INTERNATIONAL FEDERATION FOR SYSTEMS RESEARCH

# NEWSLETTER

1991 · NO. 27 · PRINT OF ISSUE · 3400 COPIES

Founding Editor: F. de Hanika · Editor: Stephen Sokoloff · International Federation for Systems Research
Schottengasse 3, A-1010 Wien, Austria · Electronic Mail: K 323390@ aearn. Bitnet

Presentation of the "Norbert Wiener Memorial Gold Medal to Robert Vallée, Professor at Université Paris-Nord, by Dr. Margaret Wiener-Kennedy, Daughter of Norbert Wiener (June 13, 1990, at the 8th International Congress of Cybernetics and Systems of the World Organization of Systems, Hunter College, City University of New York)".

AN ARTICLE BY PROF. VALLÉE, **"CONCERNING SOME CONCEPTS OF SYSTEMS THEORY"**, CAN BE FOUND ON P. 3 OF THIS NEWSLETTER

## Rock Gardens and Houses with Paper Doors - Models to Aid Comprehension of Japanese Management Principles

**by Magoroh Maruyama**

**Professor of international business, Aoyama Gakuin University, Tokyo 150, Japan**

Since the time of Plato, Europeans have been writing books on social organization, planning and management. The Japanese have preferred to elaborate and transmit their organizational and managerial concepts nonverbally; by means of rock garden design, ikebana flower design, architecture, etc. Even today, when Japanese think about how to organize and run things, they do so mainly in images, and they have difficulty expressing their ideas in words. Therefore foreigners have the false impression that they are unwilling to communicate. Foreign businesspersons are frustrated in trying to pin down the decision structure in Japanese firms. An analogy can be made to Japanese gardens. They are organized quite differently from the gardens of Versailles in France or those in Union Square, San Francisco. In fact, many Americans think that they are unstructured. Quite to the contrary, they are very carefully designed, according to complex rules.

In order to comprehend Japanese business behavior, you have to understand the nonverbal management principles upon which it is based. Once you do, you begin to see a new logic where none had been apparent before. Here are some "open sesame" keys.

### Concept of Space

If you have visited a Japanese firm or a Japanese government office and gone beyond the formal meeting rooms, you have probably been struck by the fact that many office workers, and even high-level managers, work together in huge rooms. Quite often there is no spatial separation between different departments.

In the traditional Japanese house, the paper door partitions between rooms can be completely removed, so that the space becomes continuous. Often the outer shell, the wooden sliding doors, can also be taken off, so that there is no separation between outdoors and indoors. Furthermore, the garden may run on into the house, and the floor may extend outside beyond the eaves. Space is continuous; this is the first principle to remember. Similarly, responsibility is not divided between persons, but is continuous. If there are five workers, each one takes 100% responsibility (all in all: 500%)!

The second is the concept of convertibility. Each room in a house can become a living room, a dining room or a bedroom, because the furniture is removed after each use. Likewise in a Japanese firm, each employee can be used for many different functions. Job rotation is practiced interdepartmentally. Workers can be borrowed back and forth between departments depending on work-load fluctuations. Specialists can change their fields. For example when shipbuilding activities slowed down in Japan due to Korean competition, many shipbuilders diversified into new fields such as polymers or biotechnology. They converted their shipbuilding engineers into chemists or biologists.

Job rotation is also practiced in many other countries. For example in Sweden, factory workers are rotated systematically for three reasons: (1) to reduce fatigue of specific muscles or of the eyes; (2) to enable workers to replace one another in case of illness; (3) to counteract boredom. In contrast, the main benefit from job rotation in Japan is that workers empathize with one another because they have experienced each other's jobs. This feeling also contributes to the sense of continuous responsibility. A byproduct, which is more easily understandable for foreigners and is therefore more often expressed, is that each worker develops a contextual grasp of his/her specific job.

The concept of space is closely related to the concept of the individual. In Japan, the individual feels continuous to others and is convertible in his/her own function. In Europe, where each room in a house has a boundary, an identity, a specialized function and is permanently occupied by specialized furniture, the individual also has his/her territory, identity and permanent specialization, and is not convertible.

## Harmony of Diversity

What is very basic to a culture is implicit rather than explicit. Nobody talks about it. Nobody explains it. In fact, people are unaware of it.

In the design of rock gardens, the Japanese avoid repetition of the same form: each rock must be different in shape, and different shapes must be combined into a harmony in such a way that the individuality of each element is maximally used and enhanced. This rule is so basic that it is not explicitly written, but it is obvious when you look at the rock gardens. The same can be said for the composition of different materials, shapes and colors in Japanese floral art. In Dutch tulip gardens flowers are, in contrast, used as a color-mass: the individuality of each one disappears.

