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INTEGRAL ORGANIZATIONAL RENEWAL (IOR)

Between Structure and Uncertainty

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Abstract

As the dominant scientific paradigm is transmuting, Socio-Technical Systems Design (STSD) also finds itself submerged in a major process of transition and redefinition. The theory of open systems is bound to be replaced by what is called the 'new science' (i.e. complexity/chaos theory). In order to bring up to date the theoretical foundation upon which STSD is built, this paper tentatively explores the possibility of substituting Chaordic-Systems Thinking (CST) for Open-Systems Thinking (OST) as STSD's root metaphor. The case for doing so will be illustrated by analyzing the Dutch Integral Organizational Renewal (IOR) approach in general, and its 'Interference Model' in particular. In support of this effort, an existing conceptual framework for CST has been taken into account. IOR is analysed as to what extent it articulates with the properties of Consciousness, Connectivity, Indeterminacy, Dissipation and Emergence. It is concluded that IOR already is exhibiting a high degree of coherence with the precepts of CST. The discussion is focused on whether OST and CST are more or less interchangeable 'empty-cartridge' concepts, either of which will suffice in support of the practice of IOR, or CST will prove superior both in terms of parsimony and efficacy of design as well.

Introduction

Nowadays, like most every approach taken to the design and management of organizations, Socio-Technical Systems Design (STSD) finds itself in the midst of profound transformation. Being one of the first nearly half a century ago, to challenge Taylorism, the reigning doctrine of 'scientific management', STSD has become a widely accepted way to view the modern

world of work. The STSD paradigm continues to inform the actions of practitioners throughout the Western world.

Conceived in the United Kingdom as a result of the accidental rediscovery of an old colliers' work tradition (Trist & Bamforth, 1951; Trist et al., 1963), the concept was elaborated and put to the test in India, Holland and Scandinavia in the 1960s and subsequently exported to the United States and Australia as well. Although the original approach based on 'open-systems thinking' (OST) has been credited to American Consultancy (c.f. Van Eijnatten, 1993), several distinctive contemporary local variants were to emerge in Scandinavia, Australia and The Netherlands. The Dutch version, Integral Organizational Renewal (IOR), advocating holistic, non-hierarchical structures, and the integration of work, organization, and information systems design, stands as a prominent representative of STSD in Europe.

Today on this eve of the new millennium, OST---the paradigm underpinning STSD---appears to be in the process of evolving to a higher order thought system which may be called 'chaordic systems thinking' (CST). The term 'chaordic' was coined by Dee Hock, founder and former chief executive of Visa Card International, to convey the 20th century discovery that 'chaos' and 'order' are not opposites from which to choose...a primary assumption with roots in 17th century science. Instead, the two have been shown to be interpenetrated aspects of the same reality, ergo 'cha-ordic'. Not only does this now disproven dichotomy continue to permeate modern Western thought, it remains evident as well in the open systems (OST) framework through which organizations are viewed.

This paper explores the potential CST holds for renewing the theoretical foundation upon which STSD in general, and Dutch IOR in particular are built. The focus of this discussion will be on determining whether OST and CST are as some claim, more or less interchangeable 'empty-cartridge' conceptualizations, either of which will suffice in support of the practice of IOR, or as the authors suspect, CST will prove superior both in terms of parsimony and efficacy of design.

Integral Organizational Renewal

The Dutch variant of STSD---'Integral Organisational Renewal' (IOR)---was originally formulated by De Sitter and associates at Eindhoven University of Technology (c.f. De Sitter, 1973; De Sitter et al., 1986) in 1973. Since then, it has proved a prominent representative of modern STSD in Europe due to its advocacy of holistic, non-hierarchical structures, the integration of both work and organisation design with information systems design, as well as an emphasis on logistics and learning. Currently, IOR is the most common approach to systems renewal in The Netherlands.

