

JOURNAL OF SOCIOCYBERNETICS

Volume 5

Numbers 1/2

2007

*Official Journal of the Research Committee on Sociocybernetics
(RC51) of the International Sociological Association*

JOURNAL OF SOCIOCYBERNETICS

www.unizar.es/sociocybernetics/

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The **JOURNAL OF SOCIOCYBERNETICS** (ISSN 1607-8667) is an electronic journal published biannually--Spring/Summer and Fall/Winter--by the Research Committee on Sociocybernetics of the International Sociological Association. The Journal looks for submissions that are innovative and apply principles of General Systems Theory and Cybernetics to the social sciences, broadly conceived.

MANUSCRIPT submissions should be sent electronically (in MSWord or Rich Text File format) to the editor: Karl-Heinz Simon simon@usf.uni-kassel.de. In general, please follow the Chicago Manual of Style; citations and bibliography should follow the current journal style (APA). Normally, articles should be original texts of no more than 6000 words, although longer articles will be considered in exceptional circumstances.

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SOCIOCYBERNETICS traces its intellectual roots to the rise of a panoply of new approaches to scientific inquiry beginning in the 1940's. These included General System Theory, cybernetics and information theory, game theory and automata, net, set, graph and compartment theories, and decision and queuing theory conceived as strategies in one way or another appropriate to the study of organized complexity. Although today the Research Committee casts a wide net in terms of appropriate subject matters, pertinent theoretical frameworks and applicable methodologies, the range of approaches deployed by scholars associated with RC51 reflect the maturation of these developments. Here we find, again, GST and first- and second-order cybernetics; in addition, there is widespread sensitivity to the issues raised by "complexity studies," especially in work conceptualizing systems as self-organizing, autocatalytic or autopoietic. "System theory", in the form given it by Niklas Luhmann, and world-systems analysis are also prominently represented within the ranks of RC51.

The institutionalization of sociocybernetic approaches in what was to become RC51, the Research Committee on Sociocybernetics of the International Sociological Association, began in 1980 with the founding of an ISA Ad Hoc Group and proceeded with the organization of sessions at succeeding quadrennial World Congresses of Sociology. The eventual RC51 became a Thematic Group and then a Working Group. Finally, in recognition of its extraordinary success (growing from some 30 members in early 1995 to 240 in 1998), the group was promoted to the status of Research Committee at the 1998 World Congress of Sociology in Montreal.

Over these past two decades, sociocybernetics has attracted a broad range of scholars whose departmental affiliations represent the entire spectrum of the disciplines, from the humanities and the social sciences through the sciences, mathematics and engineering. Furthermore, the many countries of origin of these RC51 members attest to the wide international appeal of sociocybernetic approaches. Within this highly diverse community, there is wide agreement on some very general issues, for instance, on developing strategies for the study of human reality that avoid reification, are cognizant of the pitfalls of reductionism and dualism, and generally eschew linear or homeostatic models. Not surprisingly, however, there are also wide divergences in subject matter, theoretical frameworks and methodological practices.

Many have argued that models developed for the study of complexity can be usefully appropriated for the study of human reality. Moreover, however, the emphasis in complexity studies on contingency, context-dependency, multiple, overlapping temporal and spatial frameworks, and deterministic but unpredictable systems displaying an arrow-of-time suggest that the dividing line between the sciences and the historical social sciences is fuzzier than many might like to think. What is more, in the humanities, the uniquely modern concepts of original object and autonomous human creator have come under serious attack. The coincidence of these two phenomena substantiate the impression that across the disciplines there may be observed a new concern for spatial-temporal wholes constituted at once of relational structures and the phenomenological time of their reproduction and change.

In this context of rich history and exciting possibilities, the Research Committee on Sociocybernetics of the International Sociological Association extends an open invitation through the **Journal of Sociocybernetics** to all engaged in the common quest to explain and understand social reality holistically and self-reflexively without forsaking a concern for human values--human values not construed simply as a matter of individual ethics, but conceived as an integral part of a social science for our time.

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NOTE FROM THE OUTGOING EDITOR

Apologies to our readers for the long delay since the last issue of JoS. This is chiefly because I took on the task of helping to edit a double special issue of the journal *Kybernetes*, a festschrift published in honour of Felix Geyer, Honorary President of RC51. My co-editors were Vessela Misheva and Cor van Dijkum. We highly recommend this twenty article collection as an overview of current activity in the field of sociocybernetics and beyond (*Kybernetes*, 35, 3/4).

This double issue of the *Journal of Sociocybernetics*, marks the end of the present editor's tenure. Beginning with Volume 6, *JoS* will be in the able hands of Karl-Heinz Simon (thus all manuscripts should be submitted to him at simon@usf.uni-kassel.de). I wish to thank Karl-Heinz for his help in assembling this double issue. I wish him well with his future endeavours.

Bernard Scott, June 11th 2007.

MODELLING ORGANISATIONAL FACTORS AFFECTING THE DEVELOPMENT OF E-LEARNING IN A UNIVERSITY USING A CYBERNETICS APPROACH¹

Sandy Britain, Oleg Liber², Sharon Perry, Wynne Rees

Abstract

The recent emergence of internet-enabled software tools to support e-learning has prompted many UK universities to begin to attempt to integrate such Virtual Learning Environments (VLEs) into their teaching. It is generally recognised that to be effective in an institutional context, VLEs need to be joined up to existing information and administration systems. In this paper we argue from a cybernetic perspective that in addition to the technical demands of this task, there are a wide variety of organisational, social and political factors associated with the way a university is structured, the dynamics of its internal operation and its recent history that present a significant risk of project failure if they are not given sufficient recognition and appropriate strategies for change put in place. These complex challenges can usefully be addressed from a cybernetic perspective. The remainder of this paper describes an approach to modelling an institution's socio-technical systems using a combination of the Viable System Model, drawn from management cybernetics and action research techniques.

Introduction

There has recently been a surge of interest amongst UK universities in both e-learning and the development of 'joined-up' university IT systems to support e-learning. The central notion is that internet-aware software applications can provide a 'Virtual Learning Environment' that extend the capabilities of the physical learning environment traditionally provided by a university. For such virtual learning environments (VLEs) to be effective in an institutional context, they need to be integrated with a variety of management information systems that support university administrative functions. In the UK, the project of joining-up all relevant university administration systems with a VLE is currently being termed a managed learning environment (MLE).

Figure 1. below shows a schematic diagram produced by a public funding body in the UK of what an MLE conceptually involves:

¹ A version of this paper was presented in the sessions of the Research Committee on Sociocybernetics (RC51), International Sociological Association, 15th World Congress, Brisbane July 8-13, 2002

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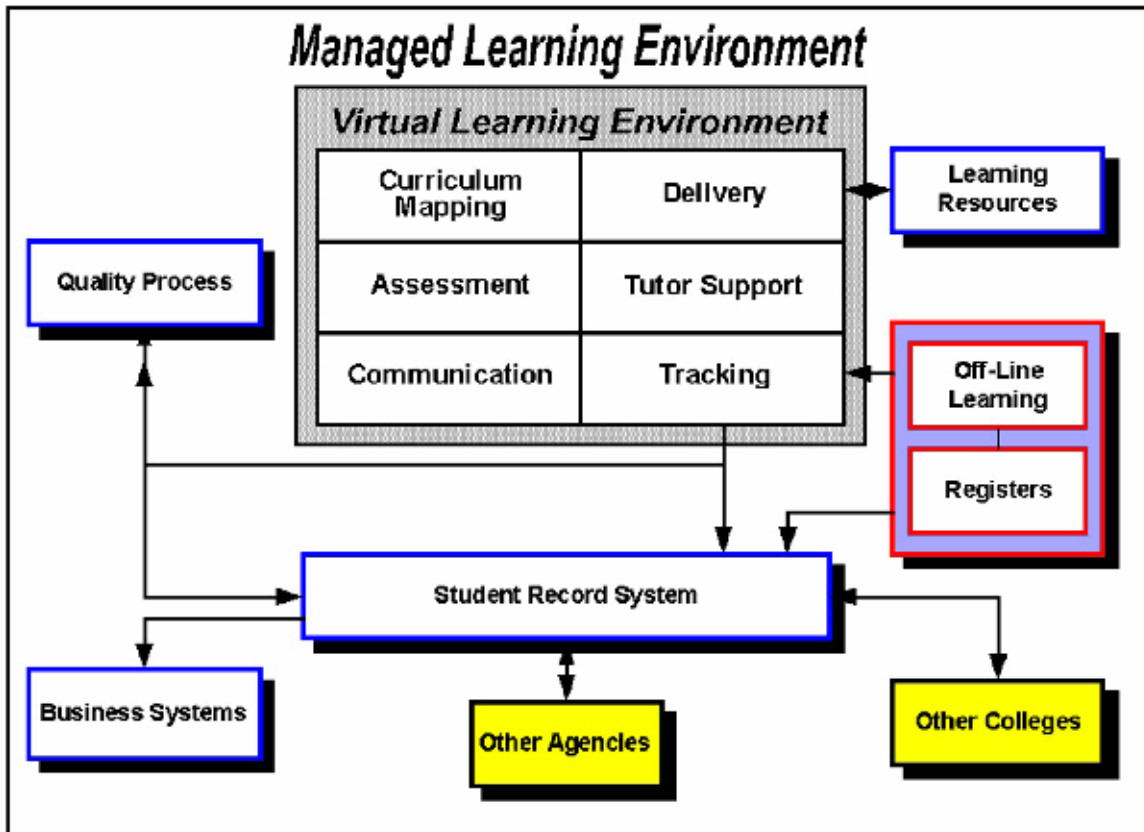


Figure 1. MLE illustration from Joint Information Services Committee (JISC)

The above diagram was produced by JISC in 1999 to show some of the key relationships between university administrative systems and a virtual learning environment. It also (unintentionally) shows a number of the widely-held assumptions about e-learning and also some confusion. However, what it does illustrate is that E-learning developments are unlike any technology development in universities to date in that they involve the whole system: academic, administration, service and support. This task presents complex challenges for universities by having to coordinate parts of the institution that have traditionally maintained cultural and functional independence e.g. Information Services, Library Services, Staff Development and Academic departments.

A feature of university organisation is that academic departments, and individual lecturers have considerable autonomy about how they teach their subject. There is a concern that decisions made about e-learning by information services managers (who regard technology as their territory, but do not understand teaching) will constrain the way lecturers can teach and manage their classes using virtual environments.

This paper asks what are the system effects of decisions to implement e-learning in universities? What are the issues for the design of new learning environments? and what are the organisational change issues for universities?

These are questions about the cybernetics of technology and organisations. This paper illustrates the use of a cybernetic methodology to address these questions.

Methodology

The modelling work included in this paper forms part of an ongoing project at University of Wales - Bangor, which also involves technical innovation and systems design. The broad aims of the project (Comantle - celt.bangor.ac.uk/comantle) were to examine approaches to MLE development suitable for the context of UWB and to highlight areas of organisational change. In this sense the work reported here is in the spirit of action research in which the existence of the research project itself acts as a reflexive input to the system under consideration.

Methodologies appropriate to this type of study are a combination of action research and soft systems methodology, (e.g. Checkland, 1981; Checkland & Scholes, 1990) in which the project team collect data about the existing nature of the institution through qualitative research methods such as interviews, focus groups and participant-observation³ in order to structure and elaborate a rich description of the problem domain. This description is then used to develop a systems characterisation of the problem which in turn is used to inform problem-solving activities in the organisation. Espejo et al., (1996) describe a similar approach which they refer to as the 'cybernetic methodology'. This methodology condenses a variety of systems and socio-technical approaches into single approach. The advantage of this methodology is it was developed to be used in conjunction with the VSM which provides the theoretical framework for this study.

The basic form of the methodology used is depicted schematically in figure 2

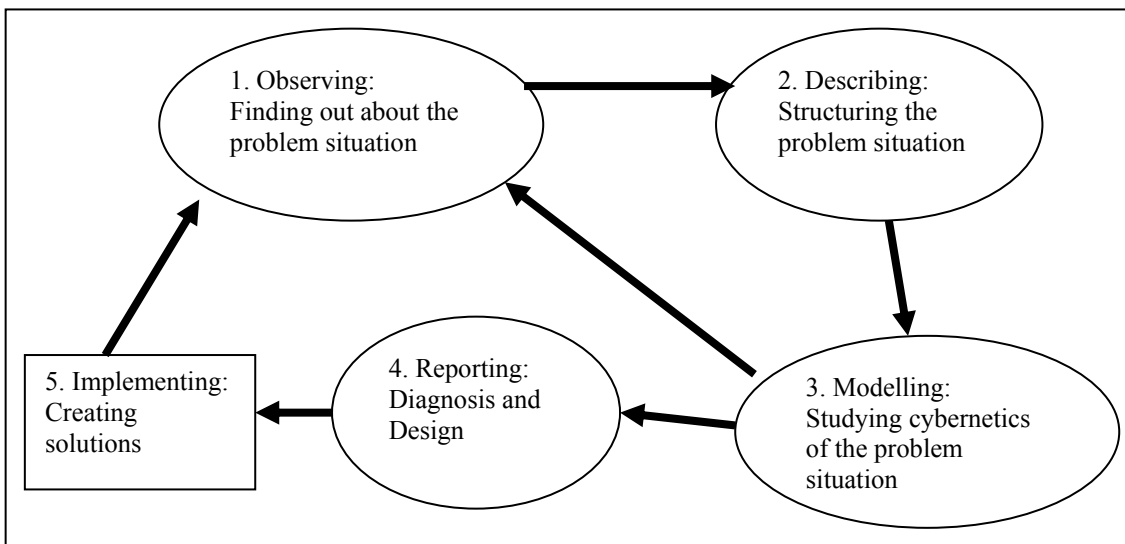


Figure 2 The cybernetic methodology (adapted from Espejo et al., 1996)

The 'problem situation' in the context of the current work refers to the development and implementation of systems to support e-learning at UWB.

³ All the above techniques were employed in data collection during the Comantle project.

1. Observing

This is the process of collecting information about the organisation that is relevant to the problem of study. Techniques for information collection relied on typical of qualitative approaches such as action-research, case-study research and market research. These included participant-observation, semi-structured interviews, focus groups, collection of documentation including existing surveys and other data.

2. Describing

This process involved using the information collected to develop a rich picture of the organisation within the scope of the problem definition (see Checkland and Scholes, 1996). This provides structure to the problem situation

3. Modelling

From the rich picture developed by describing the organisation and the problem situation, cybernetic models were created using the VSM. These provide the basis for an analysis of the organisation from a cybernetic perspective.

4. Reporting

Having used the cybernetic modelling to diagnose aspects of the organisation which need to be adapted to support e-learning developments in the institution, specific recommendations for organisational change and MLE design can be reported.

5. Implementing

The report of the study can be used to feed into institutional mechanisms for implementing e-learning. Part of the project involves VLE adaptation to work with university systems.

Iterative modelling and reflection

Stages 1 –3 of the methodology have been continuous and iterative throughout the study. Initial rich pictures and cybernetic models have been used to identify further information that needs to be gathered to elaborate and improve the cybernetic model. Where possible the model building process has been done in partnership with university stakeholders. Although this has been difficult due to time constraints and the difficulty of explaining the modelling form, it has been highly productive in some instances. There is a second loop missing from figure 2 which depicts the process of reflection on the part of the research team on the nature of change in the university.

In the next section we describe in more detail the problem situation.

Describing the problem situation - the Why? and How? of E-learning.

In attempting to structure the problem situation, it is crucial to establish *why*, despite the expense and uncertainty involved, university vice-chancellors are considering taking e-learning on board in an institutional sense, and precisely *how* they expect it to help the institution. These are hard questions to answer because in order to answer them requires a clear model of the organisational identity, strategy, management and operations. In other words it requires that some sub-system(s) of the organisation develop a model of the whole system. ⁴

Insight into the why question, can be obtained by taking a closer look at the current context of UK higher education. "Two decades ago one in eight school-leavers went on to higher education. Now

⁴ This is an interesting application of the models put forward both by Scott (2000) and Espejo et al., (1996) after Harri-Augstein and Thomas in relation to organisational learning.

more than one in three do. But universities are creaking under the strain of years of expansion in which student numbers have gone up but the funding for each student has gone down.....As student numbers increased by 88% between 1989 and 2002, government funding per student fell by 37%, which followed a 20% cut from 1976-1989." (Woodward, 2002).

In essence, the government wants to educate more people through the higher education system and they want to do it for less money. Recently the British government declared a goal of putting 50% of the under 30's through some form of higher education by 2010.

Although it is the opinion of many in the HE sector that is the "wrong target at the wrong time" (Woodward, 2002), it means that universities are recruiting an increasingly diverse body of students with different skills and backgrounds that do not conform to the traditional expectations of a school-leaving student with three A-levels. Conversely, the structures and processes in many UK universities are still tailored towards the profile of the traditional student. Vice chancellors recognise that the environment universities inhabit is changing. Increasingly they are thinking of how to create courses to match students changing interests and requirements. All this involves being more dynamic and responsive to the environment.

This background sketch of the wider pressures on universities throws one central question into sharp relief: **How can universities educate more students, for less money and still maintain and improve the quality of education?**

Since the Dearing Inquiry report (1997) pointed in the direction of the potential of communication and information technologies (C&IT), e-learning is now squarely on the political agenda for the future of higher education.

There are some problems with this picture however. As pointed out by Mayes (2000), there are two pedagogies commonly associated with C & IT. There is *delivery of information*, which is the "IT" bit, and there is a *tutorial dialogue*, which is the "C" bit. Of course successful teaching relies on both content and conversation, but the problem is that IT is cost-effective, C is not. Unfortunately, suggests Mayes, it is the C, that is pedagogically the more important component and is the bit that gets left out. A number of constructivist writers have expressed similar criticisms of educational technology that relies on delivery of information at the expense of conversation and reflection (Bopry, 2001; Laurillard, 1993; Scott, 2000). Indeed according to a constructivist perspective that is central to many cybernetic accounts of learning and knowing, a pedagogy based on information *delivery* is patently nonsensical (e.g. Kjellman, 2002).

So the question remains how can e-learning help universities educate more students, cheaper? In this paper we draw on work we have been conducting with the management cybernetics Viable System Model of Stafford Beer, (Beer, 1979, 1981, 1986) to address this question.

THE VIABLE SYSTEM MODEL

Here we can only give a very brief introduction to the main features of the Viable System Model (VSM). Comprehensive introductions to this subject are provided by Beer (op.cit.), Espejo and Harnden (1989), Espejo et al. (1996).

The VSM provides an elegant general cybernetic description of organisations. It is built upon two key insights. The first originates in Ashby's law of Requisite Variety, which is that for any control system the variety of the controller must match the variety of the controlled system. In the general case the controlled system (plant) will have more variety than the controller. Therefore the controller is faced with a problem, which can be overcome through designing the system in such a way that the controller's variety can be amplified (increased) and excess variety in the controlled system can be attenuated (reduced). Fortunately, the controller rarely has to deal with all the variety of the controlled system, as much of it is soaked-up by self-organisation of the plant. This is an important concept to which we shall return.

The second insight is that viable systems (i.e. those systems that can operate autonomously in their environment) both contain and are contained by viable systems with an identical general internal structure. This provides a powerful 'recursive' model of organisational systems which emphasises the dynamic regulation and interaction between the sub-systems of an organisation and the system as a whole.

The management of variety

The cybernetic goal of an organisation both in its operations and management is to maintain viability (i.e. to sustain an independent existence) and the means by which viability is attained is through the management of complexity (or variety in VSM terms⁵). An organisation intrinsically has less variety than the environment with which it interacts and the management structures of an organisation in turn have less variety than does the organisation. (See figure 3 below).

To manage variety, either managers need to attenuate (reduce) the variety of operations or must amplify their own variety, or some combination of the two. (Variety is the measure of complexity). In fact, this is what always does happen, according to the Law of Requisite Variety, which simply states that varieties MUST match between controller and controlled. However, HOW variety is managed affects the nature and success of the operation. A balance of amplification and attenuation of variety throughout the organisation needs to be achieved. A classic example of variety engineering based solely on attenuation is Taylorism (Hammer and Champy, 1993). This makes the system predictable and easily manageable, but at the cost of human unhappiness, loss of creativity, and a small product range leading to customer dissatisfaction. Keeping variety as high as possible, by increasing management options in how it handles operations, enabling self-organisation through autonomous working, and using flexible production is more likely to lead to success - but requires careful design. Information systems are crucial tools in helping manage variety at a high level, and integrated systems should be used to provide support throughout the organisation. In the modern age of the global economy, flexible organisations that can operate in high variety environments are more likely to succeed, giving weight to Beer's first principle of organisation:

“Managerial, operational and environmental varieties, diffusing throughout an organisation, tend to equate; they should be designed to do so with minimum damage to people and to cost.” (Beer 1986, p35)

⁵ Variety is a measurement of complexity originating in information theory. (Shannon and Weaver, 1949). It refers to the number of states of which a system is capable of attaining.

Hence, effective variety management involves amplifying the variety of the organisation to absorb as much of the variety of the environment as possible, whilst also attenuating excess variety inherent in the environment which the organisation is not capable of handling. The same relationship holds between an organisation and its management. It is a balancing act between potentially volatile dynamic systems that requires the management of an organisation to maintain a stable internal environment in the organisation (homeostasis) to prevent possibly catastrophic oscillations in the system and also to steer the organisation to respond and adapt to changes in the environment.

Figure 3 shows a model of the problem of managing complexity, known as the simple Viable System Model (VSM).

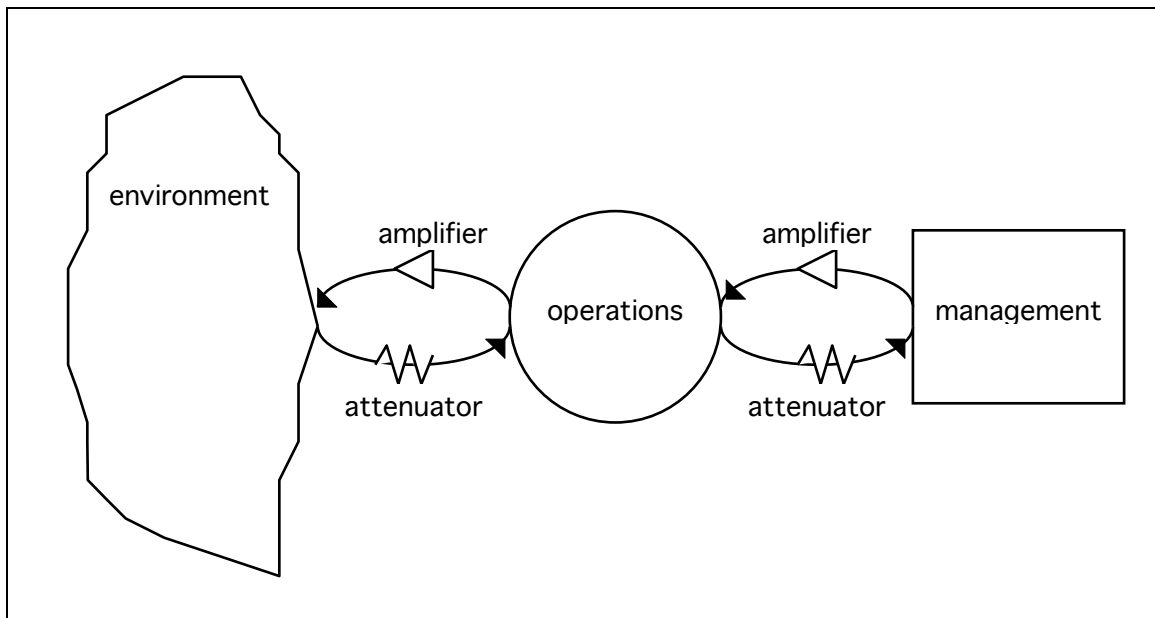


Figure 3: The Simple Viable System Model

Unfolding Complexity: Identifying Recursions

Unfolding the complexity of an organisation involves identifying the recursions of viable sub-systems within the organisation. A university can be seen as consisting of a number of departments, which could be in theory be spun off as separate institutes. In fact the processes of spinning off and incorporation or merger are frequent events in most businesses, as they struggle to gain some advantage, and depending on whether centralisation or decentralisation is in the ascendant. Beer's insight was that there is an optimal degree of autonomy, where the benefits of autonomy are balanced against the benefits of cohesion.