The Japanese prefer to work in groups. In each one, the individuals combine themselves like the previously-described garden rocks. They know one another's idiosyncrasies and make maximal use of them. It is like a good sports team in any country, in which members know one another's habits and talents, and combine them in mutually enhancing ways. Many foreign managers make the mistake of giving an assignment to each Japanese employee. Better results can be attained by giving the whole task to the group and letting it figure out how to divide it up.

It may seem strange to describe Japanese workers as heterogeneous, since the Japanese people have a reputation for being homogeneous. To understand what is meant, it is best to take a historical view. In the USA, racial origins and religions are heteregeneous. Therefore, explicit rules of equality were necessary. It is considered to be morally right, democratic, fair and economically efficient to treat all workes of the same category as equals. The heterogeneity necessitated homogenistic rules. You have to be blind to racial and religious differences. In Japan, in contrast, where race, religion and language are fairly similar throughout the country, explicitly homogenizing rules were not necessary, and the Japanese could afford to recognize individual differences. A heterogeneous society needs homogenistic rules, whereas a homogeneous society can afford to be heterogenistic. Such countertendencies are found in many countries. French managers need to be authoritarian because French workers are individualistic. Regulations proliferate in Argentina because rules are often violated.

One more consideration is that in the USA heterogeneity is often thought of in an individualistic or independent way. But in Japan, heterogeneity is used in an interpersonal, interactive manner. For example in a group of young people, each person becomes a specialist in order to be useful to the group and in order to be recognized for his/her contribution: one person becomes a hi-fi specialist; another a travel information specialist, etc. However, this specialization is not necessarily permanent. It can be altered as the needs of the group change.

## Contextual Learning and Teaching

In Japan, learning and teaching are accomplished by experiencing, doing and showing. For example, an engineer fresh from college is made to spend one or two years working as an assembly line worker, a retail shop salesperson, a repairman for the products sold, etc., in order to experience and learn about all aspects of the company products he will design. He absorbs everything around him **simultaneously** and **contextually**. This is called "learning through the skin".

For Americans, on the other hand, learning and teaching are accomplished by **verbal** explanation which is **categorized** and **sequenced**. This cultural difference creates perennial problems in multicultural management. In the American branches of Japanese firms, the American employees complain that the Japanese do not explain or teach anything, and the Japanese managers complain tha the Americans do not learn anything.

## Mindscape Types

Now that you have some open sesame keys, you can begin to see a new logic where none was apparent before. Actually there are many logical types in the world. They are called "mindscape types". You can see the Japanese as logical if you understand their mindscapes.

There are many different ones and mixtures between them. Nobody is of a single, pure kind. In each society, all of the various forms are present. They are to some extent innate and to some extent learned. Various cultures exercise different pressures for or against certain types; the processes whereby they do so are called "acculturation", "socialization", "marginalization", ostracism, etc. Individuals also influence their mindscape types by exercising self-selection, internalization, sublimation, attrition, alienation, repression, identification, etc.

Some selected characteristics of the four most frequen mindscapes are:

| H-type | I-type | S-type | G-type |
|---|---|---|---|
| homogenist | heterogenist | heterogenist | heterogenizing |
| universalist | indivualist | mutualist | mutualizing |
| hierarchical | isolationist | interactive | interactive |
| classifying | randomizing | contextual | contextualizing |
| eternal | temporary | pattern-maintaining | pattern-generating |
| sequential | no order | simultaneous | simultaneous |
| competitive | uniquing | cooperative | cogenerative |
| zero-sum | negative-sum | positive-sum | positive-sum |
| unity by similarity | independence | mutual gain by diversity | mutual gain by diversity |
| identity | identity | relation | relating |
| specialization | specialization | convertibility, job rotation | convertibility, job rotation |
| opposition | separation | absorption | absorption |
| tension | indifference | continuity | flow |
| extension | caprice | stability | development |
| one truth | subjectivity | polyocular | polyocular |

## Historical Origins

Japan had three main cultural roots: Jomon culture which began 11,000 years ago, Yayoi culture which began 2,300 years ago, and Yamato culture which came via Korea 1,500 years ago. Judging from archaeological studies, the Jomon culture was mainly of the G-type. The Yayoi culture mainly of the S-type, and the Yamato culture mainly of the H-type. The principle of avoiding repetition in design can be traced back 5.000 years, to the Middle Jomon period.

Today each Japanese is a mixture of the three different types, with individually varying proportions of the three disparate tendencies. This is why the Japanese are sometimes hierarchical and exclusive, while they are interactive and receptive on other occasions.