Since its inception, IOR has continued to develop in great detail, both with respect to its theory of systems design and the change process as well (Van Eijnatten, 1993; De Sitter, 1994; De Sitter et al, 1997; Van Eijnatten & Van der Zwaan, 1997). IOR is an 'integral' meaning 'structural' socio-technical approach to design that has been firmly grounded in OST. It has its roots in the Dutch discipline of 'Bedrijfskunde', a rather unique integration of the faculties of industrial engineering, management science and the social sciences. The multi-disciplinary context of Bedrijfskunde is vital to understanding IOR. Mainly due to a history of favorable industrial relations in The Netherlands (i.e., managers and workers pragmatically

collaborate to achieve commonly-agreed business goals; and labor unions are organised at the national rather than the local corporate level), IOR is developing into a major local design theory. It is now endorsed and put into practice by a significant number of Dutch firms in the industrial, service delivery, and governmental sectors as well.

Formal education appears to be the most important channel for diffusion of IOR in The Netherlands. In several Dutch technical universities, students in the building and engineering sciences are introduced as a matter of course to STSD as well as the principles of organisational behavior. Certainly the most successful Dutch STSD diffusion strategy has been on a call to “train the engineers!” in the theory of socio-technical systems, although in a majority of Dutch firms, there is still a minimal understanding of STSD in general, or IOR in particular.

The Open Systems Paradigm

As with the IOR version, virtually all STSD variants to date have their roots in OST (c.f. Van Eijnatten, 1993). Inspired by discoveries in the fields of biology and cybernetics, the Tavistock Institute of Human Relations in London adopted the OST lens in their famous studies of coal-mine work in the 1950's. Fred Emery (1959/1963) elaborated upon OST concepts in the following decade. Fostered by its export to Australia and North America in the 1970's, the open-systems model continued to play a dominant role as a central metaphor to inform STSD. OST became even more refined through the introduction of the aspect-system concept by the developers of IOR (c.f. De Sitter, 1973).

Although the integrated set of systems concepts comprising STSD and founded on OST has developed into a sort of ‘esparanto’ is now used widely by practitioners, a unified theory of systems has not appeared (Emery, 1993). For instance, the concept of ‘equifinality’ (Von Bertalanffy, 1950, 1968) is embraced broadly throughout all variants of STSD. According to Katz & Kahn (1978), equifinality holds that a system can reach the same final steady state regardless of its initial conditions or the path it takes. One might also consider the notion of ‘directive correlations’, the intricate two-way adaptational process thought to exist between an open system and its environment (Sommerhoff, 1950/1969; c.f. Emery, 1990). So far, neither of these examples of many established principles of OST has been successfully woven together to form an integrated theory of practice.

The Chaordic Systems Framework

Increasingly, OST is faced with significant anomalies arising in many different fields (Lorentz, 1963a/b; Zukav, 1979; Prigogine & Stengers, 1984; Allen & Sanglier, 1984; Packard, 1988; Ruelle, 1991; Stacy, 1992; Thiétart & Forgues, 1997). Increasing realization of OST's inadequacy in explaining these startling phenomena was spurred by the discovery of the ‘butterfly-effect’ (c.f. Lorenz, 1963a/b) which shows how a very tiny change in the system's initial conditions can wield enormous effects on the outcome---clearly an indication of some flaw in the principle of equifinality. More importantly, the OST assumption that open systems aim to maintain a ‘steady’ or equilibrium state, has been challenged with significant evidence that such systems in the flux of ‘far-from-equilibrium’ conditions are eminently more sustainable.

