Why Is Managing Change Difficult?

Organizational Renewal and the Cybernetics of Effective Enterprise

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Abstract

Change is used in this paper as a context for reflecting on management. Following Watzlawick and his colleagues, the concept of first and second-order change is adopted in order to distinguish between two essential types of change and the question of why is managing change difficult is addressed. Four factors are identified at the heart of this difficulty. They include the Complexity factor, the Epistemic factor, the Structural factor, and the Inertia or Vested-Interest factor. These factors act not only as obstacles to change, when change is required, but are also the root cause which drive organizations into conditions of crisis requiring second-order change interventions. Antidotes to the four factors are briefly discussed, and organizational learning, interpreted as a system's ability to amplify its internal variety, is suggested as the most potent means of transcending limitations of existing programming and ensuring constant organizational renewal.

1. Perspectives on Change

Change is a pervasive, intrinsic component of human experience. From the earliest dawn of human existence, change must have dominated conscious awareness. It is manifest in all the dynamic processes which underlie life. It is reflected in all of nature's cycles, the movement of heavenly bodies, flow of seasons, phases of each single day and the sequence of life's passage. It is difficult to postulate consciousness itself, in total absence of change.

While change is a central fact of experience, the concept of change can prove to be evasive and paradoxical due to its inherent relativity. Constancy and change, which in our language designate contrasting conditions, are, in fact, entirely inseparable. Like many pairs of opposites they define one another and are revealed by comparison and contrast. In relation to humans, change rarely occurs as an independent, objective event. Its interpretation and meaning are rooted in the special type of interaction involving "participant observers" and their environment, an interaction during which both constantly shape and reshape one another. This reciprocal interdependence between observers and observed phenomena introduces an essential uncertainty which adds important ambiguity to our concept of change.

This essential ambivalence is reflected by different cultural perspectives on change where, in the extremes, emphasis is placed on either constancy or change as the basis for a world view. The orthodox Judeo-Christian myth of creation, for example, sees completion -- no change -- as having been established immediately after the early six days of divine intervention and even today, evolutionary theory is frowned upon in some circles. By contrast, the ancient Chinese perspective as embodied in the *I Ching*, the Book of Change, puts an emphasis on a more dynamic view of universe and seeks to interpret events in relation to constantly shifting

permutations of a given sets of constraints. Attitudinal, cultural differences such as these have profound implications on the ways people perceive, react and handle the challenges of change situations.

Understanding change and, by extension, enhancing our ability to manage change processes is of fundamental importance since ultimately all management processes revolve around change -- blocking change or bringing change about. Obtaining a clear definition would provide a good starting point, and, here, classical cybernetics offers a useful operational formulation. It is due to Ross Ashby and the theory of finite machines – dynamic systems which change states over time. According to Ashby's formulation, basic elements in a change situation include an ***operand,*** acted on by an ***operator,*** to produce a ***transform***. A transformation event is thus defined by a starting state, a decision rule, and an end result. Note that no reference is made to a specific type of system, a particular cause or to the effect of time. In a generalized sense, accordingly, different types of transformations are produced by different types of relationships among the three basic elements referred to above. One immediate and very significant consequence of this formulation is a fundamental distinction between two types of transformations: changing states under a given decision rule and changing the decision rule itself.

2. Types of change

A distinction between fundamentally different types of change is important in practical situations. Choosing which strategy should be employed in managing a particular change situation directly derives from such a distinction. A significant contribution in this regard is due to a definition proposed by Paul Watzlawick and colleagues, based on the Theory of Groups and the Theory of Logical Types. Theory of Groups, to paraphrase, addresses rules which govern membership in a class and transformations in such members which do not affect the class itself. It provides, accordingly, a framework for thinking about change which occurs within a given system, where the system itself remains invariant. The Theory of Logical Types, on the other hand, addresses issues concerning the distinction between components and wholes and the transformations from one class to another. It highlights cases which require discontinuity and a shift in logical level, where change occurs in the very nature of the system under consideration. These two theories, Watzlawick and his colleagues suggest, provide a consistent, complementary basis for differentiating between two distinct types of change. They characterize these as ***first-order*** and ***second-order*** change, respectively.