When considering which parts of an organisation are viable sub-systems and which are not, it is crucial to keep the identity in mind. Many organisation units are regulatory – administrative, service or managerial.

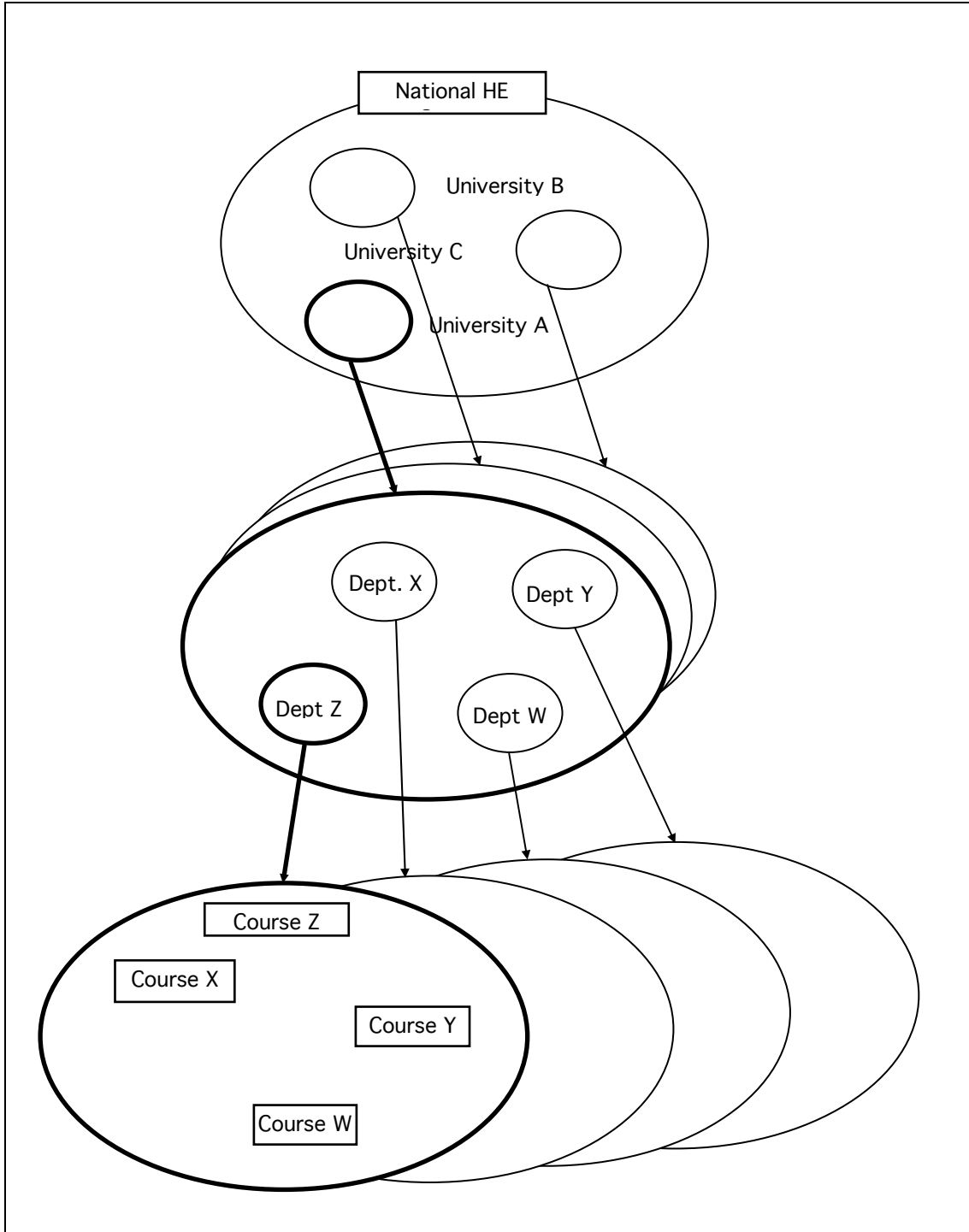


Figure 4: Recursion Diagram for a University

So, whereas a subject department can be seen as a viable sub-system, the finance department cannot. Of course it could also be spun off, but it would not be in the same business – accountancy firms do not teach nor do research.

The recursive process of identifying viable sub-systems continues in both directions. Sub-systems have sub-sub-systems and so on; and the organisation itself will be a sub-system of larger systems. These may have a formal structure, like a parent company; or they may be less formal, like an industry. This embedding of systems, each of which is potentially viable, is known as recursion. Figure 4 is an example recursion diagram for a university.

For the purposes of the current model we treat departments and modules as viable sub-systems for teaching and learning and we make the assumption that faculties may be thought of as organisational devices.⁶ We can therefore simplify our model by restricting it to 3 recursions. These are:

Recursion 1: The Institution

Recursion 2: The Department

Recursion 3: The Module / Course

Identifying the sub-systems for each recursion

Beer identifies five key sub-systems that must be in place for a system to operate effectively in its environment. Figure 3 shows the full VSM model with the different sub-systems labelled. Inside system 1 the same overall structure is replicated at the next level of recursion down.

The five systems are:

System 1: Implementation. This is the primary activity of the organisation. The primary activity plays a large part in defining the identity of the organisation. 'An organisation is what it does' (Beer, 1986). In the case of a university, the primary activities are explicitly declared to be teaching, research and service. (Birnbbaum, 1988).⁷ The weighting of these activities depends on the particular institution. In the case of e-learning we are most interested in the teaching activities of universities.

The system 1 for any viable system is at the centre of its recursive structure as it will contain the viable system at the next recursion down. In universities, departments are generally responsible for teaching and learning activities

System 2: Coordination. Strictly speaking this is a regulatory function that dampens oscillation between the sub-systems and ensures that they work synergistically especially with respect to shared resources such as physical space. System 2 functions typically provide communication channels between management, support units and sub-systems. Other functions are mechanisms for coordination such as timetables, a particularly important system 2 mechanism in universities. This an important growing area for IT systems.

⁶ Evidence to back up this assumption is provided by Bolton institute, which has recently decided to get rid off faculties as they were deemed a functionally inert management layer in a recent review.

⁷ There are many other ways of constructing the primary activity of an organisation other than the explicit one. This can lead to interesting and fruitful alternative conceptualisations of an organisations identity. A police force, for example, may be viewed as a 'body for public protection' or 'a body for public oppression'. The different statements about identity provide different constraints on the specifics of system modelling.

System 3: Control. This is the function that is responsible for the day to day management of the internal environment of the system. There is a channel for resource negotiation with systems 1. In universities there is a loose relationship between management and departments. Departments are closely connected to their own environments. Birnbaum (1988) suggests this is good cybernetic design for universities. There is an additional vertical channel which allows for monitoring of the 'health' of subsystems.

System 4: Strategy. This is the function responsible for adaptation of the system to changes in the environment. In universities the system 4 function is played by senior management bodies/personnel that have good links outside the university and a role in institutional decision-making. As a general design principle there need to be strong communication channels between systems 3 and 4. This is especially true for the implementation of e-learning.

System 5: Policy. System 5 provides closure to the organisational system and a mechanism for absorbing any residual variety left-over from the interactions between systems 3 and 4.

The entire prototypical VSM is shown in figure 5 below:

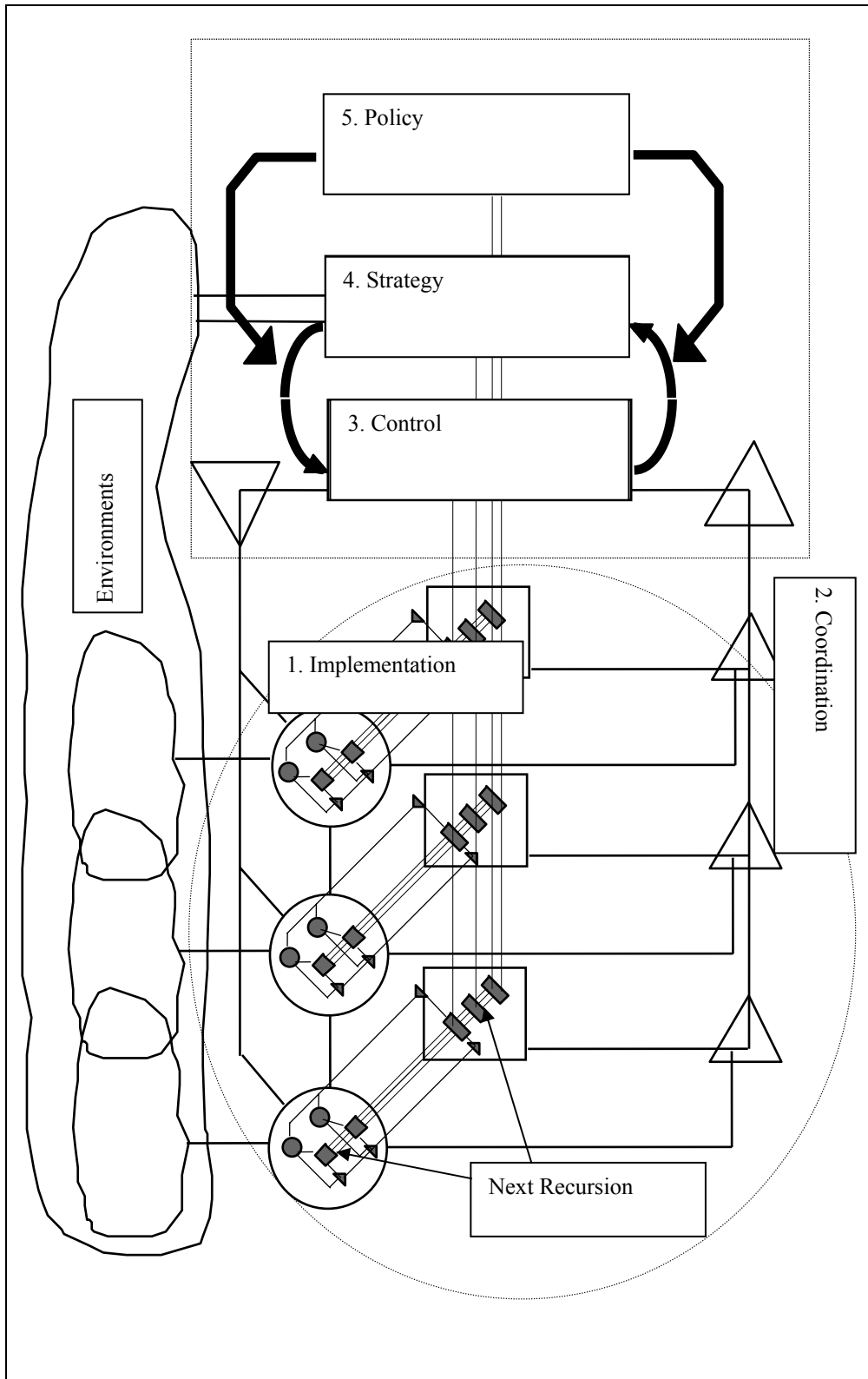


Figure 5. The Viable System Model

A reinterpretation of the problem facing universities in terms of variety management.

How is variety management manifest in an educational institution such as a university? The education system is involved in variety management tasks at several levels. For example, in order to reduce the complexity inherent in any academic area of study departments create programmes of study which consist of a structured set of content and

activities to guide the student progressively through what would otherwise be a bewildering mass of information. The division of knowledge into subjects, courses, modules and topics represents an

attempt to attenuate excess environmental variety. Teachers also attempt to amplify the students' variety sufficiently to be able to graduate from the course and be able to operate independently in the domain. In theory, the graduate student should then be able to handle the complexity inherent in the domain having acquired the necessary skills, knowledge base, conceptual distinctions and specialist discourse.

Now let us view, for the sake of this example, the lecturer as the manager of the course or module the student is engaged upon. If there is only one student on the course, and it is the only course the lecturer teaches, the lecturer has no difficulty in matching the variety of the student as there is a one-to-one relationship between two systems of similar complexity. However as the number of students in a class increases and the lecturer has to manage multiple classes, a variety imbalance occurs and the lecturer has insufficient variety to handle the complexity of the students. Let us use a notional property of 'mental states' as the dimension of variety management here and let us say conservatively that a lecturer manages 100 students. However many mental states the lecturer is capable of generating, then even accounting for duplication of mental states amongst the students their total variety will be far greater than the lecturer can match.

Thus to achieve requisite variety in both the course and the lecturer, the educational system must employ techniques and tools for variety management – amplifying and attenuating variety as required. The lecture is a classic example of a tool for attenuating the variety of a group of students such that it is manageable by a single lecturer. It involves treating all the students essentially as if they were a single student. By providing very limited opportunity for the lecturer to engage with the variety of conceptions (and misconceptions) generated by the students, the one-to-one variety relationship is restored. The downside of this is that can be argued (e.g. Laurillard, 1993; Britain and Liber, 1999) that the lecture is a poor educational tool precisely because it doesn't provide a mechanism for the lecturer to understand the students' conceptions. In other words there is over-attenuation of the variety in the student body and under-amplification of lecturer variety.

To return to our initial question in its new form, how can the university achieve better variety management with limited resources of money and time ?

C&IT is a powerful variety management tool. From this perspective VLEs can be viewed as ways of managing variety in universities to meet the demands of a changing environment, in much the same way as books, libraries, cataloguing systems, computers, student records systems. A VLE can be thought of as primarily a tool for managing the variety involved in teaching and learning. But this is only one level of university operation in which variety needs to be managed for the whole organisation to be viable. There are several layers of organisational structure and management in a university and variety dissipates freely across layers. Modules are managed by departments, which are managed by faculties, which are managed by senior committees and so on. At each recursive layer the management needs to be given requisite variety to effectively control their sub-system. According to the cybernetic framework control is the outcome of systemic self-regulation and effective communications. (Espejo et al., 1996)

It is a fair bet that the designers of commercial VLEs and MIS products will typically have not designed their systems with any explicit notion of variety management in mind. In fact software designers of educational technology design their software with a model (that is often implicit) of

what education involves. Thus the locus of control of pedagogy is removed a step from the teacher to the software designer. It is important to be aware of such shifts in emphasis. Bopry (2001) cites Johnson and Taylor (1991) in noting that a 300 year old tradition of letting first the teacher and then the designer take responsibility for learning has left us with students who think learning is something that someone else does for you.

In conclusion to this paper, we consider insights gained from the VSM modelling process in relation to the design of virtual and managed learning environments and the organisational change implications for universities.

Cybernetic principles for the design of virtual and managed learning environments

1. Employ techniques and tools to amplify variety within the operations (teaching and learning).

In the view of many in the field of educational technology, high variety interaction is a hallmark of good quality university teaching, (Laurillard, 1993; Bopry, 2001; Scott, 2000). In other words whatever complexity is thrown at the system by the environment in terms of either student learning demands or new ground-breaking research published elsewhere, the department can absorb the variety through the depth and breadth of knowledge and experience in the academic discipline of the lecturing staff. Departments typically have strong connections to their environments.

One of the criticisms that has been levelled at university teaching in recent years (Laurillard, 1993) is that, in the face of increasing numbers of students and diversity of students when combined with funding shortages and staff cuts, universities have failed to maintain high variety teaching. Laurillard cites over-reliance on the lecture (a low-variety method) as a case in point. E-learning using a VLE or other learning management tools offers the possibility of restoring high-variety pedagogies to departments and modules with high student-lecturer ratios by providing for flexible learning and self-organisation amongst the student body (Britain and Liber, 1999).

2. An alternative coordinatory framework

The timetable is a coordinatory (system 2) device that operates across all recursions of university operation because of the constraints on physical space. The timetable is also a variety attenuator as it prevents cross-fertilisation and inter-disciplinarity in module choices for students. E-learning offers the opportunity for both cross-department course programmes and cross-module sharing of learning resources by freeing learning activities from the tyranny of the timetable. However, in order for this to happen an alternative coordinatory framework needs to be established in the organisation. This is difficult as it will require cross-service cooperation both within and between recursions. Technical and pedagogical support using e-learning tools often does not reach from central services down to departments. Support provided by a coordinatory framework consisting of staff development and technical support at all levels of recursion is required.

3. More than one VLE for the institution

Different departments and academic disciplines have different demands and that a single institutional VLE may not provide sufficient variety to enable different departments to work in the way they require. There are many examples in the UK where universities have adopted a commercial VLE and developed at least one other home-grown solution too. Currently at University of Wales - Bangor there are several different tools being used to support pockets of e-learning even though an

'institutional' system is currently under consideration. It remains to be seen whether departments and individual lecturers will migrate to the institutional system.

4. Maximise opportunities for self-organisation

Providing the opportunity for self-organisation is the key to maintaining high-variety conversations in an electronic environment. According to Bopry (2001) quoting Varela (1992), the design of learning environments should afford:

- access to communities of practice
- opportunities to create communities of practice
- an environment rich enough to afford problem setting as well as problem solving

These requirements suggest that learners should be able to construct their own learning activities and create their own communities as part of their ability to self-organise. Few commercial Virtual Learning Environments promote self organisation of learners.

5. Design for Redundancy

A feature of the physical learning environment of universities is that there are many possible spaces and places where a conversation may strike up or a spontaneous gathering may occur. This is a variation on the 'watercooler' idea in the design of office spaces. Software designers of VLEs tend to attempt to design for simplicity and efficiency, which means labelling and designating 'areas' for a particular purpose. In software that is intended as an 'environment', this may have the opposite effect of inhibiting conversations and creativity.

Organisational change issues for UK universities in implementing e-learning

6. Establishing an Identity

At system 5 level the university needs to establish its identity with respect to e-learning. This means developing a rich model of the organisation in the interaction between systems 3 and 4, so that the why and how questions can be addressed.

7. Strategy and management

This is the interplay between the institution as it currently is (system 3) and the institution as it will be in the future (system 4). In times of environmental stability system 3 can become the dominant force in the 3-4 homeostat as Beer calls it. This can be problematic if the environmental demands on the organisation begin to rapidly change. This models the current situation for traditional universities.

One very clear way in which the VSM for a university differs from a prototypical VSM diagram is that there is a split between governance structures and management structures for systems 3, 4 and 5. See diagram 6 below.

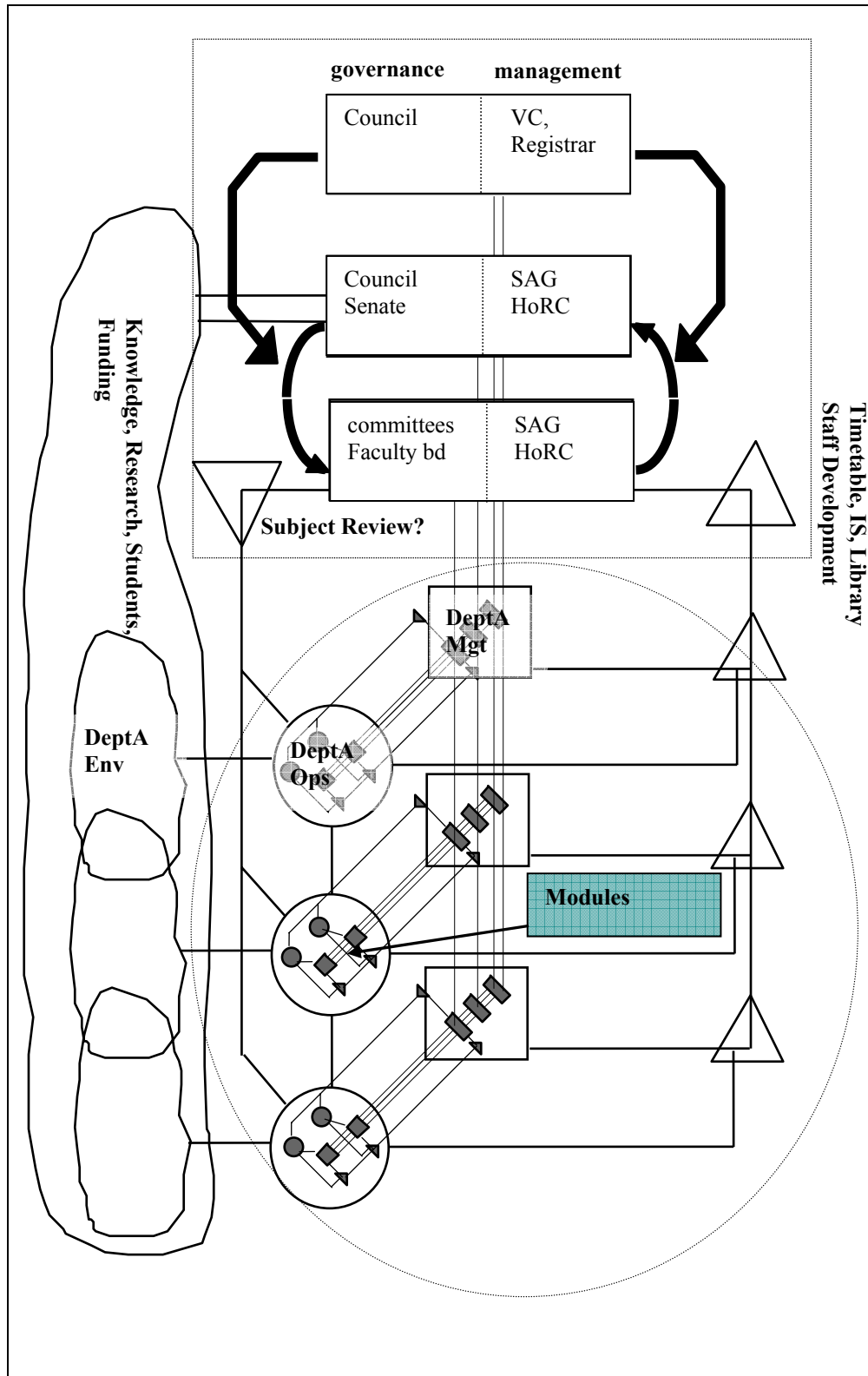


Figure 6: A Viable System for a University at recursion 1

Key to figure: VC = Vice Chancellor, SAG = Strategic Advisory Group, HoRC = Heads of Resource Centres.