The next time you are in a traditional Japanese house or in a Japanese rock garden, or in front of an ikebana flower design, you can see the implicit logic behind the Japanese style of business management.

# CONCERNING SOME CONCEPTS OF SYSTEMS THEORY


**Robert Vallée**

**Université Paris-Nord**
**2, rue de Vouillé, 75015 Paris, France**


In this article some concepts commonly employed in systems theory will be discussed. I will try to show, sometimes in a critical way, why they are interesting and suggest how they can be misleading when too radically defined.

## System and Environment

The very idea of the **system** is unfortunately not perfectly clear. The danger of too broad a definition is that systems theory could come to be identified with science itself and its specificity thereby forgotten: it is obviously not acceptable to say that "all is system". Bertalanffy's definition (Bertalanffy, 1968), even if it implies unprecise terms and is more or less controversial, can be used as a guideline: a system is a **set of elements in interaction** (obviously interacting between themselves, but with the environment too). It is through the interactions of its elements that a system obtains its cohesion, and if a system is **more than the sum of its parts** (parts with only one element being considered too), this is mainly due to the presupposition that "sum" means juxtaposition without interactions being taken into account. But the allusion to the environment in the definition raises a question: there is something, called the environment, with which the elements of the system can also interact. How then can the system be separated from this environment which is, perhaps, another system also constituted by elements? I feel that it is not possible to really distinguish a system from its environment with the exception of the whole universe which, by definition, has no environment. Logically **the distinction between a system and its environment can only be arbitrary**. It implies the acceptance of a **border** defined in space-time. This border can be complicated, even fuzzy, but logically the observer of the system has to choose it according to his observational possibilities and the use he intends to make of it. But obviously some choices are better than others when a specific purpose and some means for its fulfillment are given.

## Subjectivity, Relativism and Complexity

The introduction of the observer (it can be the system itself) leads us to recognize the importance of the **power of resolution** of a perception process. As do many other concepts, this one also depends upon the observer. This is not surprising if we recognize that the "reference frame" of the observer plays its part, as does more generally his vision of the world, his subjectivity, to which we associate what we call the **"observation operator"** (Vallée, 1951, 1973). The notion of **level of organization**, of hierarchy between levels, is obviously important for particles, atoms, molecules, cells, organs, living beings, families, societies, planets, stellar systems, galaxies ... But the perception of the levels depends upon observation, hence there is here again some kind of **relativism**.

Even the important idea of **complexity**, which in fact can arise in systems very simply defined, can be considered partly subjective. Instead of defining an absolute complexity it seems safer to consider a **relative** or **perceived complexity**. Complexity is thereby converted into a relation between the observing and the observed systems (Vallée, 1990).

## Locality, Globality and Teleonomy

The concepts of **locality** and **globality** are not independent of the idea of **teleonomy**. A dynamic system can be called teleonomic if it evolves as if it had a purpose. This is the case for cybernetic systems whose states tend, under the influence of negative feedback, to come closer to prescribed ones or to approach prescribed trajectories, notwithstanding external influences. In classical mechanics the movement of a material element is such that an integral, the action, is minimal. In the same way a light ray (curved in the case of a non-homogeneous medium) corresponds to a minimal time of propagation (Fermat's principle). These two rather simple systems are teleonomic; they evolve in such a way that they minimize the value of a global entity whose value is known only at the end of the evolution. There is no paradox here because the global criterion is, in each case, equivalent to a local one: to the differential equation of mechanics in the first example and to Descartes' law of refraction (considered in a differential way at each point of the trajectory) in the second. Here we have an equivalence between **differential determinism** and **integral finalism**, between the local and the global. But of course finalism or teleonomy can be involved (in the sense of their strong meanings) if we consider systems to be endowed with some kind of free will.

## Order, Noise and Structure

Another familiar theme of systems theory is **order** and **noise** and, more particularly, "order from noise". The idea that order can be generated from noise is very attractive; it is reminiscent of the birth of the world from chaos. We must, however, not forget that when noise generates order it is due to the fact that this noise has been introduced into a structure which contains some order: the shaking of a box containing magnets, more simply a kernel of corn climbing up a sleeve under the influence of small, erratic movements. In the case of the magnets, order is already present in the very structured interactions between the magnets, in the case of the kernel of corn it is involved in its very dissymmetrical structure. Noise does not create order but it is **structure-revealing**. It causes very little interference when it is structureless (white noise), but it nevertheless has a triggering influence very important in the emergence of order in the case of the self-organization or **autopoiesis** of a system.