In familiar management terms these distinctions express the fundamental difference between "doing things right" and "doing the right thing" or change in efficiency as distinct from change in effectiveness. Strategically, these distinctions highlight the difference between two different approaches to managing change interventions. The first focuses on "internal" adjustments while the system in question remains, in essence, unchanged. In the second, however, internal adjustments are insufficient for producing a desired outcome and in this case, a deep transformation in the very nature of the system itself would be required. Confusion between the two types of change is common and, quite often, first-order change strategies are applied to situations which require second-order change, not surprisingly, with disappointing results.

The concept of second-order change, in particular, defines the nature of issues related to radical transformations and highlights the particular nature of many of the difficulties which are typical of major change efforts. In an organizational context, second-order change typically requires

simultaneously addressing issues in a number if different dimensions. These include: the underlying vision, mission and prevailing culture; strategic questions including product and service mix, governance, organizational structure, management systems, and investments and resources requirement; and all specific operational modalities.

3. Obstacles to Managing Change

Change, second-order change in particular, is difficult to manage successfully. This is as true for personal circumstances as it is for institutional life. Four distinct but closely interrelated factors underscore the difficulties of managing change. They include: the Complexity factor, which has to do with fundamental systemic aspects of the nature of reality; the Epistemic factor, which has to do with the limitations of knowledge and language; the Structural factor, which has to do with the relationship between the internal structure of systems and their behavior; and the Inertia factor, which has to do with entrenched “vested interests” that are part of any existing regime.

i. The Complexity Factor

Management of organizational change occurs in a context that is exceedingly complex constituting a dynamic multi-variable domain where complete understanding of all the factors involved is all but impossible. There are a number of theoretical reasons for this:

Underlying systemic nature: The systemic nature of organizations and of the socio-economic and political context within which they operate is characterized by a large number of variables and by multiple interactions. These systemic characteristics often produce counter-intuitive behavior and make accurate predictions, even of major events, genuinely difficult.

Irreducibility: The fundamentally irreducible nature of systems has been brought to light by General Systems Theory and Cybernetics. The central idea pertains to the synergetic characteristics of "wholes" which are more than the simple sum of their parts. This aspect rules out linear analysis and fragmented, over-simplified approaches to the understanding of complex wholes.

Historical Dependence: All forms of social organizations, regardless of sector or type, behave like "non-trivial, finite state machines" in the sense proposed by Heinz von Foerster, referring to a class of systems the behavior of which is conditioned by their past. This historical dependency produces a particular type of indeterminacy whereby the system's response, observed at a particular moment, may not reoccur in response to a similar “stimulus” applied at a later time.

Reflexivity: Yet another type of uncertainty relates to the fact that managers are typically "participants-observers." They are actors in the very situation they attempt to understand and control. The financier, George Soros, for example, who coined the term “reflexivity,” has recognized this particular characteristic with respect to the behavior of markets where participants' perceptions influence market behavior only to be influenced, in turn, by market events. This type of uncertainty is rooted in Heisenberg's Uncertainty Principle which, contrary to the orthodox position that stipulates the separation of the observer from the observed, highlights

the fundamental interdependence of observation with observed phenomena and points out the particular uncertainty which this interaction entails.

All these theoretical considerations are of great practical significance. Using a reductionist, linear approach when dealing with systems is common to management at all levels. It is, however, fundamentally and logically flawed. The impulse to treat complex systems as though they were simple mechanisms is always seductive. It can often lead, however, to unintended results and even exacerbate the very conditions that it tries to resolve. Many persistent problems encountered in business, world affairs and economic development, including the short-sighted destruction of the global environment, relate to this prevalent syndrome -- the application of simplistic, non-systemic approaches, strategies and policies to a complex world.

ii. The Epistemic Factor

Another set of difficulties in managing significant change situations relates to persistent "mental models" and the limitations inherent in knowledge and language. The theoretical basis to this limitation is rooted in mathematical logic, specifically, in Gödel's Incompleteness Theorem which states that all languages are defective in the special sense that there are limitations on propositions about a given language, which can be resolved by that language. Resolving undecidable propositions and removing the paradoxes that they often produce, such as the familiar statement of Epimenides the Cretan who declared that all Cretans are liars, requires the use of a "meta-language." As Stafford Beer has argued, a solution can only emerge from the "outside" based on additional premises and concepts not available in the original case. Thus, in a dynamic world, where underlying conditions are changing, old stereotypes of language give rise to limitations which require a paradigm shift in order to be resolved.