This is the "unique dualism in organizational structure" referred to by Corson (1960) on the subject of university administration, cited in Birnbaum, (1988). There are different roles, responsibilities and power structures for management and governance. Perhaps this is why a group of business consultants complained, following an audit of Cambridge University, that its academic structure and system of governance was 'protean' in nature and could not be captured by their organisational models (Pollock and Cornford, 2002). There are no such problems for the VSM, although it is important to take note of the effects of these dual controls in the model. As one Head of Resource Centre put it "This is where much of the complexity lies and to omit it would be to fail to understand the nature of the institution".

8. Mechanisms for dealing with problem of 'coordination of coordination'

Maturana's term "the coordination of coordination" with reference to languaging is of relevance here. The coordination structures that have developed to support the university in its traditional environment have grown into separate cultures. To implement e-learning a new coordination of coordination is required. No longer can application support, network support, subject librarians and staff development remain independent of each other, these roles need to coordinate and penetrate downwards into departments.

Conclusions

In this paper we have outlined some of the ways in which a cybernetic modelling approach using the VSM can elucidate some of the organisational issues in the design and implementation of environments for e-learning in UK universities.

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INSIDER CODING: CONGRUENCE IN THE THEORIES OF LUHMANN AND MILLER¹

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ABSTRACT

The insider-outsider dichotomy, in both its covert and overt forms, is prevalent in much of social-systems theory. Yet, in spite of the problems inherent in this ubiquitous dichotomy, there is inexplicably a paucity of careful analysis that attempts to deal with both the logical and empirical problems of the insider-outsider distinction. Fortunately, hope for resolving some of the problems with this troublesome dichotomy can be found in the coding analyses of Miller and Luhmann. This paper seeks to explicate these two theories, and then integrate them in a manner that will lend insights into the resolution of some of the problems posed by the insider-outsider distinction. Specifically, the paper shows that while second-order sociocybernetics does not resolve insider-outsider problems, third-order sociocybernetics can do so through the adoption of a second external observer.

INTRODUCTION

The argument can be made that while the insider/outsider dichotomy is one of the basic dichotomies in social research, it remains logically unsound, and has not been properly analyzed. A dichotomy that is so widely used should be examined in detail to ensure that its logical foundation is sound, before it is centrally incorporated into social-systems theory. Unfortunately, this comprehensive analysis is thoroughly lacking for the insider/outsider distinction. The result, unfortunately, is that this dichotomy fails the two most basic tests for classificatory adequacy. These interrelated tests for adequacy can be administered in two forms—a weaker synchronic form, and a stronger diachronic form.

In the weak form, a classification must be simultaneously mutually exclusive and exhaustive, meaning that there is a cell (but only one) for every empirical specimen (Bailey, 1994a). Unfortunately, it can easily be documented that the weak test for mutual exclusiveness has already been broken. As one example of an instance where the weak test was broken, Merton (1972) defined an insider researcher as one with inside knowledge. Thus, he considered a black researcher to be an insider when studying a black sample. This characterization was quickly challenged by critics, who claimed that the insider/outsider distinction is based on power (see Williams and Sjoberg, 1993).

¹ Revised and expanded version of a paper presented at the ISA RC51 Fourth Conference on Sociocybernetics, Corfu, Greece, July, 2003.

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They said that since black researchers were relatively powerless, they must be classified as outsiders (see Collilns, 1986, 1990; Williams and Sjoberg, 1993; Bailey, 1994b).

For example, Williams and Sjoberg (1993) stated that regarding Merton's example of a black researcher, the correct label for this researcher was not that of "insider" as Merton claimed, nor was it an "outsider within" as claimed by Collins (1986). Rather, Williams and Sjoberg (1993, p. 162) claim that the correct term for Merton's black researcher is "outsider insider". The question for future research is, how can a casual student of research methods distinguish an "outsider insider" from an "insider outsider", or for that matter, from an "outsider within"? Further, how can such logically contradictory labels be successfully applied in actual research? The need to resort to such logical contradictions is procedurally untenable in empirical research, and clearly shows that the insider/outsider dichotomy lacks minimal research adequacy.

The stronger diachronic test also easily shows the inadequacy of the dichotomy. A major problem diachronically is that an insider at one point in time (when his or her group is being studied), quickly becomes an outsider at another point in time, when the research project switches its focus to another group. For example, if I am conducting a study of professors in Los Angeles, I am an insider. However, if my next research project the next year is a study of physicians in New York City, than I become an outsider. The reality is that the insider/outsider dichotomy is a subjective indexical. That is, it is almost totally context specific, and cannot be defined without a clear empirical referent (see Bailey, 1994b). Further, this apparent dichotomy is in reality basically a single-cell classification, meaning that only one cell (the insider) has a clear empirical referent. The outsider is not clearly specified, but is merely a residual category comprising all non-insiders. As such, it can be so heterogeneous as to be both theoretically meaningless, and virtually impossible to apply in research.

All of this discussion might be dismissed as mere analytical rhetoric if the insider/outsider dichotomy were not so central in social-systems theory. In reality, it is perhaps no exaggeration to say that scuttling the insider/outsider classification could ultimately result in scuttling second-order sociocybernetics as well, since the whole notion of second-order sociocybernetics centers around the idea of the external observer (outsider) observing the social system observing itself (Geyer, 1995). If the existence of the outsider as an external observer cannot be firmly established, then the whole notion of second-order sociocybernetics is vulnerable.

Furthermore, even if we can assume the existence of an outsider observer who is analytically distinct from an insider observer, how are we to deal with the fact that since the outsider category is residual, we cannot assume homogeneity in the notion of "observer"? Specifically, what assurance do we have that the outside observer has a different viewpoint than the insider observer, or that two or more outsider observers have the same viewpoint? More specifically, how can we assume that outsider observer 1 and outsider observer 2 have the same vantage points, as they may be extremely different from each other in age, race, religion, language, gender, and national origin? The implicit or latent assumption of a homogeneous pool of outsider observers becomes increasingly untenable over time, as societal pluralism increases.

Although this summary has not dealt with all of the problems inherent in the insider/outsider dichotomy, it suffices to demonstrate that the dichotomy is a troubled one. For further discussion of the insider/outsider distinction, please see Bailey (1994b, Bailey, 2001). Sociocyberneticists should not continue to use this dichotomy, unless further analysis is done to shore up both the dichotomy's logical and empirical adequacy, including the heterogeneous residual nature of the outsider (observer) designation.

The needed analysis can be facilitated by exploring the seminal work of both Niklas Luhmann and James Grier Miller. Both have worked extensively on the problem of insider coding. These two approaches are very different, but fortunately are also very compatible and congruent. This paper will combine these two approaches in an attempt to strengthen the critical insider/outsider dichotomy, and to make it more useful in sociocybernetics.

Of particular interest in Miller's approach are his concepts of the internal encoder and decoder, as well as the channel and net, decider, input transducer and output transducer. Of particular interest in Luhmann's approach are his general discussion of the role of binary coding in the social system, as well as his discussion of the problems of tautology and paradox that originate with binary coding, and how these can be resolved. These two approaches can be combined to offer new insights into the vexing conundrum posed by the insider/outsider distinction.

The purpose of the present paper is to integrate the approaches of Miller and Luhmann to offer new insights regarding the processing of information in social systems, and the boundary problems of insider-outsider systems in particular. To this point, the literature on the insider/outsider problem has unfortunately totally neglected any analysis of coding procedures. Fortunately, the analysis of Miller and Luhmann's coding strategies as presented below will help to rectify this neglect. I will begin with the older approach presented by Miller, and then turn to the more recent approach presented by Luhmann.

MILLER'S LIVING SYSTEMS THEORY

Miller's (1978) Living Systems Theory (LST) is the culmination of a group project began in 1952. The basic structure of LST was presented in Miller (1978), but was expanded in Miller and Miller (1992). In its final form, the model presents 20 "critical subsystems" that operate for each living system. These systems are said to exist at eight levels: the cell, organ, organism, group, organization, community, society, and supranational system. The 20 critical subsystems are termed critical because they are said to be necessary for the functioning of the system. Although Miller does not pose his theory in terms of functionalism, each of the subsystems are seen to be functions or processes that must be provided for successful system continuance. However, there is a bit of confusion, as the examples that are often provided for a given subsystem are really not examples of the subsystem, but of components that fulfill the given function (Miller, 1978).

The 20 subsystems are classified by whether they process matter-energy or information. Two subsystems are said to process both matter-energy and information. These are the boundary and the reproducer. Another eight subsystems are said to process matter-energy only. These are the ingestor, distributor, converter, producer, matter-energy storage subsystem, extruder, motor, and supporter. Together, these eight subsystems bring matter-energy into the system (the ingestor), move it internally and prepare it for use by the system, and then eliminate waste products from the system (the extruder). The two matter-energy subsystems that deal most directly with outsiders are the ingestor and the extruder. Specifically, insiders may take energy from the outside system (the environment) through the ingestor, while simultaneously disposing of the system's wastes into the outside system (the environment) via the extruder.

The remaining 10 subsystems are said to process information only, and thus are the central interest of the present paper. These are the input transducer, the internal transducer, the channel and net, the decoder, the associator, the memory, the decider, the timer, the encoder, and the output transducer. The input transducer and the decoder work in tandem to bring information into the insider system from outside. The "outside" may be expressed in various terms such as an outsider group, environment, external world, public world, etc.

Note that the type of information brought into the system by the internal transducer and the decoder may vary widely. It might be “neutral” information that has no particular insider-outsider or private-public connotation. Such information may already be in a form that is immediately usable by the inside group, and thus may require little or no decoding or processing. On the other hand, the information being brought in could be “proprietary”, “private”, “classified”, “confidential”, or “insider” information for another group. This information might be encrypted in such a sophisticated fashion (e.g., 512-bit encryption instead of the standard 128-bit encryption) that it is difficult to decode or see successfully within the system.

The difference between the input transducer and the decoder may not be clear at first glance. The decoder alters the code from a public code (outsider code) to a private code (insider code). At this point one might ask, what more is there for the input transducer to do, once the information has already been coded? As described by Miller, the input transducer really seems to be dealing with matter-energy more than with information. Miller says that the input transducer brings a marker bearing information into the system, and then changes it into some other matter-energy form that is suitable for transmission within the system (Miller, 1978). In Miller’s (1978) terms, a “marker” is some matter-energy entity that can carry information. An example of input transducing would be to receive a document in the mail (paper marker), and transduce it by scanning in into the hard drive of your computer.

Unfortunately the relationship between coding and transducing is not always clear. Theoretically, one could transduce the document into a computer diskette by either scanning or keyboarding the information, or could read the document onto an audio cassette, without doing any re-coding. However, some alterations or clarifications in the data might be technically necessary, and this could be considered a form of coding. Also, errors or omissions could occur, leading to information loss, which could also be considered a type of coding. Very often transducing and coding are done together. For example, if I wish to transduce an outsider document into my computer memory by keyboarding the information, I might simultaneously recode the outsider terminology into the insider jargon that is currently used by my insider system.

The very terminology of decoder and encoder that Miller uses unfortunately reflects the confusion of the insider-outsider dichotomy. In reality we can do both decoding and encoding at both the point of incoming information processing and outgoing information processing. Whether one is decoding or encoding depends upon whether one is recoding from insider information to outsider information or not. From one perspective, “decoding” can be defined as the process or recoding data from insider information to outsider information. In this view, “encoding” is then the process of recoding from outsider information to insider information. Thus, the input process of recoding outside information into insider information would be called encoding, while the output process of recoding insider (private or confidential) information into outsider (public) information would be called decoding. Here, the insider group is consistently the reference group, generally the group that holds power (the dominant group). This might seem to be the logical way to proceed from the standpoint of Miller’s (1978) Living Systems Theory, as all of the 20 critical subsystems refer to internal (insider) processes, not to outsider processes. However, Miller (1978) takes the opposite view. He reverses the terms, using “decoder” to refer to the recoding of information from outside (public information) to insider (private) information, and “encoder” to refer to the recoding of insider or private information for use by outsiders (the public). In reality, the situation is even more complex than it might appear, as one can do both encoding and decoding of input information, and also can perform both encoding and decoding of output information.

To illustrate the situation in terms of second-order sociocybernetics, assume that we have a system containing a person who is in charge of internal coding, and an outside observer, who is observing the system observing itself (in sociocybernetics terms). We will adopt Miller's terminology for decoding and encoding. Assume that an external message is written somewhere in the vicinity of the external sociocybernetic observer. It then enters the system as "input", where the person in charge of coding classifies it as "externally coded", and thus not understandable to internal members of the system. Thus, it must be "decoded", so as to be made understandable, and useful within the system. Later, when a reply to the external environment is needed, the reply will have to be "encoded", and sent out externally as "output".

But from the standpoint of second-order sociocybernetics, something quite different has occurred. The message, which was not in "code" at all before entering the system, (but was in perfectly intelligible language from the external perspective), was input into the system, and was then "encoded" by system members into some internal system code. However, in this form it remained unintelligible to the external "outsider" observer, until it was once again "decoded" before being "output" into the external environment where the observer resides. Thus, what is "decoding" to the insider is "encoding" to the outsider, while "encoding" to the insider is "decoding" to the outsider.

The question for sociocybernetics is, what exactly has been gained in second-order sociocybernetics by having the vantage point of the external observer? The external observer can observe the system observing itself. But what the system calls "decoding" is the same process that will be reported by the external observer as "encoding" (and vice versa). The end result seems to be not the hoped-for improved analysis of reality, but rather two separate (and somewhat discordant) views of the same reality.

THIRD-ORDER SOCIOCYBERNETICS

The remaining problem is that even with the second-order external observer, only a portion of the coding process is being analyzed by the two parts of the analytic process—first-order sociocybernetics and second-order sociocybernetics. The solution is to extend the sociocybernetic analysis still further to third-order sociocybernetics. Third-order sociocybernetics entails using a second external observer to observe the first external observer in the process of observing the system observing itself. From the standpoint of second-order sociocybernetics, it appeared that what the internal-system members called decoding was called encoding by the outsider observer. Conversely, what the insiders called encoding was decoding to the outsider. This constituted a sort of an analytical stalemate, which was not useful in understanding the coding process in social systems.

Third-order sociocybernetics reveals that in every coding process, there are two separate coding operations, rather than just one operation that is being labeled differently by insiders and outsiders. Thus, when a message is brought into the system by the input transducer, it is first decoded out of its outsider language, and then encoded into insider language. Conversely, the output transducer first must decode the message out of insider language, and then encode it into outsider language. What really happens is the same whether the process is an input process or an output process. In either case there are two stages, the first is the decoding stage, followed by the encoding stage. That is, the old message first must be decoded, and then the new message must be encoded. This must occur whether one is using the input transducer, and thus converting from an outsider code to an insider code, or conversely, whether one is converting from an insider code to an outsider code.

Thus, it is not a matter of an insider wrongly labeling an encoding operation as decoding, or an outsider wrongly labeling a decoding operation as encoding. In reality, they both were correct,

but were referring to different processes. In Miller's terms, it is not wrong to say that the input transducer decodes and the output transducer encodes, but it just does not provide the complete picture. The proper way to describe what goes on with the input transducer and output transducer is to say that the input transducer decodes (from outsider code) and then encodes (into insider code), while the output transducer also first decodes (from insider code) and then encodes (into outsider code).

From the standpoint of sociocybernetics, both the first-order and the second order accounts are correct as far as they go, but neither is complete. Only the third-order sociocybernetic description of the coding processes across the boundaries of a social system (both the input process and the output process) is complete and adequate.

We can illustrate the complexity of the issues, and the role of the insider-outsider dichotomy, by examining the case of the Navajo language radio transmissions used by the United States Marines in World War II. The Japanese military forces needed to translate Navajo into Japanese. The ideal ultimate goal would be to both decode and transduce. The first goal would be to transduce spoken Navajo into written Navajo. This proved impossible, because Navajo was solely an unwritten language. If this could have been done, it would have been easier for Japanese cryptographers first to decode it (for example, into written English), and then to encode it into written Japanese.

Since this was impossible, it was necessary to find a Navajo person that could also speak Japanese, and so could decode from Navajo, and encode either into spoken Japanese (or both encode and transduce into written Japanese). Since the Navajo tribe was such a pure "insider" group as far as the Japanese were concerned, there apparently was not a single Navajo living in Japan that could speak Japanese. One Navajo army soldier was captured by the Japanese and ordered to break the code, but could not do so. Thus, the Navajo code was never decoded during the entire war. The Japanese did not face the typical problem of recoding from public to private language. Rather, they faced the problem of decoding from one of the most "inside" of insider groups—the Navajo—and were ultimately unsuccessful.

Unfortunately, in addition to the basic insider-outsider dichotomy, there are a whole host of unsatisfactory dichotomies such as encoder-decoder, which are very difficult to use successfully and consistently. The potential for confusion unfortunately is compounded by the fact that the insider-outsider dichotomy is used in conjunction with a plethora of related (and sometimes ill defined) dichotomies such as private-public (used by Miller), internal-external, system-environment, proprietary-nonproprietary, confidential-not confidential, classified-unclassified, copyrighted-public domain, etc. Consider the widely used private-public dichotomy. Most readers would likely equate private with insider and public with outsider. The connotation of the public code is that (unlike the private code), the public code is accessible to all. In reality, this can be misleading, and requires clarification.

Consider two companies listed on the United States stock market, RSA Security (RSAS), and Yahoo. The former sells Internet encryption services, while the latter is a famous Internet search engine and portal. Both are financially successful, and information on the business model and financial health of both companies is available to the "public" on the Internet, without charge. However, Yahoo stock sells for a much higher price than RSAS. My hypothesis is that investors bid up the price of companies with easily understandable and familiar products such as Yahoo. Even though the information on RSAS is equally "public", it is apparently not accessible to many investors simply because they do not have the expertise to understand either the technical product jargon, or the complex accounting information, or both.

While both of these companies are technically public, the so-called “public” information is not equally accessible, with the result that RSAS is de facto much more of an “insider” stock than Yahoo is. This is not because the public is restricted from access to RSAS, but simply because the information is too technical for many people. The difference in the public nature of these two companies is reflected (at least partially) in the cost of their stock, as measured by the familiar price/earnings ratio (PE) of each company. While both companies are profitable, at the time of this writing, RSAS sold for a comparatively low PE of 49, while Yahoo had a PE of 125.

LUHMANN’S BINARY-CODING THEORY

We have seen to this point that the whole notion of insider-outsider information processing is not as simple as it might seem in LST, but encompasses a whole host of confusing dichotomies such as input transducer/output transducer, decoder/encoder, private/public, etc. The source of much (but not all) of this confusion lies in the stipulation of the internal-external boundary. In order to shed light on this problem, we turn now to the binary coding analysis of Luhmann (1989). Although Luhmann’s binary coding analysis is technically a part of his larger theory of communication, it is more abstract and arcane than the larger theory. As a result, it is not well understood, and in my opinion it remains unfinished. However, as abstract as it is, the role of binary coding in the insider-outsider dichotomy is crucial, and is ignored only at our peril.

Ideally, the entire insider-outsider anomaly could be avoided by merely focusing solely upon the internals of one system (the insider system), and neglecting the outside system. Indeed this is what was done in early social-systems analysis. If one looks, for example, at the work of Parsons (1951), and Miller (1978), most of the emphasis is on system internals (the insider system). The outside of the system is usually defined residually (as everything not in the system), and is usually referred to as the “environment”. The whole notion of focusing primarily on the insider system and defining the environment residually is itself problematic, as the “environment” of the systems theorist is not the environment of the ecologist (see Bailey, 1990, 1994c). In reality, a focus on internals (the insider system) is an analytical simplification that cannot be maintained.

There are at least two reasons that we cannot focus only on system internals. One reason, of course, is that since the social system is an open system, it must continually exchange matter, energy, and information with the external (outsider) world, and thus this outside world must be a part of our analysis. A second reason that we cannot limit our analysis to system internals is a logical reason. This is because the practice of defining a system entirely in terms of itself leads to the problem of tautology, as noted by Luhmann (1989, p 37).

I can define a social system as an interacting group of members. In response to the question of how one can tell if a person is a member, I reply that a member is a person that belongs to the group. When asked how I can tell if a person belongs to the group, I reply that a person belongs to the group if he or she is a member. Thus, the definition of a unitary system solely in terms of itself is clearly tautological, as Luhmann (1989, p. 37) recognizes. Luhmann (1989, p. 37) also seems to imply (at least in the English translation) that paradox is also a problem for a unitarily defined system, but I think that paradox is much less of a fundamental problem for a self-defined system than is tautology.

Fortunately, the problem of tautology is easily removed by resorting to binary coding. Here, the social group is now defined in terms of whether one is a member or insider (for example, a scientist), coded “1”, or a nonmember or outsider (nonscientist) coded “0”. The key to removing tautology is to define the system not only terms of what it is, but also by contrasting it to what it is not. Thus, as one example, science does not define itself tautologically in terms of what it is, but

depends heavily on defining what it is not, by contrasting itself with the patently unscientific. Therefore, if I am having difficulty determining what makes astronomy a science, I can clarify the notion of science by comparing astronomy with an unscientific approach to the study of the stars (astrology).

I agree with Luhmann (1989, p. 37) that the use of binary codes and dichotomies, as in the insider-outsider dichotomy, removes the problem of tautology. To say that an astronomer is different than an astrologer is not a tautology. However, I do not agree with Luhmann that binary coding removes the problem of paradox. On the contrary, I think it tends to introduce it.

To Luhmann (1989, p. 36), the chief function of a binary code, when used in an important social institution (“differentiated function system” in Luhmann’s terms), is that the code “claims universal validity, and excludes further possibilities”. Thus, from the perspective of second-order observation (Luhmann, 1989, p. 37), the former tautology is removed, as a scientist is not being defined solely in terms of being a scientist, but in addition the scientist is being defined in contrast to what he or she is *not*, (a nonscientist).

However, Luhmann (1989, p. 37), states further that, “As one can see, from the standpoint of a second-order cybernetics, i.e., from the observing of observations, every binary code resolves tautologies *and paradoxes* for the system that operates with this code” (emphasis added). I think the claim that binary coding resolves the problem of tautology is very defensible. The claim that binary coding resolves paradoxes is more problematic, and I would not attempt to defend it universally, without some clarification. In fact, I think that any critic who charges that binary coding *introduces* paradox (instead of removing it) may have a strong argument. I consider the statement that “a scientist is someone who is not a nonscientist” to represent a clear paradox, and not a resolution of paradox (although it is clearly a resolution of tautology).

Unfortunately, a researcher seeking a simple solution to this conundrum by reading Luhmann might easily conclude that Luhmann answers the question about paradox resolution through paradox introduction. That is, reading further, we encounter an apparently paradoxical statement (Luhmann, 1989, p 39): “Codes, as mentioned already, *resolve the paradox* inherent in the problematic underlying every self-referential relation. Yet every coding leads to the problem of applying the code to itself and thereby, sometimes, to a paradox” (emphasis in the original). Thus, Luhmann tells us in the same sentence that coding both can resolve a paradox and produce a paradox. The statement in itself is a classic paradox.

