(c*(x+y))$  for any  $c$ . The level curves are  $C = \ln(u) = c*(x+y)$ , however, leading by the

general theory to the conclusion that any function of  $x+y$  will work, and by matching the boundary conditions, to the solution  $u = 1-x-y$ .

As a second example, consider the "L-shaped" figure, consisting of one-half unit down plus one-half unit to the right. The  $u$  function has a modular form made up of two triangles bounded by (first triangle) straight line sides  $\{y = \frac{1}{2} \text{ with } 0 \leq x \leq \frac{1}{2}\}$ ,  $\{x+y = 1 \text{ with } 0 \leq x \leq \frac{1}{2}\}$ ,  $\{x=0 \text{ with } \frac{1}{2} \leq y \leq 1\}$ , and (second triangle)  $\{y=0 \text{ with } \frac{1}{2} \leq x \leq 1\}$ ,  $\{x+y=1 \text{ with } \frac{1}{2} \leq x \leq 1\}$ ,  $\{x=\frac{1}{2} \text{ with } 0 \leq y \leq \frac{1}{2}\}$ , representing the self-intersection of the straight-line portions of the "L-shape," plus a square-shaped region  $\{(x,y): 0 \leq x \leq \frac{1}{2}, 0 \leq y \leq \frac{1}{2}\}$ , representing the interaction of the vertical part of the "L-shape" with the horizontal part. The solution for  $u$  over the triangular regions is similar to the argument above for the straight line. The solution for  $u$  over the square region is

part of a cone  $u = \sqrt{(x - \frac{1}{2})^2 + (y - \frac{1}{2})^2}$  centered at  $(\frac{1}{2}, \frac{1}{2})$ . Taking the differential of  $u$  squared,

leads to  $u \cdot du = (x - \frac{1}{2}) \cdot dx + (y - \frac{1}{2}) \cdot dy$  or  $\frac{\partial u}{\partial x} = (x - \frac{1}{2}) / u$  and  $\frac{\partial u}{\partial y} = (y - \frac{1}{2}) / u$ .

Multiplying the first equation by  $(y - \frac{1}{2})$  and the second equation by  $(x - \frac{1}{2})$  and subtracting leads

to the partial wave equation  $(y - \frac{1}{2}) \frac{\partial u}{\partial x} - (x - \frac{1}{2}) \frac{\partial u}{\partial y} = 0$  with boundary conditions:

$$\begin{aligned} u(x,0) &= \sqrt{(x - \frac{1}{2})^2 + (\frac{1}{2})^2} && \text{if } 0 \leq x \leq \frac{1}{2} \\ u(x, \frac{1}{2}) &= x - \frac{1}{2} && \text{if } 0 \leq x \leq \frac{1}{2} \end{aligned}$$

$$\begin{aligned} u(0,y) &= \sqrt{(\frac{1}{2})^2 + (y - \frac{1}{2})^2} && \text{if } 0 \leq y \leq \frac{1}{2} \\ u(\frac{1}{2},y) &= y - \frac{1}{2} && \text{if } 0 \leq y \leq \frac{1}{2} \end{aligned}$$

In spite of the pde arguments being circular in these cases, it is believed a general derivation of a partial wave equation is possible in terms of the curvature of the (planar) curve. In any case the pde approach seems to help explain the modular form frequently taken by the  $u$  function. It is possible to think in terms of distance waves moving away from the line  $x+y=1$  in the  $x-y$  plane.

A closed figure (such that the starting point connects to the ending point) will have  $u$ -function value 0 at the origin, i.e.  $u(0,0)=0$ .

Of course the theory extends to three or other dimensions.

### Alternatives

Three ways to measure continuous symmetry are the following:

Exact calculation: If it is assumed the total length of the figure is 1, then the set of distances between any two points of the figure appear as the height  $u(x,y)$  above a triangle in the  $x-y$  plane bounded by the  $x$ -axis, the  $y$ -axis, and the line  $x+y=1$ . Here  $x$  represents the first point on the figure and  $y$  represents the second point measured downward starting at  $y=1$ . Thus the origin  $(0,0)$  has a height  $u(0,0)$  equal to the distance from the first point to the last point on the figure. The  $u(x,y)$  heights along the line  $x+y=1$  are zero since the distance from a point to itself is zero. For example  $u(0,1)$  is the distance from the starting point to the starting point, which is zero. Next the area within the triangle can be integrated versus distance and doubled to give total area 1 at maximum distance, and the derivative will be the desired density. For a straight line of length 1 the density comes out  $f(x) = 2x$  if  $0 \leq x \leq 1$  and 0 otherwise, so that the continuous symmetry equals  $\frac{1}{2} - \ln(2) = .193$ . For a square of perimeter the density is believed to be  $f(x) = 4(-.5-2x)+4(\pi \cdot x)$  if

$0 \leq x \leq .25$  and  $4(.5 + 1/\sqrt{2} - 2x) + 4x(\pi - 4\arccos(1/(4x)))$  if  $.25 \leq x \leq .25\sqrt{2}$ , which comes out to 1.068, if *Mathematica* integrals are correct. For an L-shape (.5 each side) the value comes out .476. The u-function frequently has a modular form, which appears as tent shapes fitted together. It is important to distinguish between the entropy of the density above the triangle and the entropy of the density versus distances on the u-coordinate, which is desired.

- Counting triangles method: If a grid is set up on the triangle determined by an x-grid, a y-grid, and a grid of  $x+y=k$  lines, an appropriate density can be created by considering the range of u-values in each triangle, to get an approximate density.
- Probability centrifuge method: Here u-values are calculated at points within the triangle, ordered, interpolated, normalized to maximum distance 1, and the entropy of the resulting density calculated. Then the result has to be adjusted to make the length of the figure come out to 1. A result is given in the abstract. These results are not very accurate at present due to the approximations necessary to get the *Mathematica* integrals to give numerical answers.

### Extensive Entropy and Concavity

Real line theory provides a one-to-one mapping between line segments of different lengths. On the other hand practical experience indicates it will take four times as much ink to draw a straight line of length 4 inches, as to draw a straight line of length 1 inch. This leads to the following procedure to measure continuous symmetry of any figure, as opposed to a figure of length one.

- contract the figure until it has length one,
- measure the continuous symmetry (= negative entropy) for the figure of length one,
- multiply back the continuous symmetry by the expansion factor necessary to get the original figure back.

In general the procedure would be to find continuous symmetry per unit length and integrate. It is conjectured that such a procedure will lead to a concave calculation of extensive continuous symmetry of a figure versus its parts. This fact is more or less obvious in the discrete case since combining together can only leave alone or increase the number of equal distances within the overall figure.

For example a square of side-length 1 would have an extensive continuous symmetry of  $4 \cdot (1.068) = 4.272$ , always being greater than or equal to the sum of the continuous symmetry of its straight-line parts or  $4 \cdot .193 = .772$ .

### Further Work

Much further work needs to be done relating the various methods. A goal is to distinguish a malignant (2-dimensional) tumor from a benign tumor by measuring their symmetry. Presumably the malignant tumor would have less continuous symmetry.

### References

D.G. Collins, "Algorithm to Measure Symmetry and Positional Entropy of n-Points," (talk at 2007 meeting of the American Mathematical Society, Jan. 6, 2007), *General Systems Bulletin*, Vol. XXXVI, 2007 (International Society of Systems Sciences), pp. 15-21.

# SECTION TWO

## MEETINGS AND CONFERENCES

**The 52nd Annual Meeting  
International Society for the Systems Sciences  
ISSS 2008  
The University of Wisconsin, Madison, WI, USA  
July 13-18, 2008**

**Systems that Make a Difference  
President: Gary Metcalf**

The title for this conference borrows from Gregory Bateson's definition of information as "a difference that makes a difference." The question for systems researchers and practitioners is, "what difference are we making?"

The ISSS 2008 conference will bring together professionals who are developing the cutting edge of systems ideas with leaders who face real-world complexities and "messes" daily. While we must continue to make systems research ever more rigorous, we must also connect that work with the dilemmas in the world for which people are seeking solutions. The intent of this conference is to further build the bridges between rigor and relevance in systems work. Speakers and authors are invited who can address any part of this spectrum, from better methods for systems research to clarifying the nature of real-world problems in need of resolution.

### Location

The 52nd conference will be held at the University of Wisconsin at Madison, July 13-18, 2008. The University of Wisconsin-Madison is located in Madison, WI, and the campus spreads out along Lake Mendota, encompassing wooded hills, friendly shores and lively city streets. Madison (the state's capital city with a population of 208,000) offers the perfect combination of natural beauty, stimulating cultural offerings, outdoor recreation, distinctive restaurants, unique shops and vibrant nightlife.

The university's location in south central Wisconsin makes for convenient access to Milwaukee (80 miles), Chicago (150 miles) and Minneapolis (270 miles). Daily buses serve all three cities.

### Related Web Sites

- \* University of Wisconsin-Madison: [www.wisc.edu](http://www.wisc.edu)
- \* City of Madison: [www.ci.madison.wi.us](http://www.ci.madison.wi.us)
- \* Greater Madison Convention and Visitors Bureau: [www.visitmadison.com](http://www.visitmadison.com)
- \* Dane County: [www.co.dane.wi.us](http://www.co.dane.wi.us)
- \* State of Wisconsin: [www.wisconsin.gov/state/home](http://www.wisconsin.gov/state/home)
- \* Visiting Wisconsin: [www.travelwisconsin.com](http://www.travelwisconsin.com)

## CALL FOR PAPERS

Although the conference will accept papers related to the following areas of research, the list is neither exclusive nor restrictive. Proposals of new sessions and tracks are very welcome. Each session chair takes the final responsibility for running his/her session. All submitted papers are encouraged to state how relevant the paper is with regard to systems thinking, systems modeling and/or systems practice.

