Abstract

The aim of this lecture is to present the design, implementation and experiences of a radical constructivist experiment in socialized Knowledge Management that we designed and implemented with the aim of promoting informal learning in a network of university researchers. The new and most challenging aspect of our approach was the way in which we designed the connection between the network members: in fact our idea – based on our constructivist view of knowledge - was to connect them around the common task of stewarding their research knowledge in a participative way (Bettoni, 2005).

By combining Ernst von Glasersfeld’s constructivist approach to learning (von Glasersfeld, 1995) with Etienne Wenger’s social theory of learning (Wenger 1998) we were able to deduce the following main guideline for designing our approach: if meaning as a constituent of a theory of learning should be viewed as a duality of participation and reification, then engagement in stewarding knowledge requires a duality of two corresponding informal learning processes. These processes are: a) participation in knowledge and b) cultivation of knowledge. To conceive and implement participation and cultivation as a duality means that they should take place together, they should both require and enable each other. There should not be any cultivation without participation and no participation without cultivation.

In our conclusion we will show how this experiment was a precursor of socialized KM, an approach that only very recently has begun to be recognized as a better way to manage knowledge in institutions: "KM initiatives need to shift focus to a consumption-centric model that acknowledges the wealth of information that exists in people and networks. This shift will increase knowledge reuse and will make organizations better prepared to meet the challenges of medium- and high-complexity situations" (Gartner Research Report, ID Number: G00167449, May 2009).
The talk will have a direct focus on Brain Goodwin who died a few months ago and an implicit focus on Heinz von Foerster who worked in many of Brian Goodwin’s domains and who shared many of Goodwin’s research perspectives and heuristic preferences.

The talk will not be about learning as such, but on alternative ways to frame cognitive processes and analyses. It will be centered on holism and on structural biology, including post-Turing computer modelling of self-organization in biology. However, I will say very little about Goodwin’s later work, in which he generalized his ideas to human life and society.

The reference to “via von Foerster” is really a place-holder for a lot of facts about von Foerster’s work with which the audience will already be highly familiar. I take it for granted that the Heinz von Foerster conference does not want to hear about Heinz von Foerster but is interested rather in topics, bold guesses and research designs which Heinz von Foerster had pursued, too, or which he would have liked to explore.
Abstract

Both Luhmann and Pask have developed detailed theories of social systems which include accounts of the role of learning. In this paper we compare the two approaches by identifying key similarities and differences. We begin by noting that, as someone whose research activities were primarily based in individual and social psychology, Pask’s theorising is essentially ‘bottom-up’. His concept of a social system is built up from consideration of the processes of learning as they occur in human beings in interaction. In contrast, we note that, as a sociologist, Luhmann’s approach is primarily ‘top-down’. He begins with the abstract concept of a social system as a system of communications and calls on psychological and biological considerations as supports and justifications for that concept.

Both authors conceptualise learning as a process of construction and reconstruction. Construction and reconstruction refer here primarily to qualitative rather than quantitative changes and include not only “new knowledge” but also “forgetting”. It is further true that both approaches proceed on the assumption that communication plays an important role in learning processes and that communication is dependent on shared meaning structures. In Pask’s theorising “concepts” are central. He addresses the processes of concept acquisition and the dynamics of conceptualisation, which lead to relatively stable systems of belief. In Luhmann’s theoretical considerations, “expectations” are central, with a key analytic distinction between normative expectations, which are relatively fixed over time, and cognitive expectations, which are more readily modified by learning. Having examine these similarities and differences in detail, we go on to consider ways in which a useful synthesis of the two theoretical approaches may be developed by showing the centrality of the concepts of ‘double contingency’ and ‘reflexivity’ for the conceptualisation of learning in both theories.
The words love, trust and intimacy are on the one hand regarded as relevant to relationships other than learning, and on the other hand all those teachers, who students look back on years later as having been significant in their lives, know that these relational descriptors are highly relevant to their praxis.

As many of you know Maturana has abstracted the relational dynamics that pertain to all instances of love in a manner that enables us to see past the social prejudices and conventions associated with love. I will follow along this manner of thinking and present what appear to me the fundamental relational dynamics that pertain to trust, intimacy, and learning. In so doing I will claim that these are corollaries to Maturana’s second law of biology, namely the conservation of adaptation. The pleasure of engaging in behaviour that we refer to as loving, trusting, and intimate results in a process we distinguish as learning. This dynamic is visible in all animals, and takes on a richness of dimensionality in us humans, living in language.