Luhmann (1989, pp. 40-50) distinguishes between coding and programming, with the latter being the criteria for correct operation of the code. For example, if the code is legal/illegal, the program could be the pursuit of justice through valid legal norms (Luhmann, 1989, p. 48). Programming is significant for Luhmann because, along with binary coding, it facilitates the simultaneous closed/open nature of the autopoietic social system. Unfortunately, programming does not resolve the issue of paradox in coding.

Luhmann’s claim (Luhmann, 1989, p. 37) that binary coding resolves paradox is only true in a limited number of cases. This statement is true for cases where there is little internal variance within each class of the dichotomy, and much between-class variance. Thus, paradox can be removed for a dichotomy like male-female, which generally demonstrates little overlap, and has little within-class variation. Thus, the binary coding of sex (“1” if female, “0” if not [if male]), suffices to remove both tautology and paradox. The program of mutually exclusive and exhaustive assignment of cases is relatively easily achieved in this example.

However, paradox is not removed when one class of the dichotomy has a high degree of internal variation, which is usually the case in dichotomies where one of the classes is residually

defined, such as insider-outsider, scientific-unscientific, or even (unfortunately), system-environment. Usually in such cases, the class of interest (such as “insider” or “science” or “system”) is well defined, while all other possible entities are poorly defined (or even are undefined) and are thrown into a residual “other” category, such as “outsider” or “unscientific” or “environment”.

Often this residual category is not well defined, and functions as a “garbage” category that is likely to include an eclectic congeries of strange and assorted entities. In such cases, (which unfortunately are all too familiar in contemporary social-systems theory), the paradox remains alive and well, and can only be resolved by relinquishing the dichotomy in favor of a multi-cell, nominal or ordinal classification, or a continuum. The respective cells of the multi-cell classification can still be binary coded if desired, as in the familiar practice of “dummy variable analysis”.

As an example of how paradox can be removed by dividing the residual category of a dichotomy into a series of subcategories, consider Miller’s (1978) dichotomy of private and public information. The “private” category refers to information that is only accessible internally to “insider” members within a given system. The “public” category refers to all information that is not private (this is essentially all external information existing outside of the system boundaries).

The reality is that while this residual category of “public” is said to consist of information that is available to all individuals, the category actually contains a rather wide variety of information that exhibits varying degrees of openness. That is, some of the “public” information is open so some persons and not others, while other public information is “open” if certain restrictions or conditions are met, or if the potential users of the information have certain credentials. Thus, we might revise the “public” category by dividing it into four subcategories—“professional public”, “military public”, “freedom of information act public”, and “unrestricted public”. The former dichotomy is now a

five-category nominal variable consisting of the categories of “private”, “professional public”, “military public”, “freedom of information act public”, and “unrestricted public”. Now both tautology and paradox have been removed.

INTEGRATING MILLER AND LUHMANN

The integration of the coding models of Miller and Luhmann is relatively straightforward. The main point is that there are no areas of contradiction between the two approaches, so that the integration project is not problematic. However, both scholars were so prolific, and wrote on so many topics, that it is sometimes difficult to winnow out their remarks on coding from the larger body of work in a manner that can easily be integrated. The chief points of complementarity are:

1. Miller’s careful analysis of the 12 information-processing subsystems, particularly the input transducer, the output transducer, the decoder, and the encoder, is useful in understanding how Luhmann’s notions of coding and programming are carried out by social organizations.
2. Miller’s analysis of markers, memory, and information-transmission subsystems such as the channel and net, help buttress Luhmann’s argument that social systems are autopoietic (Luhmann, 1989, 1995). Specifically, Luhmann’s argument for autopoiesis hangs on the notion that the communication is the basic social unit, and since utterances continually disappear, they must be continually self-reproduced by the social system. Such necessary self-reproduction of utterances can be taken as evidence for social autopoiesis. This argument is empirically vulnerable, because if past utterances have ceased to exist, there is no proof that they have been reproduced or replicated. The charge can be made that new utterances, rather than being evidence of social self-reproduction, are simply random utterances that do not reproduce the ones that have disappeared. One can prove that new utterances occur, but *not* that these constitute

sufficient self-reproduction to support claims of social autopoiesis. Miller's analysis of information storage in the memory subsystem, as well as storage and transmission of information on physical markers, such as computer diskettes, audio tape, paper, etc., illustrates a way to substantiate Luhmann's claim of social reproduction.

3. Miller's distinction between decoding and encoding illustrates the insider-outsider distinction that is generally not emphasized in Luhmann's analysis of coding (except as reflected in Luhmann's analysis of second-order cybernetics).
4. Luhmann provides the important analysis of tautology and paradox in coding that is totaling lacking in Miller's theory.
5. Luhmann's analysis of autopoiesis and self-reproduction of communication is a crucial complement for Miller's work, which has no discussion of autopoiesis, and approaches communication from a much different way than does Luhmann.

To summarize, Miller provides a comprehensive discussion of the internal structural features of social systems that can carry out coding and information processing. This is generally lacking in Luhmann's discussion. In contrast, Luhmann provides a comprehensive discussion of autopoiesis and the logic of binary coding and code programming that Miller neglects. Thus, the two approaches complement each other well.

CONCLUDING REMARKS

While the approaches of both Miller and Luhmann make major contributions to the social-systems literature, and complement each other well, neither goes far enough in dealing with the insider-outsider problem (which is reflected in the distinction between encoding and decoding), or in resolving the problem of paradox in coding. The paradox is inherent in Miller's use of the private-public distinction, in that private must be defined by what it is not (is not public). Further, the concept of "public" is residually defined as everything that is not private.

The concept of "public" has the erroneous connotation of easy and equitable accessibility. This is at best misleading, or perhaps even can be considered invalid, as accessibility to so-called "public" information varies widely in terms of location, expense, technical expertise, available technology (both hardware and software), etc. Much of the so-called "public" information on the Internet is thus no more accessible to many persons than is private information. The chief point here is that while "private" is a fairly unitary concept with relatively little internal variance, "public" reflects a great deal of internal variance.

In summary, this paper has analyzed and critiqued the coding analyses of Miller and Luhmann, with special attention to the insider-outsider problem. While these two approaches, taken either separately or together, do not solve all of the problems of insider-outsider coding, or of more general social systems analysis, they do provide a strong foundation for such analysis.

Miller's approach excels in showing how the internal structural features of social organizations code, store, transmit, and process information. Luhmann's approach excels in demonstrating how the logical problems of coding and autopoiesis can be effectively analyzed. Together, they form a strong platform for future research on coding and information processing within social systems.

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SYSTEMS FOR SOCIAL SUSTAINABILITY: GLOBAL CONNECTEDNESS AND THE TUVALU TEST¹

Joy Murray, Christopher Dey and Manfred Lenzen²

Abstract – Taking social indicators and the triple bottom line as a jumping off point we discuss current approaches to social sustainability as part of the social welfare debate. We consider a broader systems framework in which everything is connected to everything else. We suggest *life span* as a fundamental social indicator and suggest a metaphor to convey its complexity. We conclude that *social sustainability* has a number of connotations, is a useful concept for advancing the sustainability debate, and can usefully be applied to a consideration of enduring social systems.

Keywords: social sustainability, social systems, mid and endpoint indicators

1. Introduction

At a recent workshop³ addressing social indicators for the triple bottom line (TBL) Eva Cox⁴ made the observation that the previous five speakers had all talked about ‘people’ and ‘people issues’ in the process of describing their attempts to collect and analyse TBL data.

The point of her comment was that, although we often forget this, it is the people who instigate, create and sustain change and therefore the people factor needs to be put high up on the agenda. Stimulus for change, she said, comes from people pressure and people act on perceptions and prejudices not necessarily on facts. She also cautioned that we should be sceptical, realising that the sustainability discussion is part of the political process.

The questions implicit in her comments (what are ‘facts’; what are people’s perceptions and how can they be influenced; what are the politics of sustainability) led to a discussion of qualitative/soft versus quantitative/hard data, objectivity - myth or reality, the meaning of corporate responsibility (supporting charity or ensuring that core business operations are socially and environmentally sustainable), and the need for ethical leadership. The whole discussion illuminated the fundamental need for multiple approaches to addressing, discussing and promoting sustainability issues so that expert opinions are accessible, information is shared, and people are able to make decisions about

¹ Writing of this paper was supported in part by a grant from the NSW Department of Environment and Conservation’s Environmental Trust

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³ Sustainability Reporting Project Update & Social Indicators Workshop, University of Sydney, Dec 3, 2004

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trustworthiness and ethical behaviour. It highlighted the need for reliable data while recognising that expert opinions and ‘facts’ are worthless unless they are heard and trusted by people within and outside organisations who ultimately make decisions either because of positions of power or because of the power of public opinion.

Justine Alpe⁵ described one source of what she considered to be reliable data: the Corporate Social Responsibility (CSR) Index⁶ designed to rank companies on a range of social and environmental indicators. She spoke of the need to adopt analysis tools promoted by the very top of the organisation but developed through a process of consultation with stakeholders and community. She saw one of the main reasons for companies becoming involved in the CSR index, and therefore visibly ‘doing the right thing’, was to attract and retain good employees. Again it came down to people.

Richard Boele⁷ felt that being perceived to be doing the right thing was increasingly important but was concerned that perceptions could be ‘bought’ through donations and charitable works. He suggested that power, trust and humility need to be taken into account when working with organisations through the process of social assurance. Organisations, he said, need to examine their power and build trust through humility.

All speakers recognised the complexity and interdependent nature of sustainability reporting across the triple bottom line making it hard to disentangle social impacts from environmental and economic.

A lengthy *social indicators* round-table discussion among about 40 participants at the above mentioned workshop raised the following points:

- Trust is basic to change and trust engenders resilience
- There needs to be stakeholder input into indicator development
- Quality of life indicators are needed (including a sense of community)
- Behavioural change indicators are needed
- There needs to be a democratic workplace
- There is a deal of scepticism out there
- Paying tax may be preferable to doing good works but the kudos gained from tax paying cannot rival the kudos from charitable deeds
- There is a need for a social ‘footprint’ measure and methodology
- The social cannot be disentangled from other aspects of doing business, it underpins everything else

In addition participants cited a number of data sources that might provide quantitative indicators of how some groups were faring in the workplace (e.g. OH&S statistics, employment profile, taxation, skill levels).

So what to make of all this? A glance at the points raised above indicates the importance attributed by participants to the social aspect of TBL. Words like *resilience*, *democracy*, *community* and a reference to *charitable deeds* suggest the tensions between some of the traditional welfare practices of governments and philanthropic organizations and the more recent approaches to social justice

⁵ Manager, Corporate Responsibility Index, St James Ethics Centre, Sydney.

⁶ validated/audited in Australia by Ernst and Young and published in The Age and Sydney Morning Herald

⁷ Banarra Sustainability and Social Assurance

through ideas like *social capital*. There is also recognition that both quantitative (e.g. a ‘footprint’) and qualitative (e.g. quality of life) indicators can shed light on the social impact of doing business. These themes (importance of the social bottom line (BL); approaches to social BL - welfare or social capital; quantitative or qualitative measurements) are explored below.

2. Importance of the social aspect of TBL

2.1 Social impact of doing business

The purpose of trying to assess the social impact of doing business is, presumably, to help understand and account for the consequences of doing business on the social well being of communities affected by that business. This implies that with understanding comes action to maintain or improve social well being for everyone. However social well being cannot be disentangled from economic well being⁸ (for example, we need the economic means to maintain social structures and to participate in society) neither can it be divorced from a healthy environment because as Lehtonen (2004:204) says many environmental assets “fulfil not only ecological, but also ... social functions, through their critical contribution to human mental well-being and pleasure, as well as being a source of ethical and cultural meaning”. If divorced from the context of the economic and environmental, improvements in social well being could be at the expense of others (say taxes were reduced for some to the extent that there was insufficient funding to pay for social infrastructure for all or social cohesion in one workplace was achieved at the expense of the environment of another social group through for example, water-thirsty gardens, free polystyrene cups at the water fountain, workplace subsidized take away foods or four-wheel drive cars). Within the context of economic and environmental impact the assessment of social impact can reveal unintended consequences embedded in decision making and expose the interdependencies of the total social/economic/environmental system (Oakley & Buckland, 2004). Accounting for the social impact of doing business then, only makes sense if it is recognized as part of an interdependent system (that eventually spreads out to cover all of existence on this planet and beyond). Any boundaries applied must be recognized as artificial and expedient, and although some partitioning off for the purpose of accounting and (limited) understanding may serve some purpose to organisations (e.g. in order to report to stakeholders on specific, local initiatives) it must be recognized that it is not possible to separate the social from the economic and environmental or to separate any of them from what happens in the rest of the global community. Gallopin (1997:19) recognizes this in his argument for an holistic approach to the development of indicators for sustainability, he suggests that the “systemic nature of many aspects of sustainable development points to the importance of searching for fundamental whole-system attributes for which appropriate indicators could be devised”. Everything that we do is ultimately linked to everything else in a seamless web of connections that transverse time and place. The whole/parts approach will never have the explanatory power of an understanding of what makes a sustainable system (Maturana & Varela, 1987; Richardson, 2004). Below is a short digression into the whole/parts/systems debate which seems to be important in conceptualising the *social* in the bottom line.

2.2 Part/whole or system of relationships?

⁸ The notion that the ideal state is one of being ‘socially and economically *well*’ and that it is to be striven for seems to be the current guiding principle by which we measure society (witness the international well being index (http://acqol.deakin.edu.au/inter_wellbeing/index.htm ; <http://www.finfacts.ie/costofliving.htm>), and the UK development of a *well being* indicator (HM Government, 2005)). Luhmann (1997) cites *happiness* and *similarity of living conditions* as previous guiding principles. It is important to remember that they are themselves socially/culturally constructed and not all societies would rate them important in living their lives whatever others might wish for them.

The shift from a parts/whole perspective to viewing systems in terms of relationships is not new. It is accredited to theoretical biologist Bertalanffy (1968) who used instead the distinction between system and environment as an explanatory mechanism⁹. In this way of thinking parts of a living system are understood only in the context of the whole. In reviewing this shift in perspective Capra refers to systems thinking as ‘contextual’ thinking or ‘environmental’ thinking (1996:36-37). What we call a part, he says, “is merely a pattern in an inseparable web of relationships” in which “no part is more fundamental than the others” (1996:39). This relational system/environment world is non-hierarchical; system and environment are seen as an interacting whole. Bertalanffy (1968) referred to living systems as ‘open systems’ because they depend on a flow of energy and resources from their environment. He characterised them as networks of relationships rather than wholes to be dissected into parts. But how do these networks of relationships operate?

2.3 *The living system in its environment*

Biologists Maturana and Varela (1987) claim that we, like all living systems, are structurally determined systems. By this they mean that the way in which we respond to perturbations (or irritations) in our environment is determined by our structure. But the medium is also a structurally determined system. Recurrent interactions of both living system and medium will result in structural changes in both system and medium/environment. Who we, as living systems, are at this instant and the medium we find ourselves in mutually specify each other so that each contributes to creating the world of the next instant, and so on, creating the world by living in it. This process Maturana and Varela call *co-ontogenic structural drift*. In co-ontogenic structural drift, they say, the system does not adapt to the environment as in the classical system-environment model (Krohn, Koppers, Novotny, 1990:9) but both change over time as they become structurally coupled (Maturana, 2002); either they ‘fit’ together or separate or disintegrate (Maturana et al, 1987; Maturana, 2002). Luhmann (1995, 1997) uses this concept in his work on social systems. In a social context, he says, *communication* is the social system and everything else including living systems, is the environment in which communication operates (i.e. human actors are part of the environment of social systems rather than composing them). However, he says, “[T]he concept of the environment should not be misunderstood as a kind of residual category. Instead, relationship to the environment is *constitutive* in system formation” (Luhmann, 1995:176, italics in the original). Communication, he says, becomes structurally coupled with the consciousness of individuals (1997) and, “[O]nly consciousness can produce the noise necessary for the emergence and evolution of social order” (1997:4). A particular social system arises out of the difference between system (communication) and environment as they bump up against each other and (because of their differences) change over time as they find ways to ‘fit’.

Viewed through Luhmann’s social frame communication and its environment, which is the consciousness of individuals, change over time as they become coupled in a never-ending reciprocal relationship. Viewed through Maturana and Varela’s biological frame living system and environment (which includes other living systems as well as all communication) become coupled so that they grow and change together, each influencing the possibilities of the other. In both cases we living systems are structurally changed in the process of living and communicating over time. This means, as Fell and Russell (1993:35) say, “that everything we have ever done together in this world could be a part of who we are and what we do today” and “[w]e cannot know what the future holds, but we

⁹ Capra (1996:43) cites the work of a Russian medical researcher, Alexander Bogdanov, who developed a sophisticated systems theory 20-30 years before Bertalanffy published his first paper on his ‘general systems theory.’

can know that everything we do (or say) contributes significantly to it . . . This awesome responsibility is what we regard as the biological basis of our human ethics.” (Fell & Russell, 1993:35; see also von Foerster, 1992 on cybernetics and ethics).

Thus the social impact of doing business is part of the web of interactions that are life on this planet. Socially sustainable activities, like all of our activities, become part of who we are and what we do. They are activities that, because they become part of who we are and what we do (and the ‘we’ referred to includes all of humanity including ourselves, carrying with us our histories, and future generations) must, for us if we accept this position, be bound by human ethics. Moreover if human ethics have a biological basis, as suggested by Fell and Russell above, it is probably reasonable to speculate that they play a role in human survival (something to add to the debate on human altruism maybe). It is likely that the round table discussants mentioned above, who suggest that the social aspect of TBL underpins everything else, would agree with this speculation (i.e. the aligning of social sustainability with human ethics and the fundamental role of ethics in human survival).

2.4 Summary

In this discussion we have moved:

- from the social dimension of the TBL as the social impact of (an organization) doing business;
- through the interconnectivity of social, environmental, and economic on a local scale;
- to the notion that everything we do together on this planet is connected through time and space in a seamless web of interactions; and that
- through this interdependency of living system and medium (environment) or communication and consciousness our actions are bound by something we refer to as human ethics (which could be about survival).

This has brought us to the idea that the social dimension of TBL, which seeks ethical solutions to local (local in the sense that they are connected in some way to one organization although they could be upstream or downstream and geographically dispersed) social dilemmas is striving towards something that we call social sustainability and in some way is contributing to an ethical (or more equitable?) future for living systems. Hence the discussion has moved from the social bottom line of an organization, or workplace, into the notion of *social sustainability* and society as a whole because all of society is interlinked.

3. Social sustainability

3.1 What is it?

Alan Black in his 2004 address to the Effective Sustainability Education Conference¹⁰ in Sydney defined social sustainability as the extent to which social values, social identities, social relationships and social institutions can continue into the future. This raises the question of time scales: how long do social systems need to continue into the future to be called sustained? Or are they always sustained for x number of years (in which case who’s counting?). There are social organisations that last a lifetime and those that are sustained over the rise and fall of many lifetimes; rituals, arts and stories that carry a culture and bind a social group can continue over generations.

¹⁰ *The Quest for Sustainable, Healthy Communities*, 19th Feb, NSW Council on Environmental Education, UNSW, Sydney Feb 18-20, 2004

Membership may change, wax and wane, but, like my old broom that's had four new handles and six new heads, the social system goes on. (This would bear out Luhmann's argument that the social system cannot be the actors, they come and go, they are part of the environment, it is communication that is sustained, that goes on manufacturing and transforming itself, and is therefore the social system.) But how can we call any social system a sustainable system when it is disappearing into an unknown future (and how do we know the future will want a system that seems like a good idea now).

Furthermore, although in some respects Black's definition echoes the oft-quoted sustainability definition of "development that meets the needs of the present world without compromising the ability of future generations to meet their own needs" (UNWCED, 1987) it makes no judgments about the type of social system that is sustained or its impact on future generations. It leaves room for social upheaval: if current social norms are not sustainable over the long term, because say, they are unjust, they will be overturned (e.g. if social relationships are based on a class system and at some time it is overthrown then it wasn't socially sustainable in the long term). This implies a striving for social balance (a kind of social equilibrium maybe) and the notion of equity where no one group is living at the expense of another (the lifestyle of that particular group wouldn't be socially sustainable, because at some time there would be a reshuffle of power (bloody or otherwise) and a realignment of resources). Someone would have overstepped the mark living at the expense of others. As a recent UK government report points out, "A world disfigured by poverty and inequality is unsustainable"¹¹ (HM Government, 2005:13). The other side of this of course is that we cannot escape our history and what one group may see as overstepping the mark another may see as their inalienable right. One group can, and history has shown that they will, cause the complete annihilation of another if they do not find ways to 'fit' (Wright, 2005). As Maturana and Varela (1987) point out, if they cannot find ways to fit they will 'separate' or 'disintegrate'. So, who's watching and acting so as to avoid 'disintegration' and find ways to 'fit'?

Gray and Milne (2004:77) discuss the political minefield of social sustainability, suggesting that it "rests on nothing less than interpretations and explanations of the relationships between modern capitalist activity and social justice – the probability of a consensus on this area" they say, "seems slim, indeed". Others who (may or) may not operate in a modern capitalist society may say that social sustainability rests on ethics, human relationships and survival of kin, local and ultimately global community. Which looks as though we, who are lucky enough to have communication systems that allow us to live to some extent in a global community, cannot escape an obligation to 'watch' and act to find ways for social systems to fit together. However, as in many other political dilemmas throughout history the danger lies in creating insiders and outsiders.

Thus social sustainability is a restless concept, it cannot escape the messiness of human life on earth. It implies interrelationships and interdependencies built on communication over time; local or global communities in constant struggle towards living together without exploitation in an ever-changing world. On a small scale this could be about sharing services and paying for those services (where those more able may pay for services enjoyed equally by those less able to pay, such as through taxes to pay for social infrastructure) or in providing different but essential services to maintain the functioning of, say, a sport or social club. On a larger scale however since all communities are

¹¹ "over a billion people live on less than a dollar a day, more than 800 million are malnourished, and over two and a half billion lack access to adequate sanitation."

interdependent and ultimately form one global social system the sustainability of one community (of geography or interest) ultimately depends on that of others.

To achieve social sustainability, it seems, would be to achieve lasting global harmony, and not just between social systems but also between social systems and their environments. Striving for a new utopia! Something that Luhmann (1997) cautions us about looking for because, he says, it can only lead to new disappointments. Perhaps then, rather than a meaningless quest for a utopian social sustainability grounded, perhaps, in well-being, it is better to settle for the struggle itself and the constant learning that this implies. Perhaps our focus should be on the “sustainable quest for systems of inquiry” (Bawden, 1997:3); sustainability-as-process, learning to manage in a shifting world (Cox, MacLeod & Shulman, 1997) as we living systems in communication with ourselves in reflection (Schön, 1979, 1983) and others (in discussion) find novel ways to deal with the tensions created by ethical dilemmas and competing demands.

3.2 Summary

This section of the discussion has suggested some problems inherent in the definition of social sustainability. A god’s eye view is implied in the idea that someone is counting and judging, we cannot know for example:

- how long something must persist for it to be called ‘sustainable’;
- if social sustainability connotes an ethical position, whose notion of ‘equity’ should prevail and be sustained; or
- whether an identified social system, pronounced ‘sustainable’ today will ‘fit’ in a future world.

