Systems Intelligence

in Leadership and Everyday Life

Edited by RAIMO P. HÄMÄLÄINEN and ESA SAARINEN

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PREFACE

Leadership is action with impact. It is a human endeavour the success of which is judged on the basis of results. Leadership seeks to create leverage, and does so via other people and through a web of connected activities, with respect to a flow of changing situations and with respect to a future that can never be fully known. Leadership is a practical art, a complex applicative craft of the facilitation of forward-coming processes that unfold. It is skilfulness of dealing with wholes on the move, and amount to abilities of an individual at the pressures of the living now moment to bring about desired changes even in the presence of relative ignorance and sometimes against all odds.

The Systems Intelligence approach that we have developed with a number of associates and students in the course of the past five years at Helsinki University of Technology, offers a major opening for the understanding of leadership. The perspective is rich in terms of potential relevance for the actual conduct of leadership, we believe. This is because of the fruitful cross-fertilization the approach creates between conceptual and theoretical considerations on the one hand, and an interest in actual praxis, on the other.

Our starting point is the conviction that there is holistic, systemic ingenuity to human action and to human leadership action that should be met head-on. This calls for the description, analysis and conceptualization of actual practices in a mode that takes for granted the intelligence of those practices even when that intelligence cannot be approached with conventional methods or in terms of explicit knowledge or strict objective rationalism. The Systems Intelligence perspective wants to bring back the human element of leadership – categories such as choice, subjectivity, experience and shared experience, instinct, sensitivity, inspiration, emotional energy and association, without dismissing the more traditional categories of control and prediction, analysis and calculation, and objectivity.

This book has three parts. The first part starts with our own articles that attempt to articulate the foundations of Systems Intelligence and Systems Intelligent Leadership. Other articles in the section discuss themes such as the paradoxes of leadership, sustainability, emotional energy, and leadership in architecture. In his article, J.T. Bergqvist presents his highly suggestive concept of "superproductivity" and relates that to the specific case of the industrial future of Finland. Included in this section are also two of our earlier published articles that in their original forums might not be accessible.

In the second part the reader will find a wide array of themes being discussed from the Systems Intelligence perspective, including emotional intelligence, value creation, aesthetic fluency, architecture, significance of forgiveness, and the Enron case. The concluding third part presents several theoretically inspired models of Systems Intelligence. Among them are articles that reflect Systems Intelligence from the point of view of communications studies, cooperation models, as well as an article on Ralph Stacey's "Complex responsive processes" model.

We believe this book is a valuable source of insight for practitioners of leadership whether they are managers, business executives, public sector change agents or organization directors, educators, teachers, supervisors, team builders, parents, future-builders or commissioners of power positions large or small, in macro or micro context. Leadership is about people and it is about influence. It is about the future, it is about bringing about change with the resonance of a system. With a deepening self-understanding and alertness to her special condition and pragmatic skilfulness – her Systems Intelligence – the leader will be in a position to do even better something that she is already doing well.

In addition to its practical value, the book hopes to offer intellectually stimulating openings and suggestive perspectives for leadership research. Many fruitful conceptualizations that have been developed both in the academic and consultancy-oriented leadership literature can be placed into a wider explanatory and integrative context with the approach presented in this volume and with the umbrella concept of Systems Intelligence.

In putting this book together, we have had the pleasure of working together with Mr Petri Lievonen, Mr Ilkka Leppänen, and Mr Jukka Luoma whose energy, skills, and insightful help have been indispensable in the process. We thank Dr Riitta Nelimarkka for her allowing us to use her art once again for the cover of this volume.

Otaniemi, Finland, 18 May 2007

Raimo P. Hämäläinen ***Esa Saarinen***

Systems Intelligence and Leadership

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CHAPTER 1

Systems Intelligent Leadership

Raimo P. Hämäläinen and Esa Saarinen

This article studies leadership from a systems intelligence perspective. Referring to Lincoln, Martin Luther King and a number of other exemplary leadership cases, we argue that the holistic, contextual and choice-intensive features of systems intelligence make it an illuminating frame of reference for understanding the actual practice of leaders. The key words in the article include "the need to act", "the living presence", "the in-between", "systems intelligent interventions", "flourishment", "choice", "connectivity", "sharing", "change", "microbehaviours", "sensibilities", "super-productivity", "thinking on the fly", "emergence", "systems of holding back", "positivity", "hope", "human potential", and "the symbolic order". We indicate three critical systems intelligent leadership questions, and conclude with a discussion of the focus points of a systems intelligent leader.

Introduction

The systems intelligence approach is about human intellect in action, in connection of other agents and in environments that change. We introduced the concept in 2004 as "intelligent behaviour in the context of complex systems involving interaction and feedback. A subject acting with Systems Intelligence engages successfully and productively with the holistic feedback mechanisms of her environment. She perceives herself as part of a whole, the influence of the whole upon herself as well as her own influence upon the whole. By observing her own interdependence in the feedback intensive environment, she is able to act intelligently." (Saarinen and Hämäläinen 2004, p. 3)

Our thesis was that Systems Intelligence is a key competence we possess as human beings – and one that has not been elevated to the status it deserves.

Visual intelligence, logical intelligence, bodily–kinaesthetic or motoric intelligence, verbal intelligence, musical intelligence, intrapersonal and interpersonal intelligence (Gardner),[1] social intelligence,[2] emotional intelligence (Salovey and Mayer, Goleman)[3] – we do possess those as

[1] Howard Gardner (1983) and subsequent works. On visual intelligence, see Hoffman (1998).

[2] The concept "social intelligence" goes back to 1920s. Its recent revival is particularly due to the unfolding field of social brain studies. For insightful discussions, see Brothers (1997/2001), Stern (2004) and

human beings and probably more still. Yet before anything else, there was already action, there was a context, something was already taking place. And somehow we managed to make it within those systems. Indeed we continue to do so – with our Systems Intelligence.

The aim of the present paper is to apply Systems Intelligence to leadership. The conceptual and pragmatic implications of the Systems Intelligence perspective are particularly striking in this area, we shall suggest.

The Systems Intelligence approach combines holistic orientation with a humanly-tuned emphasis that highlights the human potential. Systems Intelligence follows Systems Thinking in believing in rationalism and reason as the right framework to approach holism.[4] It extends Systems Thinking in its prevailing modes in several significant ways, we submit. At the same time, the Systems Intelligence perspective also extends the multiple intelligences approach, including Emotional Intelligence and Social Intelligence, to what we believe is the next level of development in the effort to develop a more comprehensive, pragmatically relevant, and realistic perspective for leadership in action.

The Systems Intelligence approach stems from a deep belief in the human potential. In its positive overtones and strive towards flourishment, as opposed to avoiding pitfalls or neutralizing negatives, Systems Intelligence runs parallel to Positive Organizational Scholarship and to Positive Psychology.[5] It connects deeply with the tradition of humanistic psychology of Maslow, Rogers, and others,[6] with the study of organizational behaviour[7] initiated by Roethlisberger and others,[8] as well as with a Douglas McGregor -style emphasis on "the human side of enterprise".[9]

Goleman (2006). For a more consultancy-oriented approach, see Albrecht (2006). For some of the implications of social brain research to the study of leadership, see Rock and Schwartz (2006).

[3] For a succint history and a scientifically focused description of the concept of Emotional Intelligence, see Salovey, Mayer, and Caruso (2002). The idiom, originally formulated by Salovey and Mayer in 1990, witnessed a breakthrough with Daniel Goleman's hugely successful book *Emotional Intelligence* which came out in 1995.

[4] For excellent overviews of the various facets of Systems Thinking, see Jackson (2000) and Midgley (2000). Flood (1999) is also useful. An enormous amount of key material is collected in the four volumes edited by Midgley (2002). An extensive exposition of systems dynamics is Sterman (2000). For an inspiring introduction of some of the philosophical ideas by an early breakthrough writer, see Churchman (1982). Much of current interest in Systems Thinking is due to Senge (1990; see also Senge et al. 1994). Important philosophical discussions of some of key aspects of Systems Thinking include Bateson (1972/2000, 1979/2002), and Bateson and Bateson (1987/2002). For useful, pragmatically oriented discussions, see Oshry (1995, 1999). For a comprehensive in-depth analysis of some of the key philosophical issues, see Midgley (2000). Midgley's important work in its emphasis on theoretical and methodological pluralism, in its reach beyond the subject—object dichotomy, and strong emphasis on practice, has strong parallels to our thinking and would deserve a separate discussion. For now, we observe that like Midgley, our Systems Intelligence approach amounts to "advocating engagement in both practice and discourses about practice" (Midgley 2000, p. 272).

[5] Cameron et al. (2003), Snyder and Lopez (2002), Keys and Haidt (2003). For a succint program article, see the influential Seligman and Csikszentmihalyi (2000). For an extensive discussion from a research-based perspective, see Lyubomirsky, King, and Diener (2005).

[6] Particularly relevant here are Maslow (1998) and Rogers (1961/1989, 1980).

[7] For a comprehensive text on organizational behaviour, see Buchanan and Huczynski (2004).

[8] Organizational behaviour was recognized at Harvard in 1962 as a result of breakthrough work by Elton Mayo and F.J. Roethlisberger. Roethlisberger's autobiographical book *The Elusive Phenomena* (published

Systems Intelligence does not wish to define itself as an academic and theoretical approach only but strives to be also a source of empowerment and inspiration for action. It does not wish to remain only a scholarship of action but reaches out to be also a trigger for action – intelligent action within systems and in order to create more intelligent systems for people to use as platforms for further intelligent actions.[10]

The Systems Intelligence of Abraham Lincoln

"That Lincoln, after winning the presidency," Doris Kearns Goodwin writes in her landmark study on Lincoln, "made the unprecedented decision to incorporate his eminent rivals into his political family, the cabinet, was evidence of a profound self-confidence and a first indication of what would prove to others a most unexpected greatness." (Goodwin 2005, p. XVI)

"His success in dealing with the strong egos of the men in his cabinet suggests that in the hands of a truly great politician the qualities we generally associate with decency and morality – kindness, sensitivity, compassion, honesty, and empathy – can also be impressive political resources."

This form of greatness is one that should be studied with the keenest of attention, not only for the purpose of Lincoln studies but for the purposes of understanding crucial aspects of leadership, we suggest. It is greatness the features of which relate to other people, patterns of activities that are interconnected and involve the subject himself in situations that are context-sensitive and cognitively non-transparent. Even while lacking clear precedents or codes to rely upon, the subject is able to act constructively and productively within an emerging whole as it unfolds.

What is involved is active intelligence of the highest order involving cultivation and care, insight and intuition, effort and trial, emotional and social intelligence, command of the symbolic order, sensitivities for other people and for the possibilities of the moment as well as for the complexities involved, a sense for the most relevant factors and an ability to integrate conflicting forces, and a fierce resolve towards a desired state of affairs.

Such is the field of Lincoln's activities in 1860s and such is the field of Systems Intelligence at large, we suggest. It takes the pragmatic intelligence of us humans as its starting point, seeking to highlight what we do right even when we do not know exactly why it is right or know for sure if it will be right – all that in contexts of dramatic, perhaps humanly impenetrable complexity. Systems Intelligence approach, in other words, seeks to connect two distinct intellectual and life-orientational paradigms: the tradition of rationally controlling, engineering and commanding complex structures, and the tradition of sensing, experiencing and sharing the subtleties of one's environment through human connectivity and the subjective dimension.

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posthumously in 1977) is stunning and touching in its description of the struggle for the emergence of the new subject matter. "For many years the question I found most embarrassing to answer was, 'Tell me, Professor R., what are you teaching at the Harvard Business School?'" "I had become a professor without ever being able to state clearly what it was I was professing. A professor without subject matter seemed a contradiction in terms, and yet, by golly, I had become [one]." (Roethlisberger 1977, p. 1)

[9] McGregor's (1960) emphasis on leadership as a relationship is very much in line with our overall approach. "The relationship between the leader and the situation is essentially circular." (p. 183). For a recent discussion of McGregor, see Heil et al. (2000).

[10] We take the concept of "Systems Intelligence" as "iconic" in the sense that its appearance points the user to move mentally to the right direction even in the absence of expert knowledge on the subject being named. We consider the highly intuitive nature of the concept to be a valuable asset.

Systems Intelligence is intelligent action in real time and within complex, interconnected, and changing structures, in contexts and environments, where human agents tune to, react to and influence one another in those subtle and sometimes-not-so-subtle ways that are unique to us as human beings.

The novelty of the approach is in that it highlights environments and contexts as systems that are emerging, i.e. as complex wholes which have an internal structure that generate outcomes, and yet are subject to change and reinterpretation themselves. The Systems Intelligence approach opens the door for finely-tuned and subjectivity-intense ways of relating to environments, contexts, and horizons of action in real time. Without dismissing the rational dimension, emotions, intuitions, and instinctual forms of awareness and connectivity are acknowledged as key elements of the focus of study.

Systems Intelligence is thus a distinctly humanly tuned effort. It acknowledges the power of our explanatory and rational competencies, but at the same time celebrates our non-cognitive-but-core-human dimensions which typically are dismissed as vague or insignificant in more narrowly oriented rationalistic approaches.

Lincoln's success, Goodwin emphasizes, "is a story of political genius revealed through his extraordinary array of personal qualities that enabled him to form friendships with men who had previously opposed him; to repair injured feelings that, left untended, might have escalated into permanent hostility; to assume responsibility for the failures of subordinates; to share credit with ease; and to learn from mistakes." (Goodwin 2005, p. XVII)

It is this kind of human parameters that the Systems Intelligence approach wants to highlight from a systems perspective, and to bring to leadership focus. A paradigmatic point of interest for us is therefore an observation such as: "Time and again, he [Lincoln] was the one who dispelled his colleagues' anxiety and sustained their spirits with his gift for storytelling and his life-affirming sense of humor."

The focus is upon the human, the *fundamentally human* dimensions in Lincoln the leader. As opposed to a narrowly focused rationalism, Systems Intelligence approach wants to develop a broadly-based account of what an active intelligence essentially amounts to.

Tuning Up the Senses

Intellectual work is based on categories. But categories can be misleading. An underlying idea of Systems Intelligence is to seek out perspectives beyond dualisms such as

- Generic vs. Specific
- Rational vs. Emotional
- Objective vs. Subjective
- Outside vs. Inside
- Theoretical vs. Pragmatic
- Me vs. Others
- Control vs. See what happens
- Separate vs. Connected

and build a way towards more humanly-tuned, humanly relevant, integrated and pragmatically operative ways of thinking and acting. Systems Intelligence approach seeks to articulate modes of being in the world that take into account our fundamental need, *to the extent that we can*, to sense and to influence, to understand and to engineer our environment, with our rational capacities and instrumental reason, in order to survive and flourish. It wishes to account for the fundamental human ability to connect with one's environment and other humans in modes that generate growth through realistically assessing the negative aspects of life yet at the same time placing emphasis upon positive dimensions of the human condition such as acceptance, encouragement, warmth, trust, optimism and partnership.

We suggest that Lincoln's brilliance amounted to just this.

Systems Intelligent Action is Inherent in Us

Leadership is about creating an impact. As Peter Drucker puts it, "It deals with action and application; and its test is its results" (Drucker 1989, p. 223). Similarly Ralph Stogdill, an early influential writer, defined leadership as "the process (act) of influencing the activities of an organized group in its efforts towards goal setting and goal achievement".[11] The dimension of the outcome is a key measure for the leader's work, providing for leadership its "evaluative component" (Buchanan and Huczynski 2004, p. 715).

The systemic perspective is crucial for leadership first of all because outcome-production in organizations *is* systemic, i.e., it emerges out of the interactive and cumulative functionings of complex entities with specific internal structure, interconnections and holistic interplay, and all this with reference to similar structures in the environment. The key concepts here include the customary notions of systems thinking such as

- whole
- cumulative effect
- interaction pattern
- causal loops
- feedback
- dynamic evolution
- effects with delay
- direction
- complexity.