## Isomorphism, Homomorphism and Modelling

Systems theory is considered **pluridisciplinary**. This comes from one of its fundamental ambitions, which is to reveal, in the most favourable case, structural isomorphisms between systems (or representations of systems) belonging to different disciplines. Demonstrating these isomorphisms, or, more frequently, **homomorphisms**, was one of the aims of cybernetics. This can be seen from the title of Norbert Wiener's most famous book (Wiener, 1948). The search for isomorphisms, or at least homomorphisms, leads to the concept of the **model** which represents a system of a given kind. But the ideal of an isomorphic representation is, in a certain sense, misleading. **The map is not the territory**, according to Korzybski. This is due to the limitations of our capacity for representation, but it also has a positive effect; the map is not supposed to provide useless details. Homomorphism is enough, and the degree of accuracy of a representation ought to be adapted to the purpose for which it has been chosen: cognition, action or any other end.

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# EDITORIAL

## The Demise of General Knowledge and its Social Consequences


**Stephen Sokoloff**
**Stefan-Fechter Weg 1/49**
**A-4020 Linz, Austria, Tel.: +43 732 - 28 16 805**


Currently we are witnessing a pronounced tendency to emphasize highly specialized instruction and neglect general education. This can even be seen at systems science conferences, where most of the time is devoted to special groups. I consider this trend unfortunate; out of common shared knowledge the social fabric is woven, the deterioration of which leads to moral and cultural atrophy, loss of a sense of meaning and an increase in mental health problems.

By no means do I intend to deny the importance of specialized training. It is a prerequisite for the maintenance of high-level services in various professional areas. No single person could possibly absorb all the knowledge and accumulate all the experience necessary for competence in such diverse fields as heart surgery, nuclear physics, diplomacy, automobile mechanics and baking.

Common knowledge is, however, no less essential. Perhaps one reason why general education has fallen into disrepute is the obscurity and uselessness of much of school learning. What sense does it make, for example, to drill adolescents in ancient languages when they don't even know the essentials of birth control? In my opinion, the general populace needs more education particularly in the following areas:

- Those which are necessary for the intelligent appraisal of major political decisions, for example in the fields dealing with governmental processes, economics and environmental and social concerns;
- maintaining good health;
- modern languages;
- practical psychology (understanding the various personality types, the problems that arise among colleagues at work and in partnership and marriage). The psychiatrist Carl Rogers demonstrated that merely confronting others with a certain pattern of behavior characterized by openness (frankness), empathy and complete acceptance diminishes their neuroses. Wouldn't it be possible to teach this form of human interaction in the schools?
- Culture in the broadest sense, that is not only the fine arts but also the understanding of "exotic" peoples, their ways of life and their beliefs. This kind of education would enable people to engage in high-quality and meaningful free-time activities.

Our lopsided, profit-oriented educational attitudes have already led to serious consequences. We do find a good general availability of material products and specialized services in industrialized capitalist nations, but the social fabric in many of these countries is in tatters. There is a high rate of broken families, and discontent, mental health problems and criminality are rampant. Better general education could help to alleviate these conditions.

# LETTER TO THE EDITOR

## Ref.: OVERCOMING ISOLATION

Dear Dr. Sokoloff, dear IFSR-NEWSLETTER readers,

I was deeply impressed by the note about "Overcoming Isolation" in NEWSLETTER nr. 25, and am very eager to help drive the nail deeper into our very tough systemic wood.

The description of the specialization problem in that editorial is a perfect clinical diagnosis and, in these short lines, I see a most clear definition of our current and future quandaries. Specialists generally lack interest in the work of other specialists who do not live in their own islet. Should one of them come to understand that he is becoming a kind of social (and even scientific) castaway, he would lack the time, means and keys to sail again towards the open ocean of questioning and understanding.

You advocate, quite correctly in my opinion, a "restructuring of our academic institutions" in order to give "equal prestige (and employment) to both specialists and generalists". Let us face it: this is going to be a Herculean endeavour. And, moreover, nearly nobody else besides ourselves has any understanding of the urgent need to do so, if we are to avoid a series of agonizing global crises in the coming century.

Unfortunately, I should add that the systemic movement has not yet produced the needed tools. Many of the participants in our meetings are still, at best, part-time generalists, who try to connect whatever special work they are doing with a more efficient methodology or/and with a better understanding of their local scientific environment. Full-blown generalists are still a very rare species, indeed. As a result, our generalist community has until now produced very little material of inspiring quality. And this is my first point: if we are not able to communicate to many people what we precisely mean with our G.S. and cybernetic view of the world, that is, of course, our own failure. So, let me express what I mean, first by "many people" and secondly by "a G.S. and cybernetic view of the world".