We are *of* the system and cannot take an outside point of view. Instead we can ask from the messiness of our relationships:

- if social sustainability is something utopian and unattainable like lasting global harmony should we shift the focus of our debate to something attainable like a sustainable process of learning as we communicate as living systems in our environment over time¹²?

Having looked at the Social Bottom Line as part of the wider concept of social sustainability and discussed the possible meaning of social sustainability, the following section explores current approaches to the social BL and social sustainability. It briefly discusses global and local work on social indicators. It picks up the term ‘community’ and looks at various ways of conceptualizing ‘community’ that are used in the broader literature of social sustainability.

4. Current approaches to the social bottom line and social sustainability

The social bottom line is part of the general sustainability debate. It is accounted for in the workplace by the use of indicators. The Department of Family and Community Services’ (2003) draft document Triple Bottom Line Reporting in Australia: A practitioners’ guide to reporting against social indicators and the Global Reporting Initiative’s (2002) Sustainability Reporting Guidelines, address social issues in the workplace (see appendix 1 for a list of sample social indicators from a range of sources) providing an outline for a social audit. They examine for example employment, workplace relations, discrimination, working hours and conditions, OH&S statistics, taxation, and skill levels, many of which were raised by the round table discussants

¹² This may, of course, be more akin to the Little Prince commanding the sun to rise in the morning since living systems have always learned –that’s how they/we go on living (Maturana et al, 1987).

above. All of these apply to the immediate workplace, they are part of a social audit, and are important in assisting organizations address inequities.

The broader social sustainability debate that looks at social groups inside and outside the workplace tends to draw more on social welfare for its frameworks.

4.1 Community work or social capital

Most definitions of ‘community’ include reference to ‘social interaction within a geographic area and having goals or norms in common’ (Black & Hughes, 2001:1). Today the geographic area can be expanded to include communities of interest that could be spread across the globe. In some areas however, the term *community* has come to refer to disadvantage, deficiencies and needs; community work can sometimes be synonymous with social/welfare work, which implies an outside agency fixing up problems. This view of community is a construct that supports a vast social/political welfare infrastructure and an equally thriving cultural counter weight of response. The infrastructure supports government departments, non-government organisations and educational institutions; the response can be from the media, others in society who believe this is wasted tax payer dollars, or members of such communities who may develop intricate strategies to baulk the system. It is not a ‘natural’ state of affairs (McNight, & Kretzmann, 1996). It has been constructed over time by various societies for social, cultural and political purposes.

Over the past couple of decades an alternative construct has been developing. This tends to see the capacity of communities to deal with their own problems (usually problems associated with poverty). “That alternative path, very simply, leads toward the development of policies and activities based on the capacities, skills and assets of lower income people and their neighbourhoods” (McNight, & Kretzmann, 1993:4).

Working with economically poor communities is now more likely to be seen in terms of building *community capacity*; or building *resilience* which is the capacity of people or communities to recover from adversity¹³ or in terms of *community strength*. Black and Hughes (2001:7) offer a definition of *community strength* as “the extent to which resources and processes within a community maintain and enhance both individual and collective wellbeing in ways consistent with the principles of equity, comprehensiveness, participation, self-reliance and social responsibility”.

Another term associated with work in relief of poverty is *social capital*, used by Robert Putnam (1993; 2000) as a focus for research and policy discussion and picked up by The World Bank in its exploration of “poverty alleviation and sustainable human and economic development”. The World Bank uses the term to refer to “the norms and networks that enable collective action”¹⁴. It argues that “increasing evidence shows that social cohesion is critical for societies to prosper economically and for development to be sustainable”¹⁵.

¹³ A resilient community is one that "takes intentional actions to enhance the personal and collective capacity of its citizens and institutions to respond to, and influence the course of social and economic change". The Community Resilience Manual, developed by the Community for Community Enterprise in Canada http://www.communitybuilders.nsw.gov.au/getting_started/needs/canadian_resil.html NSW Gov (18/02/05) The Premier's Department of New South Wales (Australia) coordinates this site as a joint government and community project

¹⁴ <http://www1.worldbank.org/prem/poverty/scapital/home.htm> (retrieved from the internet 18/02/05)

¹⁵ http://www.infed.org/biblio/social_capital.htm (retrieved from the internet 18/02/05)

The Civic Dictionary¹⁶ defines *social capital* as those stocks of social trust, norms and networks that people can draw upon to solve common problems. However Woolcock (2001:70) suggests that the simple definition of: “norms and networks that facilitate collective action” has gained consensus among scholars, suggesting that ‘trust’ is an outcome of social capital rather than being part of social capital itself. Whatever the precise definition the central premise is that social networks¹⁷ have value; who we know, and the inclination to do things for each other, that arises from knowing each other, is valuable to individuals and groups. It is not surprising then that the notion of social capital is regarded as the most commonly proposed framework for addressing social sustainability (Lehtonen, 2004). In his exploration of *social capital* as a basis for examining the environmental-social interface, Lehtonen looks at the three levels of social networks proposed by Woolcock (2001):

Bonding: with family, neighbours and close friends

Bridging: with a wider network of distant friends, associates and colleagues

Linking: with formal institutions, government and business.

He says that this framework has been useful for examining determinants of social capital such as age, education, values, living area; and outcomes of social capital like individual or public well-being. Lehtonen, reports the view, however, that there are two main difficulties with use of *social capital* as an analytical tool. The first is that it is too broad and vague and the second is that its vagueness “renders the measurement and the design of suitable indicators difficult” (2004:206).

Accumulation of social capital may result in a measure of well being which seems to have taken over from ‘human happiness’ as the human condition to be strived for. However Luhmann dismisses ‘human happiness’ or ‘similarities of living conditions’¹⁸ as organising principles for the examination of social systems. He says “[O]ne cannot define the concept of society by one of its possible realizations. If one restricts the concept to particular aspects of modern society, the temptation becomes irresistible, to include in the concept, ideological or normative assumptions such as human happiness, solidarity, similarity of living conditions, or communal integration.” (1997:3).

Social capital has proved a useful tool for understanding the flow of resources and influence around and through groups in society, however for an understanding of society through which to examine social sustainability something more fundamental may be useful. Luhmann (1997) believes that we should drop the search for a good or better society and instead ask how a living system, bumping up against communication, can change its mind set (way of thinking, world view). Rather than search for universal happiness or solidarity (or, presumably, well being) as an ideal, which, he says, leads to a regional concept of society as a frame for improvements, we should see the problem as one of complexity. This latter, he suggests, would require starting from a concept of world society.

4.2 Summary

- Led by the Global Reporting Initiative social workplace indicators provide a useful way to deal with onsite issues in an audit framework;

¹⁶ <http://www.cpn.org/tools/dictionary/capital.html> Carmen Sirianni and Lewis Friedland editor-in-chief and research director of the Civic Practices Network, Civic Dictionary (retrieved from the internet 18/02/05)

¹⁷ <http://www.bowlingalone.com/socialcapital.php3> (retrieved from the internet 18/02/05)

¹⁸ Presumably ‘well being’ would fit here too.

- In the broader community social sustainability draws on the discourse of social welfare and is often viewed through a social capital framework;
- Social capital may allow us to accrue well being but Luhmann suggests we cannot examine social systems through one of society's possible realisations [e.g. well being] which is just one of many culturally defined constructs;
- Instead we should ask questions about how living systems are able to make profound changes in their world-view; and
- To do this we need to begin with a global perspective.

In the next section we examine some alternatives to onsite audit-style indicators and look at ways in which we can change and be changed by the sustainability debate, adopting new positions in response to new conversations.

5. Indicators

5.1 Endpoint and midpoint

The notion of beginning with a view of world society *and* seeing the problem as one of complexity seems to encapsulate the problems associated with finding suitable TBL indicators, be it in an environmental, economic or social framework. Taking a world view suggests big picture indicators. These are known as *endpoint indicators* for example, the environmental footprint which rolls up a great deal of complexity into a single world-view indicator that tells you how much of the planet you are taking up through your life-style. In a social context 'life-span' or 'loss of life' could be used as endpoint indicators. The term 'endpoint' refers to aggregate measures at the end of one, or several converging impact pathways. An endpoint indicator requires painstaking data collection, and complex modeling and computation. Apart from agreeing on where the endpoint occurs it requires someone to decide what data are relevant and what events contributed to the impact (for discussion of midpoint and endpoint indicators see Lenzen, 2005).

On the other hand retaining the complexity that Luhmann thinks important requires a range of what are known as midpoint indicators. Midpoint indicators can be observed somewhere along the chain of impacts, for example, rising sea level or dislocation of peoples. Debate rages around which are more useful, endpoint or midpoint. Many think that endpoint indicators are easier for people to understand (Heijungs et al., 2003). The ecological footprint metaphor, for example, has had a powerful impact. However decision making at midpoints has advantages because it allows for more of the complexity to be examined; instead of providing a few aggregated numbers, the more multi-faceted midpoint information reveals the multi-dimensionality of the problem and can suggest a range of areas where action might be taken. Decision making based on indicators is always going to be contentious because endpoints are too uncertain to allow a decision to be made with reasonable confidence, and midpoint information is complex, revealing competing issues that need to be balanced. People will always have to make decisions and decision makers will always belong to some social system or other and make those decisions out of a particular life history.

Such decision-making owes much to meaningful numbers, yet numbers come to us embedded in a particular social system that itself influences our actions. Not only that, but many believe that our decisions, and hence our actions, are ultimately emotion based (Damasio, 1996; Freeman & Núñez, 1999; Hardcastle, 1999; Kovecses, 1990; Lutz & White, 1986; Plutchik, 1994; Wimmer, 1995). How we feel about the sources of data, how much we trust the people and systems that produce the data,

and how they fit with our beliefs, can determine what we do. Metaphors, like *Ecological Footprint* are also important, acting at an emotional level they can change what and how we communicate (Krippendorff, 1993; Lakoff, 1993). Good numbers and powerful metaphors are part of the mix, their influence may depend on how well they fit with our beliefs and prejudices, how we feel about the source, what story we can tell about them, and how they grab the imagination.

5.2 Endpoint measures and powerful metaphors

Environmental sustainability has the *Ecological Footprint*. The power of the metaphor lies in its instant recognisability. Through Western eyes it has connotations of, for example, ‘dirty footprints’. Leaving a footprint has overtones of spoiling something or undoing someone’s good work. It’s also easy to see when a footprint overhangs its allotted space and spills over the end of the world into space, or intrudes into someone else’s ‘garden’. In exchange for this powerful metaphor that turns our environmental impact on the world into used up hectares of the earth itself we are prepared to sacrifice some inaccuracies in its calculation (although it is slowly being refined see Lenzen & Murray, 2001), particularly when the results seem to accord with our expectations. Its usefulness as a political tool providing startling comparisons and benchmarks has outweighed its crudeness as a measure.

But what metaphor, and endpoint indicator, can we find for our social impact on the world? And what do we hold in common that could be expressed in terms of some people using up more than their fair share at the expense of others? What, at some fundamental level integrates the social, environmental and economic and does so in a way that acknowledges the interconnectedness of life on earth, past present and future. To address this we need to peel back the layers of social constructs discussed above and look for some simple, universal necessities.

Let’s assume that, once born, the general aim is to spend as much time here on earth as possible (within the belief systems of the culture that we belong to). If life, at its simplest, is passing the time between being born and dying then after providing for food, water, shelter, health and safety, everything else is (a) pass-time. Everyone on the planet has passing of time in common (though some have more time to pass in total than others because some live longer- for various reasons). However, as in Tuvalu where the living is easy but the web of connections to the rest of the world is apparent in the rising sea level, we cannot pass the time of our lives for ever in isolation from the web of global social, economic and environmental connections. At some stage the activities of the rest of the world will catch up with us. As the UK publication *Securing the Future: Delivering UK Sustainable Development* (HM Government, 2005:140) states: “We have created a relatively good quality of life in this country [i.e. the UK] for most of us but we now realise that this may have been at the expense of communities elsewhere in the world. Rich and poor worlds cannot co-exist without dramatic consequences. In 2000, states facing stability challenges contained just over 1.2 billion people living on less than one dollar a day, and 65 million of the 114 million children of primary school age who did not attend school”.

Like it or not we are connected (see Briguglio, 1997, for a discussion of the economic vulnerability of small island developing states). Which leads to the next assumption: that those groups in society who spend considerably more than the average time on earth, and in doing so, wittingly or unwittingly, diminish the time that others have to spend, could be said to be acting unfairly. It could be argued that our instinct for survival means that we will take every opportunity to enhance our

chance at longevity. However the discussion above of living systems and their environment suggests there is a biological base for human ethics: that we can and do care about the survival of other living systems albeit often at a tribal rather than global level (the trick may be to create a global tribe).

So: the *Tuvalu Test* asks how much time, on average, do we have to pass; then, how much of our time do we have to pass in providing food, water, shelter, health and safety (i.e. the basics of Maslow's hierarchy of needs) and how much do we have left for pass-time¹⁹ (which includes everything we do after the provision of the basic necessities of life). Then it asks – but how much of the pass-time of others (i.e. engagement in anything above the necessities of life such as: over-working; over-eating; over-provision of dwelling space; shopping as a leisure activity) makes trouble for some (like rising sea levels; dangerous work conditions; depletion of natural resources) and impinges on the time we/they have to pass (either in terms of life-span²⁰ or time for pass-time activities other than providing for necessities of life). Or conversely, how much of our pass-time impinges negatively on the lives of others. How does our demand for cheap chicken meals, for example, affect the amount of pass-time Mexican chicken factory workers have (e.g. as Monbiot (2005) says, “the consequences of our gluttony are visited on others”).

Being able to calculate such a beast is an attractive thought. If, as with the ecological footprint, it were possible to see who in the world was taking up more than their fair share of an allotted whole, it would be a powerful, if blunt, measure. There is a difference of course, the size of the earth's surface, used to indicate footprint overspill, is finite; time it seems, is infinite and there is no given quantity of time that we should share out fairly. The best we could do would be to take the world average life span and compare with it that of individuals and groups.

A nice idea. Unfortunately it is an almost impossible idea on which to base numerical calculations for the reasons given above in describing endpoint indicators.

5.3 Midpoint measures and mean lives

A simpler, and cruder, measure might be derived if we could address the first part of the *Tuvalu Test* and take the cost of living, divide by the average hourly rate of pay, find out how long we have to work to cover the cost of living and then how many hours of the day are left for pass-time? What might this show about who has time for spending pass-time in earning more money (to spend) that is, trading immediate time for stored time (in the form of the storage device money, which can then be inherited by descendants as stored time); who has time for social and cultural activities, for the sheer luxury of paying full attention to beauty (in all its spiritual and artistic manifestations) including spending time with family and friends (that some might refer to as ‘bonding’ or building ‘social capital’) and who is too busy making ends meet? Who has time for education and is therefore more likely to be able to earn the cost of living in a smaller number of hours? Who has more time for

¹⁹ We recognize that the differentiation of work and leisure is a cultural construct, implying that leisure is not-working, hence the use of *basic necessities* and *pass-time*. However, passing most of one's life-time in attending to life's necessities is considered, in some cultures a normal and healthy thing to do, and there are others where the basic necessities are not bought with money earned from other work. These cases are probably diminishing in number because the rest of us are impinging on that lifestyle.

²⁰ E.g. average life expectancy at birth in the UK is currently 78 years whilst the global average is 65 years, www.who.int/en/

participation and dialogue? If we tempered this with life expectancy and a measure of quality of life then maybe we could compare the allocation of pass-time between individuals, groups and nations.

In their review of the literature linking leisure time with quality of life, Lloyd and Auld (2002:43) point out there have been various studies done that “include selected leisure attributes such as ‘amount of nonwork time’, ‘spare time activities’ and ‘access to leisure facilities’ in assessments of life quality”. These cover a wide range of social groups including black urban youth in South Africa, urban Iranian women and people with disabilities. In their study of leisure and quality of life Lloyd and Auld (2002:62) found that “mere proliferation of leisure resources while increasing leisure opportunities, does not improve overall QOL”. The best predictor, they found was “frequency of visiting and going out with friends and attending clubs and organizations” (p63). This result, they said, is reflected in “the work of numerous authors”. (p63). Thus time for frequent leisure activities underpins what they suggest is a good quality of life. If *quality of life* (indicating *well-being*²¹) is our current yard-stick by which to judge society then time for social interaction may be an important midpoint indicator of social sustainability for the global tribe.

6. Conclusion

So social sustainability is about local social systems in constant struggle for harmony with other social systems and the environment. They can never be still. Many systems will differentiate themselves by excluding others, many will bind themselves together with rules or geography. However all belong to the total global human population.

In the end the universe doesn't care what we do. In the end we are one species roaming the earth, currently destroying our own habitat and the extent of our destruction will govern our future numbers just as it does for all other species. Someone's idea of social sustainability today is inconsequential as (human) life is played out across the globe. Its meaning is slippery; there are some social systems that some of us would rather not sustain (others would disagree). Whatever social system we differentiate from the background noise is temporary— even if it is differentiated by the notion of well being – because fashions change in our ways of talking about ourselves, the ideal state, our ways of defining society.

How do we know that the future will want some social system that we have decreed sustainable? We don't! And since reciprocal change of social system and human consciousness is a consequence of communicating as we live together on this planet, change is inevitable. According to the systems framework touched on above we cannot escape our obligations. We have an ethical responsibility for our contribution, made by way of our communications, towards the creation of the world we all inhabit. We can help effect changes that will bring about conditions supportive of a more global, less tribal, social system. We can use powerful metaphors and good numbers to help promote: global communication systems so that all can participate in multiple conversations; the sharing of our planet's resources to satisfy everyone's basic needs; the need for time to communicate with family and friends for health and well being, and with the rest of the world for education and learning.

We're all in this together, as we bump up against each other and the multiple conversations that make up our myriad social systems we will grow and change and in so doing we will change the

²¹ Quality of Life indicators are being developed to gather statistics on well-being: <http://www.calvert-henderson.com/index.htm>

conversations and the environment. We have only our learning to ensure that the broom survives its infinite new handles and equally infinite new heads.

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Appendix 1

A sample collection of social indicators taken from a range of frameworks, reports and indices

	Indicator	Included in:
Workplace		
<i>Employment</i>	Status (employee/non-employee) Type (full/part time) Contract (permanent/fixed term/temporary) Region/country	Core Aust draft index ²² ; GRI ²³ ; ISA
	Net employment creation and average turnover	Core Aust draft index; GRI; ISA ²⁴
	Employee benefits beyond those legally mandated (e.g. contributions to health care, disability, maternity, education, retirement)	Core Aust draft index; GRI
	Standard injury, lost day and absentee rates and number of work related fatalities (including sub-contractors)	Core Aust draft index; GRI
	Business size supported (\$of turnover)	ISA
	Wage and salary income generated (\$)	ISA
	Government revenue contributed (\$)	ISA
	Workloads and staffing levels	Westpac ²⁵
	Staff selection and contract	Westpac
	Employer of choice (employees proud to be employed by -----; feel they can make a contribution; feel employee is concerned for their health and safety)	BP Australia ²⁶
<i>Workplace Relations</i>	Percentage of employees represented by independent trade union or other such organization; or percentage of employees covered by collective bargaining agreements	GRI
	Policy and procedures for informing, consulting and negotiating with employees over changes in operations (restructuring)	GRI
	Provision for formal worker representation in decision making or	GRI

²² Department of Family and Community Services. *Triple Bottom Line Reporting in Australia: A practitioners' guide to reporting against social indicators*. DRAFT-IN-DISCUSSION, May 2003

²³ Global Reporting Initiative. *Sustainability Reporting Guidelines*, 2002

²⁴ *TBL indicators in the Sydney University /CSIRO framework*, 2003, www.isa.org.usyd.edu.au

²⁵ Westpac. *Pressing On: Social Impact Report 2004*

²⁶ BP Australia. *triple bottom line report*, 2000

	management inc corporate governance	
<i>Living our values</i>	Survey response to whether social issues are important to the future of the company	Novo Nordisk ²⁷
	Survey response to whether management demonstrates in words and action that they live the company's values	Novo Nordisk
	Supplier feedback	Westpac
	Employee ownership programs	Lafarge ²⁸
<i>Health & Safety</i>	Recording and notification of occupational accidents & diseases	GRI
	Formal joint health and safety committees (management and workers)	GRI
	Standard injury, lost day and absentee rates and number of work related fatalities (inc subcontracted workers)	Core Aust draft index; GRI
	Policies and programs on HIV/AIDS	GRI
	Compliance with ILO guidelines on OH&S management systems	GRI
	Formal agreements with trade unions or equivalent covering health and safety	GRI
<i>Training and Education</i>	Average hours of training per year per employee by category of employee	Core Aust draft index; GRI
	Programs to support the continued employability of employees and to manage career endings	Core Aust draft index; GRI
	Policies and programs for skills management or for lifelong learning	GRI
	Expenditure on education and research	ISA
	Apprenticeships and undergraduate scholarships	Integral ²⁹ energy
<i>Diversity and Opportunity</i>	Equal opportunity policies or programs, monitoring of programs and results	Core Aust draft index; GRI
	Composition of senior management and corporate governance bodies (inc board of directors) inc male/female ratio & cultural diversity as appropriate	Core Aust draft index; GRI
	Female- male salary ratios	Westpac
<i>Strategy & Management</i>	Policies, guidelines, corporate structure, procedures to deal with all (relevant)	Core Aust draft index; GRI

²⁷ Novo Nordisk, *Sustainability Report: What does being there mean to you?*, 2003

²⁸ "Lafarge's responsibility is about aligning its actions with its values": Lafarge 2003 Sustainability Report

²⁹ Integral Energy (2002), *Building a better future for all of us. Sustainability: achieving a balance between financial, environmental and social considerations.*

	aspects of human rights, monitoring mechanisms & results	
	How policies relate to international standards (Universal Declaration; Human Rights Conventions of the ILO)	Core Aust draft index; GRI
	Consideration of human rights impacts as part of investment and procurement decisions, including selection of suppliers/contractors	Core Aust draft index; GRI
	Policies and procedures to evaluate and address human rights performance within the supply chain and contractors, inc monitoring systems and results	GRI
	Employee training on policies and practices concerning all aspects of human rights relevant to operations.	GRI
<i>Non-discrimination</i>	Global policy and procedures programs to prevent all forms of discrimination, monitoring systems and results	GRI
<i>Indigenous rights</i>	Description of policies, guidelines and procedures to address the needs of indigenous people (in workforce and communities impacted by operation)	Core Aust draft index; GRI
	Description of jointly managed community grievance mechanism	GRI
	Share of operating revenues from the area of operations that are distributed to local communities	GRI
<i>Freedom of Association & Collective Bargaining</i>	Description of freedom of association policy and extent to which it is universally applied independent of local laws; description of procedures/programs to address the issue	Core Aust draft index; GRI
<i>Child Labour</i>	Description of policy excluding child labour as defined by the ILO convention 138 and extent to which this policy is visibly stated and applied as well as description of procedures/programs to address this issue including monitoring systems and results of monitoring	GRI
<i>Forced and compulsory labour</i>	Description of policy to prevent forced and compulsory labour and extent to which this policy is visibly stated and applied as well as description of procedures/programs to address this issue including monitoring systems	GRI