“Unless and until the system escapes its strange attractor of equilibrium (E), moves unheeded through near-to-equilibrium (NTE) conditions, and on to the ‘place’ far-from-equilibrium (FFE), it will remain susceptible to stagnation and eventually decline—the worst kind of ‘falling apart’ imaginable. In other words, the order, growth and development we crave for our systems is impossible in E, improbable when in NTE, and ripe with potential only in FFE.” (Fitzgerald, 1996: p.56)

As more and more of the findings of modern science come into popular awareness, the once dominant OST is being progressively pushed towards the limits to its usefulness, even as the “theory of complex, dynamical, non-linear systems” nicknamed ‘chaos’ (Fitzgerald, 1997a) emerges to replace it. Like OST, chaos represents a basic way of looking at reality---a new metaphor or system of thought. This ‘new science’ (Gleick, 1987) offers a common foundation for whole families of new discipline-specific theories of content or process. Its power lies in its ability to see the system in greater depth not just as a surface structure (the primary strength of OST) but as a dynamical whole reducible not into parts but a few certain properties. The complex entity that is the focus of chaos is certainly ‘open’ in the OST sense of the term. Often called ‘chaordic’, these exquisitely complex, dynamical, non-linear systems are so much more.

By definition, a ‘chaordic system’ is “A complex and dynamical arrangement of connections between elements forming a unified whole the behavior of which is both unpredictable (chaotic) and patterned (orderly)... simultaneously. Chaos then is the science of such chaotic and orderly, that is ‘chaordic’ entities found in abundance throughout the universe” (Fitzgerald, 1997a, p.1).

IOR in a Chaordic System

The following is a careful attempt to explore the possibility of replacing the current root metaphor underlying STSD, that of OST with the newly emerging CST. The case for doing so will be illustrated by analyzing the Dutch IOR approach in general, and its ‘Interference Model’ in particular. In support of this effort, an existing conceptual framework for CST has been taken into account (Fitzgerald, 1996/1997a/b). Fitzgerald has articulated five core properties characteristic of chaordic systems. These are in brief, Consciousness, Connectivity, Indeterminacy, Dissipation, and Emergence. Each has been defined below along with some ‘rules’ for their practice in the process of organizational design and change. This framework is provided as a main point of departure in the analysis of how CST can replace OST as the foundational paradigm for IOR.

Fitzgerald defines the chaordic system Property of Consciousness as follows: “As the essential substance of the universe is thought and the primary process thinking, reality is thus any ‘thing’ and every ‘thing’ one thinks” (1996: p.19). In other words, “Mind...not matter, comprises the fundamental groundstate and essential force of the universe. Reality is anything one thinks” (1997b: p.1). The notion of ‘consciousness’ as the fundamental causal reality implies several ‘rules’ to bear in mind with respect to organizational change (1996: p.24):

- The first and most formidable step in changing a chaotic system, is changing the mind.
- If you wish to change the system profoundly, you must change its mind profoundly.

- Thoughts that have become fixed over time in the organizational mind (the orgmind) as ‘truth’ are the primary source of inertia—the seeming inability and unwillingness of people in organizations to act in the face of change.
- No one should be let off the hook of responsibility for the consequences of their thinking no matter how convincingly they claim to be ‘just an innocent bystander’.
- The only legitimate work of a ‘change agent’ is building the capacity of the system for mindfulness.
- As long as the orgmind fails to hold profound systemic change as both possible and desirable, any effort to effect a strategy for change will be futile.

The distinctive Dutch change strategy captured in the call to “train the engineers” in the context of ‘self design by knowledge transfer’ (De Sitter, 1993), consists of offering people of all backgrounds and at all levels of the organization dedicated training so to facilitate the internalization of IOR theoretical content as well as OST from the very start of a change initiative. Similarities between the CST principle of Consciousness and the Dutch IOR ‘self-design by knowledge transfer’ change strategy are remarkable indeed! IOR calls for the investment of significant amounts of time, money and energy in the process of changing the ‘orgmind’. This is seen as a prerequisite to changes in the organization’s surface structures and processes.

As Hoogerwerf (1997) has pointed out, in practice actual learning processes are much slower than generally expected by change agents. In addition to providing company-wide organisational learning opportunities through courses and workshops, people should be given ample time to internalise new routines so to enhance the potential of the renewal process for success.