[11] Stogdill's early article appeared in 1950 in *Psychological Bulletin*. In 1974 came out the first edition of *Handbook of Leadership* in which Stogdill attempted to cover everything research-based that had been written about leadership up until that time; subsequent editions have been undertaken after Stogdill's death by Bernard Bass. The third edition of the immensively useful handbook came out in 1990 (Bass 1990). Pointing out the multitude of different definitions of leadership, Bass notes that "there is a sufficient similarity among definitions to permit a rough scheme of classification. Leadership has been conceived as the focus of group processes, as a matter of personality, as a matter of inducing compliance, as the exercise of influence, as particular behaviors, as a differentiated role, as inititiation of structure, and as many combinations of these definitions." (Bass 1990, p. 11) We shall operate with all these facets of leadership in mind in what follows.

A key task of any leader, as has often been pointed out in the literature, is to see the big picture, the functioning of the whole, the way various parts of a complex structure interact with one another, as well as to the dimension of the outcomes which will be visible only gradually. The leader will need conceptual and perceptual abilities to picture her organization as a holistic system with a direction and specific, interrelational and influence-prone characteristics. It is with respect to organization as such a system-to-be-engineered that a leader will form her strategies and modes of operating vis-à-vis the desired future.[12]

Here we shall not study the history of systems thinking in the context of leadership studies or the practice of leadership.[13] Suffice it to point out that while it seems fair to assume that most leaders are intuitive systems thinkers that want to engineer their organizations-as-systems to function better, even after decades of study, few managers seem to acknowledge themselves as "systems thinkers". Few managers have picked up the habit of drawing "causal loop diagrams", in spite of their illustrative usefulness for representing systems dynamics. Even Senge's *The Fifth Discipline* (1990), an international bestseller and a book famed for its articulative force and intellectual brilliance, still has not turned academically articulated systems thinking into a generally accepted building block and instrument base for actual management practice. As far as the practice of management is concerned, Systems Thinking somehow has yet to catch the fire[14]. Many systems thinkers are frustrated, as they perceive the necessity of conceptualizing holistic and dynamic relationships in the functionings of organizations, and the contribution Systems Thinking could make in that department. As Jeremy Seligman recently put it, "the benefits of practicing systems thinking … are incontrovertible. Yet sometimes it seems doubtful that ST will ever gain the critical mass required to make it an integral part of how major corporations practice strategic thinking." (Seligman 2006, p. 1)

The reluctance of the practicing managers to adopt the discipline of systems thinking as part of their day-to-day toolbox reflects a phenomenon which we believe is fundamental to acknowledge. Systems Thinking might seem too descriptive and explanatory an enterprise to strike practicing managers as a vital tool of immediate relevance to her everyday work. Systems Thinking might be useful when describing the functionings of complex phenomena, but the manager's primary imperative is not to understand, model or represent but to act upon. It is that "bias for action" (using a phrase of Bruch and Ghoshal)[15] which seems to hinder Systems Thinking from engaging a centre stage in the actual conduct of management.

Notice in particular that a leader needs to act even when full knowledge is not forthcoming regarding the systems she is in charge of and the relevant environment. Indeed, this is the case much of the time. Systems Thinking, causal loop diagrams and the like will benefit a leader's work, along with market research, industry predictions, scenario planning etc., and can provide valuable insights, yet the key call is for interventions, engineering, decisions, and for action. Systems Thinking might be an essential, fruitful and productive form of thinking – yet only *thinking*, for a leader who shall be judged on the basis of her actions.

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[12] For a survey of the key challenges of leadership as well as of the main traditions of leadership studies and of the relevant thematisations in this area, see Yukl (2006), Antonakis et al. (2004) and Bass (1990).

[13] For a survey, see Jackson (2000).

[14] This is also noted by Russel Ackoff (2006), the pioneer of systems thinking in management. For an intellectually tuned manager, an excellent place to start is Jackson (2003).

[15] Bruch and Ghoshal (2004).

It is here where Systems Intelligence provides the natural next step to the Systems Thinking movement. Systems Intelligence points attention to the intelligence of an actor whose competencies are already fully active in the confines of a "within" she cannot step outside of. She is surrounded by uncertainties in the context of the present moment;[16] she is living in a situation that unfolds; she is immersed by systems she needs to act intelligently in; she thinks, she feels, she tunes in and she projects – but most of all, she acts.

The Systems Intelligence approach wants to highlight the intelligence of a leader from within and with respect to systems even when those systems cannot be frozen to objective entities nor be reduced to conceptualized, rectified things for the leader to manipulate and control. Systems Intelligence is action-driven and context-bound intelligence with respect to wholes which are on the move and irreducible to any objectified representations. Intuitive, gut-feeling-like, emotional and instinctual aspects of the leader's raison d'être take the forefront along with more analytical and objectifying modes of apprehending reality. And the thesis is this: we do possess such intelligence, fundamental for us as human beings, and it stems from an intuitive, instinctual and sense-like grasp of *what we believe is the system*.

We enter a situation and already a holistic experience has asserted itself. We sense the system, or what we take to be the system, partly with our knowledge and through our cognitive apparatus but also by making use of our more subjective, non-verbal, emotionally tuned, instinctual capacities. Particularly relevant are our capabilities for sensing other people's intentions and our in-built need to figure out those intentions. Indeed, we operate as systems-reading systems with respect to environments we experience as systems. We do not know that much of none of those systems yet somehow succeed in operating with them – often acting superbly intelligently in the confines of those comprehensive, complex system structures.

There is, in other words, a little Lincoln in each of us.

What Does the System Generate?

From the point of view of Systems Intelligent Leadership, the most important system characteristics are revealed by three questions. The First Systems Question is:

(1) *What does the System generate – and to what extent is this what we want?*

A system might generate products, services, meetings, emails, and profits – but also outcomes such as fear. Indeed most business organizations do in fact generate fear, along with for instance indifference, cynicism, dislike, anger, withdrawal and rejection. A business system, however, could also generate hope, excitement, mutual respect, openness and trust – which is what Lincoln's cabinet as a system started to generate. Such humanly-charged outcomes of a system are however often not perceived, or taken as fundamental. They are taken to represent individual contingencies and are viewed only marginally relevant, as opposed to the primary issues that concern the organization's structure and goals.

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[16] For an illuminating study of the concept of the present moment, see Stern (2004). A related concept is that of a "living presence" as elaborated by Ralph Stacey in his studies on "complex responsive processes" (Stacey et al. 2000; Stacey 2001, 2003, and subsequent works). Stacey is severely critical of what he calls "Systems Thinking". Stacey's view is that the systems discourse is inappropriate for the description of organizational life as it assumes the key phenomena to be more thing-like than they actually are. But as Jukka Luoma (2007) argues in the present volume, Systems Intelligence perspective seeks to avoid the pitfalls of objectifying systems discourse which Stacey quite rightly criticizes.

Yet the Systems Intelligence perspective wants to highlight such outcomes as *something that the system generates*. A systems intelligent leader is concerned with the outcomes of the organization she is leading also in these "human, all-too-human" respects that conventional accounting deems irrelevant and does not take seriously. They are a key part of the seemingly invisible outcome of the system, fundamental for the systems intelligent leader to stay in tune with and to operate with respect to.

W. Edward Deming, the single most important person responsible for the upraise of Japanese industry since 1950, is famed for his "Improve constantly" -thinking. In his book *Out of the Crisis* Deming presents his "14 Points for Management" that were the intellectual cornerstones of the revolution he helped to emerge in Japan. Along with points such as "Create constancy of purpose toward improvement of product and service" (#1), "Adopt the new philosophy. We are in a new economic age" (#2), and "Improve constantly" (#5). Particularly striking is point #8 which reads: "Drive out fear". Deming comments: "Such a system formed the basis for lessons for top management in Japan in 1950 and in subsequent years" (Deming 1982/1994, p. 23)

A business system can create fear, Deming observed; the leader's job was first to acknowledge this, and then drive it out.

Yet sometimes it might be beneficial to ride on fear. In his illuminating study *Mastering the Art of Performance,* Stewart Gordon relates a story of the master pianist Arthur Rubinstein, who said, "Fear before each concert is the price I pay for my superb life". (Gordon 2006, p. 8) Rubinstein had a system that worked – and that system involved generating fear as part of its excellent functioning. Rubinstein's systems intelligence amounted to operating smoothly with the fear parameter.

No doubt Jack Welch's leadership, one of the most efficient in industrial history as judged by economic criteria, also generated fear. But it was fear that was put in perspective with other systemic aspects in Welch's GE, particularly the call for excellence. Recall Welch's famous principle according to which at GE, a business had to be "No. 1 or No. 2 in its market. If it wasn't, the managers had to fix it, sell it, or as a last resort, close it." (Welch 2005, p. 39) Fear can serve a useful function and a Systems Intelligent leader wants to benefit with the right type of integration of that function in the whole she is in charge of.

Notice that the First Systems Question has semi-mechanical and object-like components to it, natural to approach with an objectifying command-and-control mindset and scientific methods. Crucial aspects of the generative output of a system can be conceptualized, measured, engineered, and controlled as objects. The logistics of an organization, for instance, can and should be studied as an objective system, and lead as such. Yet there is more – even to a system of logistics of a manufacturing company. Indeed, the leading company in its field, Nokia, in its logistics for the production of mobile devices has consciously based its thinking on acknowledging the equally critical subjective and human dimension along with parameters that can be conceptualized objectively.[17]

Command of the mechanics of a system is important, and yet there is more. Overlooked though they often are, these systemically relevant human dimensions point to what might seem like marginalities of the organization and banalities in the way people behave, interact, and

[17] The second author of this article has worked extensively with Nokia for over a decade and can document this first hand. In his last address to Nokia's stakeholders in 2006, the retiring Chairman and CEO Jorma Ollila, emphasized strongly the relevance of culture for the Nokia's stunning success during his era.

communicate. Yet Systems Intelligence maintains that the dimension of microbehaviours reflects and represents a system that a leader must acknowledge and lead. Part of the outcome of the organization is a function of such microbehaviours. We are here introduced to a leadership space of considerable systemic relevance.

In his important studies on group behaviour, Marcial Losada and his collaborators have located three particularly relevant categories of microbehaviour as exemplified by the way people interact in a business meeting: Positivity/Negativity, Inquiry/Advocacy and Others/Self.[18] Losada's team found striking correlations between a business team's performance and the microbehaviours of the team members in business meetings:

TABLE 1. Losada results on high performing teams.

	Inquiry/Advocacy	**Positivity/Negativity**	**Others/Self**	**Connectivity**
High-Performing Teams	1.143	5.614	0.935	32
Medium-Performing Teams	0.667	1.855	0.622	22
Low-Performing teams	0.052	0.363	0.034	18

In our terminology, the system of a high performing team generated more positive behaviours, as well as more inquiry-mode behaviours and Other-referring behaviours than the systems of low performing teams did, thus balancing the effect of negativity, advocacy and self-referring speech acts. The key point here is to look into such microbehaviours as a relevant leadership question, i.e., as a question of systemic relevance from the point of view of the leader. This insight, overlooked by conventional business thinking, is one of the cornerstones of Systems Intelligent Leadership. In business life and to the extent we believe Losada's findings are representative, a Systems Intelligent Leader wants to maintain the P/N, I/A, and O/S ratios of his team at a level that support top performance.

Life is about choice, Systems Intelligence approach maintains. We do have a choice. But much of the time we do not realize the choice, or we dismiss its relevance, creating indifference and mediocrity. We do not acknowledge the implications, much less the potential of systemic effects of our behaviours and even microbehaviours when they push the right buttons at the right time. People are sensitive, and moveable from within. Systems Intelligence is ability to operate with this dimension, fundamental to us as human beings.

"One of the major problems in marriage may be described as the *regulating* negative affect", John Gottman and his co-workers write in their impressive study *The Mathematics of Marriage*

[18] See Losada (1999), Losada and Heaphy (2004), and Fredrickson and Losada (2005). For a mathematical discussion of some of the dimensions of Losada's work, see Luoma, Hämäläinen, and Saarinen (forthcoming).

(Gottman et al. 2002, p. 88). They point attention to negativity-generating microbehaviours in marital interaction.

"The balance between negative and positive affect is absolutely critical in predicting the longitudinal fate of marriage." Referring to extensive empirical research conducted by Gottman and his associates, the authors report the striking results according to which "during a conflict discussion a few months after the wedding, only 30 seconds of positive affect (out of 15 minutes of interaction) differentiated couples who would eventually wind up either divorced, stable but unhappy, or stable and happy in the next six years. The happy stable couples had 30 seconds more positive affect (affection, humour, interest, or engaged listening) out of 900 seconds than the unhappy stable couples. The unhappy stable couples, in turn, had 30 seconds more positive affect than the couples who eventually divorced."

Gottman's quantified approach to happiness in marriage is striking in its results. Like Losada's results with high-performing teams, Gottman's work highlights the critical role microbehaviours play in human systems, and vis-à-vis the effects such systems produce.

The leader's attitude is to tune into this critical dimension of human life.

Systems Moulding People

People change. They may become more or less generous, they may become more or less egoistic, more or less hopeful, more or less respectful for others, more or less open, curious, excited, encouraging, laughing, source of delight for others, more or less caring, inspired and growth oriented. How do they change? The Systems Intelligence wants to highlight the category of outcome in the human realm. Thus the Second Systems Question reads:

(2) *How do systems mould us as human beings?*

The second systems question stems from the observation that in actual life the gradual changes in people's personalities, modes of being and ways of life often do *not* reflect their conscious choice. In addition to exercising their existential possibility to make a genuine choice, people often people just follow suit, fit into a custom or a convention, and conform to what others are already doing.[19] We engage ourselves with what we assume is "the wisdom of the crowd",[20] and sometimes get crafted into styles, attitudes, modes of being and acting that soon seem like a second nature. Yet the identity we have gradually assumed might be quite distant from what is truly and internally our authentic aspiration. What we have become might be a shallow version of ourselves, or a monstrous version – experience indicates that even the most intelligent, morally integrated and civil people can be influenced to act in ways which in retrospect are perceived to be disgraceful and even appalling.[21] Systems do tricks on people, generating patterns, tendencies, ways of being and life styles. Systems can define your actions and your microbehaviours, and craft a you-for-

[19] This is not the place to discuss the key category of choice at length. For an illuminating discussion of some of the key philosophical dimensions with an eye to the work context, see Koestenbaum and Block (2001).

[20] The phrase is from Surowiecki (2004). The line of thought of Surowiecki's illuminating book supports our basic line of thought, we believe, but we will not study the matter here in more detail.

[21] "Obedience to authority", using the term of Stanley Milgram's classic study, can result in deeply disturbing behaviors (Milgram 1974/2004). The human capacity to evil has of course been demonstrated in history beyond any doubt. Ordinary people of high ethical standards can be led to conduct atrocities (see e.g. Rhodes 2002; Aly and Heim 1991/2002).

others and a me-for-yourself that is quite far from what you might have wanted. A system might have gotten the upper hand, defining what appears to you and others as your personal identity.

Most people in our culture on an average day at work do not smile very much. Many do not radiate warmth, or generate in others a feeling of being accepted when coming into a meeting. Yet they could. To smile, to radiate warmth, to generate in another the feeling of being accepted – these are quintessential human possibilities all of us possess as part of our innate constitution. But a system might make them oblivious. Indeed this is what work-as-a-system is doing to most of us. It moulds us to relatively unsmiling, cold, others-disrespecting versions of ourselves. But the opposite possibility is there as well – as an individual choice and as a system. In a system of uplift and encouragement, people will mould towards smiling, toward positive affection, towards warmth, excitement and mutual respect.

