BUILDING LEARNING ORGANIZATIONS: IMPLEMENTING ORGANIZATIONAL LEARNING PROCESSES, AND THE THEORY OF SELF-REFERENTIAL SYSTEMS

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Abstract: This paper refers to the assumption that the major paradigm of Systems Dynamics, General Systems Theory, is not able to provide adequate models of organizational learning processes. It is shown that the theory of self-referential systems is able to overcome current theoretical weaknesses: Considering the difference between communication, the basic operation of social systems, and thoughts, the basic operation of psychic systems, a framework for organizational learning is proposed. Consequences for the management of organizations, especially their strategic change resp. the building of learning organizations, are discussed.

INTRODUCTION: THE LEARNING ORGANIZATION - VISION OR FICTION?

The idea of "Learning Organizations" (LOs) has grown during the last few years: There seems to be an agreement between managers and management consultants what the characteristics of a LO should be: "... an organization which facilitates the learning of all its members and continually transforms itself" (GARRATT, 1990, p. 77) or "... an organization that is continually expanding its capacity to create its future" (SENGE, 1990, p. 14). These abilities finally are the prerequisites of the "only sustainable competitive advantage companies will have" (STATA, 1989, p. 64). The reason for the attractivity of the LO idea seems to be clear: Management is faced increasingly with - partly - new problems, the cause of which is attributed to the turbulence and lacking predictability of the companies' environment. "Traditional" solutions based on strategic management and / or organizational development concepts could not solve these problems in a satisfying way - consequently the idea of a LO had to be invented. Meanwhile conferences were held (e.g. London, November 1990; Munich, November 1991), and books were published (e.g. SENGE, 1990; SATTELBERGER, 1991), both with the goal to satisfy this ambitious demand - to develop and provide successful concepts and interventions for "the art of building learning organizations".

A closer look to this scene makes clear that most of these concepts and methods were tried to put into practice without having a fundamental theoretical understanding what a learning organization could mean. The reason for this is that research was not able to develop a widely accepted model of organizational learning (OL) - the fundamental processes of a LO - as FIOL & LYLES stated already in 1985, and no real progress has been made in the theoretical domain until today. Considering that the vision of LOs should not become a fiction or fairy tale because of its advantages in contrast to current change management concepts we want to propose a theoretical framework which helps to conceptualize OL processes as much as LOs and is able (1) to overcome current theoretical weaknesses and problems, and (2) to provide an overview which empirical processes may or may not be subsumed under the OL concept.

1. ORGANIZATIONS AS OPEN SYSTEMS

General Systems Theory (GST): Traditional management concepts can be described in terms of General Systems Theory (VON BERTALANFFY, 1968) as KATZ & KAHN showed in 1978. The basic ideas of GST can be summarized as follows (e.g. LUHMANN, 1984, pp. 24): (1) The relation between system and environment is described by an input-output relation: input of material, energy, information etc. from environment into the system, transformation of this input by the system, which constitutes the output of the system, (2) the structure of the system constitutes the rules of the transformation, (3) the function of the system is identical with the transformation. (4) Differentiation of the system can be described in terms of the system's operation of distinguishing system and environment within itself. (5) This process constitutes subsystems, the behavior of which can be controlled by a higher order system by controlling the input into the subsystem. (6) Thus transformation processes can be controlled by changing the system's structure, which leads to the consequence that (7) the systems survival is dependent on its degree of fitness to its environment (adaptability), which is caused by the environment's demands on the system's output: the higher the goodness of fit between demand and generation of output, the higher the probability to survive. This leads to the pressure that the system must be able to predict changes in environment's demands.

Managerial Consequences of GST: Based on GST the following well known managerial imperatives can be described easily: (1) organizing principles have to be installed in organizations in order to avoid chaos and to achieve order; (2) order can only be achieved if there is a single idea or a top value in the system, which is the mental basis of the order. (3) order has to be implemented in systems in a hierarchical way: The top has to decide, knows the truth and takes responsibility. The "only" problems that theoretically could occur are (1) not to get enough information from the environment, e.g. from the market that lies outside of the organization, and (2) that the employees have their own ideas/goals which means they do not belief in the total wisdom of the top.