Specific Calls for Papers will be advertised on the website, and in the General Systems Bulletin 2008, by the following Special Integration Groups (SIGs) and exploratory groups:

SIGs	SIG Chair(s)	Contact
Systems Applications in Business & Industry	David Ing	iss@daviding.com
Hierarchy Theory	Jennifer Wilby	j.wilby@hull.ac.uk
Duality Theory	ISSS Office	2008cnf@dsl.pipex.com
Systems Philosophy & Systems Ethics	ISSS Office	2008cnf@dsl.pipex.com
Systems Modeling & Simulation	ISSS Office	2008cnf@dsl.pipex.com
Futurism & Systems Change	Curt McNamara	c.mcnamara@ieee.org
Meta-Modeling & Systems Epistemology	Janet McIntyre	janet.mcintyre@flinders.edu.au
Systems Psychology & Psychiatry (Mental Health)	Tamar Zohar Harel and Pamela Buckle Henning	tzoharel@macam.ac.il buckle@adelphi.edu Information
Systems Design & Information Technology	Bela A Banathy	babanathy@yahoo.com
Research Towards General Theories of Systems	Len Troncale	lynn@lynncras.com
Medical and Health Systems	ISSS Office	2008cnf@dsl.pipex.com
Living Systems Analysis	Jim Simms	jsimms@juno.com
Evolutionary Development	Alexander and Kathia Laszlo	info@syntonyquest.org
Designing Educational Systems	Patrick Jenlink	pjenlink@sfasu.edu
Spirituality and Systems	Carl Swanson	carl18292003@yahoo.com
Human Systems Inquiry	ISSS Office	2008cnf@dsl.pipex.com
Critical Systems Theory & Practice	Jennifer Wilby	j.wilby@hull.ac.uk
Systems Biology and Evolution	Len Troncale	ltroncale@csupomona.edu
Applied Systems & Development	Dennis Finlayson and Jae Yu	dfinlayson@btopenworld.com
What is Life/Living	John Kineman	john.kineman@colorado.edu
Women and Children	Anne Nelson	nelsongroup@comcast.net
Systems Specific Technology	Vadim Kvitash	Kvitash@hotmail.com
Organisational Transformation & Social Change	Maurice Yolles	m.yolles@livjm.ac.uk
Systems Pathology	Len Troncale	ltroncale@csupomona.edu
Roundtable	Sue Gabriele	sgabriele@gemslearning.com
Aging Systems	Daniel Hershey	Daniel.Hershey@uc.edu
Agent-based Social Simulation	Shingo Takahashi	shingo@waseda.jp
SIG for Students	Nicholas Magliocca	nrm@duke.edu
Primer Project	Tom Mandel	thommandel@aol.com



## Exploratory Groups:

Foundations of Information Systems Soren Brier and Bela Banathy, Emails: sbr.lpf@cbs.dk and babanathy@yahoo.com

Arts Based Inquiry Lezlie Kinyon iss06lezlie@yahoo.com

In addition the above sessions, the Student SIG and ISSS Roundtable SIG will be organized and the format for these sessions is interwoven into the program. These groups do not accept abstracts or paper submissions. Anyone who is interested is welcome and invited to participate; please see the website for information about the organization of these sessions or contact Nicholas Magliocca (Student SIG) or Sue Gabriele (Roundtable SIG) for further information.

## Important Dates

December 5, 2007: The start of abstract submission and registration. (Please allow at least two weeks for your abstract to be reviewed.)

February 1, 2008: The start of on-line registration.

April 30, 2008: Deadline for early registration discount.

May 10, 2008: The deadline for abstract submission.

May 10, 2008: The deadline for full papers

(Late papers received after May 10, 2008 may still be accepted to the conference, but they are included on the CD-ROM proceedings for the subsequent year.)

Late abstracts may be accepted after May 10 on a space available basis until June 6, 2008. If late papers from these abstracts are submitted they will be held for publication on the following year conference CDROM.

## Social Programs

The conference opening reception will be held on July 13 and the conference banquet will be held on Thursday, July 17. Detailed plans will be announced on the conference website.

Registration	Payment by April 30	Payment from May 1
Regular	\$455 USD	\$525 USD
Retired	\$355 USD	\$425 USD
Developing country	\$330 USD	\$400 USD
Student	\$275 USD	\$325 USD
Additional banquet ticket	\$45 USD	

Off-line registration will also begin on February 1. A copy of the registration form has been included with this mailing. Accommodation information for the conference can also be found on the website. The registration fee does not cover accommodation or transportation expenses to and from the conference site.

The registration fee includes:

- \* ISSS membership fees for 2009
- \* A program/abstract book
- \* CD-ROM proceedings
- \* Reception on Sunday July 13
- \* One banquet ticket for Thursday July 17
- \* Coffee/tea breaks
- \* Lunches from Monday to Thursday

## OTHER CONFERENCES

**18th Annual International Symposium of the  
International Council on Systems Engineering  
6th Biennial European Systems Engineering Conference  
[www.incose.org/symp2008](http://www.incose.org/symp2008)  
The Netherlands  
15-19 June, 2008**

The INCOSE International Symposium is the foremost annual conference on Systems Engineering, gathering more than 1000 delegates from six continents to participate in five days of presentations, case studies, workshops, and panel discussions. The program attracts an international mix of professionals, researchers and educators from industry, government and academia who share knowledge on the most recent innovations, trends, experiences and concerns.

The International Council on Systems Engineering (INCOSE) is the premier professional organization that emphasizes a systems thinking approach to problem solving. Systems Engineering practices consider all aspects of problem solving, from defining the problem set to developing a solution, all while consideration is given to the outside environmental and enterprise effects that may impact the result.

'Systems Engineering for the Planet' provides the theme for paper authors, panellists and tutorial presenters to address how Systems Engineering principles and perspectives can improve the sustainability of our planet. Sustainability is concerned with achieving balanced solutions that account for the social, technological, economic, environmental, and political constraints. The theme also encourages Systems Engineers and others to address how we can use systems, methods, processes and tools to manage resource scarcity, prevent and repair environmental damage, ensure safety and security, and resolve social imbalances. Other topics of value include technology insertion, process improvements and organizational governance of the systems we make, manage, operate and maintain over their life cycle in their respective environment -locally or globally - to the benefit of mankind

The topics covered by the 18th International Symposium include but are not limited to the following:

Topics: Safety & Security, Resilient systems, Human-system integration , Disaster control, Resource efficiency, Infrastructure, Transportation systems, Climate impact, Water Management, Education & Government, Sustainable Development... the list goes on! Please visit the conference website for more information: <http://www.incose.org/symp2008>

### **Submission procedure**

Prospective authors are invited to make their submissions using the instructions for paper submission and manuscript preparation found on the website <http://www.incose.org/symp2008> at Technical Program or at the Download Area.

All submissions deadline: November 5th, 2007

Notification of Acceptance: February 8th, 2008

Final Manuscript due: March 19th, 2008

Mail: [sven-olaf.schulze@gfse.de](mailto:sven-olaf.schulze@gfse.de)

**ICE'2008: the 14th International Conference on Concurrent Enterprising  
Lisbon – Portugal  
23-25, June 2008  
<http://www.ice-conference.org/>**

Track: Co-creation, Co-Innovation and Open Innovation

The unprecedented pace of technological development that characterises the 21st century, coupled with the increased connectedness of individuals and the democratisation of knowledge access and production tools have transformed the ways we interact, work, innovate and produce. The emerging Web 2.0 technologies, such as blogs, wikis, social tagging and social networking, are empowering consumers to make more informed decisions and to demand more value from suppliers. While this highly dynamic environment poses significant challenges to companies that strive to cope with the connected, informed and demanding consumer, it also offers unique opportunities to tap into the collective knowledge and wisdom of the consumers' communities to drive the innovation and product development process and to deliver products and services that satisfy the continuously changing requirements of the market. The Concurrent Enterprise is emerging as the new enterprise paradigm to capitalise on these opportunities and build the responsive firm of the future.

Transforming traditional businesses into viable concurrent enterprises became an essential ingredient for survival in the new marketplace. Over the past few years, many companies have successfully adapted their internal processes and business models to embrace the new enterprise paradigm and have achieved remarkable success in establishing vibrant networks with business partners, customers and suppliers in order to exploit the massive amounts of creativity, knowledge and innovation created by these networks. This transformation requires a radical shift from the traditional approaches to business management and product research and development into more open, participatory and virtual structures. This track aims to explore the different issues and challenges that organisations face in embracing the emerging practices of co-creation, co-innovation and open innovation. The concurrent enterprise concept has captured the attention of many researchers and practitioners. However, there is still limited efforts invested into research that examines the dynamics of co-creation, co-innovation and open innovation, how they affect organisation structures, related management aspects, competitive advantage, business models and impact.

**EISTA 2008: The 6th International Conference on  
Education and Information Systems, Technologies  
and Applications  
Orlando, Florida, USA  
June 29th to July 2nd, 2008)  
<http://www.socioinfo-cyber.org/eista2008>**

For submissions or Invited Sessions Proposals, please go to the website: <http://www.socioinfo-cyber.org/eista2008/organizer.asp> Authors of the best 10%-20% of the papers presented at the conference will be invited to adapt their papers for their publication in the Journal of Systemics, Cybernetics and Informatics.

Each session to be included in the conference program will have corresponding electronic pre-conference and post-conference sessions for 15 days each. In the electronic pre-conference sessions authors will have access to the papers to be presented at their session and to an associated electronic forum, so they can be better prepared for their conference face-to-face session. Similarly, electronic post-conference sessions will complement and support a follow-up of the respective conference sessions, via an electronic forum and the possibility of evaluating papers presented at the associated session. These evaluations will also support the selection process for the papers to be published in JSCI journal.

**Methodology of Societal Complexity**  
**The IFORS Conference on Operational Research**  
**South Africa , Africa**  
**July 13-18 2008**  
**IFORS**

Organisers: Chair International Research Society on Methodology of Societal Complexity

P.O. Box. 3286, 1001 AB Amsterdam,

The Netherlands, Europe Tel: +31 20 6927526

E-Mail: [DeTombe@nosmo.nl](mailto:DeTombe@nosmo.nl)

<http://www.geocities.com/doriendetombe>

The stream of methodology of societal complexity consists of:

Session I : Societal complexity and Safety

Session II : Societal complexity and Sustainable Development

Session III : Societal complexity and Healthcare

Session info: <http://www.geocities.com/doriendetombe/detombelFORS2008.html>

General information of the Conference: [www.ifors2008.org](http://www.ifors2008.org)

Contacts and information: For questions and information you may consult the IFORS website at [www.ifors2008.org](http://www.ifors2008.org) This may already answer many of your questions. You may also directly contact the Session Organizers.