<i>Disciplinary Practices</i>	Description of appeal practices, inc human rights issues	GRI
	Description of non-retaliation policy and effective confidential employee grievance system	GRI
<i>Community</i>	Policies to manage impact on communities in areas affected by the reporting organisation’s activities; procedures/programs to address the issue & monitoring	Core Aust draft index; GRI
	Policies and procedures for identifying and talking with community stakeholders	Core Aust draft index; GRI
	Awards received relevant to social ethical and environmental performance	GRI
	Sponsorship and funding for community events	Integral Energy
<i>Bribery and Corruption</i>	Description of the policy procedures and compliance mechanisms for organizations and employees addressing bribery and corruption	GRI
<i>Political contributions</i>	Money paid to political parties and institutions that exist to fund political parties or candidates	Core Aust draft index; GRI
<i>Competition and Pricing</i>	Court decisions regarding cases pertaining to anti-trust and monopoly regulations	GRI
	Description of policy procedures and compliance mechanisms for preventing anti-competitive behaviour	GRI
<i>Customer health and safety</i>	Policies for preserving customer health and safety during use of organization’s products and services; application of the policy; procedures and programs to address the issue, monitoring systems	Core Aust draft index; GRI
	Number and type of instances of non-compliance with regulations concerning customer health and safety including the penalties and fines assessed for these breaches	GRI
	Number of complaints upheld by regulatory or similar official bodies to oversee or regulate the health and safety of products and services	GRI
	Voluntary code compliance product labels or awards with respect to social	GRI

	and or environmental responsibility that the reporter is qualified to use	
<i>Products and services</i>	Description of policy procedures management systems and compliance mechanisms related to product information and labelling	GRI
	Number and type of instances of non-compliance with regulations concerning product information and labelling	GRI
	Description of policies procedures management systems and compliance mechanisms related to customer satisfaction	GRI
	Customer charter	Westpac
	Accessibility for the disabled	GRI Westpac
<i>Advertising</i>	Description of policies procedures management systems and compliance mechanisms for adherence to standards and voluntary codes related to advertising	GRI
	Number and type of breaches of advertising and marketing regulations	GRI
<i>Respect for Privacy</i>	Description of policies procedures management systems and compliance mechanisms for consumer privacy	GRI
	Number of substantiated complaints regarding breaches of consumer privacy	GRI
	Premature death from heart disease	London ³⁰
	Average life expectancy	UK gov ³¹
	Crime	London
	Child poverty	London
	Proportion of working-age people who live in households where no-one works	UK gov
	House price/income ratio	London
	Proportion of single elderly households experiencing fuel poverty	UK gov
	Equal opportunity – ethnicity (comparative unemployment rates)	London
	Equal opportunity – gender (comparative unemployment rates)	London

³⁰ London First Sustainability Unit. A Triple Bottom Line for London: An Index of London’s Sustainability 2003, <http://www.london-first.co.uk>

³¹ Sustainable Development –the UK Government’s approach. Headline Indicators 2004, <http://www.sustainable-development.gov.uk>

	Unemployment Percentage of working age people in work	London UK gov
	Education Qualification at age 19	London UK gov
	Housing condition	UK gov
<i>Libraries</i>	Access to community information (website visits)	W'gong Council ³²
	Supply of new library materials	W'gong Council
	Public access computers	W'gong Council
	Range of services for children and youth	W'gong Council
<i>Community services</i>	Services for older people and those with disabilities and carers	W'gong Council
	Volunteering (opportunities, support, training, matching)	W'gong Council
	Community facilities	W'gong Council
	Grants to local communities	W'gong Council
	Partnerships with community, business, industry, education and government sectors	W'gong Council
	Arts: opportunities and cultural events	W'gong Council
	Respite services	W'gong Council
	Community transport	W'gong Council

Corporate Responsibility Index (St James Ethics Centre, The Sydney Morning Herald, The Age)

<p>Access to justice Addressing homelessness Alcohol misuse Economic development Employee assistance program (EAP) Employee development Employee engagement Employee programs and support Accessible communications products and support for people with disabilities Financial inclusion Financial literacy Flexible working conditions Human rights Information transparency and awareness raising Internal cultural transformation Noise Social inclusion</p>	
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³² Wollongong City Council. Annual Report, 01/02

	Supporting youth training and development Work life balance Workplace satisfaction	
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SYSTEMS THEORY, THE WESTERN FUNCTIONAL CONCEPTION OF DEVELOPMENT AND THE DIFFERENCES OF VALUE WORLDS AND CULTURES¹

Philippos Nicolopoulos²

I

The meaning of the developmental process, as it has been formed in the western world after the 2nd world war, was associated with the belief that all the countries of the planet could reach the economical and technological standards of the developed industrial countries of western Europe and northern America independently of their economic and social history. The point was to adopt the western rational criteria (in both quantitative and qualitative terms) and to define a developmental process in compliance with them. The formation of society gradually would change and would acquire the same structural and institutional features, as those of the so-called “first world”³.

A specified dimension of development was the political one. It was a dimension related to the political system and the political processes. Thus, we constructed in addition the term and the meaning of “political development”, which, of course, was based on the conception of western indirect and representative democracy⁴.

It was an optimistic view. Let’s take, for example, the known developmental scheme of W.W. Rostow: “The traditional Society”-“The preconditions for take off”-’The take off”-”The drive to maturity”-”The Age of high mass- consumption”(from *The Stages of Economic Development*⁵). Let’s, also, remember *the structural – functional approach* of development of Gabriel Almond and Bingham Powell in their book *Comparative Politics: A Developmental Approach*⁶ or of Gambriel Almond, James S. Coleman, Lucian W. Pye, Dunkwart A. Rustow et al. in their book *The Politics in*

¹ A version of this paper was presented at the 4th International Conference Of Sociocybernetics, June 29-July 5 2003, Corfu, Greece.

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³ J. P. Nettle, "Strategies in the study of Political Development" in Colin Leys (ed.) *Politics and Change in Developing Countries: Studies in the Theory and Practice of Development*, London, Cambridge University Press, 1969, pp. 15-22.

⁴ Keith r. Legg, *Politics in Modern Greece*, Stanford, Stanford University Press, 1969, pp. 1-18 ("Introduction" with references to modern theories about "the political development"); Colin Leys, "Introduction" in Colin Leys (ed.) *Politics and Change in Developing Countries*, op. cit., pp. 1-12; Lucian W. Pye, "The Concept of Political Development" in Jason L. Finkle and Richard W. Gable (eds), *Political Development and Social Change*, 2nd ed., New York, John Wiley and Sons, 1971, pp. 43-51.

⁵ W. W. Rostow, *The Stages of Economic Growth*, 2nd ed. London, Cambridge University Press, 1971, pp. 4-17.

⁶ Gabriel Almond and Bingham Powell, *Comparative Politics: A Developmental Approach*, Boston, Brown and Co., 1966.

*Developing Areas*⁷. Even in Talcott Parson's theory of social systems there exists an idea about change. But what kind of change? T. Parsons speaks about "institutionalized rationalization"⁸ and about "factors of change"⁹, which are introduced into the social systems thanks to the above mentioned institutionalization ("institutionalization of science"¹⁰ and of its applications in various technical fields). In the case of "charismatic revolutionary movement"¹¹ he is skeptical about the real "social leap" associated with stable radical changes and he adopts finally the "long-run continuance"¹², as the reference point and the undoubted reality, which the "revolutionary movement" should be adapted to.

I could mention many other developmental ideas and schemes of western social scientists, especially of the Anglo-Saxon scientific world (e.g. works of David Apter¹³, of Lucian Pye¹⁴, of Fred Riggs¹⁵, of S.N. Eisenstadt¹⁶, of Karl W. Deutsch¹⁷, of Samuel P. Huntington¹⁸). In all these western developmental conceptions and theories there is a gradual (according to a scheme of exact stages or not) change of the existing social structure towards a more progressive society with more fair distribution of the existing goods and more democratic participation of people in decision – making processes. (The "progressive" element according to western perceptions about development is not always identified with the "socialist" one; it is rather conceived on the basis of the positive aspects of liberalism).

I do not believe that the above mentioned perceptions, ideas and theoretical elaborations are absolutely wrong and that they do not include useful theoretical tools and scientific elements for developing countries. But the point is to conceive them in their real possibilities and dimensions and to make a criticism without bias or a unidimensional way of thinking. In addition one can and should understand this 'theoretical content' in its socioeconomic and historical terms from the standpoint of the sociology of knowledge and the sociology and history of science and ideas.

⁷ Gabriel Almond and James S. Coleman (eds), Princeton, Princeton University Press, 1971, pp. 3-64, 109-138, 183-233, 354-365, 391-444.

⁸ Talcott Parsons, *The Social System* London, Routledge and Kegan Paul, 1967, p. 505.

⁹ Ibid, p. 505.

¹⁰ Ibid, p. 505.

¹¹ Ibid, pp. 520-535.

¹² Ibid, p. 521.

¹³ David E. Apter, *The Politics of Modernization*, Chicago, University of Chicago Press, 1969.

¹⁴ Lucian W. Pye, *Aspects of Political Development: An Analytic Study*, Boston, Little Brown and Co, 1965.

¹⁵ Fred W. Riggs "Agraria and Industria: A Typology of Comparative Administration" in William J. Siffin (ed.) *Towards the Comparative Study of Public Administration*, Bloomington, Indiana University Press, 1957 pp. 23-116; *Administration in Developing Countries*, Boston, Houghton Mifflin, 1964.

¹⁶ S.N. Eisenstadt, *Modernization; Protest and Change*, Englewood Cliffs, Prentice-Hall, inc., 1966.

¹⁷ Karl W. Deutsch, *The Nerves of Government*, New York, The Free Press of Glencol, 1966.

¹⁸ Samuel P. Huntington, *Political Order in Changing Societies*, New Haven, Yale University Press, 1976.

We can conceive in general lines the above mentioned theories as functional ones, independently of partial differences among them. What are the salient features of these theories? *They give a priority to the coherence and the order of a society and they try to define a “regulated” and “classified” change process towards the structural and institutional characteristics of the developed so – called “first world”*. The inherent conflicts among social groups and classes as change factors¹⁹ towards a society with more just and democratic structures are rather out of their scope. They are rather considered as factors associated with dysfunctions, the effects of which might be limited through the “corrective” mechanisms of the political system. The conception of development in the decision-making mechanisms of the International Monetary Fund and of the World Bank is formed approximately on the basis of these functional perceptions. The class conflict analysis or especially the conflict analysis at the world level (with marxist or neo-marxist elements included) are absent. The global neoliberal directions are absolutely combined with some supposed *functional prerequisites* .

II

Systems theory, of course, is not identical to functional theoretical schemes, but some common elements can be found²⁰. Some known examples: T Parsons’, D. Easton’s, G. Almond’s theoretical schemes, in which the classical model of “input-output–feedback” of 1st order Cybernetics is obviously present. Another example from Continental sociology is the case of Niklas Luhmann²¹.

That’s why the “accusation of conservatism”, which at first was associated with functionalism, was also made against systems theory. And that’s why systems theory and sociocybernetics should be separated from the functional-static theoretical front, taking seriously into account *the positive feedback process, the dynamics of conflicts, the process of change through conflicts*²² and *the variety and differences of cultures and value worlds*, as human creations influenced by concrete socioeconomic and historical circumstances.

Let’s underline some common points between systems theory and functionalism.

1) If one approaches this comparison from a historical point of view, one finds that the system concept developed in the decades of 20’s and 30’s in parallel with the elaboration of functional ideas²³. Bertalanffy first presented his “general systems theory” in 1937-1938²⁴. In the same decade

¹⁹ K. Marx Fr. Engels, Manifesto tou Kommounistikou Kommatos (Manifest of the Communist Party), Athina (Athens), "Sinchroni Epochi", 1977 pp. 18-36; Jonathan H. Turner, *The Structure of Sociological Theory*, 5th ed., Belmont, Wadsworth Publishing Company, 1991, pp. 181-185, 254-282 (about conflict and critical theorising).

²⁰ Jonathan H. Turner, op. cit., pp. 116-130.

²¹ Ibid, pp. 93-130.

²² Tom Baumgartner, Tom R. Burns and Philippe Devillè "Actors, Games, and Systems: The Dialectics of Social Action and System Structuring" in R. Felix Geyer and Johannes Van der Zouwen *Sociocybernetics*, Leiden, Martinus Nijhoff Social Sciences Division, 1978, pp. 27-54.

²³ Michael Decleris, "The Evolution of Systems Thinking" in Michael Decleris (ed.), *Systems Science Manual*, Athens, 1991, pp. 14-16.

T. Parsons worked in the systems field²⁵. Both were influenced by biological theory. T. Parsons was influenced by the biologists Henderson and Claude Bernard²⁶.

Bertalanffy and Parsons conceived a well organized “complex totality”, where the “whole” obviously is something more than sum and its parts (an idea which was not unknown to the ancient Greek philosophers). They were searching for general principles, with exact rational definitions and “equilibriums” (accordingly to the functions of biological organisms). The internal conflicts of an entity and especially the internal conflicts as “factors of progress” were disregarded.

In the later decades, systems theory, cybernetics and functionalism proceeded on the basis of the same great guidelines. (Shannon’s mathematical theory of information²⁷, communication theory²⁸, N. Wiener’s theory of control systems²⁹, black box and white box methodology³⁰, systems engineering³¹, mathematical model and systems theory). Only after 1970 cybernetics and much more sociocybernetics started to introduce and to use more often in their approach the concepts of *change*, *positive feedback*, *morphogenesis*, *auto-catalysis* and *cross-catalysis*³².

2) Both theories, at least till the 70’s, give priority to the elements of order and to the processes of “equilibrium” of an entity. They are mainly interested in systems in an “equilibrium” situation or systems fluctuating near to this situation through *homeostasis* processes.

3) Both of them conceive the parts as entities that are associated by harmonious and predictable relationships

²⁴ Ibid, p. 16; Ludwig Von Bertalanffy, *Theorie Generale des Systemes*, Paris, Dunod, 1973.

²⁵ Michael Decleris, "The Evolution of Systems Thinking", op. p. 16.

²⁶ Ibid, p. 14.

²⁷ O. Shannon and W. Weaver *The Mathematical Theory of Communication*, Illinois, University of Illinois, Press, 1949.

²⁸ Gerbner, G. "Toward a General Model of Communication", *Audio Visual Communication Review*, IV:3, 1956; Lasswell, H., "The Structure and Function of Communication in Society" in L. Bryson (ed.), *The Communication of Ideas*, New York, Institute for Religious and Social Studies, 1948.

²⁹ Wiener, Norbert, *Cybernetics or Control and Communication in the Animal and Machine*, Cambridge, MIT Press, 1961.

³⁰ Michael Decleris, op. cit., pp. 19-20 (reference to the contribution of A. Rosenblueth, N. Wiener, J. Bigelow); A. Rosenblueth, N. Wiener and J. Biglow "Behaviour, Purpose and Teleology", *Philosophy of Science*, 10, 1943.

³¹ Chestnut, *Systems Engineering Methods*, New York, 1967; Hall, *Systems Engineering*, Princeton University Press, 1962; Michael Decleris, op. cit., p. 20.

³² R. Felix Geyer and Johannes Van der Zouwen, "Introduction" in R. Felix Geyer and Johannes Van der Zouwen, *Sociocybernetics*, op. cit., pp. 1-3; Felix Geyer, *The Challenge of Sociocybernetics*, paper presented in the 13th World Congress of Sociology, (Bielefeld, July 18-24, 1994), pp. 5, 7-13.

4) Both of them accept that an entity (in a normal situation) is characterized by an internal steady coherence.

5) Both of them do not accept conflicts as basic inherent feature of the reality

6) Both of them accept some general principles and conceptions independently of the various contents at an empirical level. For these principles and conceptions there exists a supposed general consensus of all observers (at first the spirit of “observed systems” dominates)

7) Both of them accept that each part or element of an entity fulfills a concrete work that covers concrete needs of the whole entity (functions) and contributes to its maintenance and to its self-reproduction in the future.

8) Both of them are based on a rational perception of the world, as it has developed in Western civilization, since the era of the Enlightenment onwards. The same perception was the basis for the idea and the programs of development.

From the standpoint of the sociology of scientific knowledge, one can maintain that this rational perception of the world and the belief that humanity can attain progress and prosperity through scientific and technological knowledge is associated with the predominance of the bourgeois class and its value system³³.

Such a thesis, of course, does not mean that we do not recognize a relative autonomy of ideas and of the intellectual world or of the progress of scientific knowledge. We focus only on the connection, on the association between the two poles: a) social class and b) rational knowledge. We do not maintain that the only cause of the latter is exclusively the former.

III

From a functional point of view the issue of social change and more specifically the process of development are considered in a way that is always close to the spirit of these common points. Post-war development should take place in an evolutionary way within social systems and without doubts about the existing class structure and the idea of “ruling class”, as it has been constructed in western societies based on a market economy. The “revolutionary social leaps” are rejected and they are more strongly rejected, if they are connected with goals which tend to build a society different from that of the western type (a recent vulgar example is the Bush administration’s view about how the new Iraq should be rebuilt...). The process of development should be “controlled”, “classified”, “regulated”, “associated” with the western liberal value world. The inherent conflicts of the social reality within the developing country itself or the tensions and conflicts between the core of the developed “first world” and the peripheral or semi-peripheral capitalist countries (tensions and conflicts associated with structural characteristics and tendencies of the global capitalist system)³⁴

³³ Panajotis Kondilis, *I Parakmi tou Astikou Politismou* (Der Niedergang der Bürgerlichen Denk - und Lebensform), 3rd ed., Athens, Themelio, 2000, pp. 179-181.

³⁴ Even George Soros is very anxious. See his book *The Crisis of Global Capitalism* (I Krissi tou Pagomiou Kapitalismou, I Anikti Kinonia se Kindino) *The Crisis of Global Capitalism, Open Society in Danger*, Athina (Athens, Nea Sinora, 1999).

are neglected. More theoretically one can say that the “far-from-equilibrium”³⁵ situation and specifically the process of radical positive change and progress through social conflicts is rather beyond its scope. In contrast with the view of *complexity theory*, it does not believe that a situation of social entropy (as there exists, for example, in a revolutionary period or in a period of a regime collapse) can be a pre-stage for the *emergence of a new society with structures organized with a better and more effective way* (let’s remember the “dissipative structures” and the “bifurcation point” of the *complexity theory*³⁶).

It is an approach which is opposed to *conflict theorizing* and believes that a society can find its “developmental road” through value consensus about the goals of this process, neglecting the various interest and power contradictions that are associated with the economic and class infrastructure of this society.

Another basic point of the western-functional theory of development is that ultimately it is characterized by a spirit of *utilitarianism* and *individualism*. The goals of postwar development were the increase of economical standards, the production and the consumption of material goods and the gratification of the demands of individuals³⁷. In W.W.Rostow’s development theory, for example, the last stage of the development process is that of a *mass consumption society*, a society of integrated capitalism with mass production and mass expanded open markets, where the individuals can gratify all their desire through market economy laws (e.g., the contemporary U.S.A society). Apart from the criticism that might be made against the ideals of this society and about a supposed possibility for a generalization of this type of society in every part of the planet, the fact is that this developmental model and its ultimate goal is individual-centered.

It is known, of course, that functionalism, as theory, is interested in the “social whole”, about how this “whole” works and about how this “whole” maintains and succeeds its self-reproduction through a set of institutions. Thus, it has concrete differences from the *behaviorism* (which is a more individual-centered theory) and from various versions of individualistic approaches to social phenomena³⁸ (e.g. Weber’s approach, Hayek’s approach, symbolic interactionism, etc.). But these differences do not constitute a contradiction to the above mentioned ultimate goals.

The main versions of functionalism (apart from the theories of social anthropology), since 19th century onwards, developed in European and American bourgeois society. So the society which would be maintained through institutionalization and consensus was this one. Even Durkheim, who, of course, did not adopt an individualistic approach, did not deny the industrial-bourgeois society but he was dealing with the way in which this society would find the corresponding value and moral system in a non violent or non revolutionary way³⁹. That is why his “socialism” was different from

³⁵ Felix Geyer, *The Challenge of Sociocybernetics*, op. cit., p. 14; Ilya Prigogine - Isabelle Stengers, *Taxi Messa Apo to Chaos. O Neos Dialogos tou Anthropou me tin Fissi (Order Out of Chaos. Man's New Dialogue with Nature)*, Athina (Athens), Kedros, 1984, pp. 199-214, 231-242.

³⁶ Felix Geyer, op. cit., p. 14; Ilya Prigogine - Isabelle Stengers, op. cit., pp. 58-65.

³⁷ W.W. Rostow, *Politics and the Stages of Growth*, Cambridge University Press, 1971, pp. 218-229.

³⁸ Jonathan H. Turner, *The Structure of Sociological Theory*, op. cit., pp. 285-287, 269-377, 379-389.

³⁹ Emile Durkheim, *The Division of Labor in Society*, London, The Free Press, 1964, pp. 396-409.

that of K. Marx. And the “actor” of T. Parsons, the “actor”, who possesses many “roles”, in the last analysis, reflects a western construction of "an individual-citizen", who is activated in a liberal and pluralistic society of the West. In all his theory, there is a latent tendency to give priority to a modern liberal society with a market economy⁴⁰.

But apart from all these mentioned above, the western functional theory of development tends to underscore something more concrete: how, through scientific knowledge and technology, a society can reach a stage in its evolution, where *the value patterns and the socioeconomic structures will be similar to those of the industrial and capitalist (including the Keynesian policies) “first world”*. Thus, indirectly it accepts an *individual-centered society*, although contemporary late capitalism is organized in cooperation with state mechanisms and a pure liberal economy does not exist there. But even this society of an “organized capitalism”, in the last analysis, is an individual–orientated one and in its value patterns, the individual, the market economy and the “personal dream of prosperity”, have priority.

Furthermore, if one says that the same society has developed also the spirit of *utilitarianism*, one is right. Its goals are associated with the phenomena of “industrialism”. And industrialism, in its turn, is associated with so-called *instrumental rational knowledge*⁴¹ and the *ability to exploit natural and human resources*. This ability is extremely developed in western civilization. The *ratio* was called to serve the “useful” and the *ratio* organized new advanced ways of exploitation of natural and human resources, in order to fulfill its initial “useful” goals. (The function of ratio in the ancient greek civilization was rather different and worked independently of utilitarian mechanisms⁴²).

IV

But one may ask: do “change” and more concretely the “development”, as have been constructed in the West in the post-war period, really proceed as the functionalists believe? The point is not to remain clinging to an ethnocentric western and liberal perceptiobut to search for empirical evidence about what actually happens in these processes.

K. Marx in his “Capital” refers to the violent way in which the people of the countryside in England, in the period of the so-called *initial accumulation of Capitalism*, were forced to abandon their homes and to stay near to urban areas⁴³. He refers to real historical evidence and he tries to point out that the transition from feudalism to capitalism was not a normal peaceful process, while the initial accumulation had to do with predatory raids of Europeans against the populations of the new lands after the 15th century⁴⁴. What happened in England has been repeated in other countries in similar ways.