Characteristics of LOs: Summarizing the ideas about the characteristics of LOs leads to the following list of capabilities of LOs (e.g. PEDLER, BOYDELL & BURGOYNE, 1989; SENGE, 1990; SATTELBERGER, 1991): LOs (1) should be able to increase their adaptibility to the environment in order to increase the probability to survive, and (2) to increase their ability to learn in order to reach the ability of continuous self-transformation. (3) LOs enable their members to learn and develop themselves continuously, which leads to (4) new ways of thinking and to new insights about the "real nature of things". (5) Furthermore in LOs human resources and customers become the real core of the enterprise, and (6) trust is the basic modus operandi of interaction and communication, (7) managers become coaches of their employees, (8) the most important task of the leaders of today's company is to build LOs, (9) the number of hierarchical levels in LOs is reduced and (10) the company's structure is more flexible .... and so forth.

LOs as Open Systems: Without going more deeply into detail it should become clear that in the current conceptualizations of OL resp. LO (1) organizations are treated as **open systems** - without this assumption the arguments in the context of adaptability make no sense (see below), (2) leaders can **control** the relevant organizational processes in order to build LOs, and (3) environmental changes must be **predicted** in order to be able to increase adaptation.

Some Problems of the Application of Open Systems Approach to OL

Before the problems of applying GST to the field of OL can be made clear, the notion of a "scientific method" must be explicated, which provides an appropriate frame which can be referred to in order to show the weaknesses of the open systems approach outlined above.

The Scientific Method: MATURANA (1978, p. 27) describes the scientific method on the basis of four steps: "(1) Observation of a phenomenon that henceforth is taken as a problem to be explained. (2) Proposition of an explanatory hypothesis in the form of a deterministic system that can generate a phenomenon isomorphic with the observed one. (3) Proposition of a computed state or process in the system specified by the hypothesis as a predicted phenomenon to be observed. (4) Observation of the predicted phenomenon".

This paper deals only with the first two steps. First it is shown that the phenomenon of OL cannot be generated appropriately on the basis of GST while treating the characteristics of LO as the phenomena to be observed. Following this critique an overview over theories of self-referential systems is given on the basis of which a theoretical framework of OL can be provided which fits the criteria above and therefore overcomes current weaknesses of OL concepts.

Problems Caused by GST

Maintenance of the System's Borders: Boundary maintenance is the necessary prerequisite for the survival of the system. GST is not able to describe and explain the processes constituting the ability of the system to maintain its borders and therefore guarantee its survival. The notion "adaptation" does not solve this problems as will be shown now.

Adaptation: GST describes survival of systems by the metaphor of adaptation, which is borrowed from evolution theory. Evolution can be explained by two interlinked processes "selection" and "genetic variation": Selection is the description of the process by which a species (class of living systems), whose adaptation is optimal, survives ("survival of the fittest"). Variation describes the species inherent processes, on the basis of which a species is able to survive. Unfortunately selection describes the process the result of which is the survival of already adopted systems. Thus the term "selection" does not refer to the ability/behavior of the system which survives - survival means having been able to adopt. Consequently it makes no sense at all that changes in the environment cause activities within the system which enable it to start processes in order to increase its probability to survive (for a more detailed discussion of the epistemological problems of the use of evolutionary concepts see VON GLASERSFELD, 1987, pp. 81; HEIJL (1984, pp. 65) shows the inappropriateness of this notion even within the biological domain).

Allocation of Competence at the Top of the System: Even though systems dynamics have made clear that the idea to be able to control complex systems mechanistically (e.g. S. BEER, 1981) is not appropriate, the differentiation between leaders (who know the real truth, for example the principles of building LOs) and followers (which belief this real truth and act in relation to this, for example they are told to learn in order to be an element of a LO) has not been given up. Transformation processes have to be controlled in order to ensure adaptability, this leads to the sharing of responsibilities: Management has the competence to decide, employees have to follow.