The concept of "paradigm shift" is credited to Thomas Kuhn, who studied the advent of scientific revolutions and situations in which one conceptual world-view is replaced by another. In such situations, the established tenets of a heretofore successful theory fail to account for some new experimental evidence, and a significant shift is required in underlying premises and criteria for explanation. Some of the examples used by Kuhn include the resolution of conceptual problems that characterized Ptolemaic astronomy by Copernicus' heliocentric revolution; the advance from Aristotle's theory of motion to Galileo's theory of falling bodies; and the fundamental shift from Newton's classical physics to Einstein's theory of relativity.

The requirement for a paradigm shift is typical to all second-order transformations. It can be identified in myriad experiences and practical circumstances and, interestingly enough, it is also echoed by various wisdom traditions. The Jewish rabbinical commentary on Exodus, for example, explains that forty years of wandering in the desert were required in order to rid the Hebrews of a generation infused with slave mentality, before entering and establishing a new life in the Promised Land. Similar in principle are techniques employed by various traditions designed to alter states of consciousness and jolt the mind from the traps of conventional reality, thereby producing the quantum jump that is associated with "enlightenment."

Other situations can receive a similar interpretation. In her book, *The March of Folly*, Barbara Tuchman demonstrated how ruling establishments, in the face of changes in underlying historical conditions, can sometimes continue to pursue accepted, set policies only to obtain results that are contrary to intended objectives. Tuchman's compelling examples include the cases of decades of

Renaissance Popes ignoring pleas for church reforms which brought about a break in Christendom with the advent of Protestant secession; the case of George III, the English monarch and his government who, in spite of rising discontent expressed by their subjects pursued oppressive policies which lost them the American colonies; and the case of the United States war in Vietnam, were a steady expansion of hostilities with ever-mounting losses was driven by deeply entrenched assumptions and policies until the final collapse.

In all these cases a similar scenario is being played out. Invariably, the challenge is that of producing a second-order change in the context of a dominant but no longer valid mind set. In all these cases, a system of thought, or of management, is trapped by its own set of conventions, unable to produce an effective solution from within its existing frame of reference. Moreover, there is a powerful "blind-spot" syndrome involved in such situations, a syndrome which is particularly difficult to overcome, because the system is not only blinded by the governing epistemology to the relevance of new data, it is even blind to the very fact that it is blind. This type of trap is usually associated with self-reinforcing mechanisms which automatically reject all evidence that is contrary to accepted stereotypes and norms. At times such rejection can be expressed with great violence, directed at the promoters of change who are perceived as deviants by a prevailing regime.

All these features converge to make it difficult for an epistemic community to transcend itself, and effects of this obstacle can be found in all forms of human endeavors. They are typical to situations of conflict in interpersonal relationships and in relationships between groups and nations, where solutions are sought in the "language" of the existing argument rather than in a level which transcends it. Albert Einstein's often quoted pronouncement, that we can not solve persistent problems by the same methods of thinking which created them, speaks directly to the nature of this difficulty. Business organizations and other forms of enterprise show evidence of the very same quandary. The best and mightiest are susceptible to this kind of difficulty, which can actually be exacerbated by a history of previous success. The later can foster a combination of complacency and arrogance, which often prevents management from identifying emerging new circumstances and taking appropriate actions in time. Periodic crises in dominant, leading companies such as GM, Chrysler, IBM, Revlon and countless others, where a successful, well established management culture overlooked the need for deep change, bear ample evidence to this fact.