Other activities organized by the International Research Society on Methodology of Societal Complexity see <http://www.geocities.com/doriendetombe/detombeagendas.html>

**International Conference of the System Dynamics Society**  
**Athens, Greece**  
**July 20 – 24, 2008**

Call for Papers, Presentations, Workshops and Sessions

IMPORTANT LINKS for the Athens Conference:

Conference website:

<http://www.systemdynamics.org/conferences/current/index.htm>

PhD Student Colloquium:

<http://www.systemdynamics.org/chapters/student/>

Conference Sponsorship Opportunities:

<http://www.systemdynamics.org/conferences/current/sponsor.htm>

Email: [conference@systemdynamics.org](mailto:conference@systemdynamics.org)

**The InterSymp-2008 20th International Conference on Systems Research,  
Informatics and Cybernetics  
Baden-Baden, Germany  
July 24th to 30th, 2008**

Focus of the Symposium: To collect, discuss and disseminate scientific knowledge and professionals, experience of high-quality level and relevance, obtained with rigor from theoretical or empirical studies, that have been conducted to explore, describe-compare, predict, explain, control, design or evaluate IT-based Organizational Systems (ITOS ), by using the Systems Approach. Due to the inherent complexity of current ITOS realization, papers with an interdisciplinary scope are of special interest (drawing from Information Systems, Systems Engineering, Complex Sciences, Software Engineering, Computer Sciences, Industrial Engineering, Management Sciences and/or Operations Research), as well as focused on the support for engineering and managerial decision-making process (intelligence, design, choice, implementation, and learning).

Types of Contributions:

- Theoretical-based papers on philosophical issues of the systems approach for the engineering and management of CITOS.
- Interdisciplinary-based papers on systems research methodological issues, such as Conceptual, Formal Mathematical, Systems Simulation (Discrete, Multi-Agent or Hybrid), System Dynamics, Soft Systems, Action Research, Critical or Multi-Method Research (combination of several approaches including Survey, Case Study and Grounded Theory) for the engineering and management of CITOS.
- Empirical-based papers on a full or prototype CITOS where a Systems Approach was relevant for its Conceptualization, Design, Development, Deployment or/and Evaluation.

Registration and General Submission Information at:

[http://www.ias.edu/intersymp\\_registr\\_submiss.html](http://www.ias.edu/intersymp_registr_submiss.html)

Venue: Markgraf-Ludwig-Gymnasium, Hardstrasse 2, 76530 Baden-Baden, Germany

**1st Stafford Spirit Seminar  
How to make use of Stafford Beer's legacy in co-operating for our future?  
Mid Sweden University, Östersund, Sweden  
August 7th – 8th 2008**

The S3 event will be focusing on Syntegration. Syntegration is a model for democratic decisionmaking and team -building, developed by Stafford Beer, and described in detail in his book 'Beyond Dispute'. Based on a topological model that Stafford derived from the work of Buckminster Fuller, the methodology lay down the rules for a group interaction that includes the generation of the group's own agenda; it also lays down the precise protocol for discussion and on going action. Normally the whole event is held 'in the flesh' with the participants gathered in time and space. What we want to discuss and investigate this time, however, is to (1) make all or some of the steps on-line with help of electronic means and (2) use Team Syntegrity (TS) as an organisation's normal working procedure. This means that TS transforms from an 'one shot' event to a continuous process. Hence, our goal will be a Continuous Tele Syntegrity (CTS) protocol.

Before July 1st, send extended abstract of 1 – 2 pages to Professor Stig C Holmberg at [stig.holmberg@miun.se](mailto:stig.holmberg@miun.se). Registration and further details: [www.systeminformatik.se/mp2008/](http://www.systeminformatik.se/mp2008/)

Full papers due: July 28th, 2008. There will be no registration fee for S3-2008. Each participant will however be responsible for their own food, travelling and accommodation expenses.

See travel information on: [www.systeminformatik.se/mp2008](http://www.systeminformatik.se/mp2008)

See hotel information on: [www.systeminformatik.se/mp2008](http://www.systeminformatik.se/mp2008)

**The United Kingdom Systems Society  
Annual Conference  
Oxford, UK  
September 1-3, 2008**

The conference will be held from 1-3 September 2008 at St Anne's College, University of Oxford.

The theme is Building Resilience: Responses to a Turbulent World.

There is an excellent line up of keynote speakers:

- Professor Ralph Stacey, Professor of Management at the Business School, University of Hertfordshire, author of numerous books on complexity.
- Professor Bernard Lietaer, co-designed and implemented the convergence mechanism to single European currency system, Visiting Prof. at Naropa University in Boulder, CO.
- Dr. Tony Kendle, Foundation Director at the Eden Project.
- Mark Lynas, Journalist and author of three books on climate change.
- Sarb Sembhi, Director of Metis-For, is a world expert on networked surveillance, IT security and cybercrime.

The deadline for papers is April 30th, 2008. The early bird discount ends on June 30th, 2008.

Check the website, [www.ukss.org.uk](http://www.ukss.org.uk) for updates. Please circulate this to your colleagues and networks. There is a prize for the best student paper.

**7th International Conference on Social Science Methodology  
Campus di Monte Sant'Angelo Naples, Italy, Europe  
Methodology for Societal Complexity RC33  
September 1-5, 2008**

E-Mail: [DeTombe@nosmo.nl](mailto:DeTombe@nosmo.nl)     [www.geocities.com/doriendetombe](http://www.geocities.com/doriendetombe)

P.O. Box. 3286, 1001 AB Amsterdam, The Netherlands, Europe

Tel: +31 20 6927526

E-Mail: [Rosanna.Memoli@uniroma1.it](mailto:Rosanna.Memoli@uniroma1.it)

The stream of methodology of societal complexity consists of:

Session I : Societal complexity and Safety

Session II : Societal complexity and Sustainable Development

Session III : Societal complexity and Healthcare

We welcome contributions of methodology of societal complexity

For session info: Session info: <http://www.geocities.com/doriendetombe/DeTombe2008RC33.html>

**OR50 Conference  
University of York, York, UK  
September 9-11 2008**

If you wish to attend the conference, please log in to

[http://www.orsoc.org.uk/orshop/\(nusgkj55o3zmf45bu5di5fy\)/orcontent.aspx?inc=or50\\_main.htm](http://www.orsoc.org.uk/orshop/(nusgkj55o3zmf45bu5di5fy)/orcontent.aspx?inc=or50_main.htm)

**14th International Congress of Cybernetics and Systems of WOSC - ICCS'08**  
**Wroclaw, Poland**  
**September 9 - 12, 2008**

<http://www.wosc-congress.pwr.wroc.pl>

**PLENARY LECTURES**

Prof. Hermann Haken (Germany) on "synergetics"

Prof. Tadeusz Kaczorek (Poland) on "positive systems"

**INVITED SESSIONS**

"Grey Systems" (Prof. Sifeng Liu)

"Symmetry-Asymmetry within a Contemporary Natural-Artificial Dualism" (Prof. Nicolae Bulz)

**SUBMISSION DEADLINES**

February 29, 2008 - extended abstracts

May 31, 2008 - accepted full papers

Papers will be published in the proceedings with ISBN number. Selected papers will be published in: KYBERNETES (official journal of WOSC, indexed and abstracted in, e.g., ISI databases, IEE Proceedings, INSPEC, Knowledge Engineering Review) SYSTEMS SCIENCE (journal edited in IISE, indexed and abstracted in, e.g., COMPENDEX, IEE Proceedings, INSPEC, Mathematical Reviews).

A post-congress book including a selection of the best conference papers will be also edited and published by IGI Global in "Advance in Applied Intelligence

Technologies" Book Series

<http://www.igi-global.com/bookseries/details.asp?ID=508>

**Management Track within WiCOM**  
**International Symposium on Information System & Management (ISM 2008)**  
**<http://www.wicom-meeting.org/ism/>**  
**Dalian, China**  
**October 14-16, 2008**

This conference is sponsored by IEEE Engineering Management Society, IEEE Communications Society, Dalian University of Technology and Wuhan University. All papers accepted will be included in IEEE Xplore and indexed by EI. For more information, please contact: [ism@highsci.org](mailto:ism@highsci.org).

The conference will be held in Dalian, the bright pearl of northern China. Dalian is regarded as a romantic beach city full of vigor and vitality. You are welcome to visit Dalian and Beijing, where the 2008 Olympic Games will be held.

**Second Conference on Emergent Order and Society**  
**“ORDERS AND BORDERS”**  
**Portsmouth, NH, USA**  
**November 1-4, 2008**

We urge all scholars interested in exploring how emergent order analysis can contribute to our understanding of the social world to consider submitting a proposal. We seek original work in four basic areas:

1. Exploring the relations between emergent (spontaneous) orders and the instrumental organizations within them. For example, the relationship of corporations to the market, political parties to democracies, or schools of thought to science. To what degree are they benign, mutually beneficial, or conflicting?
2. Exploring issues involving the intersection and overlapping of different emergent order processes. For example, how do science and the market influence one another? How do science and democracy influence one another? To what extent can these influences be regarded as beneficial, neutral, or disruptive?
3. Exploring organizations that straddle the borders of different emergent orders. For example, the mass media must be both economically viable by serving consumers and also able to inform citizens in a democracy. A fishery must be economically viable and maintain its ecological sustainability. Different emergent processes are coordinated by different rules biased towards different values. How do they interact?
4. Exploring issues involving the borders of disciplines studying emergent phenomena. The distinction between emergent orders and instrumental organizations arose independently of disciplinary boundaries and a theoretical approach making use of it cuts across traditional disciplinary boundaries. Thus much work in economics, anthropology, ecology, philosophy and sociology of science, and political science independently discovers and explores similar territory without benefiting from similar work elsewhere. How might we develop a paradigm of study that integrates these boundaries?

Acceptable papers may be either case studies or more general theoretical explorations.