By "many people", I simply mean Mr. John Citizen, or Jacques Bonhomme, or Juan Pueblo, or Comrade Ivan. He may be a scientist, but he could also be a blue or white collar worker, a farmer, an engineer. Most important of all, he may be a politician, one of those gentlemen who regard themselves as the managers of our society, until some tail-twisting of the unpredictible crocodile throws them to the ground (or below it). By "many people" I mean, moreover, the rich and poor, women and men, youngsters and old people, instructed or just somewhat literate individuals.

As to a "G.S. and cybernetic view of the world", I should summarize it as a capability to understand complex situations.

Synthetically, we should produce educational material suited to very different levels of understanding in very different cultures, and aimed to enable people to better understand where they belong, in which way they do and what responsibility they have towards the world in which they live.

Let me now go into some detail and try to more precisely characterize the different kinds of material I have in mind. Of course, in every case, it should be **significant** and of **the highest possible quality**.

### 1- Graduate level material

There is an urgent need to prepare a global census of systemic and cybernetic **concepts**, to explain these concepts, to discuss them, to exemplify and interconnect them. Their general relevance must be emphasized and their transdisciplinary value explained. They should be presented as tools for observation and practical action in complex situations, while at the same time recognizing their limitations, especially the predictive ones.

We also need a good presentation of a systemic-cybernetic **methodology** for observing, typifying and modelling complex systems. However, in my opinion, the actual limitations of this methodology should be clearly stated and explained.

Addressing themselves to specialists, the generalists should team up with them in small task forces to consider, first, what systemic-cybernetic concepts and models may contribute to every speciality, which examples and, eventually, new general concepts can be obtained from them and how they can be used to relate one's own work to the world at large.

### 2- High school, technical school and college level

In these surroundings too, concepts, methodology and practice constitute our basic tripod. However, in this case, we must considerably reduce the level of abstraction and invert the whole process.

The key to the understanding of complex systems must be sought and found in practical and everyday real situations. It is not even necessary to speak of "systems" or "cybernetics" in abstract terms to youngsters until they are 12 to 14 years old. The most important aspects are the links and reciprocal interrelations that can easily be observed in everyday life. The ones who must really know about the global view are the teachers and professors, in order to avoid perceptive and conceptual **shrinking** in their charges' minds.

Thus, our responsibility is to explain all this to the instructors and educators who are responsible at this level. To this end, another type of material must be created, with the help of these teachers. This is what we are trying to do at an experimental level here in Buenos Aires. (See our NEWSLETTER nr. 7: "Systemic education for youngsters".)

### 3- "We were all general systemists once"

Under this banner I some years ago, in an ISSS Meeting, reminded you that we all, as "newborn babies and kindergarten children", have experimented with complex systems. We have all had to connect complex causal sequences, learn familial and social differences, learn the coordinated uses of thousands of objects, etc. We had to do all this before being able to read, count and write, let alone study anything in a scholarly and formal way, becoming thus more or less blocked in perceptive and conceptual straight-jackets.

And we did it, in the most natural fashion: by game and play. Now that we are grownups, or even old men, let us remember! All we have to do, is to let small children discover complexity for themselves. When they come to the ripe age of three or four, we may start to suggest some new games

to them, which should **in an implicit form** contain, logical rules, feed-backs, organizational closure, dynamic stability, discontinuities or other systemic or cybernetic ways or means, as long as they remain playful and unobtrusive. Soon or later, they would discover everything by themselves, with the help of their fresh minds and natural creativity.
This is the third - and most fundamental - level where we should create systemic-cybernetic material. It does not need to be sophisticated. One of our members here achieves quite a lot with just some chalk marks on the tiles in a courtyard.
From primary school on, subtly oriented observation of natural systems (growing plants, animal antics, an aquarium or a pond, insect metamorphosis, visiting some reserve) should help a lot.
Let us now see who should accomplish this task and how. I do not pretend to know all the ways to attain our goals, but I propose, at least, a shopping list of material that should be produced:

## 1- Kindergarten and primary school level

There is a lot of material available: toys, games and the like. Most of this could be used, if it were more or less refocussed in a more systemic way.
Training programs for teachers should be conceived and tried out.
There are also many studies in child psychology that could be important sources for a systemic redirection of learning.

## 2- Medium level education and instruction

Some of us should tackle the task of creating systemic-cybernetic guidelines for educators. There are various ways to do this, as, for example, by defining ways of observing real systems (the school, the borough, the family, woods, a pond, the beach, a river, a field, etc.) and real situations (an accident, a feast, a fight, an election, a strike, etc.).
Role-playing, participation in civic campaigns, scouting, self government, etc. are quite effective in creating a consciousness of personal interconnections and reciprocal rights and duties.
Here we are at an intermediate level, between abstraction and concrete observation, somewhat selective and reasoning. Here "teachers and explainers" should be at their best. But they must be trained: it is not so much a matter of changing the curricula as of a new formulation and a better interconnection of their contents, combined with the promotion of a spirit of participation and initiation.