Predictability of Environment: Since adaptability is crucial for the system within GST, it is essential for the system to predict future environmental changes. This seems also to be true in the case of OL: "How quickly an organization can adapt to the changes dictated by its environment or initiate changes of its own is largely dictated by the organization's ability to learn" (KIM, 1990, p. 543). Even though it is already known that the behavior of complex systems cannot be predicted, the idea to be able to predict environmental changes has not been given up, despite that the environmental complexity per definition is larger than the complexity of a complex system.

These arguments make clear that (1) the first characteristic of LOs (increasing adaptability) does not lead to any fruitful insight into the problems, especially within GST which is not able to describe and

explain the processes constituting the systems "adaptability". Considering the second characteristic of LOs (ability of self-transformation and facilitating learning of its members) this means to use models / concepts which are able to describe the processes within the system. Stressing the importance of environment while simultaneously neglecting internal processes GST cannot adequately model OL processes.

Problems of Current OL Concepts

According to literature two problems have not been solved appropriately until today. The first problem is related to the differentiation between individual learning (IL) and OL.

Relations between IL and OL: Because of a lacking theory of OL the problems of the relation between IL and OL is described mainly phenemenologically. So ARGYRIS & SCHÖN (1978. p. 9) said, that "... OL is not merely IL, yet organizations learn only through the experience and actions of individuals". SENGE (1990, p. 25) points out, that "Individual learning is, in some sense, irrelevant to organizational learning. For many critical organizational issues, the fundamental learning unit is not the individual but the team of managers who need one another to take new actions". The latter means that a new process must be explained: the relation between OL, IL and team learning, which seems not to be very helpful at all.

The second problem arising results from an anthropocentric understanding of current OL concepts: There seems to be common sense that the processes of OL can only be described in terms of metaphors (e.g. MORGAN, 1986) or as analogies in relation to IL.

OL as Metaphor / Analogy: Despite the epistemological problems of using metaphors for building theories in a different domain, doing this adequately means that there must be at least clarity within the "source science" the metaphors are derived from. Unfortunately this seems not to be the case as actual research of cognition makes clear through the following examples.

Individual's memory neither can be localized at special areas in the brain (e.g. ROSENFIELD, 1988; ROTH, 1992) nor can it be conceptualized as storage including knowledge which represents reality (e.g. MATURANA, 1982; VON FOERSTER, 1985; MATURANA & VARELA, 1987). According to this findings the question about the learning unit of OL does not make sense even within the metaphorical point of view. Additionally the ideas about organizational memory or knowledge base must be reconceptualized and re-adapted to the latest findings of human memory research, which conceptualizes memory as a function which is spread over the whole brain (VON FOERSTER, 1992). Even if metaphorical arguments are used the idea that the learning of organizations mainly depends on the learning of managers (e.g. STATA, 1989; DE GEUS, 1988) can never be adequate from a theoretical point of view.

The arguments outlined above make clear that LOs cannot be modelled on the basis of input-output concepts appropriately. Relating this insight to MATURANA's criteria of scientific method it becomes clear that GST cannot meet these criteria, especially not the second one. Consequently the theoretical framework to describe and to explain OL processes resp. the building of LOs must be provided with a theoretical basis which is at least able (1) to explain the relation between the internal processes which constitute the system's borders resp. leads to its survival. Furthermore (2) the differentiation between IL and OL has to be taken into account appropriately, and (3) the term OL / LO may not be treated as a metaphor or an analogy only.