Consider the emphasis with which Jack Welch sets out in his book *Winning*:

"What a huge problem it is. Lack of candor basically blocks smart ideas, fast action, and good people contributing all the stuff they've got. It's a killer." (Welch 2005, p. 25)

Welch points to *candour* as key dimension for a leader to look after in the system he is in charge of. And this because "candor works" (p. 35). But candour cannot work unless people generate behaviours that display candour. This people do not do automatically, on the contrary. People are too lazy to do it, might have self-deceptive reasons to back themselves up in white lies, and also because "they don't look at the big picture". "Even though candor is vital to winning, it is hard and time-consuming to instill in any group, no matter what size."

A system could help and should, but the system will not be there unless there is a desire and will to create it. This will involve hard work "because you are fighting human nature and entrenched organizational behaviors", and it is going to be time-consuming. "At GE, it took close to a decade to use candor as a matter of course, and it was by no means universal after twenty." (p. 31)

The point here is that there is no level of candour that is somehow automatically guaranteed in people. Candour will reflect the system, as people are moulded by the system. Therefore the Systems Intelligent leader wants to stay in touch with what the system is moulding of the people that the leader is leading.

Like the First Systems Question, the Second Systems Question focuses attention upon parameters that might seem irrelevant and mundane from the point of view of an organization's purpose. The idea here is to take seriously the dictum that "Structure generates behaviours" and bring that to the level of the tendencies, patterns of behaviour and action-identities of people. Systems mould people, influence their actions, ways of interaction, ways of talking and ways of thinking, and thus create an impact that eventually is going to have a systemic, far-reaching impact. The effect is going to be indirect and it takes place with delay. It operates via a system – a system that is beyond the frame of reference a typical board room meeting is basing its agenda on.

There might be systems that allow for a person to disrespect a colleague, in some cases encouraging him to do so. Perhaps it is thought that competition between colleagues creates welcome dynamism into the organization. The emerging system might generate disrespect, but that is dismissed as a minor problem. Yet disrespect is going to have an effect through the people being disrespected and also in terms of the persons that gradually adopt disrespect as part of their standard behaviour at work. People that disrespect one another are not likely to share ideas or stimulate upsurge of new ideas through mutual excitement. Similarly, the lack of discipline in attending meetings, or low energy attention while present, will generate behaviours that eat away

people's enthusiasm which in turn moulds those people towards low-energy versions of themselves.

In a culture of respect, people are more likely to take risks. When there is trust in the fairness-behaviours of others, you can even count on failures being treated with a focus upon the fact of the matter, with judgment and moderation. There is a connection from microbehaviours of fairness to the macroquestion of co-creativity, yet many organizations dismiss the question of how it moulds people's behaviours in the dimension of microbehaviours.

A Systems Intelligent leader wants to stay alert to the tendencies of change in her people. If people change anyway, in their behaviours and attitudes, ways of interaction and patterns of thinking, is that change in people in line with what we want to accomplish?

The In-Between

The Third Systems question is:

(3) *What kind of In-Between does the System endorse?*

People influence one another far beyond what is visible; people are fine-tuned, indeed hard-wired to one another. Even physiologically, we are more closely connected to one another than we often realize or the traditional perspective suggests. In her groundbreaking book, Leslie Brothers (1997/2001) argues for "social brain". "From the beginning, human infants attend to social stimuli, suggesting that inborn brain mechanisms direct them towards the sights and sounds of other human beings. As a result of this predilection, they receive a steady stream of social information, and neural assemblies representing social objects flourish." (Brothers 1997/2001, p. 12).

Further studies to the same effect include Daniel N. Stern (2004) and Daniel Goleman (2006). The argument is largely physiological and points to the hard-wire that connects us as human beings. "Brains loop outside our awareness, with no special attention or intention demanded." (Goleman 2006, p. 40) "The social brain is the sum of the neural mechanisms that orchestrate our interactions as well as our thoughts and feelings about people and our relationships … the social brain represents the only biological system in our bodies that continually attunes us to, and in turn becomes influenced by, the internal state of people we're with." (ibid., p. 10)

The point is well taken. People are connected to one another far beyond what is suggested by traditional Cartesian models of subjectivity or by traditional models of interconnectivity. "Until now neuroscience has studied just one brain at a time. But now two are being analyzed at once, unveiling a hitherto undreamed-of neural duet between brains as people interact." (ibid., p. 28)

Systems Intelligence makes use of the functionings of the human "social brain" and its physiological mechanisms of social connectivity of the kind that Brothers, Stern and Goleman describe. People read situations as systems, we hold, and part of that is the result of the workings of our social brain and what Stern calls the "psychology of mutually sensitive minds".[22]

[22] Stern's powerful analysis of intersubjectivity as a "primary system of motivation," (p. 97) is particulaly relevant for Systems Intelligence. We believe Stern's insightful and bold synthesis yields strong support for our perspective, and should be studied in more detail than is possible here. Stern highlights intentions and emphasizes the human ability to read intentions "as a mental primitive" which arises in infants preverbally. "Inferring intentions in human behavior appears to be universal", Stern writes. "Intentions, in one form or another, and in one state of completeness or another, are always there, acting as the engine driving foward

Yet there is more to situations as systems, more to people's interconnectedness in those systems, more to the *In-Between*[23] of people, than just the social dimension. Observing *relationships* as fundamental is one step; observing the *systemicity* of those relationships another. Systems Intelligence is based on the insight that not only are we constituted in relationships, but also in relationships-in-the-flux, in and through relationships that constitute systems and with respect to what we take to be the systems.

Particularly relevant are the following aspects of systems:

a. Systems are not absolute, but emerge as a result of a man-made interpretative process;

b. Systems are always subject to redefinition, and to human choice;

c. Once apparently fixed, Systems generate a feeling of being overwhelming and in charge, extending their power to a vast array of microbehaviours including ones unrelated to what seems like the main functionings of the System;

d. Systems are deceptive for the human agents within, because of the illusion of command-and-control they create, together with appearance of fixedness and permanence of other agents in that system. People might seem like sturdy supporters of a System they in fact despise, but you do not know about it.

e. Systems create possibilities for self-supporting spirals of uplift in which people generate positive energy, excitement, encouragement and excellence through connectivity of the kind that sparks human flourishment.

Point (e) could not be overemphasized as it brings out the positive overtone of Systems Intelligence. Systems Intelligence seeks emergence – indeed what J.T. Bergqvist (2007) calls *superproductivity*.[24]

In a video cut from the original three tenors concert in 1990 in Rome one can see a particularly impressive example of this uniquely human possibility unfold before one's eyes as Placido Domingo performs "No puede ser" with the support and encouragement of Zubin Mehta as the conductor.[25] A rare moment of stunning uplift is created in front of one's eyes as the two masters of their craft connect to create an instance of superproductivity that takes even themselves by surprise. The example is particularly impressive, and rare by any standards. Yet the possibility it demonstrates is completely generic – the possibility to connect and to bond, the possibility to create an encouraging and uplifting in-between, and reach out to the upscale register from the platform that emerges.

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the action, story, or mind." (p. 86–7) Using the systems discourse one could say that reading intentions gives rise to the constuction of systems, and thus to behaviours approapriate with respect to those systems. Sensitivity and preverbal sensitivity to intentions of others is a human fundament, and so is the emergence of the functionings of forward-driven wholes in which the self is a part along with other people.

[23] We treat the concept of the "In-Between" (and the "In-Between of people") as a primitive that points beyond the subject-object discourse, seeks not to objectify the space it names, and calls attention to those features of the human condition that give rise to relatedness, connectivity and interconnectivity, intersubjectivity, reciprocity, loops of interpretation and metainterpretation, and to shared experience. "The In-Between" is felt and experienced rather than is fully cognitively known, and often involves intanglible dimensions.

[24] Bergqvist (2007) in this volume and originally in Finnish in Bergqvist (2005).

[25] "The Original Three Tenors Concert. Carreras Domingo Pavarotti in concert Terme di Caracalla, Roma 7 July 1990", The Decca Record Company 1990.

The In-Between has demonstratedly created miracles, Systems Intelligence approach emphasizes. Instead of pushing those glorious moments of human flourishment and uplift to the special category of exceptions, the Systems Intelligence approach takes them as lessons of generic relevance. We are systemic creatures: let us take this possibility to its height – and make the systems we create excel. It is this call towards flourishment, at the core of Systems Intelligence, that goes beyond Gardner's multiple intelligences, beyond Emotional Intelligence, the recent emphasis on Social Intelligence, and also what is provided by traditional Systems Thinking.

Lincoln's brilliance, as described by Kearns Goodwin, is not appropriate to reduce merely to a keen functioning of "social intelligence" in Lincoln. The connectivity and spirit that Lincoln managed to create among his former rivals and opponents took place in a specific real-time context of action in which Lincoln made the system they all were parts of *work*. It is in facilitating that uplift-of-the-system where Lincoln's true brilliance lied, as opposed to (say) the highly important yet secondary social dimension.

Lincoln stretched the system beyond what anybody thought was possible.

"I Have a Dream"

Consider the action of Martin Luther King Jr in Washington D.C. on August 28, 1963, as described in his autobiography:

> I started out reading the speech, and read it down to a point. The audience's response was wonderful that day, and all of a sudden this thing came to me. The previous June, following a peaceful assemblage of thousands of people through the streets of downtown Detroit, Michigan, I had delivered a speech in Cobo Hall, in which I used the phrase 'I have a dream.' I had used it many times before, and I just felt that I wanted to use it here. I don't know why. I hadn't thought about it before the speech. I used the phrase, and at that point I just turned aside from the manuscript altogether and didn't come back to it. (King 1998, p. 223)

This description of King's sudden decision to reject a pre-written text in front of half a million people, in order to go along with a phrase he suddenly remembered, gave rise to one of the most uplifting speeches of all time, and demonstrates the workings of Systems Intelligence at its best. The "In-Between" of people, as felt and shared by Martin Luther King, gave rise to a possibility King was sufficiently sensitive to connect with in spite of the fact that he was in the midst of a high-pressure task, in a supremely stressful situation, and without the luxury of the backing of a precalculated evaluation concerning the measurable rational of what the likely outcome would be *should he go with that spontaneously emerging phrase*. King went on to act in a way that made the system work *superproductively* and beyond what anybody could have guessed was possible in the first place. While demonstrating emotional, social, linguistic and even musical intelligence King's brilliance in Washington does not reduce to them. We suggest it demonstrates Systems Intelligent Leadership of the kind fundamental to all of us.

Our reference, in connection of Systems Intelligence, to certain key actions of giants such as Abraham Lincoln, Placido Domingo, Zubin Mehta, or to Martin Luther King Jr is intended to elevate our everyday actions *in the right direction*. Instead of categorizing their actions as something too extraordinary to fall within the scope of the generic fundamentals of human intelligence, we suggest these actions are paradigmatic of the kind of focus we should adopt. Their brilliance point to a form of intelligence we all possess to some extent, and it is this key competence that humans have that the Systems Intelligence approach wishes to reinforce and strengthen.

Systems Intelligence in Zaire

At the age of 32 on October 30, 1974, Muhammad Ali entered the ring in Zaire as a challenger. The hard-hitting reigning champion Foreman, at 25 and undefeated, was three-to-one betting favourite. In his acclaimed Ali-biography Thomas Hauser documents people that witnessed the fight:

> Ferdie Pacheco (Ali's doctor): "What Ali did in the ring that night was truly inspired. … He could think creatively and clearly with bombs flying around him. And he showed it all when it mattered most that night with the most amazing performance I've ever seen. Somehow, early in the fight, Ali figured out that the way to beat George Foreman was to let Foreman hit him." (Hauser 1991, p. 274)
>
> Archie Moore (Foreman's cornerman): "George was the most dangerous puncher of his time. … And everything George did would have been well and good, except for several small details. Ali protected his body with his forearms and elbows. He was able to avoid devastating experience of George hitting him in the head by leaning way back against the ropes. And when George's blows did land, Ali took them with a marvelous show of disdain and managed to convince George that George couldn't punch. Then George got tired." (p. 275)
>
> Angelo Dundee (Ali's coach): "When he went to the ropes, I felt sick. … Styles make fights, and George had the perfect style for Ali. But everything we planned was built around not getting hit." (p. 276)
>
> Muhammad Ali: "I didn't really plan what happened that night. But when a fighter gets in the ring, he has to adjust according to the conditions he faces. Against George, the ring was slow. Dancing all night, my legs would have got tired. And George was following me too close, cutting off the ring. … So between rounds, I decided to do what I did in training when I got tired. … So starting in the second round, I gave George what he thought he wanted. And he hit hard. A couple of times, he shook me bad, especially with right hand. But I blocked and dodged most of what he threw, and each round his punches got slower and hurt less when they landed. Then I started talking to him. 'Hit harder! Show me something, George. That don't hurt. I thought you were supposed to be bad.' And George was trapped." (p. 275)
>
> George Foreman: "Muhammad started talking to me. I remember Angelo shouting from the corner, 'Muhammad, don't play with that sucker,' but Muhammad just kept playing. The 'rope-a-dope' was what he called it later, and it worked. You see, Muhammad's antennas were built to look out for big punches. And with the style I had, my height, and my tendency to throw big punches – no matter how hard I hit, Muhammad had the instinct to get ready for each punch, ride it through, and be waiting for the next one. I was the aggressor; there was no doubt about that. I was throwing most of the punches, but I knew that in some way I was losing." (p. 277–8)
>
> Muhammad Ali: "I was on the ropes, but he was trapped, because attacking was all he knew how to do. By round six, I knew he was tired." (p. 277)

From the systems perspective, what Ali did in Zaire was remarkable because of the intelligence and leadership he demonstrated *on the fly* as that epic fight unfolded. He used the loose ropes to his benefit, as that allowed him to lean back away from the devastating punches of his opponent (the "rope-a-dope", as it was later called); on the face of it setting himself as a target-soon-to-be-destroyed under the bombs of the killer puncher Foreman, Ali was in fact staging his opponent for a trap in which the reigning champion punched himself out in the heat and humidity of the

African night in the outside stadium in which the fight took place; leading the "experience economy" of the fight, Ali frustrated his opponent with his comments during the fight, while at the same making the largely African crowd support him with the shout "Ali bomaye" (Ali kill him). Out of two black fighters, Ali managed to get recognized as the King of Africa, rounding up the stadium for his own support.

Notice that Ali's Systems Intelligence in the Foreman fight can naturally be thought to have involved some amount of Systems Thinking, particularly regarding the "causal loop" from Foreman's delivery of punches to his state of tiredness. On the face of it, Foreman was tiring Ali, but on a deeper level Foreman was tiring himself out. Yet such objectifying knowledge does little by way of capturing the ingenuity of Ali's action *as the action unfolded* in an ongoing fight in the course of which nobody can tell if actually Foreman is going to tire out before Ali gets tired. Afterwards one can refer to causal loops as descriptions of what took place but what took place emerged out a number of other systemic parameters and a myriad of human choices the overall intelligence of which in the actions of Ali is what we believe should be the focus of fundamental interest. And this is the focus of interest of Systems Intelligence. In order to capture Ali's brilliance, causal loops come too late, yet the intelligence is there for us to admire and to activate from within us.

It seems to us undoubted that Ali in the course of the Zaire fight did demonstrate tremendous intelligence of the kind we should approach with the intention of reinforcing it everywhere. We should look for the specifics of the context of our action from the point of view of the success conditions perhaps involving systemic possibilities beyond what is customary defined as "the ring". Perhaps "the ropes" are "loose," perhaps they don't define the space of operations quite so narrowly as normally *this specific night*. Perhaps the opponent could be lead to a dance which will wear him out, and open the door for a surprise victory for the challenger. It is such strategically minded, context sensitive modes of being that Systems Intelligence wants to highlight in contexts of action and against an uncertain future.

Emergence is the key word here – emergence, not in the somewhat technical sense often brought forth in connection with holistic thinking and Systems Thinking but rather as a concept referring to a process taking place with an upsurge, arousal or becoming-visible as it is *taking form in the context of the living present moment*. Systems Intelligence, as a competence within us, is not a form of hindsight, nor a form of propositional knowledge or "knowing that", but a more fundamental and original core competence of human intelligence in action and in the midst of challenges already charging over. It stems from the human capacity to strive towards to success and survival in the context of life as it is taking place in ways that are unpredictable and within the confines of impartial knowledge, the instinctual and guesswork, challenge and pressure, yet at the same time against the background of a future that could be.