## 3- High-level rethinking

This is the toughest assignment. Specialists generally believe that they know better, and they do ... within their own fields. But they do not know about their ignorance of some very important things they should know (L'ignorance de l'ignorance, in Fourasties's words). This is dangerous because either they believe they know everything they should, or they live in a kind of blissful seclusion.
As a result, their minds are quite difficult to reach.
Our problem is, thus, to find ways of connecting up with them. I confess that I have no ready-made method to achieve this. However, after conducting quite a number of tutorials with quite different assortments of specialists, I came to the following (provisional) conclusions:

— We need good general statements of the cybernetic-system science concepts, devoid of any jargon.
— These statements should be connected with as many specialized fields as possible, but their transdisciplinary empowerment character should be emphasized.
— We should try to mix with any group, that is with practitioners of different trades, to give them a sense of surprise and amazement.
— We should carefully listen to specialists' objections and critique. If they are right, we need to rectify our presentations or, even at times, our ideas; if they seem to be wrong, we should discuss the matter with them.
— We should use case studies, chosen from everyday life, as for example ACKOFF's short stories or Stafford BEER's apologues and puns.
— We should ask these groups to think about some global problems that no specialist could solve alone: the Aral Sea plight; the English cows' "madness", AIDS propagation; ... or some more local complex problems: how to improve our borough, how to stop the spread of drug-addiction, etc.
— We should in as many places as possible offer simple tutorials for people who know nothing about systems, but could become interested in them.

The tasks that await us are gigantic. None of us can hope to make more than a small contribution. Moreover, as Margaret Mead asked many years ago: "When will systemists systemize themselves?". We need a census of good wills. Why shouldn't our Federation start that census taking with members of **all** of our societies? They should let us know their proposals, and, more than anything else, **what they are effectively ready to do.**

After a period of time it would probably become possible to start networks around specific tasks, some of which are delineated in this letter.
As a way to get the ball rolling, I will hereafter state what I am doing and willing to do:

— I have written an explicative Dictionary of systemic and cybernetic concepts in Spanish. It is ready for publication.
— I am preparing this same work in English and hope to do so later on in French.
— I am at present writing a "Guia Sistémica" (Systemic Guide) in Spanish, whose aim is to explain in the most simple terms the global systemic-cybernetic concepts, aimed at Mr. John Citizen.
— I am helping some very young systemist friends create a systemic method suitable for high-schools now (the experiment has been in progress for 18 months).

I hope to receive your feedback, dear reader, and, in collaboration with you and others, to draw more people into some kind of a really active circle.

Very truly yours,

Charles François
Libertad 742, 1640 MARTINEZ, ARGENTINA

# REPORT OF MEETING AND PROGRAM OF INQUIRY, XIIth WORLD CONGRESS OF SOCIOLOGY; SOCIOCYBERNETICS AND SOCIAL SYSTEMS THEORY WORKING GROUP

## MADRID, SPAIN, JULY 9 - 13, 1990

JOHN P. van GIGCH

CALIFORNIA STATE UNIVERSITY, SACRAMENTO, CA. 95819-2694, USA, FAX: (916) 278-7690

At the XIIth World Congress of Sociology that took place in Madrid, Spain, July 9 -13. 1990, the Sociocybernetics and Social Systems Theory Working Group met to discuss the present status of System Science as an accepted scientific discipline.
Working Group Coordinator: Francisco Parra Luna, Director, University Human Resources Institute, Campus of Somosaguas, 28023, Madrid, Spain.

Main Discussants: Mario Bunge, Department of Philosophy, McGill University, 3479 Peel Street, Montreal, Canada, H3A 1WT; and John P. van Gigch, School of Business Administration, California State University, Sacramento, CA, 95819-2694, USA.

Those attending the meeting realized only too well the present shortcomings of the discipline and resolved to make a start to remedy this situation. We felt that, as a discipline, System Science has not yet gained the recognition it deserves among all scientific disciplines.

At the moment, System Science is a loose collection of ideas. Each researcher pursues his/her own theory/model without resorting to a central theme or purpose. We noted that:

1. The discipline lacks a distinct paradigm.
2. The discipline has no distinct epistemology.
3. The discipline has no predictive or creative capability.
4. The discipline cannot claim any real accomplishment(s), either of a theoretical or of an applied nature.
5. The methodology or methodologies of System Science lack rigor and proofs of truth.