Though part of my paper will be conceptual, I will also ground my claims in an extensive set of interviews I conducted as a ten year retrospective of graduates from an alternate school. Wondertree and Virtual High operated on the principle of self-directed learning with mentors who believed in the value of relationship for learning. The interviews provide evidence of the significance of the relational dynamics of love, trust and intimacy (as I will have abstracted them) to both the children’s response during their tenure in the school, and to the long term influence on their lives as adults.
Abstract

We show that analogies between physiological adaptation and experience can be used for analyzing autopoietic self-organization of cyanobacteria, occurring when the growth rate is affected by alterations of phosphate supply. Under these conditions autopoiesis is reflected in particular features of the adaptive reconstruction of the phosphate uptake system. The elementary units of this self-organization process are “adaptive events”, in which energy-converting subsystems of the phosphate uptake system pass, via an adaptive operation mode, from one adapted state to the next. An adaptive operation mode takes place, when an adapted state is disturbed by an environmental alteration. Along a historic succession of alternating adapted states and adaptive operation modes, information pertaining to the self-preservation of the organism is transferred from one adaptive event to the next: the latter "interprets" environmental changes by means of distinct adaptive operation modes that depend on antecedent environmental influences. The outcome of this interpretation is leading to a new adapted state that is potentially favourable for the cell. The resulting concatenation of adaptive events, establishing a cellular memory of environmental influences, explains the ability of cyanobacteria to distinguish in an anticipatory manner between different patterns of environmental phosphate fluctuations. A generalization of these findings to the adaptive interplay of other energy converting subsystems of the cell leads to a dynamic view of cellular information processing in which the organism re-creates itself in every new environmental experience.
Titel: Anticipation without redundancy?

Abstract

Any living system, says Maturana (1985:52), is a prognostic system. But any kind of anticipation, including a theory’s predictions, depends on the existence of some regularity or stability. In terms of information theory, a widely accepted apparatus within the constructivist epistemology (Foerster 1985, Glasersfeld 1987:219): It presupposes redundancy. The crucial question is where to localize redundancy.

Foerster (p. 111) suggests viewing information as a relational concept, and several attempts to determine predictive success (Fenk & Vanoucek 1992) or a system’s complexity (Simon 1962, Gell-Mann 1995) arrive at similar positions. But he avoids attributing redundancy (p. 120) to the environment, i.e., to the object of “description” (in the broadest sense): This object does not contain any information; it is cognitive processes which produce a description of the environment and thus information about it (p. 112). Stable reality is the result of the calculations of the nervous system (p. 39).

There are two problems that I will discuss “using” Occam’s razor. Both problems, including the above mentioned general view of organisms as prognostic systems, have some impact on Hume’s (1777) problem and his reduction of experience to “custom or habit”.

(a) Can we conceive living systems or nervous systems which produce redundancy through interactions with a non-redundant environment and which are functional as prognostic systems in such a non-redundant world? Having in mind Occam’s razor one may argue that such a theory, though being very parsimonious concerning assumptions about the environment, at least requires a complication of a “well-entrenched” terminology. In both respects it can be seen as a counterpart of the behaviourist position which tries to avoid assumptions about the internal, instead of the external, world.

(b) The second problem is maybe easier to solve. (But difficulty is again a relational concept.) This problem deals with cases of learning from only one instance of an event 1 (E1) coinciding with or followed by another event 2 (E2), as observed e.g. in rats (Garcia, Ervin, & Kölling 1966). I will try to “justify” decision-making on the basis of only one such instance (e.g. in a fictitious dice) but have to admit that this solution requires a rather extreme use of relative frequency (of E1-E2 combinations) and related concepts.
Abstract

What does awareness have to do with perception and learning? Looking at a conference about learning, the observer perceives the people to be at ease, their faces open and relaxed, the speakers in good contact with themselves and with their audience, they come across as genuine. The atmosphere and the words spoken convey a feeling of vastness, of increased attention and at the same time of serenity, beauty, trust and a highly constructive togetherness. A creative joint inspiration is clearly taking place.

What is missing? Fear and associated competitive behavior, jealously, conformance, thoughts of image, lack of respect, cynicism and the acting out of power.

For something like this to happen and to develop further a perception and learning process is needed that requires awareness. What is expressed by awareness is a way of being in life or a manner of approaching life. In this way, conditioning can be recognized and resolved.

The extent to which a person develops awareness will govern the extent to which he or she experiences learning as an open, constructive and creative process.
Abstract

I will argue a number of points exploring a similarity and complementarity between learning and designing.

First, that the building of concepts at the most elementary of Piaget’s developmental levels, the conservation of objects, is an act of design. That, in designing the concept, we learn. The consequence is that humans are, above and beyond anything else, designers. The objects of our worlds (and our worlds themselves), the patterns we find, and even memory are designed.

Second, that the way we assemble together concepts is also a matter of learning, and of designing. I will relate this to Kelly’s Personal Constructs, and his diagnoses deriving from mismatch of constructs, as well as Pask’s notion of the learnable, as exhibited in an entailment mesh.

Third, I will discuss design as activity based in and supporting accumulation, accommodation, assimilation and affordance, all important characteristics of us when learning, matters of learning style.

Fourth, I will reintroduce the concepts of alpha- and beta- complexity, showing how they are embodied in design and science, and how, as a result, each faces complexity quite differently. Complexity is relevant because the preferred way we discuss our world, and our ability to master it, is often based around the notion of complexity. I will point to some of the advantages of the design approach and suggest that we use this as a major strategy, in learning.