Situation as a System

Leadership is action with leverage.

That leverage points to the upsurge of a future that has an emergent nature and requires attunement to parameters that cannot be reduced to *knowing that* or other forms of propositional or hindsight-based categories, we have argued. We believe leadership should be approached with keen contextualism in mind and yet not get trapped into mere contextualism. Systems Intelligent Leadership does not reduce to mere "situationism", but again takes the perspective to the next

level.[26] Systems Intelligent Leadership is situationism and contextualism with a generic foundation. Our perspective wants to pay homage to the particulars of a context, yet upgrades the view to a generic level through the systems concept. This will pay due respect to aspects of leadership which are context-, situation-, and people-sensitive, and will point to forms of sensitivity as well as possibilities of constructive leadership interventions that are all too often neglected and sometimes dismissed as insignificant.

Systems Intelligent Leadership calls for a realistic acknowledgement of the "knowing how" capacities, situational reading skills, instincts and sensibilities of a leader in the specifics of situations that are emerging. This calls for an extension of many of the premises of accepted leadership studies and conceptualizations. From our point of view, many conceptualizations of leadership are based on idealized, abstract and often formalized notions that do not reach out to the actual functionings of a leader. A leader's primary concern will always be on specific, often unique situational factors, and her success will be judged on the basis of something that is taking place at the present moment and with respect to a future which is yet to emerge. As opposed to leadership approaches that abstract away from the context and from the living presence, creating an illusion of a potentially intellectual omniscience and an illusion of the possibility of an object-like, rectified and thing-like focus-space for the leader, Systems Intelligent Leadership perspective will insist on the present moment and on the context of action as the key parameters that define a leader's condition. It is on such a platform of contextuality and situational particularity, at a course of time that is irreversible, that the leader demonstrates her intellect for productive action – in a way that structurally repeats the imperatives of the human life since the times immemorial.

We speak of the situation as a system because it is fruitful to emphasize such features of the context that are active, pressurizing and commanding vis-à-vis the human agents. The situation as a system restricts us and puzzles us, it pushes us and misleads us, seduces us, it leads us and frightens us. But it also suggests possibilities and challenges us to challenge itself with our ingenuity. We share with it a dance of influence. In the living presence it operates like an invisible partner with a will, set of desires, and an agenda of its own. In many cases and concerning a myriad of matters, it seems to have the upper hand and seems to choose for us. It comes through as an active partner in our lives. The situation is on, the context prevails, and something major is emerging. That's the condition of our lives, we hold, life within systems.

And yet we never know, and have never known, exactly what the relevant systems are. Systems can be re-identified, they can be reinterpreted, reframed; they can be redefined and influenced through choice and through actions and through the introduction of reinforcing loops that at first seem seeds only. In the midst of all that mess – or what intellectually seems like mess – people have survived, with some sort of systemic and on-the-fly intelligence, indeed sometimes have excelled.

Hence the concept of a system, as a general notion to point to what the leader is working from and with respect to – as a natural continuation of the human basic existential situation of facing the imperative to act in situations that are intellectually opaque and partly hidden, in the process of coming and uncertain in their backfirings, sudden upsurges and idiosyncrasies.

The Leader's Imperative

Human life is elusive, and a leader's life is particularly elusive.

[26] On situationism in leadership, see Bass (1990).

The systems in the midst of which we conduct our lives are non-transparent, and the leader often does not have time to wait for anything like full knowledge. She needs to act, reminiscent of a mother whose infant cries in the middle of the night, or like a father playing with his child hoping for the emergence of skills that are yet to come. When an infant is born, parents start to talk to her, caress her, and touch her. Together they enter an in-between, and work towards the miracle of growth as it starts to emerge.

You can fly with a system even when the system is ultimately elusive. You can teach a child a language even though you do not fully know the language and even though it remains a mystery exactly how or why the process succeeds. Somehow the system of language is contagious and moves itself ahead through us. Infinitely more in language learning alone is taking place than words will name or even the most informative of subjects will be aware. Somehow you manage to create a momentum, a spiral, an upsurge, passing on of a system you cannot describe and one that you recognize only vaguely, through its actions. The child will join in, but had she been taken to some other country and context, the language she commands so superbly now would be beyond her command, including even ability to master the physical movements of tongue and ability to hear differences in sounds so obvious to her now. Human system operating skills activate themselves, feed upon themselves, and move on like a dance of uplift. A leader wants to benefit from this human possibility of systems that can and will emerge. She wants to make use of the possibilities of human-systemicity even though the desired outcome is likely to be elusive perhaps because it involves other people and an in-between, or because it involves the future which-is-yet-to-come, a whole that is only partly visible, or because the leader herself is part of the whole she is attempting to influence.

This means that the key assumptions of Naive Cognitivism need to be rejected – ideas according to which leadership could be characterized in terms of cognitive parameters that define a leader's intellectual stance vis-à-vis the organization and the future she is striving to achieve on a subject—object -level. Objectifying categories of naive cognitivism based on a Cartesian subject—object -mindset might be tempting to adopt as part of what seems like the standard toolbox of a scientifically based worldview. Yet we believe a sound conceptualization of leadership cannot be based on any such mental models that will not do justice to what true leaders de facto do right.

Equally clearly, Naive Influentalism will also go over the board. By Naive Influentalism we mean the view according to which the influence a leader is seeking could be articulated in terms of object-like categories such as "organization", "the market", "product lines", "the personnel", "human resources", "critical talents", together with equally objectifying categories of more dynamic nature such as "competition", "the market", "supply chain", "customer interface" and the like. A leader's influence calls for categories that point beyond the mental models of objectifying and rectifying world view, traditionally and currently in the fashion.

Consider the case of a symphony orchestra conductor. She is a leader. Yet it is clear that whatever means she uses to make the orchestra to excel, her actions will be highly context sensitive, brought about via complex artistic and personal sensibilities only some of which could be understood or conceptualized in objective terms. If followed by the keenest of observes, even afterwards it will not be possible to explain objectively exactly why the performance that became reality did emerge. There is too much subjectively intensive life taking place in a top performing orchestra under a great conductor, for the process to be explainable in objective, rectifying terms even afterwards.

Our thesis is: the busy subjective human life, the immensely rich world of emotions, inner subtleties and relations-sensibilities, so obvious for the leadership of a top performing symphony

orchestra, is a priority everywhere. A symphony orchestra is relevant, indeed paradigmatic for leadership studies and understanding? [27]

The subjective dimension and the in-between dimension are the key here. Suppose someone argues that the functionings of a conductor with an orchestra is but of marginal interest for leadership studies because the primary focus of leadership studies should be business organizations which have identifiable objective characteristics as their foundation, as opposed to vague and subjective people parameters. People parameters, the argument would continue, do not count in business the decisive way they do in the performance of an orchestra. An orchestra is too people intensive an organization to be of primary relevance for a business leader, could be suggested.

But our view is that this line of thought amounts to cynicism. We believe the focus of leadership should be excellence, but that cannot be achieved unless people find a way to give their best and to grow with the process. But that calls for the human dimension to be taken seriously as part of the functioning of the system if that system is to function at the peak of its possibilities – and that irrespective of the domain in which we operate.

Why is the "human side of enterprise" so hard to take seriously in business contexts? Partly because the leader's imperative is to generate change, and that with urgency, the tendency is to overfocus on *objectively definable features* in whatever is to be changed. The human side of enterprise introduces the leader to a cosmos that easily seems too rich – the leader wants to operate with something that can grasped with clarity and speed, with a feeling of comprehensiveness and conclusivity. The leader may want simplicity, not complexity, in order to know how to act.

"The two-word sign on my desk genuinely summarizes my whole philosophy: I'M RESPONSIBLE", writes Rudolph W. Giuliani, the famed New York Mayer (Giuliani 2002, p. 69). Even a word statement can serve a function – it might make a system work according to plan. Indeed, one is reminded of the fact that even a person like Benjamin Franklin, a towering figure of tremendous intellectual prominence, felt that he needed such simplistic assertions in order to keep his system right on course.[28]

As we recall Peter Senge once put it, it's not what the vision is but what the vision does. Recall Churchill's tremendous words as he announced the necessity to plan and construct a floating harbour to the Normandy coast, against the enemy fire and against the advice of the engineers that deemed it impossible: "Let me have the best solution worked out. Don't argue the matter. The difficulties will argue for themselves."

Any focus will come with a price. The price is leaving out whatever is not in the focus. The leader's call for action will involve prioritizing, simplification and dismissal of the secondary but what goes to marginal might prove vital. It is imperative for effective action to follow Steven R. Covey's well-taken advice and "put first things first" but sometimes that leads to catastrophically

[27] There is but one brief reference to "managers as conductors" in the influential *Bass & Stogdill's Handbook of Leadership* which in its over 1000 pages covers the field of leadership research comprehensively (Bass 1990, p. 28).

[28] In his biography of Franklin, Walter Isaacson writes about Franklin's famous project for "moral perfection": "This rather odd endeavor, which involved sequentially practicing a list of virtues, seems at once so earnest and mechanical that one cannot help either admiring him or ridiculing him." (Isaacson 2003, p. 89) Yet the system seems to have worked for Franklin.

misplaced attention as something that came first a moment ago now comes second or vice versa. As the Intel chief Andrew Grove aptly remarked, in business "only the paranoid survive"[29] – the catch is to retain focus and remain open to possibilities beyond that focus *at the same time*.

This type of "paradoxes of leadership" are natural to approach from the Systems Intelligence perspective, as indeed Jouni Kauremaa (2007) suggests in the present volume.[30] It is a call to develop a "system of focus" alongside with "a system of staying open" in a "(meta)system of apparently conflicting powerfields". And strange though it may seem to an intellectual outsider, there are people that have been able to accomplish that.

The boundaries of systems can always be redrawn. For the Systems Intelligent leader it is essential to avoid the pitfalls of *misplaced concretism* and *overtly zealous abstractionism* when defining one's focus of attention and agenda of action. She needs an ability to think in terms of the concrete and in terms of the abstract. And yet she needs the ability not to fall too blindly to either one, or to any particular form of either one. Working on a promising merger and acquisitions deal might feed the leader's ambition for a quick break to increased profits, and yet might display both the pitfalls mentioned – particularly when we remember that according to research, most merger and acquisition deals fail to meet the expectations raised by them (Teerikangas 2006).

Systems Intelligence is essentially applicative and essentially tied to circumstances. Its secure base is the particular and the present moment – and from that base it operates with the interest to nurture the desired outcome and cultivate its realization. The imperative of a Systems Intelligent leader is essentially one of constantly staying in tune with the possibilities and requirements of whatever is emerging.

You need to focus. You need to crystallize and constantly go the core. You need to simplify your message. You need to put your vision perhaps to one sentence. And yet you must keep in mind that the organization is an abundantly rich human whole, a system of systems, never any one "thing", however complex. It is the vitality, the life of the organization that you ultimately lead and are responsible for. Do not rectify that life, do not create an atrophy out of it, the leader's motto says.[31]

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[29] Grove (1999).

[30] A related line of thought concerns the possibility to apply the Systems Intelligence perspective to the study of the paradoxes articulated by Christensen in his *The Innovator's Dilemma*. Christensen does not use the systems terminology. The one time he does employ it is enough to show how naturally the Systems Intelligence perspective would fit into the framework Christensen develops: "most resource allocation systems work in a systematic way – whether the system is formal or informal. It will be shown later in this book that a key to managers' ability to confront disruptive technology successfully is their ability to intervene and make resource allocation decisions personally and persistently. Allocation systems are designed to weed out just such proposals as disruptive technologies." (Christensen 1999, p. 109, fn. 3.) The distinction between "disruptive technologies" and "sustaining technologies" is critical for Christensen (see Christensen 1997; Christensen and Raynor 2003).

[31] Systems Intelligence calls for a more vitalistic language than typically is allowed in the confines of the intellectually and academically respectable. Let us recall that even emotions were long disrespected as a theme of study. Here the reader will find Bateson's posthumous *Angels Fear* (completed by Mary Catherine Bateson) particularly visionary. Recent important scholarly contributions to the cause of a more life-intensive topicality in research include Randall Collins' *Interaction Ritual Chains* (2004) with its concept of "emotional energy", Stern's *The Present Moment* (2004) (especially Stern's concept of "vitality affects") and the stunningly original work by Christopher Alexander in his four-volume *The Nature of Order* series (2002–2005). The concepts of "flourishment", "hope", "upward spirals", "growth-fostering", "life-giving",

Not feeling comfortable with the rich call of life and vitality, many managers prefer to focus on structure issues and other objectively definable features of their organization, dismissing the human challenge and the humanly charged systems of their organization. Along with them, out goes the possibilities embedded in those systems.

Here we believe the systems concept as part of Systems Intelligence is quite useful for conceptualizing leadership practices. It points to something man-made, and therefore manageable; and at the same time, to something that is generative, productive and active beyond our individual decisions. "A system" refers to something that can and should be approached in terms of the possibility to change that system, by intervening with the interconnections within that system and by creating leverage, and at the same time the system seems to have a will and direction of its own.

Invitation to Human Growth

A key point of Systems Intelligence is its positive emphasis. The perspective highlights what we do right with the idea that we could do more of what's right. The idea is to connect more actively, sensitively and lively with a competence we possess to start with. We are already Systems Intelligent: the point is to be more so.[32]

The primary idea of the Systems Intelligence approach is therefore not to highlight people's ignorance of (say) various complexities of the world, but rather to invite people to acknowledge the tremendous skills they have in coping with complexities. The idea is to create further momentum with that superb competence we have.

"In a system, the chains of consequences extend over time and many areas", Robert Jervis writes in his study *System Effects* (Jervis 1997, p. 10). Jervis investigates systems phenomena in political life from a systems perspective and characteristically for a systems theorist, emphasizes *interconnections* as the focus of attention as opposed to individual parts or separate entities. "When the interconnections are dense, it may be difficult to trace the impact of any change even after the fact, let alone predict it ahead of time making the system complex and hard to control." (p. 17)

Systemicity is about interconnections, and about the complexity that they multiply, often exponentially. "Many crucial effects are delayed and indirect; the relations between two actors often are determined by each one's relations with others; interactions are central and cannot be understood by additive operations; many outcomes are unintended; regulation is difficult." (Jervis 1997, p. 28).

"aliveness" and even "transcendence" have recently gained new respectability in academic studies as a result of the emergence of what could be called the science of the positive (positive psychology, positive organizational scholarship). We welcome this development which we find to support our own approach (see Seligman and Csikszentmihalyi 2000; Cameron et al. 2003; Snyder and Lopez 2002; and Keys and Haidt 2003).

[32] Notice the active overtones of these descriptions. As opposed to wondering and moaning the complexity of one's environment or the world, the Systems Intelligence perspective wants to engage in that complexity with the idea to act intelligently in it. The point is not to describe in so many words just how complex the complexities are but to move along with them and even as they emerge. From this perspective, Systems Intelligence amounts to accepting the life as a complexity (in any sense of the word complexity theory might assign to it) but at the same time assuming that this feature of the human condition can be lived with intelligently.

How to live with such unpredictable and uncontrollable environment? With their Systems Intelligence, humans have been able to do it for thousands of years.

Systems Intelligence takes interconnections not as a threat but as a *source of possibility*. Interconnectivity is not primarily a matter of uncontrollable unpredictability but a source of far-reaching potentiality for improvements, renewal and upswing. For a Systems Intelligent leader, systems create abundance, amount to abundance, and are themselves an abundance. Systems are the door to a potentially boundless space of possibilities.

Because of the fact that "chains of consequence extend over time and many areas", the Systems Intelligent leader will place emphasis even on microinterventions. By changing something small, the Systems Intelligent leader is looking for something big, through the effects and resonance brought about by that initial intervention.