The chaordic system Property of Connectivity asserts that “The universe is one—an unbroken and unbreakable unity; a wholeness in which no ‘thing’ can exist or occur independently of the whole; a pattern of active relationships between elements whose meaning is derived solely and entirely from their connection to the whole”. Or as she puts it: “Indeed, there are no ‘things’—only connections.” (Fitzgerald, 1996: p.28, 1997b: p.1). The concept of ‘connectivity’ resulted in the following rules for organizational change (1996: p.31):

- Think globally, act locally.
- The organization must be grasped as a whole or it cannot be understood at all. One learns nothing useful about a system by studying its parts.
- A system is changed as a whole or it not changed.
- The power necessary to change a system will be found in the intricate field of relationships—not in positions or individuals, no matter how much authority they may wield.
- When any two elements in a system interact, their connection is strengthened. Otherwise, it is diminished, but never is it non-existent.
- The real action in a system happens at the level of connections; it is the result of everything all the elements of the system do.

Elaborating upon an ‘Interference Model’ for IOR, De Sitter unwittingly obeyed most of the above-mentioned CST rules. This model suggests that a typical work organization can be viewed as a network of interaction cycles, wherein a multitude of functions are produced (De Sitter, 1993: p.178). Human beings are system elements whose work places serve as primary

junctions through which flows of materials, sub-assemblies, products, work orders, product and process specifications, production schedules and production informations converge (1994: p.7/8). According to De Sitter (1993: p.178): “For each individual or sub-system in a system, or for each system in a network of systems, input is central to the degree that its deviation would block the completion of the remaining complementary interaction cycles and their respective functions... Thus, process disturbances in interaction processes can be analyzed in terms of interference or contingency between two or more interaction cycles.”

The specific architecture of the network’s structure determines the probability of interference. In practice, bureaucratic structures are more prone to interference than product-based team structures. IOR is treating the organization as what Koestler (1967/1978) called a ‘holon’, a system which is simultaneously a whole onto itself and a part of a larger whole.

The chaordic system Property of Indeterminacy is based on the principle that “The universe is so dynamically complex that its future cannot be known in advance. In fact, the future is unknowable because it does not exist in actuality...but has only the potential to exist.” (Fitzgerald, 1996: p.36). She notes “any link between cause and effect is necessarily obscured” (1997b: p.1). The chaordic concept of ‘indeterminacy’ suggests therefore the following rules as guidelines for organizational change (1996: p.40):

- The answer to the ‘how?’ of change must be made up as you go.
- Every time a system changes it becomes more complex. The more complex it is, the more chaotic it becomes. The more chaotic it is, the more order it must generate. The more orderly it is, the more it will vibrate. The more it vibrates, the more unstable it becomes. The more unstable it is, the farther it moves from equilibrium. The farther it is from equilibrium, the more it will change. Every time a system changes...
- Given the fact that the long-term future is unknowable, why waste a single fleeting moment of the present planning it?
- Attempts to bring dynamical complexity under centralized control, will render the system unstable and rigid, therefore susceptible to shattering.
- Time and resources should be invested in preparing for any possibility rather than squandered on planning to cope with a fixed future the data assures us will happen.
- Straight singular linearity does not exist.

De Sitter claims the network of interactions comprising the organization, is fundamentally unstable. Furthermore, that people’s relationships in the network continuously interfere with one another, resulting in the constant perturbation of the system and its ongoing processes. To emphasize the unknowable future, he introduces the concept of ‘controllability’ instead of control referring to “the generic capacity to maintain a balance between a multitude of ever-changing functional configurations” (1993: p. 178). Controllability does not aim at rigid planning or bureaucratic procedures, but the development of adaptive strategies.

People basically perform their work activities in a multitude of environments, both professional (work group, department, company), societal (club, communion, political party), and private (nuclear and extended family). In order to give meaning to their life, humans actively select and combine their interactions in the different contexts in which they are operating. To accomplish this successfully, they should be able to choose accordingly. The concept of

‘control capacity’ can be described as the potential of a system (element) to reduce interference (De Sitter, 1994).