40 Talcott Parsons, *The Social System*, op. cit., pp. 243-248.

41 Max Horkheimer, *I Eklipsi tou Logou (The Eclipse of Reason)*, Kritiki, 1987, pp. 33-43

42 Let's remember the famous *“Θεωρίης ἐνεκεν”* (i.e. we work in the field of science and philosophy for the “theory itself and not for practical purposes”) of the ancient greek thinkers!

43 Karl Marx., *To Kefaleo (The Capital)*, Athina (Athens), Ekdosis Sinchroni Skepsi, 1975, pp. 738-769.

44 Ibid, pp. 774-788.

The exponents of the “center-periphery” theories (E. Wallerstein⁴⁵, S. Amin⁴⁶, A.G. Frank⁴⁷ et al.) in their analyses point out how *painful for the traditional societies and economies was the intervention of capitalist forces and the total pressure of the world capitalist system*. But in the same analyses they maintain that this intervention and pressure did not create effective economies and steady general prosperity in the traditional periphery or in other countries which did not belong to the “first world”. It is true that economies and societies have been changed but with many elements of disorder and disruption. Social and economic inequality increased, violent riots happened and the harmonious relationship among primary, secondary and third section of their economy was not realized. The development of industry and especially of heavy industry, based on the indigenous productive forces of these countries, proved to be a problem.

The certain point was *the increasing dependency on the economies, the technological “know how” and the great power poles of the developed countries*⁴⁸.

On the other hand, traditional cultures and identities have been subverted and new cultural balances with a combination of cultural patterns have not been found. Some patterns were and are still competitive and the state of cultural or value confusion has not been avoided.

Thus, the rational “blue prints” have not been realized and the normal successive transition from the one “Rostow’s stage” to the other has not proved to be feasible and easy. In the global capitalist system some structures of the “first world” do not allow the peripheral or semi-peripheral countries to accomplish the same economic development as that of the “first world”. There are contradictions and asymmetrical processes between the two worlds. The results of my research programs in two historical and touristic islands of Greece, Crete and Corfu (the first had as object: “Socioeconomic Structures, Development Policy and Ecological Problems: The case of Crete”⁴⁹ and the second: “Sample Census in the Old town of Corfu and Sociological Study of the Problems and the Prospects of its Restoration”⁵⁰) point out that the engagement of the population in the economic

45 I. Wallenstein, *The Modern World System: Capitalist Agriculture and the Origins of the European World - Economy in the Sixteenth Century*, London, Academic Press, 1974, *The Capitalist World-Economy*, Cambridge, Cambridge University Press, 1979, *The Modern World System: Mercantilism and the Consolidation of the European World Economy*, London, Academic Press, 1980, *Historical Capitalism*, London, Verso, 1983.

46 Samir Amin, *Unequal Development*, 1976.

47 A. G. Frank, *Capitalism et Sous-Developpement en Amerique Latin*, Paris, 1968, *The Economic Impact on Under-developed Societies*, Oxford, 1959, *Crisis in the World Economy*, London, Heinemann, 1980.

48 Vassilis Filias, *Kinoniologia tis Ipanaptixis (Sociology of Underdevelopment)*, Athina (Athens), Sinchroni Epochi, 1996, pp. 133-150.

49 The research program has been supported by the Greek Ministry of Environment and Public Works. The report-study for the two first stages of the research (in which all the empirical surveys have been finished) has been submitted to the appropriate Ministry Committee and was approved in June 2003.

50 The final report-study about the results of the research program with object “Sample census of the households in the historical Center of Corfu and study on the existing problems and the perspectives and the

sphere towards activities that were associated with mass tourism was, to some extent, a compulsory choice, thanks to the weaknesses of the primary and secondary section of the economy, as well as of the ineffective peripheral policy of the country. The above mentioned weaknesses have to do with these "asymmetrical" processes between the two worlds⁵¹. Consequently many points of the value systems of the two worlds are different, since the socioeconomic structures, which surround them are also different. The value system of the "dominant" and that of the "dominated" are not the same. Any collective value system, in general, has not been created independently of power relationships.

V

Another reason for value differences is the difference of cultures and perspectives. Some cultures include values and "states of mind" opposite to those of the western world and especially opposite to the spirit of exploitation, utilitarianism and accumulation. Let's remember some perceptions of the pre-Colombian Indians of North America, who rejected the "white civilization of accumulation and of systematic exploitation of nature⁵²". Let's also remember the great philosophical-religious theories of Asia (Buddhism, Zenism, Taoism, etc.), which give priority to the internal human world, to its harmony with the essence of the universe and reject the subjugation of nature or of human populations to some dominant human groups for economical or other reasons. They also reject the western belief in rational certainty⁵³ and the long – run rational programs of human activities (including scientific predictions and technological possibilities). For them the reconciliation with the idea of death is some thing more serious and wise. One may refer to many other cultural differences that, in the last analysis, are associated with the doubt of the supposed exclusive superiority of the western civilization and especially of its industrialism and "of its unwise rationalism".

Western civilization and the "first world" try constantly to impose their own value system or, at least, to prove that this system has an undoubted superiority and rightness. So to speak, they try to create an intellectual and cultural "uniformity". But, of course, there are intellectual, social and cultural resistances. And such a reaction is something reasonable and acceptable.

In an era of globalization and multiculturalism the whole perception of development should be revised. Social scientists cannot remain so simplistic regarding the alleged general validity of some

repercussions of its restoration" has been submitted to the appropriate committee of DEPOS A.E. (Public Company of Urban Planning and Housing) and was approved in October 2002.

51 James Petras, *Imperialismos, Kinonikes Taxis kai Ikonomiki Anaptixi (Imperialism, Social Classes and Economical Development)*, Athina (Athens), Stochastis 1983, pp. 99-109, 143-54.

52 Let's remember the meaning of the response of the Indian leader Seattle (he was leader of the Duwamish tribe in North Western America) to the U.S.A. president Franklin Pierce in 1854) "...The land does not belong to us, but we belong to it...". Another interesting text written by Indians (Iroquois) was the text, which was presented at the International Conference of Indian Ethnic Groups in Geneva in 1977. This text with the title "*White Man, Listen..., Message of the Iroquois to the Western World*" includes a profound critical analysis of the western civilization.

53 A characteristic example of this philosophical attitude is that of Zenism (D.T. Suzuki, *Zen*, Athina (Athens), 1975).

western development principles associated with the market economy and a western type polity. Similarly, they should not be so prompt to accept the “superior-inferior” hierarchy in the field of cultures, from the point of view of the alleged undoubted supremacy of the western civilization.

VI

Let us focus on some points, which, I think, should be taken into account in this new perspective. Can sociocybernetics contribute to this perspective? Yes, it can, since having adopted the characteristics of 2nd cybernetics, it has surpassed the narrow standpoint of “observed systems”. The point of view of reflexive “observing human systems” now has priority⁵⁴.

1) Conflicts are part of social reality and especially of the reality of the global capitalist world. In parallel one should accept a rich variety of cultures, which in many fields include contradictory values. One cannot know if one is able to succeed in the elimination of conflicts but one can work effectively trying to reduce them. On the other hand one should have reservations about the hierarchy of “superior” and “inferior” in the study of cultures. The same culture, according to defined criteria, may have “superior” and “inferior” elements in comparison with another one. Social scientists should be sensitive to the “messages” of other cultures that are different from the western ones and, much more, they should conceive these messages as fruitful criticisms against it.

The development program should take into account the above mentioned elements and adopt this “open” view about intervention in social reality.

2) Many elements of the western functional theory of development are useful but should be combined with the class struggle approach and generally with the view of conflict theorizing. The sociology of development has the right to try for a new theoretical synthesis, in which the analysis of the concrete socioeconomic and cultural situation of the developing country should have a priority. All countries do not follow the same road and various types of cultural osmosis can emerge.

Popper’s ideas about “situational logic” and “historical interpretation⁵⁵” can constitute an interesting methodological guideline. Another interesting point of view is that of complexity theory, according to which a “far from equilibrium situation” may contribute to the emergence of a new more advanced social organization⁵⁶.

3) Social things are formed neither according to the principles of social determinism nor according to the alleged exactness of a model of social engineering. There are social trends in which the political leadership and the social scientists can intervene⁵⁷ but they should understand that

54 Heinz Von Foerster *Cybernetics of Cybernetics*, paper presented at 1970 annual conference of the American Society for Cybernetics; Bernd R. Hornung, *Towards a Sociology of Process and Information, Information, Communication, and Action in a Constructivist Approach*, paper presented at the 3rd International Conference on Sociocybernetics, Leon, (Mexico) June 24th - July 1st, 2001.

55 Karl R. Popper, *The Poverty of Historicism*, London, Routledge and Kegan Paul, 1961, pp.147-152.

56 M. Mitchell Waldrop, *Complexity, the Emerging Science at the Edge of Order and Chaos*, New York, Simon and Schuster (Touchstone book), 1993, pp. 9-13.

57 Karl R. Popper, op. cit., pp. 105-119.

human beings and social groups do not behave like “mechanical objective systems”. Human systems are flexible and negotiated systems⁵⁸.

4) *The industrial model of development is the dominant one in western economies, but is not necessary to believe that it should be imposed in every country in the same way⁵⁹. Each country can find its own way of development and should not identify development with economic growth. The ideal of a mass consumption society seriously can be doubted.*

5) *The development process should not be associated exclusively with economic and material goals or with the capitalist economy.*

The ultimate goal is the increase of quality of human life (not only in environmental terms) and this quality includes many dimensions and parameters (the ideas of freedom, of social justice and social equality included). Man does not proceed based only on material wealth, on ratio and on certain predictions. Man composes a multi-dimensional and multi-various reality, to a point constructed by himself, and this reality exactly should be taken into consideration by the development specialists.

58 John A. Busch and Gladys M. Busch, *Sociocybernetics, A Perspective For Living In Complexity*, Social Systems Press, 1992.

59 At this point one can mention the Ivan Illich's critique against the current industrial economic development, which, according to him, leads to the subversion of *vernacular skills*.

HUMBERTO R. MATURANA/BERNHARD POERKSEN
AUTOPOIESIS AND SOCIAL THEORY
A CONVERSATION

Humberto R. Maturana, * 1928, first studied medicine in Chile, then anatomy in England, was awarded a Ph.D. in biology at *Harvard* in 1958, and subsequently worked at the *Massachusetts Institute of Technology* (M.I.T.). In 1960, he returned to work with the *University of Chile at Santiago*, which he only left for occasional periods of research and teaching abroad. He is particularly well known for his theory of autopoiesis (self-creation) that he began to develop in the late 1960s. This theory provides a novel feature of living beings going beyond the traditional criteria of biology - reproduction, mobility, etc. According to Humberto R. Maturana, a circular, autopoietic form of organisation distinguishes living beings, from the amoeba to humans. Living systems form a network of internal and circularly enmeshed processes of production that make them bounded unities by constantly producing and thus maintaining themselves. Autopoietic systems are autonomous. Whatever may happen inside them, whatever may penetrate and stimulate, perturb or destroy them, is essentially determined by their own circular organisation. The concept of autopoiesis began to gain greater popularity in the early 1980s. In the meantime, it has exploded in academic circles and become a synonym for an autonomous form of reality production. It has taken on a vital life of its own as a universally exploitable trendy concept in journals on systems thinking and family therapy or at the conferences of sociologists and media scholars - even in the face of resistance by its creator. Humberto R. Maturana is still active as a professor of biology who seeks to promote a theory of cognition in the context of the natural sciences. Until his retirement, he was director of the *Laboratory for experimental epistemology and the biology of cognition* at the *University of Chile* in Santiago, which he had founded himself.

A concept becomes fashionable

Poerksen: You have been trying hard to retain the concept of autopoiesis exclusively for the characterisation of the living. Nevertheless, your ideas are now commonly used in social theory, in the description of society. Meanwhile, everything is an autopoietic system – science, journalism, football, families, art, politics, societies, etc. –, everything vibrates along according to its own rules within its own boundaries.

Maturana: That is so. People like and honour me as the inventor of the term and the concept of autopoiesis – particularly so, when I am not present and unable to tell them what I really said. When I appear in person, however, I always point out that the concept is, in my opinion, only valid for a certain defined domain for which it solves a particular problem. A few years ago, for instance, I was invited to a conference at the *London School of Economics*, which dealt with the problem of whether social systems could be seen as autopoietic. The debate lasted three full days and, at the end, I was asked to say a few concluding words. I said: „For three days I have been listening to your ideas and exchanges, and I want to put the following question to you now: What are the features of a social system that would justify choosing as the topic of this conference the problem whether a social system could be classified as autopoietic or not?“

Poerksen: You meant to suggest a different starting point for their deliberations: one must first understand the social phenomena before one can attempt to describe them more precisely with a concept borrowed from biology.

Maturana: Precisely. Applying the concept of autopoiesis to explain social phenomena will cause them to vanish from your field of vision because your whole attention will be absorbed by the concept of autopoiesis. Naturally, we can discuss whether the house we are sitting in now is an autopoietic system. The choice of this topic, however, has the unavoidable effect that the features of an autopoietic system will guide our reflections. Asking for the constitutive properties of the entity of a house, however, and whether its characteristics accord with the concept of autopoiesis, will leave us free to analyse and investigate. We might then find that houses cannot be described as autopoietic, - or must be described as such. Who knows?

Poerksen: Is it not fascinating to play with the idea of imagining a whole society as a collection of autopoietically functioning giant cells? One such giant cell, we might say, is formed by the media, another by politics; still others comprise the economic system, science, art, etc.

Maturana: Naturally, in a community of artists works of art are produced, there are discourses and reflections about art, – but is all this autopoiesis? What is produced here in what domain and in what way? In all the different social systems you have quoted, there are indubitably dimensions of autonomy, but there is no autopoietic organisation. I can only repeat: Autopoiesis refers to a molecular network of the production of molecules that through their interactions produce that very network and create its boundary. Autopoiesis is *one* variant of autonomy among many others. Both concepts have to be strictly distinguished.

Imploring Erich Jantsch on bended knees

Poerksen: Your readers and disciples do not share your plea for precision. The astrophysicist Erich Jantsch, in his book *The self-organisation of the universe*, published in the late seventies, describes

practically any kind of recursive figure as autopoietic. I am told that you met Jantsch once and, in a dramatic gesture, fell on your knees and implored him to stop misusing your concept. Is this correct?

Maturana: It is. On that occasion, I tried to support my argument by a joke and to plead for a little more seriousness in a funny way. My genuflection took place in the year 1978; Francisco Varela had organised a meeting with Heinz von Foerster, Gregory Bateson, Ernst von Glasersfeld, Erich Jantsch and me. We had dinner together – and at some stage, I knelt down and said to Erich Jantsch that he would destroy the idea of autopoiesis if he went on using the concept in such generality.

Poerksen: How did he react?

Maturana: He insisted that autopoiesis was very well suited to describe all systems that were autonomous in some way; my objections were not valid; I was not prepared to accept all the consequences of my own theory. My own view is, however, that using a concept outside its proper context of application means committing a double fault: the concept will work properly neither in the original nor the new domain.

Poerksen: In Germany, the sociologist Niklas Luhmann at Bielefeld University has been one of the best-known proponents of the theory of autopoiesis. He introduced the concept in his central work *Soziale Systeme*, published in 1984, and from there went on to elaborate this theory by describing all the different domains of society as self-directed producers of their own specific realities. Luhmann brought about the *autopoietic turn* in sociology.

Maturana: When I was a visiting professor at Bielefeld I never withheld my criticism but articulated it frequently in numerous debates. „Thank you for having made me famous in Germany,“ I said to Niklas Luhmann, „but I disagree with the way in which you are using my ideas. I suggest that we start with the question of the characteristics of social phenomena. The concept of society historically precedes the idea of the autopoiesis of living systems. Society was the primary subject of debate; autopoiesis and social systems came much later. It follows, therefore, that we should first deal with all the relevant phenomena appearing in the analyses of society and only afterwards ask ourselves whether they may be elucidated more precisely in terms of the concept of autopoiesis.“

Poerksen: You are cautioning against the dangers of reductionism.

Maturana: The problem simply is that Niklas Luhmann uses the concept of autopoiesis as a principle in the explanation of social phenomena, which does not illuminate the processes to be described nor the social phenomena but tends to obscure them. Autopoiesis as a biological phenomenon involves a network of molecules that produces molecules. Molecules produce molecules, form themselves into other molecules, and may be divided into molecules. Niklas Luhmann, however, does not proceed from molecules producing molecules; for him everything revolves around communications producing communications. He believes that the phenomena are similar and that the situations are comparable. That is incorrect because molecules produce molecules without extraneous help, without support. This means: Autopoiesis takes place in a domain in which the interactions of the elements constituting it bring forth elements of the same kind; that is crucial. Communications, however, presuppose human beings that communicate. Communications can only produce communications with the help of human beings. The decision to replace molecules by communications places communications at the centre and excludes the human beings actually communicating. The human beings are excluded and even considered irrelevant; they

only serve as the background and the basis into which the social system – conceived of as an autopoietic network of communications – is embedded.

Poerksen: What swims into focus if we follow this perspective and describe a social system as a network of autopoietically self-reproducing communications, is an extremely weird social structure: a society without human beings.

Maturana: That is precisely the form of description manufactured by Niklas Luhmann. His conception can be compared with a statistical view of social systems: people with particular features do not feature in it. When we speak about social systems in our everyday life, however, we naturally have in mind all the individuals with their peculiar properties, who would protest against their characterisation as autopoietic networks – and do so, anyway, when they criticise Niklas Luhmann.

Poerksen: One might of course say: Well, that is the objection of an empiricist, which need not upset a theoretical sociologist.

Maturana: But all those who do not want to float about in a sphere of abstractions will surely insist on an answer to the question: How do we know that we are really dealing with a social system? Is it a social system because we are observing communications? Eventually human beings will inevitably emerge in the search for an answer. – But why does Niklas Luhmann proceed in this way, at all? He once told me that he excluded people from his theoretical design because he wanted to formulate universal statements. If one speaks about human beings, his argument was, universal statements become impossible. That view I do not share either.

Human beings are indispensable

Poerksen: The systems theory designed by Niklas Luhmann could perhaps be considered as a sort of *negative anthropology*: We cannot but remain silent in gentle humility and reverence regarding the infinitely manifold and ineffable mystery of humanity, the object of worship.

Maturana: I do not believe so because Niklas Luhmann has chosen this form of description to make universal statements. That was his reason for choosing a decidedly formal mode of description – like a mathematical system. What happens when human beings turn up with their likes and dislikes, their predilections and disinclinations, their desires and emotions? They are a threat to the beauty of the formal description and endanger the elegance of the formalism.

Poerksen: Nevertheless, the refusal to convert human beings into elements of one's theory could also be interpreted as a particular form of appreciation.

Maturana: That is possible; but even in the face of such a proposal you will have to take account of the people who may possibly complain and protest against their characterisation. If you deprive people of this opportunity, you treat them like freely disposable objects; they have the status of slaves, compelled to function without the opportunity of complaining when they do not like what is happening to them. Such treatment and contempt of people is standard practice in certain companies, communities, and countries that negate individuals. A social system that forbids and even principally excludes complaint and protest is not a social system. It is a system of tyranny.

Poerksen: If I understand your criticism correctly then it is primarily motivated by ethical considerations. This means that we are leaving critical epistemological analysis and entering the area of ethics. The issues are the protection of the individual and the fight for the rights of the individual.

Maturana: Just imagine for a moment a social system that is, in actual fact, functioning autopoietically. It would be an autopoietic system of the third order, itself composed of autopoietic systems of the second order. This would entail that every single process taking place within this system would necessarily be subservient to the maintenance of the autopoiesis of the whole. Consequently, the individuals with all their peculiarities and diverse forms of self-presentation would vanish. They would have to subordinate themselves to the maintenance of autopoiesis. Their fate is of no further relevance. They must conform in order to preserve the identity of the system. This kind of negation of the individual is among the characteristics of totalitarian systems. Stalin, therefore, forced party members who did not share his outlook to give up their positions so as not to endanger the cohesion and the unity of the party. In a democratic form of communal life, however, individuals are of central relevance and, in fact, indispensable. Their properties create the unique character of a social system.

Systems theory as worldview

Poerksen: The concept of autopoiesis has created a furore not only in science and amongst the followers of Erich Jantsch or Niklas Luhmann but also won huge popularity in the New-Age scene. I think we are witnessing a sort of paradigm change with the theorists and opinion leaders of the New Age. Years ago they were attracted by modern physics and the dance of the atoms. It used to be reported that the physicist Werner Heisenberg, the creator of the Uncertainty Principle, and the Buddha practically shared an identical view of the essence of matter. The syncretism that emerged could be called *quantum theology*. For some time now, the key concepts of the New-Age scene have been provided by Gregory Bateson, Francisco Varela and: Humberto Maturana. The protagonists of the scene – Capra & Co. – have been brewing a rather explosive mixture of spiritualism and science, a sort of *network theology*, which is supposed to be the scientifically legitimated foundation of the worship of universal connectedness.

Maturana: We have now hit upon the problem of reductionism, which is characteristic of our culture. Just look out the window for a moment. Over there, you see a loving couple, a young woman and a young man kissing each other. What is happening there? My answer would be: Whatever happens there happens in the domain of human relations. Naturally you can point out that in such exchanges of tenderness hormones and neurotransmitters are involved; no doubt we can speak of systemic processes in both organisms. All that would be correct, but what is occurring in the encounter of those two persons, their feeling of love is not grasped or described by the reference to such processes: the loving tender relation that those two persons are living cannot be reduced to hormones, neurotransmitters and systemic processes. What they live occurs in them in the flow of their interactions as these give rise to the flow of what they do with each other through them. – When Fritjof Capra and others promote their quantum theology or some network theology and begin to worship systems or networks, they are thinking and arguing in a reductionist way. They flatten and blur everything. They no longer speak of molecules but only of systems that they elevate to their new gods. This is obviously reductionism, too. What I do is fundamentally different from a reductionist

approach. Since I am always aware of the existence of different non-intersecting phenomenal domains, I take care not to confuse them in my thinking or in my writing. Indeed, if one does this, one can see that the phenomena of one domain cannot be expressed in terms of the phenomena of another domain. Thus, what happens in the domain of the operation of the organism as a totality in its relational space cannot be expressed in terms of the molecules that compose it, or vice versa. All that an observer can do is to see what happens in those two domains and attempt to establish a generative relation between them. I preserve, and attend to, the differences between the separate phenomenal domains in my descriptions. In this way, one sees the domain of molecules, the systemic domain, the domain of relations, etc. All these different domains constitute their own specific phenomena.

Poerksen: Although I am not particularly inclined to defend the New-Age scene against anything, I think that it is no accident that your work has become attractive to that scene. The thesis of the observer-dependence of all knowledge can be interpreted as the removal of the subject-object rift that we encounter in the description of spiritual and mystical experiences.