I will talk of learning as a design activity, and of Gordon Pask as an architect—not in the obvious sense of one who makes houses, but in terms of how he characterised the landscape, structures and actions in which learning can take place.
Abstract

Children are incredibly (?) creative, they construct their own world, ask many questions, don’t settle for the answers and act…very unpredictably. Thus they have the best requirements to be creative. Not until they learn in school (“public institutes of trivialization”, how Heinz von Foerster called them) to give the expected answers, they get called clever. Unfortunately, most of them then lose their creativity and their questioning. Who is unable to ask unanswerable questions isn’t able to seek for new answers. This should be learned in school: to ask unanswerable questions.

Who is creative and why? How can we define creativity? And do creative people have abilities only in a special field (artistic, scientific, organizational), or is creativity a universal talent? Can creativity be trained? Which requirements have to be met by tutors, who want to support learners? Extraordinary, exploratory forms of learning and outstanding tutor-personalities stimulate learners to maximum creative power. Which activity our brain is achieving and which neuronal changes are detectable at creative work has been explored by neurophysiologists in the last decade. Also whether there is coherence between creativity and intelligence. A lot of studies tried to detect, whether artistic education, especially music education, has effect on intelligence, learning habits and learning abilities. Euphoric researchers proclaimed intelligence enhancement by (only) hearing music. Evaluations from the last years had to qualify these prognoses. Only professional musicians, learning an instrument for a long time, have variances in their brain, in their corpus callosum, which connect the two hemispheres of the brain. Since learning depends on experience, memory and the ability to compose new models out of these (already learned) structures, it is my opinion, that learning an musical instrument from early age on, is helpful to increase creative abilities in all specific fields, because of more neuronal cross linking, audio-visual and motoric training and higher social intelligence.

Let us encourage children to find their own ways to work with “2x2=grün” and let us be curious about their solutions. We should hear their views of the world, they should paint, dance and play and also be able to express themselves without language. Tutors have the responsibility to impart basic knowledge to the learners, to show them possibilities and to guide their way for a time, because creativity will be a more important factor in every sphere of life.
4. Internationaler Heinz von Foerster Kongress 2009
12. bis 14. November 2009 | Universität Wien

Lernen

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Titel: The Future of the Biology/Computation Connection

Abstract

Von Neumann’s model exhibiting the existence of a self-reproducing automaton epitomizes the interaction between biology and computing. Prior to this work, self-reproduction was universally taken as a unique characteristic of living organisms; afterward that simple notion gave way to a much closer examination of the complexities of self-reproduction. Heinz von Foerster and Arthur Burks were two key figures in extending von Neumann’s insights, with whole fields – ranging from cellular automata to complex adaptive systems – developing as a result. Because complex adaptive systems (cas) directly incorporate ideas put forth by von Foerster and Burks, I will concentrate upon them in this lecture.

Complex adaptive systems consist of many components (agents) that interact in conditional (nonlinear) ways and adapt (learn) as they interact. Many of our most difficult problems center on cas: markets, political systems, ecosystems, and biological cells are familiar examples. Networks provide a natural "snapshot" of agent interaction in a cas, but these snapshots do not capture the persistent innovation and changing diversity of cas. Agent-based models offer opportunities to study such co-evolution, but research along these lines is still in an early stage.

There are two large questions about cas that remain relatively untouched. (1) What mechanisms give rise to the complex hierarchical organizations that characterize all cas? (2) How do we analyze the quasi-autonomy of cas subsystems, where subsystem inputs only modulate ongoing subsystem activities such as anticipation and planning?
Abstract

Media are in many ways presumed as important factors for learning and knowledge construction. This applies to media use in everyday life as well as to the creation of learning and knowledge spaces in business or academic contexts. Unsurprisingly, terms like ‘learning space,’ ‘knowledge space,’ ‘learning media,’ or ‘knowledge media,’ are used with different meanings and often in metaphorical ways which sometimes suggest questionable forms of reification of knowledge dynamics or ontologized media. Many of the related concepts and tools have been developed under reference to constructivist positions. And it is hardly to dismiss that many constructivist approaches dealing with learning processes have been created. Especially in e-learning discourses these approaches are likely to be depicted as preliminary peak of the evolution after behaviorism and cognitivism. On the other hand, they are also criticized, for example, in terms of disorientation, neoliberal customization or "old wine in new skins." The paper seeks (a) to sketch the variety of constructivist learning concepts, (b) to consider constructivist perspectives between all or nothing, and (c) to elucidate the relationship of learning, mediation, and mediatization.