We invite those unfamiliar with the first conference to examine papers prepared for that gathering. You can view them at <http://emergentorders.pbwiki.com>

The password for access to the wiki site is: halcyon07

A description of the work of the Fund may be found on the Atlas website under the listing “Academic Programs” at <http://atlasusa.org>

**ISSS 2009**  
**The 53rd Annual Meeting of the**  
**International Society for the Systems Sciences**  
**University of Queensland, Gatton Campus,**  
**Brisbane, Australia**  
**July 12-17, 2009**

**For further information: contact the ISSS Office at [isssoffice@dsl.pipex.com](mailto:isssoffice@dsl.pipex.com)**



# SECTION THREE

## ISSS BUSINESS

### NOTICE OF UPCOMING ISSS MEETINGS

The annual membership, council and board meetings will be held during the annual conference at University of Wisconsin, Madison, USA (July 13-18, 2008).

### Minutes of 2007 ISSS Board of Directors Meeting Tokyo Institute of Technology, Tokyo, Japan Date: August 6, 2007

**Present:**

Gary Metcalf	President-Elect 2007/2008
Jennifer Wilby	VP Administration
Ken Bailey	Representative of Board of Trustees
Kyoichi Jim Kijima	President 2006/2007
David Ing	VP Communication & Systems Education
Lynn Rasmussen	Treasurer & VP Funds
Debora Hammond	Past President
Satomi Segawa	VP Membership & Conferences
Pamela Buckle Henning	VP Protocol/Secretary
G.A. Swanson	Visitor
Len Troncale	Visitor

**Absent:**

Maurice Yolles VP Research & Publications

Jim Kijima called the meeting to order at 7:00 pm.

### Announcements and General Information

#### Ratify Elections

Jennifer Wilby reported that the following individuals have been confirmed to the following positions: President Elect, Tim Allan (University of Wisconsin Madison); VP Communication & Systems Education, David Ing; Treasurer & VP Funds Lynn Rasmussen.

#### Proposed Society Budget 2007/8

Membership is included in annual conference fees; therefore the recent increase in membership can be attributed to successful conferences that people have been attracted to attend. This year, renewals are coming in late, but are coming in. A very small number of memberships exclusive of conference participation come in each year. Len Troncale suggested that the membership be encouraged to ask their university libraries to purchase the conference proceedings as an added revenue source. Jennifer Wilby is searching for other journal publishers to purchase the opportunity to include their fliers in the *General Systems Bulletin* as another revenue source to offset mailing costs.

Lynn Rasmussen presented a plan for fundraising ideas for the society to be discussed by the Board throughout the year (online). She requested that Board members generate other ideas to add to her list.

## **2008 Conference Update**

The 2008 conference will be held in Madison Wisconsin USA July 13-18. Gary Metcalf and Jennifer Wilby will be visiting the site later in August to meet with the event planners there. Accommodations in Madison are very close to the conference facility. Costs are moderate and fixed (per person).

As President, Gary will actively seek ways to encourage attendance for the 2008 conference from as many countries as possible. Len Troncale mentioned that SIGs are important for attracting conference participants. The issue of SIGs with active, conference-attending chairs is an ongoing issue for the Society, which Gary wants the Board to examine in the year ahead.

A call for 2008 papers will be delivered to Tokyo delegates at the end of the 2007 conference.

## **2009 Conference Plans**

Jennifer Wilby reported that the 2009 conference will be held at the University of Queensland in Brisbane, Australia. Thematically, they have an interest in sustainability that may form a working focus for delegates' activities/conversation for that conference. The dates for that conference will be July 12-17, 2009.

## **Logo Changes**

We require a high-resolution version of the Society's logo, that Jennifer Wilby will have someone complete in the coming year.

## **Web Admin Report/Issues**

David Ing reported that the Society's new website now has all the previous website's content moved to it. The new website has tremendous functionality: we can now take payments, host forums, enable people to log in and access (or edit) ISSS content/groups of interest to them, etc.

## **Publications**

Tom Mandel has created a primer on systems concepts which resides on the ISSS website. Maurice Yolles has proposed that the primer be subjected to a more formal review process. David Ing has suggested (in the model of *Harvard Law Review*) that students work on the primer – he has asked Nick Magliocca (Chair of Student SIG) to determine if students would have an interest in this role. Lynn Rasmussen suggested a small scholarship for students' work as a form of support/incentive for this work. Len Troncale expressed a caution about what ideas contained within the primer be promoted as representative of the Society's ideas about systems. David will advise the Board on progress on this issue.

## **Proposed Nomination of VP for Membership/Conferences 2007/8**

Gary Metcalf reports that, since the University of Wisconsin, Madison has a conference planning facility on site, a VP Membership/Conferences is less necessary in the coming year. Instead, Jennifer Wilby recommended that Ockie Bosch (Dean of Systems group at University of Queensland) be appointed to that role, in advance preparation of the Australian conference in 2009. He could spend 2008 focusing primarily on membership generation in 2008, leaving Wisconsin's conference planning staff to work on local arrangements.

## **Other Business**

No other business to report.

Meeting adjourned at 8:05pm.

## **Motions:**

Debora Hammond moved ratification of the elected members. Jennifer Wilby seconded. Motion unanimously passed.

Jennifer Wilby moved acceptance of the minutes of the 2007 April-June online meeting. Lynn Rasmussen seconded. Motion unanimously passed.

Jennifer Wilby moved that the proposed 2007/8 budget be passed. Pamela Buckle Henning seconded. Motion unanimously passed.

**Minutes of 2007 ISSS Council Meeting  
Tokyo Institute of Technology, Tokyo, Japan  
Minutes of 2007 ISSS Council Meeting  
Tokyo Japan, August 7, 2007**

Present:

Debora Hammond	Past President; Chair of Health Systems SIG
Jennifer Wilby	VP Administration
Len Troncale	Trustees' Representative
Kyoichi Jim Kijima	President
G.A. Swanson	Trustee
Lynn Rasmussen	VP Funds & Treasurer
Gary Metcalf	President Elect 2007/2008
David Ing	VP Communication & Systems Education; Chair of SABI SIG
Sue Gabriele	Chair of Round Table SIG
Jed Jones	Chair of Information Systems SIG
John Herbohn	2009 conference organizing committee
Ockie Bosch	2009 conference organizing committee
Ken Bailey	Chair of Board of Trustees
James Simms	Chair of Living Systems SIG
Nicholas Magliocca	Chair of Student SIG
Jae Eon Yu	Chair/Representative ASO
Janet McIntyre	Chair of Meta-modelling/Systems Epistemology SIG
Pamela Buckle Henning	VP Protocol/Secretary

Jennifer Wilby called the meeting to order at 6:35 pm.

## **Announcements and General Information**

### **Bylaw Changes**

A committee comprised of G.A. Swanson, Jennifer Wilby, and Pamela Buckle Henning has proposed revisions to the bylaws. These include that a nominating committee will provide a slate of Board candidates for the membership to approve, rather than pitting members against one another in a vote. It formalizes positions for the Society's administrative office person and the VP Funds, clarifies the roles/responsibilities of the VP Administration and the President, and improves the Society's capacity to pass on learning and organizational history.

### **Elections 2007/2008**

The President-Elect will be Tim Allen (University of Wisconsin, Madison). David Ing has been re-elected to the position of VP Communications & Systems Education. Lynn Rasmussen has been elected to the position of VP Funds & Treasurer.

### **Financial Report**

Jennifer Wilby presented the financial report for the 2006 fiscal year. Cash at beginning of year was \$51,895.66; cash at end of year was \$65,929.65. The Sonoma conference generated a \$4050.41 surplus which has fed into the current year's financial position. Overall, the Society's position is financially strong at present.

## **2007-2008 Budget**

Jennifer Wilby presented a proposed budget for 2007-2008 that is variable, based on the membership numbers that are achieved in the coming year.

## **Fundraising**

Lynn Rasmussen indicated that she will be e-mailing council members to solicit ideas for sponsorship opportunities, donations, etc. in the coming year. David Ing indicated that the website is now capable of supporting product sales (i.e. books, past volumes of Society publications, etc.). Len Troncale suggested that past-proceedings be mined for papers on themes of interest that can be bound as a collection/book and sold.

## **SIGs**

Gary Metcalf urged that SIG chairs work throughout the year to encourage active participation of next year's members, starting discussions this fall with colleagues in areas of common interest to encourage participation at the 2008 conference. Len Troncale recounted that SIG chairs were initially intended to maintain active conversation among members of their SIG throughout the year, which would result in more and higher quality papers, collaboration among SIGs, etc.

## **The New Website**

David Ing reported that the current website is the Society's 4<sup>th</sup> version. People can now log in to the site and access content of interest to them. There is thread of discussion capability (although it hasn't been commonly used in the past). If a SIG wanted to archive papers for future publication they could (and such papers could either be made public or kept private to members only, as desired).

## **Students**

Nick Magliocca indicated that scheduling student SIG meetings concurrently with other streams means that students cannot participate in the paper presentations – scheduling student meetings at evenings would be preferable. Gary Metcalf indicated that the Student SIG's official status as a SIG is valued and valuable. Jennifer Wilby indicated that both the student and Roundtable SIGs are particularly valuable for their integrative/ cross-fertilizing capacities, consistent with the original and important aims of the Society.

## **Educational Forums for Introduction to Systems Science**

Lynn Rasmussen reiterated the often-discussed desire for an educational forum for people to be educated in systems science overview. Ockie Bosch discussed case study workshops/real-world projects that have been used at conferences as a means to such education. These various approaches are being considered for the 2009 Australia conference. James Simms suggested that SIGs hold workshops or some kind of meetings during annual conferences to make explicit the goals/aims/issues of each SIG, to familiarize others with their SIG goals, and to identify areas of common interest among different SIGs. G.A. Swanson indicated that SIG chairs could comment at the conference's end on what contributions the SIG made to the theme/field each year.