iii. The Structural Factor

Individually, as well as collectively we are circumscribed by our organizations and their underlying structures, much as we are by the mental models that we use and the very language we employ. In their now classical paper of 1943, *Behavior, Purpose and Teleology,* Norbert Wiener and his colleagues established the connection between the output of purposeful systems -- their behavior – and their internal structure. The latter was shown to be characterized by mechanisms of feedback nature. This premise, representing a central insight of early cybernetics, has a number of significant implications for managing change. First and foremost is the fundamental concept that a behavior different from an existing one would require a different underlying structure. Many change efforts fail to produce desired results, since, while declarations about the need for change are made the structure, the architecture of the system in question is left untouched. Organizational architecture and the design of alternative structures should always, accordingly, be a central component in managing change.

Structural resistance to change is often not well understood. Feedback homeostatic mechanisms which characterize purposeful behavior are, by their very nature, resistant to change. They work to preserve a particular condition and should thus be expected to trigger automatic, opposing forces in response to any attempt at significant change. Many attempts at reform which trigger a conservative backlash attest to this kind of underlying dynamics and, in this regard, an especially significant type of structural homeostasis, as Stafford Beer pointed out, relates to the meta-dimension in which the condition that is being maintained is the organization itself.

The structural tendency of triggering an automatic, compensatory response that seeks to return a system to its starting position following any disturbance means that, during efforts of implementing change, existing homeostatic mechanisms need to be neutralized or replaced if the objectives of change are to be sustained. Reengineering and rewiring the intricate fabric of the many formal and informal networks which comprise any organization's structure is a demanding, time-consuming effort, which is often tackled only incompletely. Ultimately, consistent with Ashby's law of requisite variety, an underlying structure needs to be fully mapped onto the conditions it seeks to support.

iv. The Inertia or Vested-interest Factor

Inertia is a general characteristic of systems, and both living and non-living systems exhibit various modes of resistance to change. Physical bodies resist change in position or motion, as prescribed by Newton's laws. In living organisms, life preserving conditions are maintained by physiological homeostatic mechanisms that restore deviations from critical norms. Similar mechanisms are at work in different types of organizations and in society, where they operate to support and secure the repetition of successful precedence.

In the special case of human social systems, both language and structure -- both epistemic communities and existing organizational arrangements -- are embodied in systems of benefits and privileges which, not surprisingly, reinforce a strong interest in preserving a status quo. The blunt fact is that any existing order benefits some particular individual or group and the threat of losing an accustomed-to advantage provides a strong incentive for keeping things as they are. Clashes between the need for a system's reform and prevailing, well-entrenched interests are numerous and familiar. Picking at random, examples range from the calls to abolish slavery and the interests of plantation owners in America's South; efforts at land reform and the interests of governing land-owner elites in many developing countries; familiar management-related tensions between "corporate" and departmental prerogatives; the potential misalignment between short-term maximization of share holder's value and the long-term interests of society; and more. The issue of vested interest receives a particularly intriguing twist when an existing leadership -- a manager, bureaucrat, monarch or government -- is placed in position to oversee a reform process, where it should itself be the primary target of change.

Clearly, this basic feature of organizational life needs to be thoroughly addressed with every significant change effort. At the extremes, two basic approaches seem to have been used throughout history. The first relies on forcing change by the use of some mode of coercion, often violent, where entrenched interests refuse to budge. Examples are furnished by the French, Russian and other revolutions. The second, on the other hand, seeks to bring about change by resolving competing, at times seemingly irreconcilable interests, in a process designed to produce acceptable win-win solutions. The peaceful signing of the Magna Carta in 13th century England, with its consequent sharing of power, is an instructive historical example. In all cases, the

difficult challenge is ensuring that the integrity and meaning of desired results are not compromised by persistent drive of interests that are in conflict with a new aim.

4. Managing Second-Order Change

In most challenging change situations, especially where management interventions involving second-order change are concerned, all four factors described above combine to make the task of major transformations genuinely demanding. In the very least, this combination precludes linear, simplistic approaches to change. We often treat complex systems -- individuals, organizations and ecosystems -- as though they were clock-like mechanisms, only to experience, again and again, unintended and often undesirable results. The management of social systems in general requires a systemic, multi-dimensional, multi-level approach, tackling all the relevant facets in an integrated, holistic, coherent manner. Managing significant transformations, in this context, requires a demanding balancing act between stability and change; order and freedom; autonomy and integration; tradition and innovation; planning and laissez-faire. By definition, underlying conditions mean operating in uncharted territory, with little instructive precedence and no manuals or accurate road maps.