Bionote

Theo Hug is associate professor of educational sciences at the University of Innsbruck (Austria) and coordinator of the Innsbruck Media Studies research group. He is the author and/or editor of several books on various aspects of media, communication, and education (s. www.hug-web.at)
Abstract

Visual multidimensional data exploration is a popular application of Parallel Coordinates. Dull as it may sound, it yielded nuggets of spicy discoveries bearing traces of Mischiefology; one of Heinz von Forster's distinctive traits. The gold market was manipulated by two major national banks, oil companies made fortunes by "mysteriously" anticipating the invasion of Kuwait in 1990, Vienna's hard-core unemployed were clandestine free-lancers receiving sizeable benefits, and hostile vehicles were recognized from afar by their noise signature with one suspicious exception. Due to the inherent danger, such disclosures will be disguised as "geometry" and narrated under a pseudo-name having no resemblance what-so-ever to that of the shadowy detective.
Titel: Cybernetics and the ‘Rhetoric’ of Technical Intervention in Education

Abstract

Learners increasingly require flexible educational provision which fits the multiple contexts of their lives and personal development paths. In meeting this need educational institutions must balance their own viable operation with the viable individual learning experiences on the part of teachers and students. Technology is increasingly playing a key role in achieving this balance, and Universities are investing in training and technologies to raise staff capacity in using learning technology and encourage pedagogical innovation. Successful implementation of such interventions presents significant challenges to the educational cybernetician.

We cite recent examples of work at the Institute for Educational Cybernetics (IEC) at the University of Bolton. On the one hand, cybernetic tools (for example, Beer’s Viable System Model) allow us to identify effective organisational practices, technologies and structures, or effective pedagogies (for example, Pask’s conversational model). On the other hand, work at IEC shows that the ways in which interventions are made can have a great bearing on their emergent success. To understand differences between the ways interventions are made, we argue that deeper models which link individual learning processes to processes of effective institutional organisation are required. In modelling these processes we have to consider a. Individual practice; b. The social impact of individual action; c. The interventions we make to change people; and d. The ways in which interventions are made.

We present models which relate to these areas of inquiry drawing on the work of Beer on viability, Luhmann on communication, and Harré’s ‘Positioning Theory’. Through computer simulation, we demonstrate how these different modelled perspectives interrelate to give what we argue is a more ‘realistic’ insight into the university where communication between diverse types of people typifies institutional life, change is slow, politics is rife, and innovation occurs in surprising ways! We argue that these deep models represent not so much a ‘blueprint’ for the organisation of education or the provision of learning, but rather a guide to effective intervention, where different ways of making the same intervention can be considered. As such, we argue, the models represent something akin to a ‘rhetoric’ of technological intervention, where Plato’s definition of rhetoric as “the art of winning the soul by discourse” is expanded to admit technological action as ‘discursive’. With such a ‘rhetoric’, strategic acts can be explored with their likely outcomes in different circumstances. We discuss the implications of this modelling and the promise it holds for educational institutions as they seek to take better control of themselves in a fast-changing world.


Abstract:

It is mentally comfortable to believe that our knowledge of ourselves and of our situation is objective. To contemplate the possibility that it is a construction is daring. Nevertheless, most contemporary constructivists are timid. Although they accept the notion that existence and significance of attributes of the world are the result of a construction, they, including adherents of second-order cybernetics, take for granted the being and the meaning of a Self or an Observer. This is although even modern psychologists such as Freud and Piaget and sociologists such as Vico, Marx, Berger, Luckman and Holzner concerned themselves with the interaction between the construction of the World and of the Self. The problem and the temptation to seek its avoidance in asymmetric dualism have been recognized since the early formulations of Indo-European critical philosophy in the Vedas. The interplay between the continuing construction and reconstruction of the World(s) and the Self (Selves) is in current psychology perhaps best described in accounts of mechanisms of defense and coping.
Title: The Principles of Evolution and Entropy in Viable Education Modelling - Limits of Operationalism - The Role of Socio-Cybernetics in Solving Educational Problems

Abstract

The uncertainty in existing methods used to predict educational performance limits the application of traditional scientific methodologies when applied to current problems. This presentation will discuss the limits of operationalism and search for new ways of reacting to the dizzying pace of global changes. The concepts of evolution, entropy and chaos theory as dynamic and uncertainty enhancing phenomena should be unfolded. If we define sustainable educational development as a set of transformative functions operating upon input from the environment of the system, then the limitations do not coincide with the boundaries set by the implications of the real world. In order to avoid distorted and over-simplified models, our analytical work should be based on the constituent functions active in the system in question and account for the current suppression of cause-effect relation.

Science, till now the mainspring of progress, has to change drastically if we are to manage our educational problems. New global social and environmental pathologies and their interaction with science demand new methods of inquiry. Socio-cybernetics and systems theory can take advantage of their scientific non-orthodoxy to promote dissemination of the knowledge, indispensable for coping with the current challenges. We will discuss the role of individual and collective responsibility in educational performance, hierarchical regulatives in social systems and the viability of legal systems in obtaining sustainable educational development.

Keywords: Uncertainty in education, limits of operationalism, systems boundaries, individual and collective responsibilities, and hierarchical regulatives.
Abstract

spacing:naming will be used as practical example involved in a longer lasting learning curve.

spacing:naming is the title of a small contract research project which was processed of the WISDOM team (Research Department Space Cybernetics) within a few weeks in Vienna, June 2009. The task comprises to sketch an alternative street naming process for the city planning project \textit{aspern} Vienna’s Urban Lakeside (a new City within the City of Vienna). The main question: How and whereby will be encouraged a prospective city naming process?

spacing:naming affords surprises. First of all, a project client who answers the question \textit{How to build a city?} free-spirited with:

\... Check the wind, take a look around, and lay the foundations.
\... Get connected with the world in many ways.
\... Develop a radiant and attractive vision that makes every obstacle surmountable.