2. ORGANIZATIONAL LEARNING AND THE THEORY OF SELF-REFERENTIAL SYSTEMS

Since in the early Sixties the concept of "self organization" was introduced into systems dynamics (e.g. VON FOERSTER, 1962), several theoretical concepts were developed which can be summarized under the headline of "theory of self-referential systems". There are different schools of thought which constitute this new paradigm of systems dynamics, such as: second order cybernetics approach (VON FOERSTER, 1985); radical constructivism (VON GLASERSFELD, 1987); theory of autopoiesis (MATURANA & VARELA, 1987); self-referential theory of social systems (LUHMANN, 1984, 1990).

ROTH (1981) developed further theories of self-organization (e.g. VON FOERSTER & ZOPF, 1962) and of autopoiesis (MATURANA, 1970; MATURANA & VARELA, 1987) and distinguished between self-organizing, self-maintaining, and self-referential systems:

Self-Organizating Systems (SOS) arise spontaneous as specific states or as sequences of states due to certain initial and limiting conditions. A self-organizing system is not self-maintaining by itself, because its components decompose or are consumed in the process of self-organization. Additionally the system itself has no possibility to resynthesize or to replace its components.

Self-Maintaining Systems (SMS) consist of cyclical concatenations of SOSs so that the first SOS produces exactly the conditions for a second SOS ... and so forth the last SOS in the cycle produces the initial conditions for the first system in the cycle, which means that self-maintaining systems are **operationally closed**. Hence, self maintaining systems are systems whose components maintain each other, and by maintaining each other uphold the whole cycle.

Self-Referential Systems (SRS) are systems which organize the **states** of their components in an **operationally closed** manner.

Consequently self-maintaining systems are self-referential, but not every self-referential system is self-maintaining. The brain for example is self-referential, because neuronal activity leads to neural activity, but the brain is not self-maintaining, because it dependens on the organs of the body to which it belongs to.

Principles of the Theory of Self-Referential Systems

The following remarks belong to those aspects of the theory of self referential systems which are important to the area of OL (for further discussion see HEIJL, 1982; LUHMANN, 1984, 1991).

(1) Every component of and every relation within the system is subordinated to the goal of the system's maintenance.

(2) The system's maintenance is dependent on the maintenance of the circular **organization** of its basic operations. Hence, the term "organization" of a system defines the class of the system, e.g. the class of SRS.

(3) The maintenance of the circular organization of SRS can be realized by different **structures** of the system. The structure of a system is constituted by concrete components and relations of an element of this class. E.g. living systems can be described in terms of an autopoietic (self-maintaining) organization, the realization of this organization depends on the species, such as animals or humans.

(4) The basic operation of a system is an operation which cannot be decomposed without destroying the system's character.

(5) The border of a system is an operation of an observer on the system's behavior. Hence, a system can have different borders - in relation to different observers, but cannot experience its own borders itself.

(6) The maintenance of the circular structure is the criterion of selection which determines that selections of activity are chosen only in such a way, that the circular structure is maintained.

(7) A system's activity is related to the interactions of its own components or to the interactions with its environment. Every interaction with the environment leads to an interaction with its own components.

(8) The circular organization of SRS defines the border of the system: all entities which do not belong to the structure of the system constitute the system's environment.

(9) The system's imperative is the maintenance of its organization. Hence, the environment is defined by those entities the system can interact with. Consequently, the environment of the system is dependent on the system: The concrete state of the system defines its environment.

(10) The environment of a SRS cannot determine the system's behavior. The environment "only" constitutes a source of pertuberations for the processes which constitute the system. The result of a given pertuberation depends on the state of the system (or subsystem), this means that the structure of the system determines its behavior (**structural determinism**).

(11) The circular organization of a SRS implies the prediction that an interaction which happened once will happen again.

(12) The circular organization of a SRS implies that SRS operate on inductive reasoning. This reasoning depends on the success of prior experiences. This means that the behavior of SRS can be described with the term "conservative".

(13) Every observer is a SRS. Because of the SR character of each observer every criterion of observing / describing is caused finally by the observer himself.

(14) The description of learning of a system is constructed by an observer through comparing two different behaviors of a system.