Under such circumstances, standardized prescriptions and simple quick fixes, which often characterize our management culture, ought to be held suspect. Deep transformations require real innovation, critical judgment and a capacity to thrive under conditions of uncertainty, in addition to gearing up for a long haul. They must combine intuition and art as well as competent technique. Successful change calls for a heavy dose of essentially qualitative aspects in leadership, including a unique blend of imagination, enthusiasm, courage, commitment, persistence and drive. Resolving the strategic question of what needs to be done and how is only one part of the effort. Skillful, considerate implementation is crucial as well. A coherent, complete integration of four essential dimensions of human experience—emotion, volition, cognition, and action-- should be at the heart. These four dimensions need to be included, balanced and satisfied, in order to secure commitment and ensure lasting results.

Three primary qualitative prerequisites appear to characterize successful change management efforts. They include the requirement for Comprehensiveness, Coherence and Creativity. Briefly:

Comprehensiveness: The requirement for comprehensiveness pertains to the fact that, in managing second-order transformations a whole range of institutional aspects must come under simultaneous consideration. These encompass: value-related issues, including intention, over all vision and underlying purpose; core “business”-related issues, including key activities, products, services and markets; resource-related issues including financing, technology, physical infrastructure and human capital; and management and organization issues, ranging from institutional culture and leadership style to organizational structure, roles, reporting relationships, management processes and operating procedures and rules.

Coherence: The requirement for coherence pertains to the need for ensuring internal consistency and functional alignment while fostering effective, mutually-reinforcing links among separate initiatives. The underlying intention, the driving vision, the overall strategy, the implementation plans and operating modalities must all be integrated and cohere in a seamless, authentic functioning whole.

Creativity: The requirement for creativity pertains to the need for a genuine problem-solving focus and to the design and orchestration of processes for addressing a myriad of issues, at different levels and at the appropriate times. It relates to such considerations as the scope of initiatives, intensity of efforts, sequence of activities and relationships between events. It also pertains to the need to balance numerous political, strategic and operational considerations and, ultimately to the ability to actually produce the required shift in the organizational paradigm.

These three elements of comprehensiveness, coherence and creativity, a combination that is not very common in main stream institutional life, constitute the essential prerequisites which underlie all the other more specific demands for the effective management of change. Experience suggests that these later should include, and integrate: a galvanizing image of a desirable end result; a compelling purpose; an effective leadership; a motivating milieu; a winning strategy; a specially created organizational structure in support of the change effort itself; a well orchestrated process; and a combination of perseverance and flexibility, with ability to correct initiatives in mid-course. Quality and integrity in intention, conception and execution is critical, although easily compromised, and, ultimately, coherence must be achieved in a well-functioning integration of three distinct systemic levels: the organization as a whole; its internal components; and its context -- the general environment within which it seeks to thrive.

5. Second-Order Change and Organizational Learning

From the view point of cybernetics, the very need for second-order change can be interpreted as a crisis condition brought about by a failure in adaptation. A system freezes within the framework of its habitual "programming," while the world, the context of its existence, has changed. Paradoxically, the very same four factors which constitute obstacles to change, when fundamental change is required, are also the factors which block the flow of smooth, continuous adaptation, ultimately creating the crisis situation associated with a need for second-order change in the first place. This brings to the fore a fascinating question: could we manage human affairs in a manner which would avoid the crisis conditions associated with second order change? Is this even a desired goal? Situations of crisis, failure and collapse create major problems but they are also windows of opportunity for rejuvenation and renewal. Like major forest fires, they can clear the deck and open the way to vibrant new starts. Nevertheless, the financial and human cost can be enormous, in market value, jobs and income loss, uprooting, and life disruptions. To the extent that the function of civilization revolves around helping to protect humans from various violent exposures, an important responsibility of management should, perhaps, include protecting those who would be impacted by its own costly mistakes. Reducing the frequency and severity of crisis occurrences may thus constitute a legitimate management goal.