Second, a sociologist, information-designer, geographer and socio-scientific spatial planner intend to collaborate in studying visions and identity formations (analog-to-digital) for the first time. It is necessary to identify planned visions on the spot; to find for them real spatial coordinates in the planning area. Third, the team around the project client \textit{aspern} Vienna’s Urban Lakeside redefines contradictions not as \textit{either/or}, but \textit{as both/and}. On the other hand these offer the chance in practise Space Cybernetics.

Space Cybernetics?
Within WISDOM the Research Department Space Cybernetics inquires models instead of – handle \textit{space} as a matter of course (space as objective reality) – a second order based \textit{spacing}. Important is not \textit{what} we know about space, essential is – \textit{how} we know spacing.

\begin{footnotesize}
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1 The planned City? The planning area covers 240 hectares, roughly equalling the combined 7th and 8th municipal districts of Vienna or 340 football pitches. The city (\textit{aspern} Vienna’s Urban Lakeside) is to be built in several construction phases over a period of at least two decades. In the final development stage – around 2028 – 20.000 persons will be living in aspern, and as many workplaces will have been created.
\end{footnotesize}
Abstract

In the last decade, probabilistic approaches to language have gained in importance in child language acquisition research, where they are often combined with constructivist approaches to development (Elman et al., 1996; MacWhinney, 1999; Tomasello, 2003). In contrast to nativist approaches, such data-driven approaches focus on inductive learning processes and attempt to provide an account of how linguistic categories can be induced based on the distributional and frequency information in the language addressed to children.

In this talk we will present a graded model on the acquisition of German noun plurals, in which the predictability of application of a certain plural suffix (-s, -en, -e, -er or zero) is calculated on the basis a) of the distribution of word-final sonority and b) of gender conditions in child-directed speech data (see Ravid et al., 2008). In order to test this model, a plural elicitation task was administered to 140 Viennese children, from the age of 3 to 9 years. Results demonstrate that, across all age groups, predictability of suffix application has an impact on children’s production of plural forms. We will show how these results fit to our constructivist approach to language acquisition.
Abstract

In the last decades modern societies have faced the phenomenon of acceleration in nearly all areas of life. While acceleration undoubtedly has contributed to prosperity and wealth in the world it now becomes obvious that the tempo it has created in the production sphere as well as in the consumption sphere is generally perceived as being too fast. Thus a process of deceleration seems to be necessary in order to reestablish a speed level which achieves both, more efficiency in the production sphere and more life satisfaction in the consumption sphere.

Thus the question arises how to learn to decelerate when being in a highly accelerated state. Viewing processes of acceleration and deceleration in a society as socially constructed processes this amounts to the question how the direction of a socially constructed process like acceleration can be changed. An obviously necessary prerequisite to achieve a change is the willingness to change the actual direction even if this creates costs. To put this into economic terms there must be a “willingness to pay” for such a change. And secondly, this willingness must be transformed into a change of the social construction of acceleration into the social construction of deceleration.

As to the first step the study provides experimental evidence that there is a significant willingness to pay for deceleration in our society. As to the second step the study proposes a certain learning process which transforms the willingness to pay for deceleration into a change process of the socially constructed acceleration habit into a socially constructed deceleration habit.
Fifty years ago there was great optimism that cybernetics would revolutionize education. The cybernetic knowledge tree had many branches such as: Piaget’s constructivist perspective on mental development; von Glasersfeld’s radical constructivism; Maturana’s autopoietic organizations; Pask’s learning machines; and von Foerster’s biological computing models. Some branches such as Papert’s Logo and Lego took root and had a significant impact – for a while. But none transformed education in the kinds of ways that innovators of the 1960’s and 1970’s imagined.

I will argue that the key ideas behind the cybernetic views of learning are not only antithetical to the education system humanity has evolved for itself, but also fundamentally at odds with the human brain as a majority of us have constructed it. Before we can realize the benefits of a cybernetic-constructivist education we will need to understand the human mental constructions that obstruct it, why they evolve and how we can divert or deconstruct them. Finally I will suggest that the mental structures which block constructivist understanding also prevent the kinds of actions that might permit humans to preserve their environment in a form in which the species could survive.
Abstract

“Education is not so much the generator of our culture as the offspring of it.” T. S. Eliot (1942).

We have all heard that mot d’ordre, ‘the learning organization’, and we each know what the imperative really means. We know so much more than we admit to know, because whatever is known is acquired through non-language interactions (Piaget; Glaserfeld; Plato, Phaedrus); the fact that we can express something in language signifies only that one can express something previously acquired in some other, non-linguistic, way.

An ‘experimental organization’ (eo, Latin, “I go”) is imagined not as the antipode of ‘the learning organisation’, but as something more completely other: as development (Piaget). But we already know what an ‘experimental organization’ is, we just need to find words to express what we know. Using Piagetian and constructivist concepts as its laboratory instruments (Latour), the paper proposes to take experimental organization as its method to organise words so that they express what we know about experimental organization.