Maturana: These spiritual experiences have, in my opinion, nothing to do with experiences of transcendence in an ontological sense but much rather with an extension of awareness and an intensified feeling of participation: You become aware of being all at one with other human beings, with the cosmos, the biosphere, etc. When people talk about spiritual matters, however, they generally refer to some experience containing an ontological understanding or a true knowledge of nature. Such insights are, in my view, impossible in principle. Nothing that can be said is independent from us.

This dialog is an excerpt from the book: *From Being to Doing. The Origins of the Biology of Cognition* by Humberto R. Maturana and Bernhard Poerksen. It is published soon by Carl-Auer Verlag (ISBN: 3-89670-448-6). For more information see: <http://www.carl-auer.com>.

TETRASOCIOLOGY: SIX SYSTEM SOCIOCYBERNETIC INNOVATIONS FOR AN INFORMATION SOCIETY

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Abstract

Tetrasociology is a four-dimensional, holistic and interdisciplinary theory of an information (global) society of four equally productive sphere classes - partners, self-organized as a cybernetic system, aspiring to become a natural order of social harmony.

On the basis of the four social reproductive spheres, tetrasociology predicts six Sociocybernetic innovations for an information society.

1. Sphere classes of the population employed in the appropriate spheres of social reproduction: Socioclass, Infoclass, Orgclass, Technoclass, which self-identification transforms them in the conscious actors of social harmony,
2. Sphere democracy constructed on equal distribution of power between the sphere classes, generations, genders that makes such democracy by a state of social harmony,
3. Sphere sociological statistics that allow quantitative measurement of social harmony,
4. Sphere information-statistical technology for calculation of social harmony,
5. Sphere sociocultural technology of achievement and maintenance of social harmony,
6. Sphere strategic management ensuring governance by social harmony of spheres and sphere classes.

These innovations can help to create a self-organizing order of social harmony, and a new culture of harmonious peace beyond wars, terrorism, poverty etc. Such order arises when a priority is placed not on money and property but on the interests of children and their caregivers. These groups, which comprise from 50% to 80% of the population, will provide the social foundation for a natural order of harmony and peace.

Keywords: *tetrasociology, social harmony, sphere classes, children's suffrage, harmonious peace*

Introduction

I began developing a "System-Sphere approach" to the study and practice of sociology in 1975. In 1998, this approach was given the name: Tetrasociology, to emphasize that four distinctive, strategic spheres work together to create and sustain society. Since the collapse of the USSR in 1989

I have published more than 80 works, including seven books, of which the last three have been translated into English. The first of these, *Tetrasociology: Responses to Challenges* (2002), was submitted to the ISA 15th World Sociological Congress in Australia, July, 2002.

The basic contents of a tetrasociology

Tetrasociology is a variant of post-pluralistic systems theory. It represents society as a system of naturally occurring spheres of societal reproduction, in four dimensions of social space-time. ('Tetra' is taken from the Greek word for four.) Post-pluralism, in my definition, recognizes a key number of societal dimensions/spheres, e.g.: three – economic, political, labor or cultural (A.Giddens, 1990; L.Sklar, 1991; R.Robertson, 1992), or four – political, economic, cultural, ecology or religion or social (U.Beck, 1998; DeWitt, 2000; G. Ternborn, 2002; Semashko, 2002), or five 'spheres of the social landscape' – etno, tecno, finance, media, ideo (A.Appadurai, 1996). "Sphere" has been used by Comte, Marx, and other sociologists to designate large sectors of society. But in tetrasociology, "sphere" is used to distinguish (A) subject and product/capital of (sphere) reproduction, and (B) reproductive employment of people within each sphere.

(A) The four spheres of societal reproduction are the social, informational (cultural), organizational (political) and technical (economic). The resource/capital, reproduced within each sphere is for society as a whole, for the benefit of all of its spheres. Consequently, the spheres work together to achieve social harmony. The social sphere reproduces the resource/capital PEOPLE, the informational sphere reproduces the resource/capital INFORMATION, the organizational sphere reproduces the resource/capital of ORGANIZATIONS (political, legal, financial capital), and the technical sphere reproduces the resource/capital of THINGS (material). Each sphere includes a great number of (at times conflicting) branches and (at times competing) enterprises. And each has a large number of resource inputs and product outputs, through which they exchange the capitals that reproduce society as a self-organizing cybernetic system. The reproductive employment of people in these spheres is essential to the process of reproduction in all spheres, and unites them in one self-reproductive system. The concept of reproductive employment of people covers life from birth to death, and includes all forms of social action, interaction, activity, labor, behavior, etc. This reproductive concept is fundamental in tetrasociology. Four dimensions of social space - time are identified: resource/capital (social statics), processes of reproduction (social dynamics), structures-spheres of reproduction (social structuratics) and social time: the various states of society from growth through decline (social genetics).

(B) The basic reproductive employment of the population is divided into four productive sphere classes:

1. SOCIOCLASS: employed in the sociosphere (including workers in education, healthcare, welfare, sports and entertainment, and also non-working population: pre-schoolers, students, unemployed, retired, etc).
2. INFOCLASS: employed in the infosphere (including workers in science, culture, communication, and information services).
3. ORGCLASS: employed in the orgsphere (workers in management, politics, law, finance, defense, police, security, etc).
4. TECHNOCLASS: employed in the technosphere (workers in industry and agriculture). Classes of reproductive employment are more fundamental than class distinctions based on property. Property

ownership is temporary, partial, and inherently unequal, whereas reproductive employment is constant, universal, and equally inherent in all human activity, although qualitatively different.

Tetrasociology is an attempt to synthesize and modernize a long tradition of theories of societal reproduction: from Comte, Marx, Weber, Parsons, Buckley, Toffler, Bourdieu, Lumann, Habermas, Castells, and more. It continues in this tradition, but brings in new concepts such as: the reproductive employment of people, social harmony/disharmony, and four dimensional social space-time. A central premise of tetrasociology is that sustainable development and maintenance of society (homeostasis) is provided by a natural law of social harmony (balance) achieved among the four spheres of social reproduction. This harmony is constantly challenged by deviations (conflicts) within the spheres, among various branches, social classes and groups, enterprises and regions.

The strength and number of deviations (conflicts) create a measure of disharmony. When this exceeds a critical measure, the society either perishes or the law of spheres harmony is subordinated to branch and other forms of disharmony, for a time, until sphere harmony can be restored, or until the society eventually disintegrates. Harmony among spheres and sphere classes (of people reproductively employed in each sphere) exists in two forms: spontaneous and conscious.

Spontaneous harmony is the natural, historical basis for human survival, for preservation of societal stability. Conscious harmony is expected by Semashko to begin with the self-identification of sphere classes in the coming age of an information (post-industrial) society. Thus, tetrasociology identifies social harmony as both the basis for society and as its ultimate goal of achievement, toward which it will aspire constantly but with varying degrees of success.

The idea of social harmony is prominent in eastern religions, such as Confucianism and Buddhism, and in the belief systems of Native Americans. Although it is not alien to western thinking, as formulated in the schools of Pythagoras, Plato, and Aristotle, and also during the Renaissance, it was not a priority for the rapidly developing industrial societies of Europe and America. *The idea of spheres of societal reproduction*, however, has found expression in western culture and pluralistic thinking. Tetrasociology is an attempt at synthesis: of the western *structural* concept of spheres of reproduction and the eastern *value* concept of harmony. The concept of *harmony of reproductive spheres of society* is the central focus and core premise of tetrasociology.

In tetrasociology develops six logical ‘discoveries’ (predictions) from this synthesis:

1. Self-identification of sphere classes of the population will transform them into conscious actors, striving for harmonious cooperation among spheres,
2. Sphere democracy will be based on an equal distribution of power among sphere classes, and also among generations and between genders, transforming democracy into an instrument of social harmony,
3. Sphere statistics will provide a quantitative measure of representation prerequisites to enhance sphere generated social harmony,
4. Sphere information-statistical technology will be developed to calculate potentials for increasing social harmony,
5. Sphere sociocultural technology will be able to measure achievement and maintenance of social harmony,
6. Sphere strategic management techniques will be developed to ensure harmonious governance of spheres and sphere classes, at all levels of political, economic and financial regulation.

The logics (premises) of other sociological theories do not generate such grand predictions, so they are unique to tetrasociology, prompting some western sociologists to refer to tetrasociology as a "nugget of gold," "brilliant," having "admirable scope and ambition." (Semashko, 2002: 148, 150). However, without sufficient empirical testing, they remain hypotheses. The author recognizes this insufficiency, which is due to a lack of funding opportunities in Russia for such research. He hopes that western universities and research centers will be more attentive, and will invite him for a period of one to three years, to conduct the necessary research.

This is a brief sketch of tetrasociological theory, its novelty and problems. (Semashko, 2002: 19-99). The author also lists 75 examples of practical applications of tetrasociology and its technologies (2002: 138-140). He seeks to apply tetrasociology to current problems, in search of adequate responses to aggravated challenges of the 21st century: terrorism, religious and ethnic wars, nuclear proliferation, poverty, ecological degradation, demographic dislocation and crises of democracy. He suggests socio-cultural projects in various problem areas: family, gender, education, religious belief systems, international bilingualism, innovative statistics and information technology, anti-terror strategies, ecological preservation, peace in Jerusalem, etc. He recognizes that many of his proposals seem utopian for our time, but anticipates that in the future they will be seen as practical and realistic.

The practical projects of tetrasociology

In a more recent book (2004) I develop a practical consequence of tetrasociology. This project and my book (2003) are directed toward creation of a new culture of peace, in an Information Age, as a global order of social harmony emerges to prevent wars and discourage terrorism. This order will gradually supersede the orders of branch (conflict oriented) disharmony of industrial societies, which have increasingly reproduced wars and terror. In this way, tetrasociology, as sociology for post-industrial (information) societies, is qualitatively different from the sociologies of industrial societies, and encourages the creation of harmony-enhancing, global institutes.

In second book on tetrasociology (2003), I propose one such institute: international bilingualism, recognizing Esperanto together with English as languages of the international community. This book is written with 14 contributors, from four continents, in three languages: Russian, English, and Esperanto. It includes ten dialogs with tetrasociology by sociologists from the USA, Japan, Australia, Germany, England and Russia. These dialogs consider various aspects of tetrasociological theory, and represent a multicultural dialog of civilizations. An International Publishing Project is proposed as a way to continue this dialog among civilizations toward a culture of peace. The project would recognize Esperanto as a second international language, to encourage development of an unbiased dialog among civilizations.

Esperanto has the necessary preconditions: it is a planned, neutral language, with 115 years of international practice, and millions of esperantists world-wide, organized in associations that are already practicing a global subculture of brotherhood and peace. I believe that, most of all, it is the distinction of languages that separates people and provides the political rationales for wars, terror and violence. But, there is no current political strategy to promote an international language, so elements of linguistic inequality and discrimination are sustained. He believes this inherent injustice

contributes to social, economic, political and cultural conflicts and global disasters. I propose international bilingualism, sponsored by the UN, as a linguistic strategy to reinforce the UN's general purpose for this decade: a dialog among civilizations to create a culture of peace.

Another project in this book is selection of "Faculty of social harmony; Humanitarian education for dialog and peace." I sum up the goal of this project in these words: "The young should be taught harmony and dialog, not war!" I contend that the degree of militarization of education greatly exceeds the degree of its humanitarianism, which calls attention to extensive preparation of the young for war and violence rather than for constructive dialog and a culture of peace. I suggest a faculty of social harmony in which four educational disciplines are created, corresponding to his four spheres of society, to teach the ways in which the spheres interact to achieve harmony. I offer to help create these faculties, to teach experts in the four disciplines and to teach basic courses for all students (2003: 250-252). This unique educational program, introduced at all grade levels, would have far-reaching consequences, not only for individuals in their day to day social relations, but for society at every level of social organization.

The ten dialogs with tetrasociology, by 14 sociologists from six countries, are beyond the scope of this paper, but represent a wealth of ideas that expand on the many insights derived from tetrasociology.

My third book (2004) is devoted to an urgent need for children's suffrage executed by their parents. A resolution of the UN Special Session on Children (May, 2002), initiated by UNICEF and attended by 180 States, called upon "all members of society" to join in a "global movement that will help build a world fit for children." Children's suffrage, executed by parents, is considered in the book as an effective political institution for such a global movement, to promote a new political psychology and culture of peace, to modernize democracy, and as a powerful antiterrorist strategy to eradicate the origins of terrorism in childhood and create an antiterrorist immunity of the population. Children's suffrage underscores the civil responsibility of the family and the political responsibility of the state for children. The brutal terrorist act against more than one thousand children in Beslan, Russia, September 1-3, 2004, of which 170 were killed, emphasizes the urgent need for such an institution. If children's suffrage replaces the state's priorities on military and economic spending with priorities on children and their reproduction of the social sphere, this will effectively promote a culture of peace. Children's suffrage executed by parents is examined as a child's inherent right in a democracy, and one that is needed to respond to the UN Convention on the Rights of the child, which response has been unsatisfactory to date, according to UNICEF.

Children's suffrage executed by parents has a potentially powerful social base. First, children under 18 make up approximately 20-35 % of the population in any given country. Second, parents and legal guardians make up approximately 30-40 % of the population in each country. Third, grandmothers and grandfather make up about the same proportion of the population. Therefore, children's suffrage affects the interests of most of each country's population. Since children and their parents, alone, make up 50-80 % of the population, they would presumably control at least 50% of the votes. The mothers and grandmothers are the ones most likely to vote on behalf of minor children, hence, children's suffrage will (also) promote women's interests, which tend to favor

harmony and peace. (One can think of notable exceptions to these generalizations, but social expectations are based on probabilities rather than certainties.)

The concept of children's suffrage supplements practical suggestions for its institution. First, we propose an international comparative research study to determine the likelihood of parent's acceptance of children's suffrage. Second, we propose a project to determine an appropriate law for Russia. For the research study, we state its purposes, hypotheses, and the number of respondents to be selected from each of four countries: two poor countries and two rich. In each country, one large city is to be selected, in which 1000 parents and guardians are asked to respond to a set of structured questions about children's suffrage, to determine the extent of parent's favorable/unfavorable attitudes. Hypotheses are based on an assumption of support or nonsupport of children's suffrage on the basis of parent's satisfaction or dissatisfaction with the well-being and quality of education of children in their country. For proposal of a Russian law: "Children's Suffrage Executed by Parents in Russia," 24 legal concepts are defined to express this right and to limit children's votes to one child per parent, with voluntary division of children's votes between the parents, with conditions for granting independent voting to minor children by way of exception, and with sanctions of encouragement and restriction, for parents and guardians, under the law.

The world shudders at the incessant reports of disaster and violence against children, but there is little that protects them.

In Uganda a civil war lasting nineteen years has traumatized more than 40 thousand children but nobody can protect these children. Who is protecting these children? In Russia the past year approximately 50 children from two schools were burnt and 175 children were killed the terrorists at Beslan school but nobody was able to protect them. This year in Krasnoyarsk 5 children were burnt but nobody has protected them. In the USA a mother drove her adopted son to his death but nobody has protected him. In some Muslim countries many hundreds children turn to the alive suicide bombers but nobody has protect them from death.

Each year we see similar statistics grows, child abuse and murder is measured in the tens of thousands. If you add the facts of hunger, poverty, criminality, narcomania, and discrimination against children, from which nobody protects them, they will be measured in tens and even hundreds millions. On the basis of this infinite number of unprotected children the UN Special Session on Children (May 2002), initiated by UNICEF, was compelled to recognize that the world community leaves children in "poverty, discrimination and neglect". The good UN Convention on the Rights of the Child (1989) has generally not been executed suggests UNICEF. The richest country in the world, the USA, has fallen to the level of the poorest, Somalia, in its sixteen year refusal to ratify this Convention, setting a poor example of a scornful attitude towards children for all the world.

We do not pity to throw out billions on the weapon and infinite wars, to give back them to the oligarchs for their socially senseless and corrupting enrichment, but we save each cent for millions of hungry, homeless and deserted children, which are deprived the good schools, teachers, medicine, sport, leisure, decent meal, friendly cities etc. Childhood becomes sick, despised and hated for children. Everything that we now do now for so-called "protection" of children more similar on hypocritical complacency of power, the rich and adults but only not on real, adequate to need,

protection of children from all their social threats, troubles and disasters. **THE HONEST AND FAIR PROTECTION FOR ALL CHILDREN IS NOT PRESENT ANYWHERE IN THE WORLD TODAY.**

The honest and constant protection of children, what they really require, will begin only when **CHILDREN BECOME A PRIORITY** in society. Dmitry Mendeleev, Janusz Korczak, Mahatma Gandhi, Elmar Sokolov, Nobel Peace Laureates, Cardinal Gustaaf Joss and some scientists called for this. But nobody knows **HOW** to ensure a priority to children? It can be ensured only with a universal **LAW** "About Children's Suffrage Executed by Parents and Guardians".

This law creates a priority for children. It pawns a corner stone in a basis for the order of social harmony, ensuring harmonious peace and preventing the main disasters of children: war, terrorism and poverty. It is discussed on sole in the world website "A New Culture of Peace from Harmony" (www.peacefromharmony.spb.ru). Please look the website contents pages 2-4 (http://www.peacefromharmony.spb.ru/docs/2-4_eng.pdf), on which the project of the specified law is submitted.

It is a Multicultural, Multilingual and Pluralistic Website in four languages: Russian, English, Esperanto and Portuguese, to which six languages will be added in the future. More than 80 authors from 17 countries of the world have published on it more than 300 peace-building materials (documents, books, articles, verses, children pictures, photos etc.) for the interests and priority of children. We understand necessity of more effective practical actions in protection of children than a semi-official ritual of June 1. Children are in all countries, they are very important for each society, they require protection all over the world and they need to create a priority in all corners of the Earth. Therefore:

WE OFFER TO BEGIN FROM JUNE 1, 2005 A NEW GLOBAL CIVIL MOVEMENT "MAKING CHILDREN A PRIORITY".

It will unit the best and most part of parents, grandmothers and grandfathers, teachers and doctors, all caregivers, which with children make from 50 up to 80 % of the population in the different countries of the world. Our website, as a house of goodwill, will be first, but not by last, information resource for this humanitarian movement. There will be goodwill; there will be also other resources for it.

Children's suffrage executed by parents was the subject of my presentations at the IIS World Sociological Congress in Beijing, People's Republic of China, July, 2004 and at the International Conference "Childhoods 2005" in University of Oslo, Norway, July 2005.

International bilingualism and children's suffrage are regarded as important and necessary for a new culture of peace, but each requires extensive public discussion and research. The research requires significant funding, which is not available in Russia.

We offer tetrasociology and its derivative proposals as a way to initiate a new culture of peace, rooted from a natural (cybernetic), evolving order of social harmony. These ideas may seem utopian, and difficult to prove, but they are filled with faith in the practical applicability of sociology, and

with optimism in the face of the increasingly difficult challenges of the 21st century. This style is unfamiliar to western sociologists; it bears the imprint of pre-Cold War Russian civilization, and features its intense, searching-for-answers mentality. Thus, my books and proposals may seem "old-fashioned" and "conservative," but at the same time, forward-looking and urgent. They invite western sociologists to examine them for new ideas and new strategies, while challenging our confrontational, conflict-oriented ideas about the natural order of things. Their positive contribution is to focus our attention on sectors/spheres of society that work together to reproduce each other, as well as themselves, and thereby provide a *deep cybernetic structure* of social harmony (*latent, at the global level*) upon which to build a culture of peace. The further development of tetrasociological theory, therefore, is in the interest of western civilization in its dialogs with other civilizations.

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June 6, 2005

REVIEW

Norbert Wiener – Cybernetician: A Review of “Dark Hero of the Information Age: In Search of Norbert Wiener, The Father of Cybernetics” By Flo Conway and Jim Siegelman (Banic Books, NY, 2005, 423pp.)

For lovers of cybernetics, this is a wonderful book, beautifully written and with a truly impressive depth of research and scholarship. While avoiding unnecessary technicality, the authors manage most persuasively to give an account of what cybernetics is, its genesis and development and the central role played by Norbert Wiener in that genesis and development. In so doing, the authors also manage to parade before us the contributions of a number of other remarkable individuals who made cybernetics what it was and is. Amongst others, due mention is made of Arturo Rosenblueth, Julian Bigelow, Warren McCulloch, Walter Pitts, John von Neumann, Margaret Mead, Gregory Bateson, Claude Shannon, Warren Weaver, W. Ross Ashby, Heinz von Foerster, Stafford Beer, Gordon Pask, Oliver Selfridge and Marvin Minsky.

For me, this is one of the most attractive parts of the book. It attempts, in some detail, to explain how the central characters in the cybernetics story came to interact, collaborate and learn from each other and also, sadly, how they came to compete and conflict. In their narrative of these events, the authors also attempt to give some understanding of how, despite its early promise, cybernetics – as a set of endeavours unified by that shared label – became marginalised in the English speaking world. The endeavours carried on but amidst schism and the rise of competing paradigms (artificial intelligence and cognitive science, self organising systems and general systems theory).

Today, much of what was lost has been referred to as ‘complexity studies’ and there are clear signs that the artificial intelligence/cognitive science paradigm is being undermined by more biologically oriented paradigms and their associated more sophisticated epistemologies. My pious hope is that the publication of Dark Hero is itself a sign of and contribution to the rehabilitation of cybernetics in the English speaking world. The authors do of course note that – and give a reasoned analysis of how and why – cybernetics became established and remained so in other parts of the world, notably Russia and India.

It is well known that Wiener coined the modern day usage of the term ‘cybernetics’ as a label for studies of ‘control and communication in the animal and the machine’. However, he did so as a member of a collegiate of individuals interested in problems of organisation and communication in complex systems, irrespective of their particular embodiment or ontological status, whether that be physical, chemical, economic, biological, psychological or social. To Wiener’s immense delight, his fellow members of that collegiate adopted his term. As an aid in bringing about clarity and unity to the field of human communication about control and communication, the concept of ‘cybernetics’ is itself a great cybernetic achievement, awesome in its elegance and simplicity, awesome in its power and potential. It is my own belief that the collegiate of thinkers who embraced cybernetics were truly enthralled by the unifying vision it provided. It is also my belief that as a vision it was just too all-embracing, too revolutionary a concept for the majority of scientists, intellectuals and managers of science to embrace. To paraphrase Nietzsche, the ‘great noon-tide’ of the rise of cybernetics has yet to be.

The authors, as the title suggests, do indeed provide a remarkable account of Norbert Wiener the man and do their best to provide an understanding of why he was the man that he was. He was a child prodigy, a mathematician gifted in revealing order in what appeared to be complex and unpredictable and truly gifted in appreciating, as only a cybernetician can, the wide generality of application of the models and methods that he devised. He was also a man of compassion and great humanity, who could see the dangers of cybernetic technologies as well as their attractive advantages. The authors also bring out something more child-like and innocent in his approach to the world. He was strongly influenced –controlled, even – by his parents and wife. He suffered and sometimes brought about suffering amongst his friends and colleagues. What does come across is his enthusiasm. He was not someone to be ignored. He was a most active evangelist for the pursuit of cybernetics. He, also, in anticipation of later developments in the discipline, advanced the pursuit of cybernetic understandings of cybernetics itself. Do read this book. I am sure that if you do, you will wish that you had had the good fortune to encounter Wiener in the flesh. Reading this book is the next best thing.

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