(15) SRS develop the criteria **themselves** on which they evaluate their own activity, based on prior evaluations of their own activity. Hence, learning can only mean learning by success and failure of the own activity, in doing so the criteria of success are also related to the learning by former success.

(16) Learning of SRS can be **defined** as the modification of their structures, which leads to the change of the coupling to its environment, whereby the structure can be defined as a modificable/plastic net of relations of cooperating/competing elements. This means that the ability of learning in SRS is - compared to controlled systems - increased in an extraordinary way because of the usage of the principles of self-reference (ROTH, 1992, p. 148).

(17) Learning of SRS can described by two different classes of operations (cf. VARELA, 1992): (1) the changing of the relations between the components of a system or (2) the changing of the components. The first class can be subdivided into (1a) the change which results on the reinforcement of the active units which have been activily involved in prior coupling events (success), and (1b) the change which is caused by the feedback of a failure. The second class can be divided into (2a) the change which is caused by little modifications of active elements, and (2b) the change which is caused by the exchange of old elements for new elements.

Social Systems as Self-Referential Systems

LUHMANN (1984) generalized the theory of SRS, which was introduced by MATURANA (1970) in order to describe living systems, to social systems. This implies that individuals may not constitute the components of a self-referential social system, because in this case the maintenance of the system is dependent on the physical reproduction of individuals. Hence, LUHMANN defined communications as the components of social systems: Social systems reproduce themselves on the basis of communication - without communication there are no processes that can be called "social".

Thus the basic operation of social systems are communications the difference between system and environment is constituted by **meaning**. Meaning has the function of a selective mechanism: Meaning selects on the basis of different opportunities of communications and therefore constitutes the border of a social system. Meaning is able to reduce the complexity of the environment into an amount of complexity the system is capable to process.

Linking Individuals to Social Systems

Communication is dependent on individuals. Individuals can be described as living systems (cf. MATURANA, 1982), dependent on cognitive and psychic processes. Hence, LUHMANN distinguishes in his theory three different classes of SRS: (1) cognitive systems, reproducing their states by the electric activity of neurons; (2) psychic systems, reproducing their states by the activity of mind/consciousness, and (3) social systems, reproducing themselves by communication.

Psychic systems are as well operationally closed as social systems: Mind cannot operate on the basis of its operations (thoughts, feelings etc.) into communication - and not into mind of other individuals: Neither a powerful thought nor an enlightening vision or insight is communication. The opposite is also true: Communication cannot operate on the basis of its operation into mind. Neither an empathic communication nor a fascinating message or information are thoughts. There is no input from mind into communication or vice versa: Both systems are operationally, that is informationally closed. There are only links between thoughts and thoughts or between communication and communication.

Because of the SR character of these systems, an adequate description and explanation of the relation between them must be found, because OL is a phenomenon which relates as well to individuals as to organizations resp. to a social systems.

Hence, the social system and the psychic system are not totally independent in so far, that the first one constitutes a part of the environment of the second one as well as the second one constitutes a part of the environment of the first one. LUHMANN coined the term "interpenetration" to describe this linking phenomenon: **Interpenetration** means that each of the systems makes its complexity available to the other system, which influences the structure of both systems, but this does not mean that there exists a common supersystem.

Applying the Theory of SRS to Organizational Learning

According to the theoretical framework outlined above it becomes clear that learning of SRS relates to changes within the system's structure. Hence, the learning of individuals and organizations (organizations can be treated as an element of the class of social systems) can be described and separated against each other on the basis of their basic operations and on the basis of their interpenetration.

Individual learning: IL is dependent on the structural changes of the individual's cognitive system which was extensively described by PIAGET (1970), MATURANA (1982), VON GLASERSFELD (1987) and others and needs not to be outlined here.