Fitzgerald describes the chaordic system Property of Dissipation as follows: “The universe is a dissipative structure that perpetually ‘falls apart’ and then grows back together again each time in a novel new form ungoverned by the past” (1996: p.46). Based on this principle, she offers several rules for organizational change (1996: p.48):

- Change before it’s time. Even if a system receives clear and timely signals that it’s approaching its limits, it still can’t change overnight.
- Only when a system acquires accurate and timely information telling of its location and speed with respect to its limits, can it change strategically.
- Because it takes years to put a new dissipative structure in place, it is critical to begin the process of relinquishing the old form long before reaching the limits.
- Chaotic systems can only emerge to higher and higher orders of coherence by ‘falling apart’.
- Its behavior will be most resistant to change when the system is in the domain of equilibrium.
- Organizations grow more complex by growing more complex, not by growing larger.
- Design into the enterprise a self-triggering mechanism—a way to shake things up that enables the system to automatically and continuously transform itself.

The holistic change process known as IOR is likely to take several years of development and growth because it is an ongoing learning process and not an ‘event’. In work organizations, the creation of self-managing teams at the micro-level should only take place when the design principles of parallelization and segmentation at the macro and meso levels are applied (De Sitter, 1994; DeSitter et al., 1997; Van Eijnatten & Van der Zwaan, 1997). Although the methodology known as business process renewal (BPR) suggested the opposite, it appears to be nearly impossible to accelerate this change process in any significant way. Furthermore, it is rather difficult to initiate IOR in the absence of a serious business crisis. Through IOR, an effort is made to build into the orgmind a continuous drive to change organizational processes and products long before their limits are reached.

The chaordic system Property of Emergence has been defined as follows: “The inexorable thrust of the universe is toward infinitely ascending levels of coherence and complexity made possible by its inherent capacities for self-organization, self-reference and self-replication” (Fitzgerald, 1996: p.51). Consequently, several rules for action in organizational change may prove useful (1996: p.58):

- Putting a ‘boss’ in charge of someone, is the ultimate antithesis of self-organization.
- Self-organization is like a gift...you get to order but you can’t choose for free.
- Through its self-referencing capacity, a system maintains its core identity by changing continuously in form and substance.
- People are like the bubbles inside of a pot of water, rising to a boil. While some let go emerging to the surface, others cling to the sides and bottom. The only way to shake them loose is to turn up the heat.

- Emergence is the evolutionary drive of the universe to advance to the next higher vibration in an infinite hierarchy of order extending from the physical to the realm of pure potential in-formation.
- The two most critical keys to the successful emergence of a chaotic system are robust connectivity and far-from-equilibrium (FFE) conditions.
- The force of emergence vibrates at the edge of chaos between stultifying equilibrium and violent instability. Do what's necessary to move the system to that 'place', then get the hell out of its way!

Due to the fact that IOR relies heavily on social systems theory, the "self" in self-referencing is taken to refer to social aggregate rather than the individual. In other words, people do not make choices in isolation from each other but as a result of connections with their team, their work unit, as well as with the organization as a whole. The ultimate purpose of IOR is to create relatively "simple organizations with complex jobs" (De Sitter et al., 1990/1997). In a recent article, Mathews states, "It is now clear that there is a lot of intellectual firepower behind the notion of holonic systems that complexity can be resolved through treating complex organizations as coordinated systems of less complex but autonomous 'wholes as parts'" (1995: p.15). Perhaps IOR can succeed in transforming 'human resource management' to 'human resource mobilisation' in both form and practice (De Sitter, 1994) allowing for a wide variety innovations in product and process to emerge from teams operating as autonomous wholes.