### PROGRAM OF INQUIRY

The undersigned presented a list of questions which constitutes a Program of Inquiry into the problems confronting the discipline. It should be made clear that only the undersigned should be held responsible for the indictment leveled against System Science as well as the questions listed below. Whereas these views were debated during one session of the Congress, other members attending may not necessarily have agreed with them or subscribed to their publication.

Question 1: At present, the discipline of System Science is not represented by a single paradigm. Should (or can) System Science develop its own distinct paradigm?

Question 2: Given the plurality of approaches which are subsumed under the various names of GST, System Theory, Applied Systems Analysis and the like, is it not timely for the discipline to concentrate its efforts on a single paradigm and to reject claims that all projects carrying the word "system(s)" in them can be named Systems Theory, System Science or Systems Methodology?

Question 3: System Science is a metascience, i.e., it should only deal with epistemological questions, i.e. questions which deal with the design of a discipline of inquiry which is devoid of any particular content. To achieve this aim, we must raise the level of abstraction of system studies and only deal with epistemological problems and questions. Can System Science achieve the status of a metascience ? (In M. Bunge's terms of "hyperscience"?)

Question 4: To be distinct from other disciplines, System Science should stop borrowing its methodology from the Physical Sciences and develop its own methodology and laws. Is this program of inquiry feasible? Should it be encouraged?

Question 5: What should each system scientist do to help System Science gain in strength as a distinct discipline? (HINT: At the moment System Science is a loose collection of ideas, it lacks a distinct paradigm, has no distinct epistemology, no predictive or creative capability, no rigor, and lacks any proof of any accomplishment in any field of science, philosophy, etc. (See above.) What can we do, individually and collectively, to improve this situation?

Question 6: Given the shortcomings outlined in Question 5 and earlier, can a program of research or inquiry be outlined that can answer some of these shortcomings?

Question 7: We aim to improve the success of System Science in becoming a distinct discipline, the domain of which is complex organizational systems. To reach this purpose, we ask the members of the Systems Community to redirect their research efforts and to present their own research in the light of the questions raised herein. We encourage each of you to reformulate your own research, taking this intent into account. Ask yourself how you could modify your own program of research in order to satisfy the purpose enunciated herein, of making System Science more influential and better known.

P.S. The above declaration stating a Program of Inquiry was promoted by the below-normal quality of the papers presented at the Congress and an utter lack of elementary knowledge of basic System Science or System Theory. It is time we became more critical of the papers presented at the systems meetings or papers submitted for possible publication in system journals.

# EUROCAST '91

Second International Workshop on "Computer Aided Systems Theory"

Following Las Palmas 1989, the second International Workshop on CAST-Computer Aided Systems Theory - will be held in Krems (Austria) from April 15 - 19, 1991.

This workshop is being organized by the Department of "Systems Engineering and Automation of the "Scientific Academy of Lower Austria" (Krems), "Johannes Kepler University" (Linz), and "Universidad de Las Palmas de Gran Canaria" (Spain) and sponsored by the "International Federation for Systems Research (IFSR)", the "International Federation of Automatic Control (IFAC)" and the "Technical Committee on Systems Engineering (SECOM)".

CAST is concerned with the development of software tools based on Systems Theory to support the engineering design process of complex technical systems. The main focus lies in the areas of communications and automation engineering.

As a supplement to conventional CAD systems, CAST technology provides easy access to a solid base of theoretical knowledge using advanced means of man/machine communication. The use of "Artificial Intelligence" techniques for the effective employment of the knowledge available in Systems Theory is among the key topics of this workshop.

The workshop will take place at the facilities of the "Scientific Academy of Lower Austria" in Krems. Accomodation is available on the Danube steamboat "Theodor Körner" (chartered exclusively for this workshop) as well as at local hotels and guest houses.

By February 7, 1991, about 80 contributions from 18 different countries (including USA and China) have been received to be evaluated for presentation.

## STATE UNIVERSITY OF NEW YORK AT BINGHAMTON POSITION ANNOUNCEMENT

**SYSTEMS SCIENCE DEPARTMENT**, State University of New York at Binghamton, invites applications for a tenure track position from candidates in the systems science field with diverse teaching capabilities and research interests, with skills in computer software and mathematical and computational methods, and research in at least one of the following areas: (1) hard-core systems science (mathematical system theory, general systems methodology, systems modelling and simulation, analysis and management of complexity); (2) cognitive systems (models of mind and brain, human factors, vision systems, aesthetics, creativity); (3) systems aspects of artificial intelligence (neural networks, knowledge engineering, expert systems, robotics); (4) systems engineering (man-machine systems, operations research, decision making). Responsibilities include graduate teaching & research supervision, publishing in the systems literature and pursuing research funding. Applications accepted until position is filled; review begins Sept. 1, 1990. Send letter of application, vita, and reprints of major publications, and have 3 letters of recommendation sent to Professor George J. Klir, Chair, Systems Science Department, Thomas J. Watson School, SUNY-Binghamton, Binghamton, New York 13901. Rank and salary commensurate with experience.