Organizational Learning: As outlined above, OL can be described in terms of change of its basic operation, that are communications. As far as meaning constitutes the border of communication, at least three levels of OL can be distinguished by an observer: (1) An observer can describe changes of communication according to descriptions of objects, individuals, or their relations. This can be caused by the exchange of these objects or individuals, or by the change of the meaning of these objects or individuals. (2) An observer can observe the change in the process how an organization communicates about communication (from "no communication about communication" to "increasing number of communications about communications"). (3) An observer can observe that an organization communicates about the tacit assumptions of communication, which enables it to take the SR character serious and to act on the assumptions of the SR character. In terms of VON FOERSTER (1985) this means that as well social as psychic systems re-discover their - meanwhile forgotten - **non-trivial character.**

Comparing these arguments with current OL approaches (cf. ARGYRIS & SCHÖN, 1978) it will become clear that the first level (1) refers to single-loop- or double-loop learning (communication about organizational prerequistes in order to achieve goals), that the second level (2) refers to deutero-learning: getting insight into the own communication practices in order to be able to change them. The third level was not considered appropriately in theory until today. This process we will call **triple-loop-learning** (TLL), in order to make clear that the system observes its own communication with the goal to change its basic assumptions on communication (which means on itself and the participating individuals).

Individual vs. Organizational Learning: Current OL concepts are not able to distinguish precisely between IL and OL. Applying the theory of SRS helps to make this difference clear: IL happens, if changes occur in the individual's cognitive system. That does not necessarily lead to OL. OL thus only occurs if there is a change in communication. This also means that IL may occur without OL.

The Learning Organization - A Vision: The discussion above should have made clear, that an adequate model of LOs must consider the SR character of social, psychic and cognitive systems. Hence, building LOs can only mean, that the acceptance of this SR character of social systems / communication and the own cognitive / psychic system is a prerequisite to be able to achieve this goal. **Hence, a LO must be defined as an organization in which TLL occurs.**

3. CONSEQUENCES FOR MANAGERS

According to the SR character of organizations the following conclusions can be drawn:

* Considering that organizations cannot be controlled from outside the system, and that instructive communication is impossible, has far reaching consequences for the **design**, **control**, and **development** of organizations. Especially planning of strategic changes can only have the function to give a context for meaning, but may not constitute the explicit goals which absolutely have to be achieved. The term "**strategic intent**" (HAMEL & PRAHALAD, 1989) gives an orientation what can be meant by "context of meaning".

* Communication is not dependent on the content of the transmission, but is dependent on that what happens within the receiver: and this cannot be called "transmission of information". This is also true in the case of reading: information is nothing which can be transmitted. Hence, **change management** and **leadership** cannot be based on instruction but on extensive use of feedback processes in order to exchange and adjust the realities of all parties.

* OL implies change of communication, which also implies change of meaning. Paying attention to and understanding of **organizational culture** and subcultures is a necessity to implement change processes successfully. **Trust** is the basis on which communication processes can be changed most appropriately, because of its higher degree of fitting connections to others in comparison to power or distrust.

* Neither organizations nor individuals show any **resistance to change**, the term "resistance" belongs to the observer, and describes the differences between the system's environment and the image of the observer what the environment of the system should be. Considering this leads to the insight that **strategic change** must be implemented differently than usually, especially the observing of "strong resistance" indicates the inappropriateness of the change process.

* **Management of meaning** is crucial to any intended change of an organization. Hence, human resources management cannot mean only to make strategic concessions to humanistic ideas, but has to be taken serious.

* Communication does not mean giving and taking or exchanging, but to give each other opportunities to cognitive change, to selecting and constructing information which is dependent on ourselves. Communication can fail, if one partner regards the message of the other as irrelevant, the content as wrong, and the demand for attention as impertinent. Communication makes clear the close interdependencies between (a) cognition as the psychic process of constructing realities, (b) interaction as the process of adjusting the own constructions of realities with those of others, and (c) organizations / institutions which organize interactions. This leads to the consequence that implementations of OI processes must be based on extensive applications of the **"sharing mental model"** approach (e.g. VENNIX & SCHEPER, 1990).