If this premise is accepted, then we should look for strategies that could effectively counteract the four change factors which, as argued earlier, are at the heart of many of our management difficulties. Where can one turn for help? Many ancient wisdom traditions, as it turns out, contain at their very core a system of thought concerning the nature of reality -- cosmologies essentially -- which are then translated into codes of conduct for successful behavior in the world. Although speculative and largely pre-scientific, such efforts represent the distilled contemplation of generations of great thinkers. They should, therefore, merit our attention. Buddhism, for example, evolved an elaborate epistemology which appears to resonate well with the modern system view of the world. From the Buddhist discourse about the nature of reality

a number of tenets are derived which seem to offer the necessary antidotes to the four change factors.

Thus, for example, the antidote for the complexity factor can be found in the Buddhist concept of "non-independent existence," which postulates the underlying interdependent, systemic nature of reality. The antidote for the epistemic factor, associated with the persistence of mental models, can be found in the concept of "non-dogma," which stresses the need of experiential basis for assertions about reality and recognizes the fundamental uncertainty immanent in the dynamic interactions of observers and the observed. The antidote for the structural factor can be found in the concept of "non-permanence," which points to the dynamic, kaleidoscopic interactions of essential components of reality, as they continuously inter-transform. Finally, the antidote for the vested-interest factor can be found in the concept of "non-attachment," which advises on letting go of entrenched patterns and looking for inclusive winning formulae.

At a first glance, these kinds of assertions may appear to be devoid of practical significance. They would most certainly be alien to most mainstream managers. Perhaps, their qualitative essence is precisely the ingredient missing in our management culture which tends to put emphasis on relatively short-term transactions and narrowly measurable results. At the very least, they point to a crucially important topic which should be developed much further, that of the spiritual and ethical dimension of management in business, in government, in all human affairs. A deeper contemplation will reveal, however, that those seemingly esoteric concepts have in common one essential quality of huge pragmatic significance. From the view point of cybernetics, all four "antidotes" represent mechanisms of huge variety-amplification potential. Amplifying variety is precisely what any system needs to accomplish, in order to remain viable, when its existing repertoire of possible responses, adjustments or internal configurations no longer match demands put upon it by its environment. Strategies for variety amplification and mechanism for achieving variety amplification are, therefore, at the heart of the question of how to develop organizations which, rather than moving from crisis to crisis in cycles of growth and decline, would be able to continuously rejuvenate and constantly renew, avoiding the costs of periodic collapse.

When a system amplifies its internal variety, when it expands the repertoire of its capabilities in order to effectively occupy an expanded "niche," it can be said to be learning! Learning is the most potent device for transcending the limitations of existing programming and learned behavior, with all its varied and complex manifestations -- socialization, language, codification of knowledge through technology, and the like -- has played a major role in evolution on earth. Designing organizations that can truly learn and embody their learning in an effective flow of adaptation is, therefore, a task of enormous importance. Much has been said and written, in recent years, about organizational learning. In retrospect, it appears, that rhetoric still exceeds actual advance. Chris Argyris' original work in this area is still most instructive since it links learning behavior to the necessary mechanisms of feedback nature through which learning processes take place. Such mechanisms should operate, be integrated and cohere on at least three different levels: the level of identifying and correcting deficiencies in existing operations; the level of recognizing the need and changing the basic norms of current operations; and the meta-level of continuously improving on the process of learning itself.

Consistent with Ashby's Law of Requisite Variety, the question of long-term viability, for organisms and organizations alike, boils down ultimately to the challenge of matching variety between internal capacity and external demands. The typical command and control structures

which still characterize most of our organization at this stage of their evolution tend to inhibit rather than encourage spontaneous unfolding of collective learning processes. Much experimentation and fundamental innovation is still required in this field, as we move towards building organizations where constant renewal becomes the underlying norm.