The paper proposes to conclude with exemplary instances of experimental organisation, and to ask the audience whether Jean Piaget’s International Center for Genetic Epistemology, or Heinz von Foerster’s Biological Computer Laboratory (BCL), or any other known constructivist practice, could likewise be considered to be exemplary instances of experimental organization.

About Adrian Lucas:
Adrian Lucas (b. 1960 in Zürich) graduated from Cambridge University in 1981, and after various travels, ski-ing winters, and working summers, became a financial risk professional in 1987. Now a specialist for Basel 2 banking operational risk, he is currently making selections from his notebooks, and organising those selections for publication as “The Organization of Promises”.

His goal thereafter is to become a sign-language interpreter for the deaf, in order to work with deaf philosophers, and deaf artists.
The Science of education of the social sciences is underdeveloped, especially it lacks a system of optical representation.” (Otto Neurath, 1926).
Currently there are six editions (1990 - 2005) of the German management textbook ‘Management’ by Steinmann & Schreyögg. Those six editions span over more than 4,500 pages and use more than 1,100 illustrations (“Abbildungen”). This paper aims at taking a closer look at those illustrations, specifically at those that can be found in all six editions and that are explicitly quoted from other sources. I will compare the sources to the illustrations cited in all six editions and analyze differences between sources and images that are quoted.
Besides this image oriented approach I will also present a case where the authors of the textbook use four cartoon-like illustrations to visualize four different kinds of corporate cultures. Though the quoted book lacks any illustration one wonders where those images derived from. The parallels and disparities between the source (text) and the use of text and image represent an interesting case.

Key words: management, illustrations, images, sources
Abstract

Service-learning is a pedagogical method that is being adopted in the U.S. and other countries. Service-learning can be defined as service performed by students which addresses a real need of the community and is conducted in a way that contributes to academic learning. Research on service-learning has shown that it has numerous benefits. It has a positive effect on personal development, ability to work well with others, and sense of social responsibility. Service-learning increases students’ ability to apply what they have learned in the “real world.” It improves leadership and communication skills. Service-learning has a positive impact on complexity of understanding, problem analysis, critical thinking, and cognitive and moral development. Universities report that community service positively affects student retention and enhances community relations.

These results can be interpreted as support for a constructivist approach to education. Ernst von Glasersfeld and others have argued for a constructivist conception of knowledge and an approach to education which requires students to relate classroom lessons to personal experiences.

The paper will describe the use of Participatory Strategic Planning methods in the education of managers in Russia. It will also seek to anticipate the effects of service-learning assignments in schools and universities in Russia.
The terms such as complex organization, learning organization, organizational knowledge, knowledge management, organization on the edge of chaos, fractal organization, etc. are frequently used in management theory and practice without necessary intellectual rigor. It's resulting from the fact that their meaning is emerging in intersubjective discourse. The process of emergence of meaning of all the above ideas, and of the similar ones is prone to distortions and abuses. The main distortion is that they are considered as "objectively" defined categories and not as metaphors and/or analogies. They are "reified" with all logical consequences stemming from that. In addition, it leads to a situation when the discourse on learning and knowledge in management theory and policy is “politicized” by the struggle for dominance in the discourse. The distortions can be divided into two groups. In the first one, the terms taken from physics, biology etc., are used as analogies and metaphors in management and errors are resulting from their various interpretations. The second group includes the terms which do not have well-defined sources of metaphors/analogies, e.g. information, learning and knowledge. The aim of the paper is to present basic limitations and errors made in applications of a rank "fashionable" terms taken from both groups with emphasis put on the second one. Firstly, limitations of understanding of those terms will be exposed and secondly, examples of distortions of discourse on them in management theory and policy will be presented. The following notions are under scrutiny: complexity of organization, learning organization, organizational knowledge, knowledge management, intellectual capital and intelligent organization.
Abstract

From 1958 on cyberneticians at the Biological Computer Laboratory (BCL) tried to construct machines that would not only resemble biological systems but also operate according to the very same underlying »fundamental principles of nature«. Experimenting with these analogue computers and combining ideas from cybernetics and biological systems theory with latest results in experimental physiology, scientists at the B.C.L. sought after »operational definitions« of biological phenomena such as »pattern recognition«. In this respect electronic modeling as an epistemic strategy was intended to support the observation, explanation and demonstration of self-organizing systems at work.

One major group of B.C.L. project was related to the analysis and synthesis of speech. Murray Babcock's Dynamic Signal Analyzer for example was guided by the contemporary idea that the analysis of acoustic signals within the inner ear of mammals equals a parallel series of Fourier transformations. The D.S.A., however, was only the starting point for numerous studies in the field of speech recognition and speech synthesis done in the years between 1962 and 1967 by Murray Babcock, I. Thomas, J. Gazdag and other B.C.L. members. One of these projects by I. Thomas, simply called Speech Synthesis and Recognition integrated Babcock’s D.S.A. into an even bigger system called Speech Processor. Including 12 by 12 array of neon glow lamps, this machine was able to visually display speech information in real time. Thomas thought this machine to have a »great potential as an instrument for speech correction, the teaching of pronunciation in foreign languages, and as a useful investigatory tool in research on speech recognition«.