## **Conference Themes**

Ockie Bosch inquired about the role/influence of conference themes. Gary Metcalf indicated that themes have traditionally been loose influences on the papers that are accepted and presented each year. Themes typically do affect the plenary speakers invited to present at each year's conference. Jennifer Wilby indicated that the calls for papers can and sometimes do require thematically-aligned papers. Nick Magliocca indicated that the Student SIG's conversations focus directly on the conference themes each year. G.A. Swanson feels that each year's conference theme is likely the single most important thing that affects attendance at a conference – when

the theme is strong, it is a compelling draw for people who may not have recently attended ISSS conferences. Len Troncale indicated that the success of conference is also due to advanced groundwork laid with other systems organizations.

### **ISSS Membership**

Jed Jones inquired about the size of ISSS members compared to history and to our ideals. He also inquired about ISSS's marketing and brand identification/differentiation. Len Troncale commented that there were 1500-2000 members when he was a managing director. In recent years it has been in the 250-300 range. Lynn Rasmussen noted the importance of interesting speakers as an attractive force for new members. G.A. Swanson noted that a tremendous number of individuals consider themselves affiliated with ISSS, regardless of their active membership from year to year.

Jennifer Wilby led the council in thanking Jim for his leadership and the wonderful experience we've enjoyed at the Tokyo conference.

Meeting adjourned at 7:45pm.

### **Motions:**

Pamela Buckle Henning moved that the proposed changes to the bylaws be accepted. James Simm seconded. Motion unanimously passed.

Gary Metcalf moved that Ockie Bosch be nominated VP Membership & Conferences. GA Swanson moved that nominations cease. James Simm seconded. Elected by unanimous acclamation.

G.A. Swanson moved acceptance of financial report. Gary Metcalf seconded. Motion unanimously approved.

Jennifer Wilby moved that the proposed budget be approved for 2008. Lynn Rasmussen seconded. Motion unanimously approved.

## **MINUTES OF 2007 ISSS MEMBERSHIP MEETING Tokyo Institute of Technology, Tokyo, Japan August 14, 2007**

Jennifer Wilby presented information from the board and council meetings, including:

- Current year ending December 2006 financial position of the society
- Budget for the next year
- Status of the board and changes in positions
- Bylaw amendments agreed by Board and Council to be sent to membership by mail for vote
- Updates on progress of organizational changes and development of the website and electronic management on-line of memberships and conferences.

### **ISSS**

#### **VOTE TO APPROVE OR DENY ISSS BYLAW AMENDMENTS**

Ballot to approve or deny amendments to the Bylaws of the International Society for the Systems Sciences was held in January/February 2008. The result of the ballots were:

APPROVE: 46 votes

DENY: 0 votes

ABSTAIN: 1 vote

The bylaw changes have been approved and have been included as a separate inclusion with this mailing of the Bulletin. The Bylaws are also posted on the ISSS website.

**ISSS2007  
TOKYO INSTITUTE OF TECHNOLOGY  
TOKYO, JAPAN  
AUGUST 31, 2007  
CONFERENCE FINANCIAL REPORT**

Category	December 31 2007
<hr/>	
Receipts	
Receipts from Conference	\$62,816.00
From Tokyo COE Program	3442.62
Sponsorships	500.00
 Total Receipts	 \$66,758.62
Expenses	
Memberships to ISSS	15,425.00
SIG donations to ISSS	240.00
2008 Journal Subscriptions	77.00
Studentship	500.00
Bank Charges	4,414.74
Catering ~Tokyo	18,227.24
Administration Tokyo/ISSS	3,558.49
Office Supplies	290.00
Vickers Award	690.00
CDROM Proceedings	3,900.74
Postage to UK	410.08
Conference Supplies	1148.60
Total Expenses	\$48,881.90
 Surplus	 \$17,876.72

**SIG ANNUAL REPORTS**

**List of Active SIGs and (Report Received)**

- Applied Systems and Development (NO)
- Critical Systems Theory and Practice (NO)
- Designing Educational Systems (NO)
- Duality Theory (NO)
- Evolution and Complexity (NO)
- Evolutionary Development (YES)
- Futurism and Systems Change (NO)
- Hierarchy Theory (NO)
- Information Systems Design (NO)
- Living Systems Analysis (YES)
- Medical and Health Systems (NO)
- Meta-modelling and Systems Epistemology (NO)
- Human Systems Enquiry (NO)
- Organizational Transformation and Social Change (NO)
- Research Towards a General Theory of Systems (NO)

Roundtable (YES)  
 Spirituality and Systems (NO)  
 Systems Applications to Business Industrial (NO)  
 Systems Modelling and Simulation (NO)  
 Systems Pathology (NO)  
 Systems Philosophy and Systems Ethics (NO)  
 Systems Psychology and Psychiatry (NO)  
 Systems Specific Technology (NO)  
 Student SIG (NO)  
 What is Life/Living (NO)  
 Women and Children (NO)

**CASH ACCOUNTS ISSS**  
**January 1 to December 31, 2007**

<b>Cash Beginning January 1 2007</b>		\$ 65,929.65
Memberships received 2007	3,824.00	
From conference		
SIG contributions 2008	240.00	
Additional 2008 journals	77.00	
Surplus from conference	17876.72	
Memberships conf. for 2008	15425.00	
Interest on certificate of deposit	1,339.97	
Income total		\$ 38,782.69
		\$ 104,712.34
Journals	13,036.48	
Bulletin printing	2,433.60	
Postage	2,033.34	
Office costs/stationary/equipment	1,727.82	
Office stipend	5,380.00	
Bank charges	40.16	
Expenses for Madison 2008	2,530.16	
Scanning Project	336.00	
Tennessee Registration	20.00	
IFSR 2006 and 2007	320.00	
Internet/Computing	1,750.68	
Expenses total		\$ 29,608.24
<b>Cash Ending December 31 2007</b>		<b>\$ 75,104.10</b>
US Certificate of Deposit		35,425.12
US Current Account		1,029.32
UK Dollar Account		35,489.46
UK Sterling Account		3,160.20
<b>Cash Ending December 31 2007</b>		<b>\$ 75,104.10</b>

**International Society for the Systems Sciences**  
**Presidential Action Plan**  
**July 2007 – July 2008**  
**Gary S. Metcalf**

As required by the ISSS bylaws (4.6.3.2), I am presenting the following Plan of Action for the term of my presidency.

I will work closely with the Vice President, Administration, the members of the Board of Directors, and the Board of Trustees to strengthen the organizational structure of the ISSS. This includes:

Clarifying the roles of the president and other officers in relation to responsibilities for conferences and meetings;

Assuring that an organizational function exists which provides continuity for the planning and execution of the conferences, and;

Developing a strategy for the ongoing funding of the organization and its activities.

I will work to strengthen the connections between the ISSS and other organizations, including:

Other systems organizations;

The institutions and organizations of which our members are parts (universities, corporations, NGO's, etc.);

Organizations which can contribute to the work of the ISSS, and;

Organizations which need or can benefit from the work of the ISSS and its members.

I will work closely with the Council to assure that there are opportunities to foster and accommodate current and relevant systems ideas of all kinds within the structure and activities of the ISSS. I will also work with the Council to align the subgroups (i.e. Special Integration Groups and others) in ways that bring coherence and ease of understanding about ISSS research to both members and prospective members of the organization.

I will work with the Treasurer and VP for Funds, along with the Boards of Directors and Trustees, to establish new means and sources for funding the organization, with the goal of creating at least one to two years of financial reserves for ongoing operations.

I will work with the Student SIG to continue to expand our outreach to students, and to target their membership and involvement as a key source of growth for the ISSS.



# SECTION FOUR

## MEMBERS' BULLETIN BOARD

### MEMBER AND SIG NEWS

#### TOKYO 2007 -- SONOMA SATELLITE MEETING

**Steven E. Wallis, Ph.D.**

**Inspiring Success through Knowledge:  
Creation, Management & Collaboration**

<http://www.easygenius.net/wallis>

We had 16 attendees, six presenters, and wonderful conversations. Topics ranged from applied to theoretical to speculative - including:

Jack Petranker - Lived stories and making meaning

Allan Combs ^ Integral Systems Theory

Larry Davis - CAS approach to interpreting how cultures make meaning

Steve Wallis ^ Emergence and Ethics

Steve Alter ^ Information Technology and Human Systems

Liza Loop ^ A systems approach to education

The formal conference was followed up by an enjoyable dinner with lively conversation at the Redwood Cafe. Our regional group has a wiki up to enable online conversation - and members have expressed an interest in conversing around a number of topics.

<http://www.seedwiki.com/wiki/norcalisss/norcalisss>

From the looks of things, we may have a couple of these one-day events each year. And, each month, a less formal dinner-conversation. One topic that kept resurfacing might be characterized as the meaning of the words we use. Take the concept of boundaries, for example, are they formed by the organization, by influences outside the organization, are they permeable, impermeable, semi-permeable, overlapping... or what? We are dealing with such abstract concepts, it is hard to know what we are talking about! Between the meaning of words and our understanding of boundaries, does anyone really "know" what a system is?

At least once, a participant surfaced a concrete situation and asked for advice from the group. This kind of "living case study" provided a great focal-point for operationalizing our abstract ideas... helping to bridge the gap between theory and application. I think we'll try to build more of these into future events.

A final idea that had some resonance was the recognition of a "trifurcation" of research methodologies in the social sciences. The "normal" science of social research might be the creation of theory based on reason and/or research. A more recent branch is a more a-theoretical approach of social construction (lets not have a theory, lets just talk about it - or - simply provide rich descriptions of the subject). The third branch might be seen in the use of reflexive ethnography, or grounded theory. In those, the researcher provides a view of the subject - and also a view of the observer. This allows the reader to "calibrate" her/his point of view with the researcher more easily.

In short - good conversations from a variety of viewpoints around foundational topics.

**ISSS MORNING ROUNDTABLE:  
CALL FOR PARTICIPATION AND REPORT**  
Sue Gabriele, ISSS RoundTable  
[sgabriele@gemslearning.com](mailto:sgabriele@gemslearning.com)

**Call For Participation**

Everyone is invited to our eighth annual daily reflection RoundTable at ISSS 2008 in Madison, Wisconsin. We will meet every morning for an hour Monday through Friday, July 14-18. Join us every day, or whenever you like.

Our RoundTable purposes are to open a space for daily reflection on our ideals, what we want to learn and create; to increase time for each of us to talk from about what we are thinking and learning now; and to be listened to by others, enjoying and learning with each other in a new way.