In similar vein, even contingencies have a play. Why overlook a possibility that arises out of a chance or a coincidence? There is an element of opportunism in Systems Intelligence, in the desire to make most of the specifics of the living presence. Pete Best might have been a better drummer than Ringo Starr but Ringo Starr was an optimal drummer for the Beatles, giving rise to a system of spectacular creativity. It is the possibility of such emerging systems of creativity and co-creativity that is part of the human condition, the Systems Intelligence perspective maintains.[33]

Insights from child development research strongly support the perspective we are here advocating. Writing about the "very complex anticipatory system" between an infant and a mother, Jerome Bruner, one of the leading scholars in the field, points out that "*early infant action takes place in constrained, familiar situations and shows a surprisingly high degree of order and 'systematicity.'*" (Bruner 1982, p. 28, italics in the original). There is in infants "readiness to find or invent systematic ways of dealing with social requirements and linguistic forms".

There are several important conclusions that follow from this, Bruner stresses.

"The first is obvious, though I do not recall ever having encountered the point. It is that from the start, the child becomes readily attuned to 'making a lot out of a little' by combination." And, further, another key conclusion Bruner makes *"about the nature of infant cognitive endowment is that its systematic character is surprisingly abstract."*(p. 29, italics in the original)

"To say that infants are also 'social' is to be banal. They are geared to respond to the human voice, to the human face, to human action and gesture." (ibid., p. 26) "Infants are, in a word, tuned to enter the world of human action." (ibid., p. 27)

It is that "world of human action" and "endowment that is systematic in character" that Systems Intelligence wants to highlight and re-introduce to the focal point of leadership. Systems Intelligent leadership amounts to making use of the core of our humanity, as described by Bruner. It highlights our human capacity to connect and to grow together with one another and with the environment, the capacity to "make a lot out of a little" that Systems Intelligence is based upon.

The resulting call for human growth, self-renewal and emergence is existential in nature. It concerns the very foundations of our humanity. It concerns primarily our being-in-the-world rather than descriptions of that being. Indeed we believe language and prevailing modes of

[33] Thus a Systems Intelligent leader is likely to welcome "serendipity". Regarding that concept, see Merton and Barber (2004). Notice in particular Merton's charming "Afterword" to that stimulating study.

discourse can be quite misleading here. As Bateson once observed, "Language commonly stresses only one side of any interaction" (Bateson 1979/2002, p. 56) and also that "Human languages – especially perhaps those of the West – are peculiar in giving undue emphasis to Separate Things. The emphasis is not upon 'relations between' but upon the ends of relationship" (Bateson and Bateson 1987/2005, p. 161). In as much as Bateson is right, prevailing modes of discourse makes what is natural for Systems Intelligence seem strange, contradictory and even perverse when you start to talk about it.

But talk is not what's critical here. Action is.

Tolstoy suggests in *War and Peace* that "in warfare the strength of an army is the product of its mass and of something else, some unknown factor X."

"Military science, finding in history innumerable instances of the size of an army not coinciding with its strength, and of small detachments defeating larger ones, vaguely admits the existence of this 'unknown' and tries to discover it – now in some geometrical disposition of the troops, now in superiority of weapons, or (more frequently) in the genius of the commanders. But none of these hypothetical identifications of the unknown factor yields results which accord with historical facts." (Tolstoy 1869/1982, p. 1223–4)

People are the key here – people and the in-between, people as connected through a shared experience that tune them up and charge them, in a real-time context and at a moment of urgency, working as a system which because of some unnamed aspect X of that system makes it more effective and flourishing than another, technically better system.

"This X is the spirit of the army", Tolstoy writes. An army with a spirit works as a system better than an army that does not have the spirit.

But "spirit," like "vitality," "life," or "human (mental) growth" will not yield to cut-and-dry concretism or rationally pleasing abstractionism. Whatever "spirit" is, it cannot be objectified or rectified to a mere "thing" or an "object". To approach it, something more than an objectifying discourse is needed. More is called for than the ability to analyze, control and command.

Systems Intelligence wants to return the focus of leadership studies back to human sensitivities and to a holistic encountering of the tasks at hand. In so doing, it highlights a leader's abilities to sense connections and what-is-only-emerging, it emphasizes her capabilities to sharing experiences, it draws from intuitions[34] and emotions and more generally from the wide array of capabilities to stay alert for the present moment and its unique possibilities.

Whatever factor X is, the Systems Intelligence leader wants to ride with it.

The Focus Points of a Systems Intelligent Leader

In earlier papers, we called attention a key form of human interaction particularly relevant to appreciate in connection of Systems Intelligence (Saarinen and Hämäläinen 2004, Hämäläinen and Saarinen 2006). The pattern in question features prominently in paradoxical situations such as

[34] For an in-depth academic study of "intuition and its role in managerial decision making", see Dane and Pratt (2007).

(1) Most managers want to give support to their team member, and most team members would want to get support from their managers, yet support does not result;

(2) Most companies want to give customers excellent service, most customers would want to get excellent service, yet excellent service does not result;

(3) Most teachers would want to give their students excellent teaching that helps their students to flourish, most students would want to get excellent teaching that helps them to flourish, yet excellent teaching or flourishment does not result;

(4) Most husbands would want to have beautiful intimacy with their wives, most wives would want to have beautiful intimacy with their husbands, yet beautiful intimacy does not result;

(5) Most people would prefer energy-giving meetings. Most people have energy to give. But most meeting eat away your energy.

A change-oriented person facing situations such as these might take action via the *technical and objective dimension* and conceptualize the malfunction to result from a fault in the thing-like features of the system in question. The manager might believe that once we get a new product line in place, or a new supplier for spare parts, the current problems will be resolved. Or, she might conclude that a subordinate is the issue. Some specific person is not up to the standards. "If only I was married with so-and-so, as opposed to such-and-such, beautiful intimacy would result for decades to come." An obvious approach to a problem is via a cause-and-effect model that identifies bottlenecks and takes the necessary actions by removing the identifiable obstacles. A remedy and a fix are possible, and the effect is sought by a manipulative intervention in a manner that perhaps can be quantifiably evaluated already in advance.

Clearly, in order to make a system work, often actions following this kind of classical logic of linear causality are called for. Objectively identifiable obstacles for the functioning of a system should be targeted and changed, and that is the duty of the leader. This is the first focus of a systems intelligent leader – any leader.

Unfortunately, many stop here. They do not see to the systemic nature of many of the issues that result in paradoxes such as (1)–(5). They do not see to the mechanisms that give rise to phenomena such as

I. Non-support-generating systems among managers and team members

II. Lousy-service-generating systems

III. Lousy-teaching-with-little-growth-impact-generating teaching and learning systems

IV. Lousy-intimacy-with-your-spouse-generating systems of interaction in a marriage

V. Energy-loss meeting systems.

A Systems Intelligent Leader wants to do better. She wants to push through what we have termed *Systems of Holding Back in Return and in Advance*.[35] Not blaming technical problems, not blaming

[35] Saarinen and Hämäläinen (2004), Hämäläinen and Saarinen (2006). The concept refers to mutually aggregating spirals which lead people to hold back contributions they could make because others hold back contributions they could make. We believe such systems are fundamental to human interaction – indeed, our conviction is that human interaction has a tendency to slide into systems of holding back unless conscious effort is launched to counter this tendency. A negative dance of holding back will prevail unless it is countered time and again. Our concept bears resemblance to what Bateson called "complementary schismogenesis" (Bateson 1936/1999, 1972/2000). (An application of the Batesonian concept to discourse analysis is offered by Tannen 1984/2005 and 2001.. For an early discussion of some of the themes involved,

some particular individuals, not blaming external circumstances, not adopting a blaming mode in general, she seeks to intervene in the system with her cognitive and non-cognitive capacities so as to make a difference. She wants to change the system that moulds people to behaviours that currently amount to the undesired, languishing outcome.

Indeed, she wants the emergence of a growth momentum. Instead of having a system of microbehaviours where people play down each other towards decreased vitality, she wants microbehaviours of growth and encouragement towards mutually created flourishment.

To the extent there are microbehaviours of holding back and a phenomenon of holding back giving rise to Systems of Holding Back, there is also the opposite possibility. And indeed, while a company culture (say) is a powerful influence on people's behaviours, in the dimension of microbehaviours, the individual still has a choice. A pattern can be challenged. In a stingily credit given organization, someone can still give credit. Arrogance of a colleague need not yield an arrogant reply back even in an arrogant company. A person coming late to meeting could have come on time. A person looking bored could look interested. Microbehaviours are a reflection of our humanity and typically do not require expertise or analytical explicit knowledge in order to get embodied. But as such, they do require choice.

Microbehaviours of encouragement, support and respect are always there as a possibility, and so is the growth of a *phenomenon* of them. And as a result, there is also the possibility of the phenomenon of mutually reinforcing loops regarding those positive affects and towards the upscale. The possibility of systems such as *Systems of Mutual Support, Encouragement, Excitement, Energy, and Uplift* are a fundament of the human condition. The Systems Intelligent leader wants to join forces with such mechanisms of the human in-between.

The second focus for a Systems Intelligent Leader: *Creating Interventions with respect to Systems of Holding Back in the name of life-increasing and vitalizing possibilities*.

Here we believe the Systems Intelligence perspective represents a major step forward beyond object-categorical, external impact seeking leadership thinking. Systems Intelligent Interventionism most certainly does acknowledge the possibility of major changes through conventional managerial actions such as organizational restructuring, but points to an equally significant realm of change through the human systemic dimension which is hiding in people's microbehaviours. It is that rich field of *held back contributions* and potentially *mutually reinforcing positive loops* that Systems Intelligent Interventionism particularly seeks to highlight and make use of.[36]

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see Watzlawick, Bavelas, and Jackson 1967.) It seems to us the phenomenon Bateson approached with his somewhat awkward concept has not received the attention it deserves. The phenomenon of "creating divisions" (schismogenesis), the arousal of negative loops of mutual influence, and life-decreasing spirals are a field that calls for further research in the context of everyday experience. The enormous literature of the related phenomenon of the "prisoners' dilemma" (see e.g. Axelrod 1984) certainly opens valuable perspectives academically but does not hit to the core of the matter in terms of leading to action. In more therapeutic and consultancy oriented writing negative loops are often discussed in terms of metaphors such as "dance". An illustrative and useful example is Lerner (1985).

[36] An important way forward is indicated by Fredrickson's studies on what she calls "the broaden-and-build theory" of positive emotions. "The broaden-and-build theory suggests that positive emotions broaden people's modes of thinking and action, which over time builds their enduring personal and social resources." Her well-researched and empirically based theory "lay groundwork for the hypothesis that

Hence the focus upon microbehaviours that reveal Systems of Holding Back; hence the desire to hit the Systems of Holding Back, hence the desire to turn the patterns of microbehaviours towards hope, encouragement and flourishment.

Systems Intelligent Interventionism often works like magic. On the face of, little might be taking place. But internally a huge impact could be on the way. Perhaps something touching took place, something that moved people and made them think, feel, connect with one another in a new and hope-triggering ways.[37]

Consider the invitation of Mr Gregory, a low-ranking prison officer, to the Presidential Inauguration of Nelson Mandela.[38] Gregory had been Mandela's ward for more than twenty years in the prison on Rodden Island. The striking invitation was a touching gesture from Mandela, a signal that stated: we shall focus on the future, as opposed to the horrendous past.[39] Or similarly, consider the thousands of small encounters of ordinary people in the meetings initiated by Desmond Tutu in connection of South Africa's Truth and Reconciliation Committee. A torturer would face the people he had tortured, in order to hear their testimonials, and in order to hear the truth, and perhaps receiving forgiveness for what was unforgivable.

Or, as a third example, consider the microfinance loans that have revolutionized poor women's lives in Bangladesh or Africa by bringing them to money economy and encouraging many to develop their entrepreneurial skills and stand up for their rights and self-respect. In many cases the results are stunningly far-reaching. As Helen Epstein and Julia Kim recently reported, "new research from South Africa suggests that it may be possible to dramatically change the status of women in a very short time, even in the poorest, most troubled communities, at a relatively low cost." (Epstein and Kim 2007, p. 39) They refer to the fact that in many cases "microfinance programs have improved many women's lives. Studies have suggested that microloan recipients tend to have fewer children than other women, and that the children they have are healthier." With some additional interventions the microloan programs have produced encouraging results by way of reducing domestic violence against women and even the spread of HIV in their community.

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positive emotions generate 'upward spirals' toward optimal functioning and enhanced emotional well-being". (Fredrickson 2003, p. 163 and 169)

[37] Systems Intelligent Interventionism is a field of study which is here called for. Contributions to that area will benefit from research of interventions in therapy-related contexts and from research on what Luthans, Youssef, and Avolio (2007) call "microintervention studies". But as is suggested by the rich array of examples we use in this paper, the study of Systems Intelligent Interventionism should not be restricted to any specific domain of life. Many of the key mechanisms are likely to be generic in nature and will ultimately ride on the functionings of the inner systems of us humans. Thus studies on Systems Intelligent Interventionism will benefit from investigations into personal coaching and sports coaching, dialogue, personal histories of influential individuals, the art of conducting, actor-directing, facilitating, psychodrama, and parenting, to name a few examples.

[38] Barry O'Neill discusses this case in his *Honors, Symbols and War* (1999/2001, p. 25). O'Neill's stimulating and original book is highly relevant for the perspectives we develop in this paper.

[39] In his autobiography Nelson Mandela devotes a touching paragraph to Officer Gregory. When describing the moments of his release from the Rodden Island prison, Mandela writes: "Warrant Officer James Gregory was there at the house, and I embraced him warmly. In the years that he had looked after me from Pollsmoor through Victor Verster, we had never discussed politics, but our bond was an unspoken one and I would miss his soothing presence. Men like Swart, Gregory, and Warrant Officer Brand reinforced my belief in the essential humanity even of those who kept me behind bars for the previous twenty-seven and half years." (Mandela 1994, p. 562)

It is the emergence of a better life one is here approaching with encouragement and hope. And the logic is: small input, big output, often in matters seemingly unrelated to what was the original initiating input.

People are the key here, as creatures that have feelings, emotions, instincts for hope and encouragement, with an inner capacity for sensing the meaningful as a personal force of uplift, and with an ability to connect with one another, with personal growth and with a better future. "There is a growing recognition that the key to improving the heath of the world's poor", Epstein and Kim write, may lie "in encouraging poor people to develop the collective will and take the social action necessary to enable them to protect their own health." As people move, so do often mountains.

This perspective is strongly reinforced in the story of Muhammad Yunus and his Grameen Bank that initiated the microloan concept. As a young economics professor in his native Bangladesh, Yunus describes a decisive experience he encountered in a near-by village to which he had gone in order to explore the functionings of poverty from what he called "the worm's eye view". Yunus approached cautiously a woman in her poor household. "She was squatting on the dirt of her veranda under the low rotten thatched roof of her house, totally absorbed in her work. She was holding the half-finished stool between her knees while plaiting the strands of bamboo cane." (Yunus 2003, p. 6)

Sufia Bagum was her name, and she was 21 years of age. "Sufia Bagum was illiterate but she was not without useful skills. The very fact that she was alive, squatting in front of me, working, breathing, struggling on in her quiet way despite such adverse conditions proved beyond a doubt that she was endowed with a useful skill – the skill of survival."

She was preparing a bamboo stool for her survival. But she could not buy the material at the equivalent of 22 US cents because she did not have the equivalent of 22 US cents. Thus she was trapped into a vicious circle that forced her to sell back the stool to the trader of the bamboo at an unfairly low price leaving her only the equivalent of 2 US cents for the day's work. She suffered because of the lack of 22 US cents.

"I had never heard of anyone suffering for the lack of 22 US cents", Yunus writes. "It seemed impossible to me, preposterous."