Drawing on archival material from the University of Illinois Archives in Urbana-Champaign and the Heinz von Foerster-Archives in Vienna I am going to present these B.C.L. projects as part of the bio-cybernetic research conducted at the B.C.L. A close examination of the actual experimental work may shed light on the general epistemological question of the applicability of biological knowledge to technology. To what extent can physiological descriptions and explanations really be taken as blueprints for the assembling of electronic machines?

Between 1998 and 2005 Jan Mueggenburg studied media studies, philosophy and British cultural studies at the Ruhr-Universität Bochum (Germany) and the Edith Cowan University in Perth (Australia). He wrote his master thesis on »The History of the Computer as Medium and its Presentation in Museums of Technology«. As a member of the Initiativkolleg »The Sciences in Historical Context« at the University of Vienna, Jan Mueggenburg is currently writing his doctoral dissertation on Heinz von Foerster's Biological Computer Laboratory.
Abstract

In developing the MEi:CogSci - Middle European interdisciplinary master programme in Cognitive Science our goal was to implement a research-based curriculum within the interdisciplinary field of cognitive science. Cognitive science, as an interdisciplinary venture involving various scientific fields in science, humanities and technology, demands integration of theories and methods from those different disciplines. When analysing existing study programmes we found the focus on integrative aspects is missing in many cognitive science curricula. This lack of integrative activities might result from a challenge to people involved in truly interdisciplinary efforts, i.e. to discuss issues on a conceptual level and negotiate different terminologies, as well as from a 'personal' challenge, namely confessing one's own limits of knowledge and the need to trust in another person's expertise.

Thus our main concern in curriculum development was to provide a learning space in which students can learn, experience and practise an interdisciplinary dialogue and develop their approach to research in the field of cognitive sciences. Put into practice, such an aim poses a challenge to the role of the teacher, who will most probably meet students socialised in school systems where the teacher is a 'conveyor of scientific truth'. Adopting a constructivist perspective, i.e. assuming that truth, also scientific truth, is socially negotiated and thereby constructed, and a view of information as something that cannot be transferred from teacher to student, provides a fruitful way to deal with the challenge of interdisciplinarity. In this sense the MEi:CogSci programme is based on a constructivist framework and also aims to offer students a space to experience the ‘truths’ of different disciplines, negotiate meaning, develop their own approach and eventually pose their own scientific question in a field that is very dynamic.

In our talk we will describe and discuss the measures we established to meet the challenge of ‘teaching’ interdisciplinarity in a research based curriculum, i.e. the construction of learning spaces which encourage students to find and follow their own research question and allow for truly interdisciplinary research.
Based on the metaphor of “enabling spaces” (Wiltschnig and Peschl 2008; Peschl and Wiltschnig 2008) we are exploring what are supportive contexts and processes for gaining new insights that could form points of crystallization for profound innovations. Looking at practices of navigating in open and ill defined search spaces and re-setting self-chosen constraints (Randbedingungen) (Stokes 2005) along the way when venturing to construct new knowledge about the un-known/not yet known, we discuss possible learnings from second order cybernetics (von Foerster 2003; von Foerster 1993) and “designerly ways of knowing, thinking, and doing” (Cross 2001; Cross 1982; Lawson 2004; Glanville 2007; Glanville 2008; Glanville 1999). The key question is: What enables/constrains the “formation of new knowing” aka learning?

The concept of enabling (Wiltschnig and Peschl 2008; Peschl and Wiltschnig 2008) will be studied in detail: constructing (radically) new knowledge cannot be achieved by following strict deterministic rules or algorithms. Rather, we show how the concept of enabling as a multidimensional set of well balanced constraints is fostering and cultivating the processes of gaining new insights as well as bringing forth new knowledge.

We will present practical examples for such enabling spaces giving an impression how these concepts work in concrete socio-epistemological environments for knowledge creation, radical/profound innovation (Peschl and Fundneider 2008), as well as in social settings of collaborative knowledge work.
Title: Probability and Orderliness in the Society and Education

Abstract

Resume: Speaking about the research objects in the probability theory as a multitude or as mass phenomena, one has to state the following remarks. First of all, the probability theory studies are not all of the mass phenomena, but they are a particular class of them, and they are characterized as a random mass phenomena. Every system (social, biological or technical) can be practically viewed as a mass aggregation of certain interactions. Such of them are the solids from the point of view of general mechanics (they represent a system of material points) and the complex biological systems.

The information and knowledge determine whatever system in the contemporary society and education because by them the subjects reflect and combine whatever object. In this meaning there is supported the thesis that everyone educational system is growing within information and technologies. The mathematical modeling, information statistics and information and communication technologies unlock the power of knowledge grids and nets. But there are many problems in the society and education with the parallel computing the way forward, developing new standards and cutting down on costs and etc.