Our format is: We spend 5 minutes listening to short readings. We then spend 55 minutes on individual reflections or learning reports, time distributed equally among all present (e.g. 27 people = about 2 minutes each). Our suggested topic for the first morning might be: "What situations and projects did you leave behind to come here, and what could happen here that would be valuable to you in your work and life back home?" Each day, a different topic will be suggested by a different volunteering facilitator in attendance.

Folk wisdom and compelling research indicate that participants experience surprising benefits from this activity after about four sessions. Our experience with this format has resulted in the following theory: *Just as we break the sound barrier when we travel faster than the speed of sound, we break the communication barrier when we hear 25 authentic viewpoints in 50 minutes.*

**Report: ISSS RoundTable 2007, Tokyo, Japan.**

We held the ISSS Morning RoundTable in Tokyo, Japan. We met every morning on August 6-10, from 8am to 9am. This is a brief, informal report on:

- a new RoundTable component;
- attendance; and
- some outcomes

**A new component**

OUR SYSTEMS RATIONALE. Bureaucratic models assume all parts of a social system are designable. Laissez-faire models assume no parts are designable. Boulding's 9-level social system (illustrated right) clarifies that specific parts of a social system are designable and others are not. Frameworks, clockworks, and thermostats (levels 1-3) are designable to exteriorly-prescribed criteria. Open, blueprint, image-aware, and symbol-processing parts (levels 4-7) are not designable. These undesignable parts, humans, have fixed boundaries, but act according to interiorly-prescribed criteria--needs, perceptions, choices--of increasing variability. Social and transcendent levels (levels 8-9) with changeable boundaries, are even more variable. Hence, the RoundTable scripts and timing are tightly designed to leave maximum time for variable individual comments.

**Attendance**

This year in Tokyo, attendance at the RoundTable ranged from six to eleven participants over the five days. Thus, the minimum ideal attendance was not reached. The RoundTable is designed as a large group participatory model, rather a team activity. This is influenced by Bohm, who finds the ideal group size for dialogue to be 20-40 people (or at least 15), for the critical mass for diversity of thinking, in order for the group not to be too "cozy" (Bohm, 1996, p. 13), too aware of others' personalities and, thus, too reserved in self-expression.

We have added a new reading to the RoundTable Guide. It is:

Boulding's  
Social System

9-transcendent
8-social (school)
7-symbol-processing (human)
6-image-aware (animal)
5-blue-print (plant)
4-open (cell)
3-thermostat
2-clockwork
1-framework

At ISSS over the last seven years, we have not often met the ideal attendance. So we are still in the exploratory mode, and I am always a little hesitant to assume that participants experience the benefits in its prototype and in the research. However, I have been learning that participants find benefits in the RoundTable in spite of the small attendance. Diana Ryan's research supports the Roundtable's value for groups as small as four.

**Two very different outcomes**

One particularly valuable outcome came from Janet McIntyre, who acted as facilitator for the Wednesday session. Janet provided the following report:

**Minutes from the Round Table**

The group discussed their vision for the future of ISSS and agreed that it needed to have both a scientific focus and relevance to current social, economic and environmental areas of concern.

Accountability, representation and sustainable futures appeared to be shared areas of concern for ISSS, and interorganisational memberships could strengthen the critical mass of across organizations.

**Programs of research need to build on members projects.**

Research needs to test out hypotheses and the findings need to be written up in scholarly journals and used for lobbying.

**Issues need to be operationalised in measurable ways.**

Quantitative and qualitative indicators need to be used in research by ISSS members.

Another outcome was an interesting personal learning for me that was triggered the last day, and then a few months later in reflection. The suggested topic was:

“Lonely: Have you ever been there?”

The six participants responded from their own experience. Then, on the way out, one of the participants remarked that the session reminded him of “a confessional.” I felt I understood the comment, as a westerner. I was not sure how eastern participants would feel. Taking place in Japan, the conference had benefited from an increased influence of eastern thought, and my awareness had been slightly raised.

I tucked the remark away in my brain as interesting. Then, months later I came upon a passage in an article that provided me with a clarifying insight.

“Christians see sin as the human problem and salvation from sin as the religious goal. Buddhists see suffering (which, in this tradition, is not ennobling) as the problem and liberation from suffering (nirvana) as the goal.” (Prothero, 2007)

My experience of the RoundTable is along the Buddhist tradition, but more secular in interpretation. In the RoundTable, people come to understand each other and themselves, without judgment, and the result is increased trust, satisfaction, and/or community feeling.

References:

Bohm, D. (1996). On dialogue. New York: Routledge.

Prothero, S (July 2-9 ,2007) True or False: The Major Religions are Essentially Alike. News-week.

Ryan, D. and Katz, S. (2005) Teaching for Social Justice: Searching for Pedagogy. Online Submission, Paper presented at the Annual Meeting of the American Educational Research Association (Montreal, Canada, 2005)

**Climate Change and Energy: The Wasan Action Framework  
Declaration and Recommendations of the  
Interdisciplinary Round Table on Climate Change and Energy Strategies  
13-15 Sept. 2007  
Wasan Island, Muskoka Lakes, Ontario, Canada**

Helmut (Ken) Burkhardt

Submitted to ISSS for information on globally relevant systemic activities in Toronto. I organized this Interdisciplinary roundtable for the Global Issues Project of Science for Peace Canada.

**Interdisciplinary Round Table on Climate Change and Energy Strategies**

Wasan Island, Muskoka Lakes, Ontario, Canada, September 13-16, 2007

Sponsored by Science for Peace, David Suzuki Foundation and Breuninger Foundation

*The first clear warnings of danger due to emissions of greenhouse gases due to human activity emerged 25 years ago. Prudence would have called for precautionary action at that time to slow down the growth in emissions of greenhouse gases. Since then, the scientific understanding of the impact of human activity on global warming has been overwhelmingly confirmed; key predictions based on that understanding have started to occur. Evidence has emerged that the potential impacts of global warming will be much worse than predicted even five years ago.*

*Individuals, corporations, and all levels of government around the world have a duty to act as global citizens on the basis of the danger posed to life on Earth and to the well-being of the human race as whole.*

**1. We declare** that human induced climate change and energy security, in particular peaking of the world oil supply are crucial issues requiring immediate action.

**2. We declare** agreement with the Intergovernmental Panel on Climate Change (IPCC) working group 1 on the physical basis of climate change that: *“Most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations”*.

**3. We identify as the root causes of this crisis:**

- a) the large per capita overconsumption and waste of natural resources in the industrialized countries
- b) the growth paradigm (economic growth for its own sake)
- c) the large and growing human population
- d) the very large dependence on fossil fuel based energy
- e) the resistance by vested interests to necessary change in energy technology
- f) the lack of appropriate political leadership
- g) the lack of global governance to protect the global commons

**4. A global solution framework:** We must begin immediately to

- a) curb overconsumption and give priority to efficiency, conservation and the avoidance of waste
- b) promote lower birthrates by empowerment of women through educational, economic and social measures, including access to birth control information and services
- c) focus globally and locally on developing low impact renewable energy infrastructure and technologies (e.g. biomass, geothermal, hydro, ocean energy, solar, wind) to its full potential, so as to avoid large scale biofuel usage and nuclear energy
- d) reduce carbon emissions by creating a just and universal framework through the implementation of appropriate incentives, government regulation, legislation and taxation
- e) preserve forests, especially tropical rainforests

**5. Implementation of solutions:** We urge that

- a) all levels of government as well as the UN and international organizations can and should embrace the **Wasan Action Framework**
- b) media, corporations, the educational system from kindergarten to university and all civil society should collaborate on implementing this **Wasan Action Framework**

List of Participants on p2

IPCC, 2007: Summary for Policymakers. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. Page 10.

## Participants who Unanimously voted for the Wasan Action Framework

Alton, Janis	Co-Chair, Canadian Voice of Women for Peace
Bartlett, Albert	Emeritus Professor of Physics, University of Colorado, Boulder
Breuninger, Helga	Director, Breuninger Foundation
Burkhardt, Helmut	Emeritus Professor of Physics, Ryerson University
Creighton, Phyllis	Science for Peace
Etcheverry, José	Policy Analyst, David Suzuki Foundation; Professor, Dept. of Environmental Studies, York University
Farlinger, Shirley	Freelance writer; journalist
Ford, John	Issue Adv. for Energy, Green Party of Ontario; Candidate Ottawa South
Goldin Rosenberg, Dorothy	Ontario Institute for Studies in Education, University of Toronto
Gómez, Ana María	Assistant Executive Director, Centro Mario Molina
Gómez, Emmanuel	Project Engineer, Climate Change Program, Centro Mario Molina
Harvey, Danny	Professor, Dept. of Geography, University of Toronto
Heaps, Toby A.A.	President, Editor & Co-founder, Corporate Knights
Hu, Amy	Climate Change Program, David Suzuki Foundation
Kennedy, Joy	United Church of Canada; Treasurer CANET
Litman, Todd A.	Founder & Executive Director, Victoria Transport Policy Institute
Lutes, Mark	Policy Analyst, Climate Change & Energy, David Suzuki Foundation
McInnis, Bert	Co-founder, WhatIf? Technologies
Marchand, Claude	Professor, Glendon, York University
Paul, Derek	Emeritus Professor of Physics, University of Toronto
Peltier, Dick	Director, Centre for Global Change Science, University of Toronto
Philp, Ian	Lawyer on UN missions
Reijerse, Fidel	Founder & President, ResCo Energy Inc.
Roberts, Mary Jane	Senior Policy Analyst, Federation of Canadian Municipalities
Schreyer, Edward	Chancellor, Brandon University, Manitoba; Former Premier of Manitoba & Former Governor General of Canada
Tainter, Joseph	Department Head, Environment and Society, Utah State University
White, Marlene	Community Partnerships Manager, Trent University; Federal Liberal Candidate, Haliburton-Kawartha Lakes-Brock

### **Technical resource specialists who did not vote**

Hughes, David	Natural Resources Canada, Geological Survey of Canada
Love, Peter	Chief Conservation Officer, Conservation Bureau, Div. of the Ontario Power Authority
Mokry, Manfred	Manager Technology, Mercedes-Benz, Canada, member of the Association of International Automobile Manufacturers of Canada
Zwiers, Francis	Director, Climate Research Division, Environment Canada

**Motion: A Proposal for a New (appointed) Position to keep the Society active between annual meetings. Submitted by C. SLAWSKI: member from Thousand Oaks, California**

As an adjunct to the already prescribed duties of the VP for Communication and the VP for Conferences (a one-year-only position) there shall be created by appointment under the main (tentative) title of CATALYST. The appointment shall be made by three officers, the above-named two, in consultation with the VP for Administration, as well as indirectly after consulting other Board members, as well as with the SIG chairs.