Yunus' insight was: "she suffered because the cost of the bamboo was 5 *taka* and she didn't have the necessary cash. Her life was miserable because she could survive only in that tight cycle – borrowing from the trader and selling back to him. She could not break free of that circle. Put in those terms it was simple. All I had to do was to lend her 5 *taka*."

There were 42 women in a similar situation in the village. Yunus gave loans to each of them, amounting to the equivalent of 27 US dollars. He created a new system through an intervention of 27 USD. The total number of borrowers now is 6.91 million, 97% of them women.

Throughout his autobiography, Yunus emphasizes the potential of each human being. "I firmly believe that all human beings have an innate skill … So rather than waste our time teaching them new skills, we decided to make maximum use of their existing skills. Giving the poor access to credit allows them immediately to put into practice the skills they already know – to weave, husk rice paddy, raise cows, peddle a rickshaw. And the cash they earn is then a tool, a key that unlocks a host of other abilities, a key to explore one's potential." (Yunus 2003, p. 225)

Yunus' microloans initiative is a Systems Intelligence superstory. Not only is the system he created intelligent, it also activates the systems intelligence in the poor people it involves. By his systems intelligent intervention Yunus changed a system a person was forced to maintain up until then – a system that forced her to hold back more productive forms of action she was capable of.

Like with our previous examples on Lincoln's cabinet and Martin Luther King's "I have a dream" -speech we once again beg the reader to pay attention to the *dramatically successful* as the benchmark for what is possible, and what should be approached as paradigmatic as we conceptualize our human potentials in the dimensions of action, collaboration and systemic change. The intelligence at work in these cases, we should have more of and develop to a mastery. This is the call of Systems Intelligence action and Systems Intelligent Leadership.

And nothing in what we suggest takes away the necessity to analyze, to conceptualize in objective terms, to measure, to know and to engineer, to command and control – too the extent we can do it, and to the extent it is beneficial in a given context to do it. The leader's natural focus point, along with the points of intervention, cultivation and care, is the organization as a machine-like system, as a whole that can be measured, as a process that can be controlled. The leader's metalevel Systems Intelligence amounts to also choosing intelligently the parameters that define the most relevant aspects of the system in the given specific time in history.

And once again we are reminded of Lincoln:

> "He possessed an acute understanding of the sources of power inherent in the presidency, an unparalleled ability to keep his governing coalition intact, a touch-minded appreciation of the need to protect his presidential prerogatives, and a masterful sense of timing." (Goodwin 2005, p. XVII).

Leadership is a comprehensive activity, and the challenge is to make the system ride towards excellence and growth with respect to the situation and with respect to the ongoing change.

Big and small, structural and human, Systems Intelligence has it all. Leadership is Systems Intelligence, but possible systems are a myriad. There is no logical prefixed borderline where to stop. Systems can and will get redefined and redrawn, and it is part of the job of the leader to decide which ones to take as primary and when. Systems Intelligence of a leader calls for the opening up of sensitivities and for her internal and external dialogue, for analysis and for intuitions, for the cognitive and for the emotional, social and the in-between.

Systems Intelligence as a Driver of Hope

Writing in 2003, Fred Luthans and Bruce Avolio state that "to date hope has had little application to the workplace or the leadership field." (Luthans and Avolio 2003, p. 253). Systems Intelligent leadership approach wants to change that.

As people are powered from within, astonishing results will emerge, outcomes one could not have imagined when witnessing those same people held back and holding back.

What keeps people from getting fully connected with their inner potentialities and energies? In many cases an institutionalized or exterior force of coercion might be in place, a powerbase that backs up an alienating system that lessens life's possibilities and creates a structure that holds back an agent from realizing her dreams and potentialities. History is full of such systems of submissive nature. But in modern democracies more often than not, the key obstacle is not an

objectively definable system that limits us from outside but systems that we have created ourselves and maintain ourselves from within and in-between.

What you believe is the system, is the system for you. But the system you have chosen and others have chosen and indeed everyone seems to endorse, might not serve anyone. It might do ill-justice to our aspirations and growth potentialities.

A key aspect of systems as we conceive them is that *systems can be changed*. Systems are not prefixed, systems are not absolute – systems are not part of the metaphysical constitution of an external reality existing independently of people's beliefs, frames of reference, modes of thinking and ways of interacting with one another and the world. Systems are constituted by people in a dialogical relationship that at the same time constitute people. Systems are constructions but as constructions they can be changed.[40]

Symbols and symbol systems are they key here. The chance is to change the perspective, the frame of reference, the rules of the game via the symbolic order, and open up the road to systemic change as a result. Of all the systems available to humans, the symbolic dimension is the most accessible when reaching out to the emergence of life-enhancing systems, and way out from systems of holding back.

Another key dimension of Systems Intelligence Leadership is thus introduced: symbolic interventionism and systems intelligence in the realm of symbols. [41]

A Yunus' microloan might well bring concrete help and indeed hope to a poor woman's reality. But perhaps even more than that, the microloan might bring her new meaning via powerful and living *symbolism of hope*. The Systems Intelligence perspective holds that people are more tuned to such immaterial possibilities than often is recognized.

Key forms of systems intelligent interventions through the symbolic dimension are likely to include ones that touch upon the categories of hope, freedom, my-own-significance, connectivity, respect and love – basic themes of life that have been touched upon, narrated, elaborated, investigated and admired since the dawn of civilization. Why should they not be relevant in the systems environment of modern work-life and everyday?

A chief reason is the tendency to perceive organizations and work environments in terms of objective categories. When an organization is conceived as an objectively definable entity, it is easier to handle, conceptualize, control and manipulate, all welcome results for many leaders, but key features of humanity are lost along with key features of the organization as a living system. The symbolic, the emotional, the experiential and the subjectively meaningful are excluded from what seems like primary or even relevant.

Yet categories such as hope and respect command a towering position within people's internal systems and in people's lives. The Systems Intelligent Leader wants to stay in tune with that

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[40] We shall not go in detail to questions of constructivism. Major inspirations for us in this area include Berger and Luckmann (1966) and Shotter (1993).

[41] The parallels to brief therapy are particularly eminent here (see e.g. Watzlawick 1978; de Shazer 1988 and 1994). Notice particularly de Shazer (1991) which uses the systems metaphor powerfully. See also Berg and Dolan (2001). Shotter's (1993) "rhetorical–responsive version of social constructivism" is a promising perspective to use when articulating some of the key aspects of Systems Intelligence in the symbolic dimension.

fundamental realm of her systemic context. She is leading a complex whole of objective systems but also more than that. There is a dimension of her leadership that deals with the organization as systems-that-are-more-than-objects. That is the systems environment she wants to work better, to produce results, and operate in harmony with people's desire to flourish with others.

"The mind's eye is both a system of selective attention and a system of interpretation and is one of the most powerful mechanisms in our brain", George Kohlrieser writes in his *Hostage at the Table* (Kohlrieser 2006, p. 21). Kohlrieser is a former hostage negotiator who has been personally taken hostage four times.

"The goal is to maintain a sense of control through the mindsets we have and the words we use. This is how negotiators succeed."(p. 8) "Refocusing the mind's eye of the hostage taker, from the negative to the positive, becomes the primary goal." (p. 24) In order for this to happen, the negotiator will have to establish *a bond* with the hostage taker. "Bonding has the potential to produce tremendous energy." (p. 46)

In order for a bond to emerge, in order for a negotiation situation to take a totally new turn, not that much need to happen in objective terms. As Kohlrieser points out, very often just a few words might be enough. "The mind's eye", activated from a new perspective by the negotiator's well-chosen words, might bring about the emergence of attachment and bond between the hostage taker and the negotiator, resulting in release.

Kohlrieser's cases of hostage negotiation breakthroughs are elaborations of the theme of systems interventions through the thematics of a highly charged and metaphorically suggestive environment. Working from the perspective of hope, seeking to create an attachment-carrying *in-between*, the negotiator uses language and her own human credibility in order to create a life-increasing system from the scarce ingredients of the hostage situation. She wants to turn the tide; she wants to trigger effects that will feed upon themselves and produce an outcome that in the first place seems impossible.

For a Systems Intelligent leader, people's internal systems of interpretation (the "mind's eye" in Kohlrieser) as well as the human systems of bonding are key resources of leadership. They are potential carriers of hope, freedom, care, excitement, respect, fresh solutions, and productivity, and of the upscale aspects of life at large. A Systems Intelligence Leader wants to use all that. She does not want to become hostage to a reduced and simplified object-based conception of her work or her leadership. There is more to people and more to organizations than meets the eye – more that is good.

What seems like the system may hide some of the best in people. Consider the story from St. John, striking in the street-credible ingenuity, if we may say so, it addresses to Jesus. "'The teachers of the law and the Pharisees' brought in to Jesus a woman caught in adultery. 'Teacher, this woman was caught in the act of adultery. In the Law Moses commanded us to stone such women. Now what do you say?'"

The evangelist notes: "They were using this question as a trap, in order to have a basis for accusing him."

But as we recall, Jesus bent down, creating a change in the rhythm of the situation. He prepared the ground for a reframing of the set-up, for the emergence of a more generous and life-appreciating system. As the accusers kept on questioning him, the masterful systems intelligent countermove of Jesus was to say, "If any one of you is without sin, let him be the first to throw a stone at her." (John 8: 1–7) As will be recalled, this decided the case. The accusers were stripped

from their accusing advocate mode and found themselves in inquiry mode that opened the door to a bond with the accused woman. A more appreciative and forgiving system emerged, backed up by a shared experience of human connectivity and non-arrogance coming to life in the living presence. Having gotten released from the hostage system of accuse and disgust the people that came to Jesus touched upon their more generous selves, felt their own guilt and left.

This is systems intelligent interventionism; this is Systems Intelligence at the service of hope.

Just Do It

Infants are remarkable in their "original endowments" (Bruner). "You are a visual virtuoso" (Hoffman). Our abilities to sense one another, to read each others intentions and minds, our innate capabilities for intersubjectivity and abilities to interact with the world without explicit knowledge and through preverbal and unconscious modes of sensing the relevant – these are magnificent skills, and as Daniel Stern emphasizes it is likely "that the majority of all we know about how to be with others resides in implicit knowing and will remain there" (Stern 2004, p. 115). Should we start to appreciate our innate contextual systems abilities as a form of genius, and start to cultivate them with a broad approach, rather than narrow them down on the basis of a restricted object-based outlook? Systems Intelligence suggests the former.

You already do it. You already create leverage, emergence, momentums and jumps forward. You meet a person, and effortlessly a successful shakings of hands emerges. Feelings in you both. Perhaps a raise in hope, meaning and purpose. All this perhaps because you sensed the other's sincerity and authenticity and returned a smile. You adjusted your speech to the other in split seconds, your discourse started to take the shape of communality right from the start. How did you do it, how did you create that constructive opening, thus a triggering of effects, that elevation to a higher level? Clearly humans are masters in creating effects on the fly if they choose to. And the call is to do more of that, more in tune with our deepest aspirations.

Leadership is a drive towards improvements in the company of others. It amounts to action within systems and the cultivation of systems, in order to create leverage and spirals towards the upscale. The best option is to face the living presence with an idea, with a purpose, with values that matter, and with trust to the human potential – with leadership that taps on the miraculous in-between dimension in us human beings: ability to create emergence.

That is the essence of Systems Intelligent leadership.

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CHAPTER 2

Systems Intelligence: A Key Competence in Human Action and Organizational Life*

Raimo P. Hämäläinen and Esa Saarinen

Introduction

Suppose the veil of uncertainty is to stay. Suppose you have to act, without knowing what your choices ultimately amount to. Suppose you are in a situation where external forces are at play, influences move hither and thither, the future is uncertain, and still you have to act.

You do not have the luxury of a theoretician to seize the situation or the flow of time, in order to analyze the various underlying patterns of the system you are embedded in. And yet you wish to act intelligently, indeed you must.

By Systems Intelligence[1] we mean intelligent behaviour in the context of complex systems involving interaction and feedback. A subject acting with Systems Intelligence engages successfully and productively with the holistic feedback mechanisms of her environment. She experiences herself as part of a whole, the influence of the whole upon herself as well as her own influence upon the whole. By experiencing her own interdependence in the feedback intensive, interconnected and holistically encountered environment, she is able to act intelligently.

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[1] The introduction of the concept of Systems Intelligence and the seminal essays on it were first presented in Finnish in 2002 and they appeared in the report series of the Systems Analysis Laboratory. In 2004 the first set of essays in English was published in Raimo P. Hämäläinen and Esa Saarinen, eds., *Systems Intelligence: Discovering a Hidden Competence in Human Action and Organisational Life* (Espoo: Systems Analysis Laboratory Research Reports A 88, Helsinki University of Technology, 2004). The key texts therein are the *Introduction* and Chapter 1: *Systems Intelligence: Connecting Engineering Thinking with Human Sensitivity* by Esa Saarinen and Raimo P. Hämäläinen.

We believe that Systems Intelligence is a key form of human behavioural, life-orientational and context-adaptive and situationally creative intelligence. We see it as a higher level cognitive capacity, a form of intelligence, referred to by Howard Gardner in his theory of multiple intelligences (1983/1993, 1999). The idea of Systems Intelligence, we hold, represents the next level in the Systems Thinking Movement and can provide a significant fresh opening for the Organizational Learning Movement.

The Systems Intelligence approach acknowledges the systemic nature of the world out there but its main emphasis is upon the concept of a system as part of the human experience and life-orientation.

"A system" is a generative frame within which a subject experiences her life as taking place. The system moves, pushes, restricts, conditions, encourages, suggests, seduces, and commands: it seems to have a will and voice of its own. There is no full knowing exactly what it is. Life as moved, pushed, restricted, conditioned, encouraged and commanded by systems: that is the existential set-up of my life as it takes place.

Systems Intelligence reaches beyond Systems Thinking in its pragmatic and active, personal and existential emphasis.

In order for the human race to have succeeded in the course of thousands of years, the race clearly must have had some form of practical intelligence in many ways unique to it. That intelligence must have demonstrated itself in action, including modes of reacting to, adjusting to and making use of changing circumstances and abrupt aspects of sudden situations. Insight, gaining knowledge, judgment and analysis must have had a prominent role in the success story of the human race but before them there was action – action that must have had intelligence to it with respect to the immediate contextual challenges and possibilities and even before being acknowledged by a rational subject *as* intelligent.

Suppose intelligence-as-embedded-in-action and with respect to the situation, context, environment, locality would come first – Systems Intelligence.

From Systems Thinking to Systems Intelligence

As we launched the Systems Intelligence project, our starting point was Peter Senge's *The Fifth Discipline (1990/2006)*. But we felt that the link between Peter's discipline of "Personal Mastery" and his discipline of "Systems Thinking" was missing.

The Systems Intelligence approach is basically about taking Senge's discipline of Personal Mastery and the systems *perspective* as fundamental, and considering systems *thinking* only secondary.

There is an objectifying bias, a bias for cognitive rationality and external view point in Systems Thinking, we feel. System Thinking highlights a domain of objects it believes are neglected – systems. But they remain objects nonetheless, entities to be identified and reflected from the outside. The Systems Intelligence approach wants to avoid this externalist trap.

Another aspect in the descriptions of Systems Thinking we felt uncomfortable with was the negative impacts that systems are often portrayed to produce. In the beer game, the individual can never fully succeed. She cannot flourish. One can improve one's game performance somewhat but ultimately the system structure forces you to acknowledge your failure.

Similarly, the "System Archetypes" of Systems Thinking focus on describing how things can go wrong when systems structures are not acknowledged. "Limits to Growth", "Shifting the Burden", "Eroding Goals", "Tragedy of the Commons", "Fixes that Backfire" all highlight the negative traps people can fall into as a result of not appreciating the relevant systems structures.

The Systems Intelligence approach, in contrast, focuses on *what people do right and could improve upon in systemic settings*. It assumes that people possess a kind of "pre-rational and pre-reflective systems thinking" as an inherent feature of the human life-orientational basic intelligence.