European and world researchers have developed varied software to simultaneously run applications on very different IT infrastructures that could contribute to societies and education. But there is a wide being difference of material and ideal phenomena and between social practices and individual studied phenomena.

Human-computer interaction is undergoing a revolution, entering a multimodal era that goes beyond, way beyond, the classical educational paradigm also. Interface systems have to adapt to human morphology and neurology and they have to do their job better than before. We could see that the revolution has begun, with touch and 2D/3D gesture systems reinventing mobile phones and gaming. But the pace of development and deployment has been painfully slow. Moreover, we can’t to know by way of security what we will meet by leaps and bounds within the social and educational technical challenges and changes. Our search and management methods depend on the probability, statistics and orderliness.
Abstract


**Verdeutlichung, Exemplifizierung:** Es gilt diese allgemeinen Prämissen und Vorüberlegungen im zweiten Teil des Vortrags konkret werden zu lassen, den hier postulierten didaktischen Imperativ am Beispiel der universitären Journalistenausbildung und eigener Lehrforschungsprojekte zu verdeutlichen.

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Abstract

In September 1970 Heinz von Foerster was required to appear before the Illinois legislature's Committee on Campus Disorders. He was one of several professors at the University of Illinois who was being investigated as promoting subversive activities at Illinois' public university campuses. The legislature authorized this investigation after the massive protests that followed the Kent State shootings, "toward determining whether present laws are adequate to deal with the situation and to prevent a repetition of such disorders." Heinz attracted the committee's attention due to learning outcomes that were part of a series of courses titled "Heuristics" that he offered with Herbert Brun. My talk will provide an overview of the US political climate at the time as a context for the teaching experiments that were launched by Heinz at Illinois. The hearings into campus disorders provide an opportunity to reflect on two fundamentally contrasting concepts of the university as learning environment.

Paul Schroeder first met Heinz von Foerster as a student at the University of Illinois. He holds a PhD in Spatial Information Science and Engineering from the University of Maine. His interests are currently focused on understanding the dynamics of the US solid waste industry. Paul also is chair of the ASC archives working group.
Abstract

Transdisciplinary fields encounter difficulties in becoming established in discipline-oriented universities. This article describes the specific problems encountered by the new field of cybernetics. Originally founded in the late 1940s cybernetics has made important contributions to many fields – computer science, management, psychotherapy, political science and philosophy of science, to name a few. However, presently there is no department of cybernetics at a university in the U.S. and few elsewhere in the world. Why has cybernetics failed to find a niche within the existing structure of disciplines? Should universities have multi-disciplinary institutes to nurture new interdisciplinary or transdisciplinary ideas?

The lack of an institutional mechanism for nurturing multi-disciplinary fields leads to several inefficiencies in the scientific community. Ideas can be reinvented due to lack of awareness of similar ideas developed decades earlier. Ideas and methods in one field may be useful in other fields, if they were known to people in other fields. Given the apparent benefits of multi-disciplinary research, why do multi-disciplinary fields continue to struggle?

One reason is the importance of career paths. If a field does not produce graduates with well-defined jobs, few students will enroll to study it. Sometimes a new way of thinking can be very different from existing patterns of thought, for example a different conception of the philosophy of science may be involved. In the case of cybernetics, the field has changed over time. People in the field have distinguished first order cybernetics and second order cybernetics. A second description is that the field has passed through three periods – engineering cybernetics, biological cybernetics, and social cybernetics. The result is that the popular conception of cybernetics reflects an earlier conception of the field.

What efforts to establish multi-disciplinary fields have occurred in the past and when have they been successful? Cybernetics is compared with cognitive science, artificial intelligence, communications, and complex systems. Also, the degrees of success of these fields in establishing themselves on university campuses and in the scientific community as a whole is examined.

What are the benefits of developing cybernetics as a field of study? Cybernetics offers a common foundation for the social sciences. It suggests a focus on methods in addition to theories because methods include the actions of an observer. Further development of concepts such as circularity, regulation, adaptation, self-organization, emergence, and reflexivity will lead to important contributions to the social sciences, management, and the science of science itself. Despite the difficulties, multidisciplinary fields reduce the costs of reinvention, stimulate creativity, maximize idea exchange, and increase the rate of scientific discovery.
Abstract

Many disciplines talk about „learning“, but since each of them relates this term to another domain of reference each one selects by this term other phenomena which are then called “learning”. In this article I do not strive for a substantial definition of ‘learning’. Instead I will analyse how we talk about learning and whether we might perhaps improve the plausibility of this discourse. The main idea of this article reads as follows: “Learning” serves as an explanatory model for the observation of a specific type of change happening in terms of contingent self alterations of self organising systems. The changing system and the observer of this system are inseparably related to one another since there “is” no change without an observation. Thus, talking about learning means talking about the observer and his culture of observation and description at the same time. The results of my analysis of the learning discourse are not meant to serve as how-to-do-knowledge for ameliorating learning processes. Instead they can contribute to a more complex observation of theses processes aiming at a second order observation of the complicated since complementary interrelations between the individual, the socio-cultural, the institutional, and the situational components in the domain called “learning”.