The duties of this appointee shall be as follows:

To periodically remind and encourage SIG chairs of the need to periodically keep notes if not minutes in preparation for the (virtually already prescribed) annual report of each SIG for publication in the annual Bulletin and for posting to each annual conference web site;

To give timely notice to SIG chairs of the deadlines for submitting the annual report to the editor of the Bulletin (notice to be given typically in late November of each year);

To remind SIG chairs to submit their Call for Papers well in advance of the mailings that go out annually containing membership dues, forms, and paper style guidelines;

To insure that there are and remain at least twelve paid members to maintain the (active) roster for each SIG;

To give notice of imminent termination of a given SIG at the annual, Board, Council, and membership meetings, as well as on the conference or Main web sites;

To assure that timely and preferably terse announcements on any significant currently ongoing as well as planned activities are posted to the ISSS Conference Web Site, and as appropriate, that they be posted in the annual Bulletin, with a way to reach by e-mail or postal service those most influential in motivating and carrying on such important activities;

To encourage (via e-mail, postal service, or direct face-to-face encounters), specific persons deemed likely to volunteer to organize annual regional or geographical chapter meetings, including meetings on different continents (different from the annual ISSS meeting) at what we have in the past called "distributed sites" or "regional parallel meetings, as a way to maintain interest and continuity as well as for the encouragement of those who, because of personal reasons, or health or financial problems, cannot afford the high expenses and stressful burden of minimally or unsubsidized annual international travel to the main meeting site;

To invite, solicit and encourage SIG chairs in turn to invite persons to submit papers for the annual meetings, those who would be most likely to make the most significant contributions to our objectives in terms of rigor and quality;

To stand ready to advise each conference web master on SIG activity, on efforts toward cross-pollination across SIG's and of possible collaborative SIG sessions at upcoming annual meetings; and finally

In general, to encourage DIALOGUE via internet messages amongst all groupings, from triads to a dozen members (or quasi-members, past or potential future members and sympathizers) of the importance of activities related to the objectives of the ISSS as stated in the bylaws. These objectives might be summarized in the notion of rigorous and creative integration of systemic theoretical knowledge in the service of humanity.

Thoughtful comments by readers and reflections on this proposal will of course be welcomed by me and hopefully by the Board members and SIG chairs. Typically, the above named tasks fall through the cracks and are not well implemented by typical panel of VP's or other Board members who tend to be preoccupied with issues around organizing the annual meetings per se, leaving little continuity from one year to the next. In principle, a single person's duties could be distributed

across members of a **small group**, which would assume the same CATALYTIC duties that would be performed by a facilitative leadership training group, or an “Organizational Development” type of group like that currently being facilitated by Ken Bausch and associates, such as the attendees at his afternoon session late in the 2006 Sonoma meetings. Such a voluntary group could assume these types of duties in part by roving throughout the annual meetings, including attendance at Board and Council and membership meetings, as well as observing the relative attendance and success of the SIG and experimental session meetings. This would then have to be followed-up with vigorous and assertive e-mailing throughout the year between annual international meetings. Incidentally, there is now a relatively new type of cyber-firm emerging that offers video conferencing meetings without a big investment, relying on home computer or laptop, Web camera, and head-set.

## ALEXANDER LASZLO

I sent the following BBC News article link to a few GERG fellows

<http://news.bbc.co.uk/2/hi/science/nature/7132794.stm>

It generated some discussion, my portion of which was as follows:

I share the skepticism regarding the facility of ascribing observed markers of evolutionary change in our species to bio-physical phenomena rather than, or in specified conjunction with, socio-cultural phenomena. In fact, the rate of evolutionary change is accelerating at the socio-cultural level largely due to the fact that the motors of memetic change rely on information sharing (rather than energy/matter exchange) and thus - provided fidelity of transmission - allow for exponentially faster rates of change than at the bio-physical level of genetic change. Of course, the changes that emerge through socio-cultural evolution then feed back into pressures for bio-physical evolution in the form of changed environments. However, these changes tend to manifest themselves in the short run through decreases in human and social capital (individual health and well-being and collective capacities to cope with epidemics of all kind, respectively). What is interesting to me is the report of such genetic novelty as the resistance to malaria though the increased prevalence of sickle-cell trait among some African populations (the protozoan parasite cannot reside in sickle-cells, and while individuals with this trait are hypersusceptible to asphyxiation in oxygen poor environments, advantage is conferred upon them in malaria infested ones). With regard to the evolution of human intelligence, the rate of socio-cultural evolution - as determined by the dynamics of memetic change - serves as the driver of change (at least of those aspects of change in human intelligence that can possibly be perceived in the course of anything bounded by the temporal parameters of homocentric notion of “deep history.” Of course, astrophysical notion of deep history reach well beyond socio-cultural aspects.). The wonderful thing about this is that the inquiry then moves out of the probabilistic realm of bio-physical evolutionary dynamics and into the possibilistic frames of socio-cultural change. This is where the potential for engaging in the purposeful and intentional evolution of consciousness toward a more fully manifest evolutionary consciousness emerges as a challenge (a good one!) for GERG-minded scholar-practitioners. In this sense, concerns about “improvements in terms of intelligence” become increasingly a matter of conscious, intentional, purposeful evolutionary systems design.

Certainly an interesting area of inquiry (and praxis) - of that there is no doubt.

Alternatively, earlier today I sent the following reply to a colleague who was interested in the way in which noetics relates to the field of systems inquiry. I replied as follows:

To my mind, noetics relates to systems considerations inasmuch as it concerns gnosiology - that area of ancient Greek concern that arose prior to the split that formed the domains of epistemology and ontology. Since gnosiology is about how we know our world - both ontologically *and* epistemologically - it is a useful construct for the field of systems thinking/practice. This is because systems approaches are concerned with the holistic and integrative exploration of phenomena and events,



and as such there are aspects of the systems approach that are ontological and aspects that are epistemological, and aspects that are at once both and should not be circumscribed to either. For these reasons, the study of noetics is important - provided it doesn't divorce the contemplation of systems from a their scientific bases (as some more exclusively humanistic approaches to noetics tend to do).

Of course, your best source for information on this field is IONS - the Institute Of Noetic Sciences. They have a particular twist on noetics and are famous for it. You can find out what they mean by the term here -

[http://www.ions.org/about/what\\_is.cfm](http://www.ions.org/about/what_is.cfm)

### **Søren Brier**

From 1. January 2008 Søren Brier will be professor in the Department of International Culture and Communication Studies at the Centre for Language, Cognition, and Mentality, Copenhagen Business School, Dalgas have 15, DK-2000 Fredriksberg, Denmark

### **Tom Mandel Chair, The Primer Project**

The Primer Project recently received clearance to publish an article about General System Theory in the Citizendium Wiki, a highly technical encyclopedia created by Larry Sangler, a former co-founder of Wikipedia. See [http://en.citizendium.org/wiki/CZ:We\\_aren't\\_Wikipedia](http://en.citizendium.org/wiki/CZ:We_aren't_Wikipedia)

It is still important that the information about general systems theory be gathered together and presented to the world community. Systems theory is increasingly becoming popular, see "systems-biology.org, but the old information is being left behind thereby creating the situation Bertalanffy tried to avoid, the duplication of research efforts as well as errors.

## **NEW WEBSITES**

### **L. Frank Morgan: Energy Always Measured As Mass**

I would like to post subject papers for possible comment by other members interested in new theory about "holistic systems": as big as the entire Universe and as small and cozy as a quilting group always looking for new holistic patterns. Please visit the website at:

<http://www.geocities.com/CapeCanaveral/Hall/2638/1MrMorganNewPhysics.doc> and/or email [lfmorgan@gmail.com](mailto:lfmorgan@gmail.com)

Recent postings:

Odium to Hawking's Problematic Math

The Planck Relation Requires New Interpretation

### **Eric Lindblom: General Systems Theory Laboratory**

The website is located at <http://rockefeller.bravehost.com> <<http://rockefeller.bravehost.com>> and is a project to create a proposal for a General System Theory laboratory. I think it would be good to let the systems community know there is an effort to revitalize General Systems Research and that several people in the systems community are interested.

Eric J. Lindblom PhD [elindblom@gmail.com](mailto:elindblom@gmail.com)

## NEW BOOKS

### “How to complete a PhD”

**Craig Standing** c.standing@ecu.edu.au

Advice on how to complete a doctorate. In fact, it includes all the things one would say to a PhD student over a three year period when supervising. It includes advice from other supervisors, what examiners look for, and

Advice from people who have recently completed their PhDs. The contents are listed below. The Web site also includes the beginnings of a blog so you might like to return there now and again if you are in the process of completing a thesis for tips and suggestions.

The Web site is: <http://www.justintimebooks.com/web3.htm> It is available on-line as an e-book for just Australian \$29.95.

Chapter 1 Why do you want to take a Doctorate?