The key idea is one of flourishment, as opposed to avoiding pitfalls. Systems Intelligence thus calls for a Positive Systems Scholarship, and sides with "Positive Organizational Scholarship" (Kim et al. 2003) and "Positive Psychology" (Snyder and Lopez 2002) movements in its focus on human flourishing, in contrast to human malfunctions. Systems Intelligence also reflects the approach of "Action Research" (Reason and Bradbury 2001).

Since we launched the idea of Systems Intelligence in 2002, it has been applied to avoiding conflicts in environmental management, merger and acquisition problematics, class-room pedagogy, themes of rewards and compensation, the Theory of Constraints, Sun Tzu, and to management and leadership coaching, to name a few[2]. During the past few years the Systems Intelligence approach has already become something like a movement in organizational life in Finland discussed even on the chief editorial page of our main national newspaper.[3]

It Works in Practice but Does It Work in Theory

As we started out the Systems Intelligence project, we had the idea that it is essential to combine several perspectives which have traditionally remained isolated in academic conceptualizations and intellectual life:

(1) Philosophy of life as an everyday activity reaching out to people irrespective of their background;

(2) Systems perspective in its emphasis of the holism and complexity of essential phenomena of human life;

(3) Humanly tuned leadership for change that builds on the hidden dimensions of human subjectivity, existential situation, and interaction;

(4) Appreciation for *humanly rich activities* such as sports, music, performing arts, and successful conduct of the everyday.

We were interested in human activities that worked, even when there was no theory to explain why they worked, or even a recognized need for a theory.

The starting point was pragmatic and in the engineering mindset. Hämäläinen's background is in engineering sciences and operations research (often referred to as the science of making things

[2] The related essays are in the publication in note 1. The home pages of our research group provide free access to all the materials, essays and slides. http://www.systemsintelligence.hut.fi/

[3] The article by the Editor-in-Chief Reetta Meriläinen entitled "There would be a standing order for Systems Intelligence" ("Systemiälylle olisi kestotilaus"), was published in the daily newspaper *Helsingin Sanomat* on July 16, 2006.

better[4]); Saarinen is a philosopher whose interest has been in bringing philosophy to everyday contexts and to organizational life. Like Hämäläinen in the decades of his tenure at Helsinki University of Technology, Saarinen has worked extensively with engineering organizations such as Nokia.

Engineering thinking is based on the idea of change. Make X work, it says; and improve upon what does not work. You use your rationality and creativity in order to bring about workable solutions to a concrete reality. You celebrate success even when you do not know exactly why something that works does work. Thus, for an engineer's mindset, a system that works comes first, understanding and explaining why it works comes only second.

Similarly, a kiss or a warm laughter, an apology or an uplifting glance might resolve a tricky situation in a relationship. For the mindset of a master-of-the-everyday, a system that works comes first, understanding why it works comes only second.

Such was our starting point. We were saying: let's allow *the system's working* be the guiding light; let's focus primarily upon the emergence of a human system instead of focusing upon our cognitive maps of that emergence.

And we assumed that human beings inherently do just that, as part of their intelligent life-orientation.

Pitfalls of Systems Thinking

The Systems Intelligence perspective is radical because

- It wishes to account for an individual's fundamental ability (intelligence) in a way that does not conceptually presuppose the subject—object -distinction, but seeks to connect her with a situation, context and other people's realities – a system – considered as primary as the subject herself;
- It wishes to account for an individual's non-rational, non-propositional and non-cognitive capabilities, such as instinctual awareness, touch, "feel" and sensibilities at large, as capabilities that relate the subject intelligently to system (the situation, context, other people);
- It explicitly seeks out the upscale dimension of life, assuming human flourishment, magnificent success, uplift and emergence to be fundamental human realities rather than mere positive exceptions.

A key contrast to Systems Thinking lies in our *refusal to take the outsider's view* to the systems which are addressed. Causal loop diagrams, for instance, are not as useful as they are in Systems Thinking. The primary situation is one where the individual identifies herself to be in the loop and not to have a chance to step outside the loop to reflect it in isolation, the Systems Intelligence approach says. She does not necessarily know and perhaps will not know exactly what the loop is, and yet that is the context of her actions and of potential flourishment. How can she do it intelligently? How can a human being act intelligently, indeed act magnificently, in contexts, situations, environments and among other people – in systems – when *a veil of uncertainty is always present?* What can intelligent choice towards flourishment mean when you cannot step aside and sort out the options and their systemic impact? These are the key questions of the Systems Intelligence approach.

[4] See "Operations Research: The Science of the Better" website http://www.scienceofbetter.org/

Our conviction is that human beings *do possess* such systemic intelligence. We believe people do own a systemic route and an almost-miraculous access to the realm of flourishment. People are intelligent creatures, and more so than is sometimes appreciated. Positive reciprocity works, can bring about wonders, and its system dynamics is intuitively appreciated by all of us. Let's focus on that! The point is not so much to teach people something new but to awaken a competence they already have, and have applied all their lives.

Systems Intelligence movement is out there to help people excel further in something they have exercised already, often with considerable success.

Optimism for Change

Change starts somewhere. It might emerge from something incremental, marginal, even trivial. And yet it might amount to a huge restructuring of the fundamental aspects of the entire system – because of the leverage created by

- change in the way people experience other agents of the system as a result of a small but significant change in the other's behaviour;
- change in the way people experience their own possibilities of acting within the system as a result of a small but significant change somewhere in the system;
- change in the way people experience the likely structure of the system in the longer run.

When Ms Rosa Parks refused to give her seat to a white man in a Montgomery city bus in 1955, most people had not heard of Rosa Parks, considered the bus systems a technical matter, did not perceive the city of Montgomery as anything particularly significant, and ruled out as indifferent the question of a particular bus seat on a particular bus leg. But as Rosa Parks was arrested the marginal incident caught fire, created an avalanche that eventually reached epic proportions. Change was on the way to reshaping the entire system of race distinction in the most powerful country in the world.

Our philosophy of change is optimistic because of the overall view we have of people's beliefs and the functioning of the human internal system. Our conviction is that many of the core beliefs of people around us do not show up in their actions. The actions reflect the assumed nature of the current system. People have adjusted to *what they believe is the system* – e.g. to the way people regard "negroes". But when the system is shaken, the latent beliefs might trigger a revolution, spreading like an epidemic. Given a small but critical change in the system, deeply held aspirations might suddenly leverage, adding exponentially to the momentum.

Beliefs are distinctive in having a fundamentally ephemeral essence. They can be changed dramatically, massively, instantaneously and due to an incremental input. People might get excited, might start believing in the future, might start to trust and respect one another – as a result of something relatively small and mundane. For Systems Intelligence, this is the key: small changes that transform something major, as a kind of butterfly-effect in the context of our life systems.

Systems Intelligence focuses on changes as leveraged by the dual force field of the systemic and movable nature of the human mental world and the systemic nature of the context, situation and people's behaviours around us.

Systems Intelligence takes the idea of people's internal and movable world utterly seriously. Unlike many forms of rationalism and objectivism, we do not fear the subjective or the emotional,

the experiential or the phenomenological – indeed we embrace them. Therein lies the source of emergence.

One might be massively misguided regarding what the others truly believe and *what might move them towards flourishment. Our interactional patterns, modes of reciprocity, adjustment tactics and proactivity strategies might be utterly misplaced and underutilized.* There might be a systematic flaw in the way a group of agents experiences the subjective worlds of the others, and the possibilities of reciprocity systemically hiding among that group of people. The "reality" we form together might stand on a quicksand, seem like a castle, and at the same time destroy the higher possibilities of life.

Systems Intelligence is based on a principle of dynamic humbleness and optimism for change, which acknowledges that my perspective of others might be drastically mistaken, particularly regarding what the true aspirations of those others might be. An incremental and seemingly trivial change in my behaviour might be a significant change *to the better* in the eyes of another, might intervene with *her* beliefs regarding me, might lead her to appreciate suddenly *what life is all about*, and thus trigger a chain of changes in the actual behaviours in each of us and in the system we form together.

To the extent there is a veil of ignorance in our beliefs regarding the aspirations others in the system, there also is a hidden possibility of a cumulative enrichment and improvement through reciprocity. Fresh possibilities of flourishment are always there, simply because most forms of interaction have *not been tried*. Instead, our patterns of interaction are highly standardized, often low in emotional energy (see Collins 2004), and typically hide the upscale options. Systems Intelligence is an approach of realistic hands-on optimism, based on acknowledging the possibility of upward-spiraling movements through human reciprocity.

This sort of leverage thinking is often bypassed as sort of idealism and a form of wishful thinking. Yet it amounts to an appreciation of some of the most powerful moments of most people's lives – those moments when one's actions flow with the situation, when people feed each other, when positivity rules, the upscale aspects of life are eminent and *the system flies and we fly with the system.*

Adapting terminology from "Systems Archetypes", you could reconstruct many of your best moments in life – or the history of the Civil Rights Movement in the U.S. – in terms of *the Systems Intelligence Archetypes* of "Fixes that Fire", "Sharing the Burden" and "Miracle of the Commons".

Marshall Mannerheim Enters the Stage

As Finland was fighting for its independence against Stalin's Red Army during the Second World War, eventually successfully, the Finnish Commander-in-Chief Marshall Mannerheim sometimes visited the front. A tall cultivated man in his eighties and in excellent physical shape Mannerheim was a towering figure, respected by all Finns as a man of mythical proportions.

When walking in a trench Mannerheim might stop and take out a cigarette, his junior adjutant at the time Colonel Rafael Bäckman told Saarinen in 2006.

- A cigarette?
- A cigarette. This offered a possibility for a soldier standing nearby to come up and offer light for the Commander-in-Chief. After the cigarette was lit, Mannerheim would talk informally with the soldier, typically about his home and loved ones.

Consider this as an example of Systems Intelligence. Suppose you are a soldier out there in a trench and observe your charismatic Commander-in-Chief approaching together with his entourage. How are you to strike a sufficiently impressive pose? You are trapped in a system that hardly allows you to breath. And yet a small, incremental intervention – cigarette lighting – can change it all.

Systemic Leverage

Our assumption is that people read and experience situations from a systemic point of view and interpret any given context in systemic terms. Then they adapt to the system, operate from the system, with respect to it and towards it. But obviously the system could be different from what people believe it to be.

As a result, there is a tremendous leverage built in any human context, if only people would interpret the system as having changed. Even if it has not yet changed, it will change, when sufficiently many people believe it has changed.

People thrive on meaning. As a result, the most forceful forms of systems intelligent interventions are likely to be those that touch basic human aspirations.

Here lie the chances of systemic intervention. In human contexts, almost anything can serve potentially as a signal of *a change for hope*. A clean subway car can become a powerful symbol of an entirely new era.

The interpretation of an event, incident or a change as symbol in the human context is highly variable upon human factors be those subjective, intuitive, interpretative, emotional etc. Interpretation is everything, creating a realm of possibility. And sometimes people grasp that possibility, personally and powerfully.

The catch for a rationalist lies in the lack of clear-cut predictability. In the context of human change the logic typically is not "If X then Y". One needs to be sensitive, situation-conscious, emotionally alert, sufficiently distanced and sufficiently connected; one needs to be fine-tuned to the non-rational undercurrents in the context in order to make full use of the *situation in order to make things work and the context to flourish*. It is such sensitivity that Systems Intelligence wants to elicit.

People are existential creatures that thrive on meaning. As a result, the most forceful forms of systems intelligent system interventions are likely to be ones that touch internally upon basic human aspirations, especially:

(1) A subject's sense of worth and desire to be respected;

(2) A subjects desire to feel connected to the company of others;

(3) A subjects desire to feel connected with something meaningful.

A systems intervention that touches upon a person's basic existential needs is likely to transform into a change factor through the internal system of that person.

Rose Buying Finns

Most Finnish men do not buy roses for their wives spontaneously on normal weekdays. A *non-rose buying system* is in place, creating behaviours that generate the lack of rose buying. The

system is invisible, as part of the accepted reality. A man that buys a rose is experienced as having made a choice but a man that does not is not experienced as having chosen not to buy a rose.

It is almost as if some higher authority governs the rose buying behaviours of all these non-rose-buying men.

The system, no doubt, is in place partly because of the experiences each particular man in his seasoned marriage has undergone in the course of years. The wife has changed, he feels, and is becoming increasingly negative. She is unenthusiastic about life. She never puts lipstick on at home just for him. The wife seems overtly pragmatic. Not much of a spark left. He reacts, pushing down his more romantic ideas and gestures, a dimension where he was never that great to start with.

But the same is true of the wife: the two are caught in *a system of mutually holding back in return and also in advance*. The two have created a system and now the system rules.

Consider the rose buying as a generative metaphor for microbehavioural actions that would touch the other positively, strengthen her faith in life, optimism, hope and sense of worth. One would expect work life, where faith in life is power and creates momentum, to be unconditionally alert to such systems of rose buying, i.e. to systems of generating faith-in-life, optimism and everyday-strength in people particularly in as much as that can be done *totally free of cost*.

This turns out not to be the case. Instead, systems of holding back in return and in advance rule everywhere:

- Most managers want to support their team members more than they currently do. Most team members would want to get more support from their managers. Yet more support does not result. There seems to be *a lack-of-support generating system* in place.
- Most speakers would like to give their best in a presentation. People attending the presentation would benefit most if the speaker would be at her best. But the speaker does not give her best, the audience does not receive the best. There seems to be *a poor presentation generating system* in place.
- Most people would benefit from generosity in everyday situations (showings of interest, presence, human warmth, politeness, considerateness, gratefulness, credit-givingness, attentiveness, etc.) Most people would themselves like to provide such gestures more than they now do. But generosity is scarce. There seems to be *a non-generosity generating system* in place.

Systems of Holding Back are a key form of human interaction. They trap us from everywhere – from within and from without.

Systems of holding back are the single most important key to life-decreasing, reciprocity-trivializing and vitality-downgrading mechanisms in human life.

It requires intelligence just to adjust to them.

Higher intelligence is needed if you want to overcome the system – a possibility that the Systems Intelligence approach wants to highlight.

Window of Opportunity

Systems Intelligence is based on the insight that *systems of holding back prevail and lurk everywhere, and yet do not tell the whole story.* Fear rules over courageousness, ungratefulness over gratefulness, taking over giving. And yet there is more to humans than meets the eye – more that is good.

An entirely different story is hiding beneath the surface – and it could be triggered out by a marginal change. This is because people are not likely to reveal their discontent with what they believe is unchangeable. But suppose hope returns, excitement is back, the realization that a seemingly unchangeable system actually is man-made, a construction, an artefact from top to bottom – entirely based on human choice. The system can be changed, in fact is likely to change, and I can be part of that change.

Saarinen's initial interest in Systems of Holding Back grew out of his philosophical lecturing as a desire to find examples of choice people subjectively could not deny they had. Saarinen was led to studying small incremental microbehaviours that would benefit others, would not require any material resources, and yet fail to materialize. It was interest in the failure of a seasoned couple to hold the other's hand in a shopping mall, or the failure of a professional to lean forward paying attention to an expert colleague giving a presentation, or the failure of a manager not to start a meeting with a few informal, credit-giving lines.

Why is there a universally accepted *people's movement* not to give credit, say? Why a *people's movement* not to pay attention at meetings? The lack of positive microbehaviours reveals a complement – the domain of micro actions that could have been.

That domain is huge – and a source of tremendous leverage if perceived in systemic terms.

Particularly when approached using examples drawn from marriage, it has turned out to be remarkably easy for people of various ranks and files, age and education backgrounds, to gain insight into *their own personal holding back behaviours* and to *the unintended systemic consequences* created thereby. Systems of holding back strike to the core of our everyday living, and to the core of all organized life, in a way that is easy for people to comprehend intuitively and personally.

Systems of holding back are a route to appreciating *the constructed nature* of our everyday modes of being. As soon as that element is appreciated, the fundamental possibility of human choice enters the picture – choice as conceived as a personal possibility on the level of *my everyday microbehaviours.*

Personally perceived choice resulting in taking an action is a key idea in Systems Intelligence. The point is to highlight choice in order to pave the way to an empowered practice of change. To this effect, it is essential to discuss behaviours regarding which the agent indisputably does have a choice, even when judged by her own perhaps distorted and biased internal belief system.