The Systems Science Department has offered the M.S. & Ph.D. programs with specialization in Systems Science since 1977. It is one of the earliest Systems Science Departments in the United States. It is unique in its ability to attract students with diverse undergraduate backgrounds (including majors in engineering, mathematics, computer science, physics, anthropology, philosophy, music, sociology, etc.). The department consists of 6 full time faculty, 9 teaching assistants and, usually, several adjunct or visiting professors. The department emphasis reflects the interest of the faculty as indicated by courses offered — such as Simple Models of Complex Systems, Systems Problem Solving, Modeling and Simulation, Data Base and Communication Design, Biological Systems Theory, Models of the Mind, Fuzzy Sets, Uncertainty and Information. The department usually includes 25 doctoral students and is in the process of establishing an undergraduate program in systems engineering.

The State University of New York at Binghamton is strongly committed to affirmative action. We offer access to services and recruit students and employees without regard to race, color, sex, religion, age, disability, marital status, sexual orientation or national origin.

## MEETINGS and COURSES

| Title | Date | Place | Deadlines | Further Information |
|---|---|---|---|---|
| EWSL - 91<br>European Working<br>Session on Learning | 6. - 8.<br>March<br>1991 | Porto<br>Portugal | EXPIRED | Pavel Brazdil<br>Univ. Porto<br>Rua Dr. R. Frias<br>4200 Porto, Portugal |
| Problems of Support,<br>Survival and<br>Culture | 2. - 5.<br>April<br>1991 | Amsterdam<br>Netherlands | FULL<br>PAPER<br>10. Feb.<br>1991 | Ms. Joop Muller<br>CICT<br>Grote Bickersstraat 72<br>1013 KS Amsterdam, The Netherlands |
| EUROCAST '91 | 15. - 19.<br>April<br>1991 | Krems<br>(Wachau)<br>Austria | | Prof. Franz Pichler<br>Institute of Systems Science<br>Johannes Kepler University Linz<br>A-4040 Linz-Austria, Phone +43732 2468895 |
| IEEE - COMP - EURO - 91<br>Advanced Computer<br>Technology, Reliable<br>Systems and Applications | 6. - 10.<br>May<br>1991 | Bologna<br>Italy | EXPIRED | Prof. Vito A. Monaco<br>Dipartimento di Elettronica,<br>Informatica e Sistemistica,<br>Facoltà di Ingegneria<br>Via Risorgimento 2<br>40136 Bologna, Italy |
| AMAST<br>Second International<br>Conference on Algebraic<br>Methodology and<br>Software Technology | 22. - 24.<br>May<br>1991 | Iowa City<br>Iowa<br>USA | EXPIRED | Prof. Teodor Rus<br>University of Iowa<br>Dept. of Comp. Science<br>Iowa City, IA 52242<br>USA, Phone: (319)-335-0694 |
| Daisy — 91<br>Dependability of Artificial<br>Intelligence Systems<br>IFIP Working Conference | 27. - 29.<br>May<br>1991 | Vienna<br>Austria | EXPIRED | Icos Congress Organization Service<br>Schleifmühlgasse 1/14<br>A-1040 Vienna, Austria<br>Phone: + 43/222/5876044<br>Fax: + 43/222/5876059<br>Telex: 133 869 blaw à |
| Ist Workshop on<br>Principia Cybernetica<br>Project | 2. - 5.<br>July<br>1991 | Brussels<br>Belgium | ABSTRACTS<br>300 - 600<br>words<br>15. March<br>1991 | Francis Heylighen<br>Pesp., V.U.B., Pleinlaan 2<br>B-1050 Brussels, Belgium<br>Tel. +32-2-64 125 25<br>Fax: +32-2-64-122 82 |
| MIE - 91<br>10th International Congress<br>on Medical Informatics<br>European Federation for<br>Medical Informatics | 19. - 22.<br>August<br>1991 | Vienna<br>Austria | | MIE 91 Interconvention<br>A-1450 Vienna, Austria<br>Tel. +43-1-23692641 |
| United Kingdom<br>Systems Society Conference:<br>Systems Thinking in Europe | 10. - 13.<br>September<br>1991 | Huddersfield<br>West Yorkshire<br>England, U. K. | EXPIRED | Barry Blackhorn<br>School of Computing and Mathematics<br>The Polytechnic, Queensgate<br>Huddersfield HD 1 3DH,<br>England, U. K., Tel. 0484 - 42 22 88 ext 22 04 / 24 75 |

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