Discussion

Although most practitioners of IOR are still largely informed by OST, this exploration has attempted to show how the distinctive Dutch brand of STSD is already exhibiting a high degree of coherence with the precepts of CST. Most illustrative in this respect are its strategy for changing the orgmind called 'self design by knowledge transfer'---paralleling the property of consciousness; the idea of 'interference between interaction cycles'---consistent with the property of connectivity; the concept of 'controllability'---related to the property of indeterminacy; the design principles of 'parallelization and segmentation'---suggestive of the property of dissipation; and the notion of 'human resource mobilisation'---in tune with the property of emergence.

It appears that CST can serve as a powerful metaphor for STSD approaches including IOR without danger of losing the essential theoretical content of its predecessor, OST. However, it is not yet clear whether CST enables a more parsimonious theory of content than does OST. In any event, it can be safely concluded that the 'new science' will continue to offer exiting opportunities for re-thinking existing theories of organizational design and change for years to come. Of course, as with any hypothesis of its inherently radical nature, more action research is needed. The authors hope to initiate the inquiry by suggesting several preliminary questions:

- * Does CST have any pragmatic applicability in the design of complex systems? Or is it merely a useful tool for diagnosing the level of complexity in an organization?

As for OST, it is important to determine what role CST can play in the actual design of organizations as complex systems of interaction. More specifically, it would be of value to

know what particular CST guidelines can inform the practice of organizational systems designers? Can CST contribute in any significant way to the process of designing and/or redesigning production processes or control structures? Is CST capable of delivering a comprehensive design framework? Are design practitioners better served by adopting CST as a metaphor for the description and assessment of organizational phenomena? How can CST be made applicable to and actionable in the design of socio-technical organizational systems?

* What and/or who actually changes the system?

From a managerial perspective, it would be invaluable to know the nature of the driving force behind change. Are persons or events more likely to catalyze change or is it a combination of the two? According to CST, is 'planned change' possible or permissible? What is the significance of the difference between change that is intentional and change that is 'accidental', i.e., change that "just happens"? And, what is it that is meant by systemic change anyway when viewed through the lens of CST?

* Must the change agent 'stand' outside a system to change it?

According to CST, is it even possible to do so? In other words, are external practitioners really 'external' or are they integral to the whole? Do all agents of change participate by definition in the system's dynamics? Can the observer ever be truly distinguished from the observed? From the CST viewpoint, are system 'experts' ever definitively distinct from system elements?

* What would a comprehensive approach to IOR founded in the CST framework look like?

Will the findings of future research continue to affirm the apparent compatibility of CST as a system of thought and IOR as a methodology for organizational design and transformation? Can CST succeed in boosting the IOR process to its next higher order of complexity? How might IOR be transfigured given a critical mass of practitioners who approach their work through the framework of CST? Is CST likely to demonstrate enhanced parsimony and design efficacy in comparison to OST?

* Are the basic systems concepts comprising CST the same or similar to those embraced by OST?

Is the primary difference between the two systems of thought merely semantical? If not, what are the major distinctions between the alternative approaches to organizational design and change? Is it possible that CST is in fact a conceptual system that expands upon and includes its predecessor, OST? Is OST a special case framework, applicable to a narrower 'bandwidth' of organizational phenomena than is CST? Is CST "quite another paradigm altogether" or "just a sexy redressing" of OST (see internet Socio-Technical Systems Roundtable Listserve <sts-r@sonoma.edu> in reference to an on-going debate of this question)?

Conclusion

Due to limitations on space and time, this paper is necessarily narrow in its scope and to some extent superficial in its treatment of the emerging conceptual system known as CST. The authors are convinced, however, that future research hopefully provoked by this initial inquiry, will continue to unfold the potential of CST for applicability in the practice of IOR as well as other local variants of STSD. Mandated is a more thorough and rigorous exploration into CST in terms of defining its fundamental assumptive commitments, the parameters or limits of its explanatory power, and its central principles for practice in contrast to the more conventional and still prevailing approach founded on OST.

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