Building LOs - Six Commandments: As outlined above change of communication can be caused by different aspects such as change of content, or change of process, or change of participants. Despite of the importance of these processes, they will not be discussed here, we only want to show some implications of the TLL-idea. Based on KRIPPENDORF's article (1990) about the self-referential character of communication the following commandments of building TLL organizations are proposed:

(1) **Construct your own reality in such a way that you are able to perceive it!** This means that we have to become aware of our blindness, our assumptions and finally that our reality is only our construcion and not the only one.

(2) **Construct yourself in such a way that you yourself are a part of your own constructions!** The application of this imperative must lead to a re-assessment of the own rules of thoughts and actions.

(3) **Give the persons who are constructed by you as much autonomy as you want to have within their constructions!** This leads to the insight that respect and empathy are superior to authority or power.

(4) **Invent as much alternative constructions as you can - but don't forget the degree of their viability!** This leads to the ability of constructing several future states, and to be able to assess their ethical and pragmatic consequences.

(5) **Communicate in such a way that the area of other individual's decisions will not be decreased!** This means that we have to pay attention about our trivialization tendencies of others, which means to describe them as predictable and controllable (cf. VON FOERSTER, 1984).

(6) **A LO is an organization in which the first five imperatives are realized.** Hence, interventions must be planned and applicated on the same basis.

4. CONSEQUENCES: SRS AND MODELS OF STRATEGIC CHANGE

There seems to be agreement that the central problem of strategic change of organizations can be described as follows (e.g. KILMANN & COVIN, 1988; BEER, EISENSTAT & SPECTOR, 1989; BEER & WALTON, 1990): Achieving **commitment** by employees is the core of a successful implementation of strategic changes. Hence, the imperatives are (1) that top managers must first develop a **vision** about the future state of the organization, and (2) this vision has to be implemented on the basis of increasing **participation** of employees.

Several prescriptive models of strategic change were developed which refer to these main assumptions. Its empirical evidence could be shown only partly, mainly as case studies but not as field studies, which means that the effectsizes of several variables is not known. Hence, we do not want to add another model based on experience with case studies only, but we want to propose some **guidelines** for the strategic change of organizations - especially building LOs - based on the arguments outlined above. These guidelines may help to overcome some weaknesses of current concepts, especially in the core-area that is achieving commitment throughout the whole organization.

Predictability, Planning, and the SR Character of Organizations

Planning implies the assumption to be able to control change processes per se in order to achieve the intended goals - the only question that can be discussed is the degree of control which can be achieved. Additionally change processes can be implemented by interventions which implies to be able to predict changes in relation to a specific intervention method.

According to the SR character of social systems it must have become clear, that every plan, and every intervention is "transformed" by the system resp. its subsystems due to their specific structure. Hence, change cannot be implemented successfully by the assumption that plans or goals do maintain their identity in relation to a subsystem or during the implementation process. Or to put it more simply: Every subsystem constructs its own meaning to any plan or goal.

Commitment and Meaning

Hence, we do not agree with the "traditional" point of view which can be described as (1) visions apriori can "define the structure, systems, management processes, and skills required in the future" (BEER & WALTON, 1990, p. 157), and (2) commitment can be achieved when the majority of the employees accept the necessity of the changes planned by the top.

The consequence of the SR character of each organizational subsystem in this context is the specific construction of meaning in relation to the "input" of a vision. Considering that this process always occurs leads to the insight that implementing visions must imply the explicite consideration of this process - because of the lacking possibilities of its control and predictability. This means that methods have to be developed so that the SR processes can contribute constructively to the achievement of an "intended" goal. Thus, the term "commitment" in the context of SRS must be treated differently: It must indicate that subsystems (1) have to be involved into the generation of a vision in such a way, that they (2) are able to construct specific meanings on the basis of the proposed vision, which finally can be (3) integrated in a shared vision on the basis of extensive participation.