Chapter 2 Choosing a doctorate topic

Chapter 3 How to be organised for success

Chapter 4 Developing academic writing skills

Chapter 5 Writing a thesis

Chapter 6 Developing the literature analysis chapter

Chapter 7 Research design

Chapter 8 Discussion and conclusions

Chapter 9 Issues along the way

Chapter 10 Submitting and beyond

Chapter 11 Advice from those that have completed a doctorate

Chapter 12 Research ethics

Chapter 13 Developing a research plan

Chapter 14 Advice from experienced supervisors

Chapter 15 An examiner's report

### **Experience and Action: Selected Items in Systems Theory** **Richard Jung**

Vol. 4 of the Series: Complexity | Design | Society. Edition echoraum

Wien A, 2007, pp. 304. ISBN 978-3-901941-13-9

November 2007 € 24,90

Order from [www.wisdom.at](http://www.wisdom.at) <<http://www.wisdom.at>> or from [www.echoraum.at](http://www.echoraum.at) <<http://www.echoraum.at>>

## Savely Savva

The recently published book *LIFE and MIND - in Search of the Physical Basis* presents a hypothesis of the general (biofield) control system of the organism. It also suggests ways for experimental and theoretical exploration of this subject. Current biomedical science and practice ignore the control function of the organism and this is the root of the upcoming socio-economic crisis of the social health care system.

The book is presented at [www.misaha.com](http://www.misaha.com) <<http://www.misaha.com>>

Genetic information carries four fundamental programs of life: development, maintenance, reproduction, and death, but these programs operate not on a chemical level, i.e., not by direct chemical interactions with genes. Dr. Craig Venter very thoughtfully mentioned this at the TV announcement of the deciphering of the human genome in 2000. This „different level of organization%” the Biofield Control System (BCS) of the organism is a hierarchical structure that includes the whole organism, organs, tissues and cells. It also includes the mind (at the organism level) that materializes all fundamental programs of life in behavior.

Ignoring the role of the BCS impairs biomedical science and pharmacology and consequently the social health care system. But the root of the problem is in the insufficiency of contemporary Newtonian physics which does not have any concept of the physical interactions responsible for emergence and existence of life.

The book suggests some ways to approach the problem. It consists of three parts: I ~ Concept of the biofield control system, its structure and its history; II ~ Experimental observations, and III ~ Alternative physical models.

The concept of the biofield has a century-long history. It was engendered by developmental biologists in opposition to the strictly genetic, biochemical approach (Prof. L. Belousov, Moscow State University with a Commentary by American Professors J. Opitz and S. Gilbert) and was independently introduced by the Romanian biochemist E. Machovschi in the 1950s ^ 1970s as the „biostructure%” (Prof. G. Drochioui, Romanian University). The structure of the BCS and its function suggest that the physical carrier of the BCS cannot be reduced to any of the currently known fundamental physical interactions (S. Savva).

Experimental observations include confirmation of the biological nuclear synthesis introduced by Louis Kervran (Dr. A. Kornilova, Moscow State University, and Prof. V. Vysotsky, Ukraine State University); water interaction with hydrophobic liquids (S. Savva); paradoxical effects of super low doses of biologically active substances on living systems (Prof. E. Burlakova et al. Institute of Biochemical Physics, Russian Academy of Sciences); and communications between living systems (Prof. J. Kiang, Walter Read Army Institute of Research and C. Backster, Backster Foundation). These observations indicate that the physical carrier (or carriers) of BCS must have both energy and informational qualities and that it is (they are) capable of interacting with the currently known fundamental physical forces.

Alternative theoretical physical models presented and referred to in the book reveal the inadequacy of the current scientific paradigm (Dr. J. Bockris and Dr. H. Puthoff), suggest a five-dimensional space-time model (J. Beichler), an eleven-dimensional space-time model (Prof. W. Tiller) and a concept of stable structures in superfluid vacuum (Dr. N. Sotina, Moscow State University).

## **SYSTEMS CONCEPTS IN EVALUATION: AN EXPERT ANTHOLOGY** **Bob Williams and Iraj Imam (eds.)**

EdgePress/American Evaluation Association (2007)

The systems field and the evaluation field are complementary methods of assessment and inquiry widely used throughout the world. Each has developed their own methodologies and methods and often directed at similar ends. Yet there have been few attempts to bring them together in a single volume.

Systems Concepts in Evaluation: An Expert Anthology brings together a wide range of systems concepts, methodologies and methods and applies them to evaluation settings. This book addresses the questions:

- o What is a systems approach?
- o What makes it different from other approaches?
- o Why is it relevant to evaluation?

The 14 chapters cover a wide range of systems concepts and methods. Most chapters are case study based and describe the use of systems concepts in real life evaluations. The approaches and methods covered include:

- o System Dynamics (both quantitative and qualitative)
- o Cybernetics and the Viable System Model
- o Soft Systems Methodology
- o Critical Systems Thinking
- o Complex Adaptive Systems

There are also overview chapters that explore the history and diversity of systems approaches and their potential within the evaluation field. There is a substantial introduction by Gerald Midgley to the key developments in systems concepts and methods over the past 50 years, and this explores the implications for evaluation of each of those developments.

Although focused on evaluation, the book is a valuable source for anyone interested in systems concepts, action research and reflective inquiry. It is useful for both teaching and practice.

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Hardback \$US36 plus s/h; Paperback \$US16 plus s/h

**Internet and Society: Social Theory in the Information Age.**  
**Christian Fuchs (2008)**  
**New York: Routledge.**

ISBN 0415961327. 408 pages

Routledge Research Series in Information Technology and Society.

<http://fuchs.icts.sbg.ac.at/i&s.html> <<http://fuchs.icts.sbg.ac.at/i&amp;s.html>>

[christian.fuchs@sbg.ac.at](mailto:christian.fuchs@sbg.ac.at)

Discussion Board on Internet+Society issues:

<http://www.nabble.com/Internet-and-Society-f28205.html>

In this book, the author develops a theory that shows how Internet has changed society and society shapes the Internet. It discusses the ecology, the economy, the politics, and the culture of transnational informational capitalism.

Topics addressed in the book include: self-organization in nature, self-organization in society, foundations of social theory, theory of capitalism, critical theory in the age of the Internet, transnational informational capitalism, Web 2.0, social software, ecological sustainability and ICTs, informational monopolies, strategies of accumulation related to the Internet, MySpace, YouTube, Wikipedia, Google, Open Source, Free Software, filesharing, knowledge labor, class theory, multitude and Empire (Hardt and Negri), class theory in informational capitalism, gift internet economy, commodity internet economy, gift commodity internet economy, digital divide, eParticipation, digital democracy, democratic theory, information warfare, electronic surveillance, cyberprotest, the movement for democratic globalization ("anti-globalization"), virtual communities, social networking platforms, cyberstalking, social relations online, individualization and isolation online, Internet addiction, cyberculture, cyberethics, etc.

The book provides foundations for Critical Internet Research / Critical Theory in the age of informational capitalism.

**Freedom, Knowledge, Power, Money - A Systems Analysis of Modern Society with  
a Social Ecological Market Economy as its Aim;**  
**Eberhard Umbach**

German in March 2008: ca. 400 pages

MEDU-Verlag, Dreieich near Frankfurt-am-Main.

The aim of the book is to outline the structure of a sustainable Modern Society. It includes efficient implementation strategies. To do this, a thorough analysis of the nature of current Modern Society is essential.

Modern Society is analysed as a phenomenon in its entirety, as opposed to a disciplinary view. The analysis is based on both a historical and a structural approach.

The **historical** approach refers to the main webs of causation: the historical development from 1500 onward preceding Modern Society in Europe, religious reformation, science, and the philosophy of Enlightenment, the genesis and development of modern societies, in Great Britain 1688-1830, in Germany from 1753 until today, the acquisitions and the self-destructing tendencies of current Modern Society, taking mainly Germany as an example, the roots of Modern Society in the entire history of human creativity over the last 200,000 years.

It is shown that modern society is the result of a rather **unique constellation of political, economic, and philosophical forces in Western and Central Europe**. Starting shortly before 1500,

this constellation allowed an unprecedented outburst of creativity to take place which has been gaining in momentum ever since without having reached its final state yet and which presages mounting dangers for the future. The opposite course of events took place in China from 1430 onward. Here the world's leading shipbuilding technology was outlawed by the ruling dynasty. China withdrew from world politics and left the Indian and the Pacific Oceans wide open to various European sea-faring nations.

Living conditions in Modern Societies improved on a spectacular scale, and strides towards reaching social and ecological sustainability were realised in most industrial nations after the Great Depression of 1929 until 1980. A new situation emerged in the USA, when US-President Reagan came into office, and also worldwide following the collapse of the Soviet Empire and the reunification of Germany. In this country, after 1990, a **serious regression** on the path toward a Social Ecological Market Economy has been gaining ground. International finance had acquired such a dominant position that it could override nearly all concerns to modify ruthless maximization of profit. This happened despite the fact that in 1992 about 170 national leaders signed the **Agenda 21** at the United Nations Conference on Environment and Development in Rio de Janeiro. The Agenda 21 contains the pledge to link economic progress to poverty eradication, and environmental protection.- So much to history.

The **structural** approach outlines basic socio-economic, psychological and philosophical concepts and processes that constitute the prerequisites for reaching sustainability. The main concepts included are:

- *power, war, market, actions of persons (routine behaviour vs. problem-solving behaviour), education* from the socio-economic realm,
- *perception, information processing, world views* from the psychological realm,
- *evolutionary epistemology and a moderate constructivism* from the philosophical realm.

**Systems concepts and systems methodology** furnish the holistic tool kit to overcome the present dominant misleading strategies based on the ideologies of neo-liberalism or, to a lesser degree, Marxism.

In the **target scenario** of a '**Sustainable**' Germany as a **Social Ecological Market Economy**, the European Union is taken as the power basis. A sustainable world view must be the philosophical basis which furnishes citizens with guide lines for their daily routines. Important characteristics of a social Ecological Market Economy are dealt with:

- a **fair distribution of the GNP**, via minimum wages, reduced working hours to curb unemployment, employee profit sharing,
- a **reinvigoration of government** and government finances via fair taxation of high incomes, increasing taxation of resource use (eco-taxes), Tobin taxes on international financial transactions,
- **civil society** as the source of incentives and control for both government and economy,
- an **educational system**, the central feature of which is to provide **individual learning strategies for each learner**, brought into being and supported by the institutions,
- **environmental protection** with emphasis on sustainability of energy supplies, use of resources, landscape design.

Thus, the six main chapters of the book offer a **synthesis of the effects of human creativity** from its very beginnings right up to our day and age and point out ways to avoid the numerous traps lurking on the way to a sustainable society for the future.