6. Limits to Management?

Implicit in the forgoing is the fundamental belief in the possibility of improvement in the management of all human endeavors. The underlying assumption is that learning and betterment are possible, that ensuring both is the central function of civilization and that, in this regard, humans can ultimately participate in writing the script of our species own evolution. But are there limits on management? Are there boundaries we can not hope to transcend? Anecdotic evidence from all dimensions of human activity suggests just that. The march, or rather river, of folly is vast and both history and current affairs betray severe limitations, manifest in disastrous government initiatives and corporate adventures directed by establishments which are often considered by expert opinion to embody the best. Can we find, however, a theoretically more compelling basis for answering that question? Mathematics and logics can be of assistance in this regard. The context is the centuries-old story of attempts to develop a consistent conceptual framework in order to provide a solid foundation for mathematics as a self-contained, full-proof system of axioms and rules of deductions which would generate the complete edifice itself. Such idealistic, even heroic attempts, which culminated with Bertrand Russell and Alfred North Whitehead, were dealt a fatal blow by Kurt Gödel whose incompleteness theorem established conclusively that no such system could escape the trap of internal paradoxes and prove itself complete under its own propositions.

But what does all this have to do with management? The crucial point is that it highlights fundamental limitations in human knowledge and the systems used to express it. This is hugely significant in so far as our management culture tends to encourage an arrogant pretence at certainty. The typical CEO is not “supposed” to make mistakes and would find it difficult to admit to it when mistakes are made. This prevailing attitude by mainstream management leadership certainly does not foster learning. It greatly inhibits, in fact, the spontaneous free flow of trial and error that learning requires. Acceptance of the fundamental fallibility of human knowledge, lead Karl Popper to argue for the concept of an “open society” as the compelling model for the human enterprise. After all, it is this very fallibility which requires that we continue to learn. The still fragile ideas of open processes, responsive structures, plurality of expressions, participation, and the equal validity of contributions by all individuals, all of which are implied by Popper’s work, constitute the essential building blocks of organizations that learn.

To many, the concept of the inherent fallibility of human knowledge may seem offensive, even alarming. There is a very real sense in which Gödel’s theorem carries a connotation of an expulsion from paradise. But in the vibrant world of living systems, utopias and paradise conditions can not last very long. It is, however, this inherent uncertainty, the inevitability of errors, the unavoidable existential incompleteness, which drives the dynamics of evolution itself; and it is the very limits inherent to management which hold the promise that it can improve and continue to learn.

7. Conclusion: Sustainability, the Ultimate Change Challenge

Ensuring that we master the ability to design and construct more innovative, agile, responsive, collaborative organizations is crucial for our time. The need for a profound reordering of human affairs has been recognized by many observers for some decades. A sense of a global crisis is spreading, about which many thoughtful individuals and groups in all parts of the world are sounding an alarm. Yet most tools, instruments, mechanisms, institutions and frameworks which we currently employ -- our technology, the whole industrial infrastructure, the accounting system that drives our economy, our system of governance, and the basic mental models and values which dominate our culture -- are inadequate to the task. All have evolved in eras long gone, characterized by an essentially fragmented humanity, motivated by fear of scarcity and the dominance of brute force. They are entirely unsuitable for the collaborative effort of constructing a wise, prosperous, peaceful, global civilization -- our most urgent task.

Transforming society and the world's economy to a sustainable basis represents this urgent challenge. It is a challenge unprecedented in scope. Its context is the planet as a whole. It requires a fundamental shift in consciousness as well as in action. It calls for a fresh vision, a new dream and new approaches for shaping an evolving new reality. The ultimate objective of establishing the concept of sustainability as an organizing principle is to foster a well-functioning alignment between individuals, society, the economy and the regenerative capacity of the planet's life-supporting ecosystems, restoring damaged environments and ensuring the enduring well-being of all. The transformation which is entailed carries all the challenges of a typical second-order change with the added burden of an unprecedented scope, shear enormity of scale and a genuine need to learn. There is no text book to show us how to manage this epochal, planetary shift. Yet such an undertaking must be joined, with the collective participation of all humans on the planet. Ultimately, this is the one change challenge in which we must not fail.

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