Sharing Mental Models

This idea can be realized by the expanding of the **sharing mental model approach** over the whole organization. Briefly described an **individual mental model** can be derived from the explication of individual constructions (in "traditional" language: cognitive maps) of empirical domains such as the own work, the relations to colleagues, the meaning of strategic change etc. **"Sharing mental models"** as a method refers to the phenomenon that the complexity and therefore the validity of an individual mental model can be increased by sharing it with others in a common process of complex problem solving (e.g. DÖRNER, 1989; VENNIX & SCHEPER, 1990).

Achieving Commitment by Participation: Building Shared Visions

As shown above, a fundamental change of organizational communication processes is crucial for the building of LOs. On the other hand the application of the SMM approach leads to quite different communication processes in groups than in the past because of the explication and exchange of the participant's cognitive maps. Recognizing this advantage of the SMM approach the question about the transferability to the transformation of a complex system such as organizations arises. Our answer to this can be made clear by the application of an "extended" SMM approach to a "traditional" top-down implementation of strategies. Hence, following guidelines have to be considered:

(1) **Proposing a vision:** The vision developed first by top management (the traditional method) should be treated only as a **proposal**, as a context - to be developed commonly - in which the intended change could talk place.

(2) **Organizationwide Feedback:** Feedback processes must be implemented in such a way that every subsystem can explicate the requirements that have to be met prior to resp. during the implementation of the intended change processes within the specific subsystem. Based on the collection of this information this diagnosis gives top management the opportunity to consider further activities in order to achieve the intended change. Additionally this may lead to a modification of the prior vision: The mental model of the top can be changed on the basis of the needs of the whole organization according to the intended change. Hence, a **shared vision**, based on the integration of the information of the feedback processes, was generated.

(3) **Maintaining the ability of self-transformation:** Following activities lead to an ongoing **self-transformation** resp. **learning** process within the organization: (a) the change activities based on the shared vision are implemented, (b) ongoing internal as well as external feedback processes (customers, benchmarking etc.) generate continuous information about requirements which have to be met.

Since feedback implies communication it must become clear that the proposed process leads to (1) fundamental change of communication processes within the organization, based on (2) an ongoing transformation of the mental models of the organizational members - regardless to their hierarchical level, which (3) can be interpreted as the first big step into a LO. Additionally this process is based on (4) extensive participation of employees to the change process, which leads to a higher degree of identification with the change process and its goals, and hence to (5) an increasing commitment by all organizational members. (6) Finally this process takes the SR character of organizations resp. its subsystems serious.

5. REMAINING QUESTIONS: RESPONSIBILITY FOR OWN ACTION

Theory of SRS makes clear that every individual is responsible for his or her own action - and also for the social consequences based on their decisions. Especially the term "power" and its use have to be changed fundamentally, because power usually means to ignore the SR character of psychic and social systems.

Instead of answering the introductionary question (LO - vision or fiction?) we even want to add the following ones, because answering these questions may help to clarify consequences that LOs will have:

* Do managers really want to build LOs really considering and accepting the far reaching implications on every social domain - or do they only want to have a new set of tools to make more profit?

* Can managers support changes like this, because society - as a supersystem to organizations - has a SR character, too: Do they not have to fear too much negative feedback and counteractivities in domains outside "their" organizations?

* Consultants usually earn a lot of money. Can they really dare to support managers building LOs, since this means - idealistically - LOs do not need any support of consultants due to their acquired ability of self-transformation?

But we want to put it more optimistically: In one of the OL conferences it was argued that the problems of world economics and ecology can be solved only if organizations learn, and thus are able to make more profit. This money can be used to solve social or ecological problems. The ideas outlined above lead to the same consequences but caused by a different reason: These goals can be achieved because LOs also imply a fundamental change of society. And these paradigmatic changes constitute the basis on which urgent problems can be solved. Or to put it briefly: **Problems are solved primarily by changes of meaning and not by making more profit.**

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