Intellectual complexity of the choice is very often not the issue. As a result, loop diagrams are not likely to be of much use. What is the bottleneck if not lack of knowledge? Our answer is: *human self-centeredness, lack of sensitivity, and disbelief in the human potential in us and around us*.

The egoistic, cynical subject views a system cold from outside assuming to find an objective reality. He might be effective in the short run in his efforts to manipulate the system from outside. But the alternative is to step inside and open up the system and open up oneself – working openly, sensitively, attentively, with systems intelligence. The alternative is to make the system flourish.

The sensitive, the instinctual, the contextual, the situational, the atmospherical, the emotional and the subjective elements and capabilities are back – they reside right there at the centre of human individual and collective action, organizational behaviour and systemic change.

Why Systems Thinking Projects Fail

Senge, in the updated edition of *The Fifth Discipline* (2006) openly acknowledges that building learning organizations has turned out to be significantly more difficult than what he envisioned in 1990. Likewise Jeremy Seligman (2005), describing his experiences of building a Systems Thinking (ST) culture at Ford, writes bluntly: "sometimes it seems doubtful that ST will ever gain the critical mass required to make it an integral part of how major corporations practice strategic thinking."

It is here where we believe the Systems Intelligence approach points the way forward.

First observe why Systems Thinking projects can easily fail. In as much as a ST project aims at increasing people's knowledge of an organization's systemic structures, teaching people the use of systemic tools such as loop diagrams and stock-and-flow computer models, *none of that ST learning need touch their everyday holding back behaviours*, or the holding back systems generated by such behaviours.

Yet it is clear that a learning organization can never flourish if it remains a system of holding back. But systems of holding back lurk at the human level and at the level of people's microbehaviours, in the dimension of the mundane, they are in many cases intellectually trivial, often seemingly invisible hiding as they do behind the curtain of custom and conformity, and generally not approachable from outside in.

ST projects fail, because people need not change their *microbehaviourally relevant* modes of thinking, behaviours, mental models and dialogical patterns as a result of increased *knowledge* of various aspects of Systems Thinking or of the systems structures involved. But microbehaviours generate systems of holding back, creating a hidden, crushingly powerful counterforce to the Systems Thinker's well-intended and rationally sound effort to launch ST initiatives in order for the organization to "grasp of the big picture" and to "understand the long-term effects".

Becoming More Systems Intelligent

The learning organizational movement has struggled with the fact that as ST programs are driven into organizations, surprisingly little changes. "Problems may get solved, but the organization will be no smarter", Peter Senge puts it in the updated edition of *The Fifth Discipline* (2006, p. 332).

We believe what is called for is a movement towards the individual, the subjective, the emotional and the magical middle ground between subjective, emotional and internally driven individuals. This is what the Systems Intelligence perspective attempts to accomplish. As a result, we believe the Systems Intelligence approach offers a way forward from some of the traps the learning organization movement seems to have fallen into. At the same time, the Systems Intelligence approach builds upon Senge's original insight regarding the significance of the systems perspective.

The Systems Intelligence perspective has already proven its iconic ability to stimulate learning. In the context of lectures and seminars, we have observed that people feel strongly encouraged to

develop further a capability they already possess, more so than to learning cognitively new material they might feel is abstract.

The concept itself points the way. It is heuristically energetic. In most cases only a few lines of explanation are needed in order for people to feel ready to move ahead with the concept and apply it to their own situations. The word "system" encourages a hands-on attitude: it suggests something that is constructed and man-made, something that is working – and thus could work better. Embedding ourselves and other people, the very fundamentals of our co-operative and interactional practices within that conceptual frame highlights the possibilities of new and creative productive actions.

Learning together is important – but acting together for flourishment even more so. That is the possibility the Systems Intelligence approach wishes to highlight.

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TABLE 1. Systems intelligent organization.

– Empowers people to share their mental system models of the organization and to consider the effects of their own actions on the whole
– Fosters and sustains inquiry mode and reduces advocacy
– Keeps fear factors down
– Helps people to be responsive to flourishing initiatives
– Builds trust in the good will of others
– Sees that its production capacity is not restricted to the measurable variables but is extended to the world of emotions and well being
– Elevates innovativeness by an environment where emotional variables do not limit performance

TABLE 2. Five levels of systems intelligence.

(1) **Seeing oneself in the System** – Ability to see oneself and one's roles and behaviour in the system. Also through the eyes of other people and with different framings of the system. Systems thinking awareness.
(2) **Thinking about Systems Intelligence** – Ability to envision and identify productive ways of behaviour for oneself in the system and cognitively understanding systemic possibilities emerging from one's choices.
(3) **Managing Systems Intelligence** – Ability to personally exercise productive ways of behaviour in the system.
(4) **Sustaining Systems Intelligence** – Ability to continue and foster systems intelligent behaviour in the long run.
(5) **Leadership with Systems Intelligence** – Ability to initiate and create systems intelligent organizations

TABLE 3. Systems intelligent leader.

Strives to learn and reach Level 5
– Sees herself in the system with a mission to develop a Systems Intelligent Organization
– Is aware of the human perspective and of the possibilities of human reciprocity
– Operates within the visible system and manages the emotional system simultaneously
– Is not held captive by the mechanistic perspective
– Identifies and eliminates structural systems dictatorships that alienate people from their own choices.
– Recognizes Systems Intelligence as an iconic personal growth challenge and a success asset

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Systems Analysis Laboratory, Helsinki University of Technology, Espoo.

CHAPTER 3

Systems Intelligence: Connecting Engineering Thinking with Human Sensitivity*

Esa Saarinen and Raimo P. Hämäläinen

This paper outlines the basic features of Systems Intelligence and discusses some of its fundamentals. Systems Intelligence combines insights of Systems Thinking with a pragmatic orientation and philosophy of life. We argue that Systems Intelligence is a new concept that is highly useful for understanding human behaviour in complex interactive settings, and in concrete efforts to generate change. We suggest that Systems Intelligence is something we apply as humans instinctively. Systems Intelligence combines engineering thinking with human sensitivity and thus serves as a foundation for a down-to-earth pragmatic philosophy of life of optimism and change.

Introduction

By Systems Intelligence (SI) we mean intelligent behaviour in the context of complex systems involving interaction and feedback. A subject acting with Systems Intelligence engages successfully and productively with the holistic feedback mechanisms of her environment. She perceives herself as part of a whole, the influence of the whole upon herself as well as her own influence upon the whole. By observing her own interdependence in the feedback intensive environment, she is able to act intelligently.

Systems Intelligence reaches beyond Systems Thinking in its pragmatic and active, personal and existential emphasis.

We believe that Systems Intelligence is a key form of human behavioural intelligence.

Systems Intelligence combines insights from a variety of disciplines and schools of thought. For us, a particular inspiration is the work of Peter Senge (1990, 1994, 1999).

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Like the forms of intelligence described by Howard Gardner (1983, 1999), as well as emotional intelligence as explicated by Daniel Goleman (1995, 1998), Systems Intelligence deals with the structures human agents use in order to conduct their lives successfully. Like Gardner in his groundbreaking work on Multiple Intelligences, Systems Intelligence is not only restricted to the verbal, analytic and conceptual aspects of intelligence. In his own criticism of Multiple Intelligences Gardner (1983) refers to higher-level cognitive capacities, which are not explained by it. These include common sense, metaphorical capacity and wisdom. Systems Intelligence, as defined here, is another important human competence not covered by Multiple Intelligences.

Systems Intelligence points beyond the forms of intelligence of Gardner and Goleman in linking intelligence with the concept of system.

Traditional Systems Thinking literature (see e.g. Churchman 1968; von Bertalanffy 1969; Checkland 1999; Flood 1999) emphasizes the importance of wholes and perspectives as it conceptualises and models systems of interaction and feedback from outside. In contrast to that Systems Intelligence wants to account for the active and practical thinking that human agents use in real life situations involving complex systems of interaction with feedback mechanisms. Systems Intelligence reaches beyond Systems Thinking in its pragmatic and active, personal and existential emphasis.

In this paper we give a programmatic introduction to the concept of Systems Intelligence, sketch out some of its different forms of manifestation and discuss its fundamental role in human life. The paper can be seen as a program description and starting point for a research initiative[1] in the analysis of this new intelligence paradigm.

Key Ideas of Systems Intelligence

Systems Intelligence makes use of some key ideas of Systems Thinking (Churchman 1968, 1969; von Bertalanffy 2001; Senge 1990; Checkland 1999; Flood 1999), Theories of Decision Making and Problem Solving (Simon 1956, 1982, 1997; Newell and Simon 1972; Rubinstein 1986; Ackoff 1987; Keeney 1992; Kahneman and Tversky 2000), Philosophical Practice and Dialogue (Bohm 1980; Isaacs 1999; Schuster 1999), a number of other forms of holistic thinking and of the human sciences as well as certain forms of therapeutic thinking, positive psychology and situation analysis (Bateson 2000; Goffman 1974; Haley 1986; Seligman 2002; Baker 2003). A major source of inspiration is also the Socratic tradition in philosophy which emphasises conceptual thinking for the purposes of the good life (Hadot 1987 and 1995; Long 2002). The reader is referred to the related literature to learn the historical roots of each of the ideas. Here we shall give a programmatic sketch of a new approach to understand human intelligence in a systems setting which is built on ideas described below.

- Whole is more important than parts.
- Human agents can influence entire systems.
- "Part" and "Whole" are relative abstractions that are always subject to potential redefinition by changing the perspective.
- Systems approach starts when you perceive the world through the eyes of another person.
- Systems approach looks beyond isolated linear cause-and-effect chains for interconnections and interrelations.

[1] http://www.systemsintelligence.hut.fi/

- In our culture the human conceptual system emphasizes linear thinking, isolating thinking and seeing separate units rather than seeing wholes.
- Our perception mechanisms exhibit a similar tendency.
- Human beings perceive themselves as independent individuals, yet they most often are encompassed in systems.
- Structure produces behaviour.
- Beliefs regarding structures produce behaviour.
- Beliefs regarding the beliefs others have regarding structures, produce behaviour.
- Co-operation is natural but extremely hard to conceptualise in a behaviourally relevant, subjectively convincing manner.
- Structures of co-operation are fundamentally based on the assumptions and meta-assumptions people make of others involved in that system of co-operation.
- The behaviour of people often reflects their best guess of rational behaviour but that guess can be completely erroneous.
- People can get caught in systems that serve nobody's interest.
- Much of the time, people display behaviours they would change if they only could see the bigger picture of the setting they are in.
- A system can make people act in some undesirable ways but as people act in such ways, they maintain the system and its influence upon the others, partly causing the system of undesirable behaviours to regenerate itself.
- There does not need to be an external reason for the particulars of a system, yet people in the system can feel helpless regarding their possibilities of changing the system.
- In most systems, each subject separately reacts to the system without seeing the cumulative overall effect of the reactive behaviours on the others.

The System Concept

Here we shall use the concept of a system intuitively. In the last chapter of this paper we shall discuss links to the related systems theoretic concepts. The principal features of a system for us are:

- A system is characterized by the interconnections of its elements, as well as the internal nature of those elements.
- A system has generative power. It produces effects beyond the modes and functionalities of its elements.
- A system has primacy over its elements while at the same time the elements influence the system.
- A system has emergent features, not reducible to the features of its elements.

Examples of human systems include: Party, Lecture, Meeting, Family, Friendships, School, Village, Society, Organization, Company, Industry, Administration, Traffic, Internet, Language, Parenthood, Global economy, etc.

Paradoxes in Human Systems

Consider the following cases:

- Most managers want to support their team members more than they currently do. Most team members would want to get more support from their managers. Yet more support does not result. There seems to be *a systemic non-support generator* in place.
- Most husbands would want to be more romantic with their wives. Most wives would want their husbands to be more romantic with them. Yet more romantic behaviours do not result. There seem to be *a systemic non-romantic behaviour generator* in place.
- Most lecturers would like to give their best in a given lecture, also when people seem restless and even negative and come in late. Most people in the audience would like the lecturer to give her very best, even at a lecture for which he came late and might not seem that focused early on. But the lecturer cannot give her best, the audience does not receive the best, and everyone is disappointed. There seems to be *a lousy-lecturing-behaviour generating system* in place.
- Most people in the industrial world would like to produce less waste. Most companies would like to produce less waste. But more waste is produced. There seems to be *a waste-generating system* in place.
- Most adult readers would like to see more responsible, holistic and broadly-minded journalism. Most journalists would like to produce more responsible, holistic and broadly-minded journalism. But the opposite seems to happen. There seems to be *a system in place that generates relatively irresponsible, fragmentary and narrow-minded journalism*.

Saarinen has explored this kind of paradoxes in the context of his accessible-to-all-lecturing (lecturing as a Philosophical Practice) which following the Socratic tradition aim to provide platforms of change, reflection and renewal for academic and non-academic people (Saarinen and Slotte 2003). The experience is that people irrespective of their background find it easy to identify such paradoxes from their everyday life. Furthermore, becoming more aware of such paradoxes helps many people avoid the traps involved, often with astonishing results.

Most people in the industrial world would like to produce less waste. Most companies would like to produce less waste. But more waste is produced. There seems to be a waste-generating system in place.

A husband may see his wife in the course of a Saarinen lecture with different eyes and from a fresh perspective. This may lead to a small but significant change later in the evening as the spouses meet. The wife may be encouraged to react with a small but significant positive change vis-à-vis the husband. A positive loop may now be generated and yet the day before apparently nothing could have been changed.

The four dimensions of change are:

- Mental change
- Perceptual change
- Individual behavioural change
- Change in the system.

The research group lead by Raimo P. Hämäläinen[2] has studied extensively the modelling of complex systems as well as the mathematical models of decision making, competition and co-operation. What we call Systems Intelligence started as an effort to combine the concrete-life oriented approach of Esa Saarinen's Socratic Philosophical Practice[3] with Hämäläinen's systems research and thinking. Some first results have been described in the volume of our student essays (Bäckström et al. 2003) and first working papers (Hämäläinen and Saarinen 2004a, b).

The Moral of Systems Intelligence

Systems Intelligence is about the betterment and improvement of human life. The idea is to take the ancient promise of philosophy seriously, the one that called for the Good Life, and to use a systems approach to the benefit of such a process.

Surprisingly, the cause of the good life has not occupied the central focus of psychology or of philosophy in the past decades. Notable exceptions are de Botton (2000), Comte-Sponville (2001) and in psychology the work of Seligman (2002). In systems thinking tradition, the work of C. West Churchman is marked for his strong moral motivation but his work has not received the credit it is due (see e.g. Churchman 1982).

We believe our organizational behaviours, family life, individual lives, communal lives and co-operation in general can be improved enormously by relatively simple means that address the systemic perspective. The moral driver of Systems Intelligence is the creed that such profound changes of utmost human relevance hinge on Systems Intelligence.

Examples of Systems Intelligence in Action

Someone presents an astonishing proposal.

a. A Low Systems Intelligence Someone reacts, "That is so stupid and so wrong".

b. A High Systems Intelligence Someone continues, "Striking. Tell me more."

A lady is at home with his boyfriend. They watch TV. Suddenly the boyfriend picks up the remote control and switches the channel.

a. Low Systems Intelligence: The lady says, "What do you think you are doing, Mr Wise Guy?"

b. High Systems Intelligence: The lady says, "Was this our decision?"

Much of what Senge describes as "inquiry mode", as opposed to "advocate mode" can be understood in terms of high Systems Intelligence.

A guy has a drinking problem.

a. Low Systems Intelligence: The guy gets furious any time his lady suggests he might have a slight drinking problem.

b. High Systems Intelligence: The guy turns to his lady and says, "How could we work on this major personal problem I have?"

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[2] http://www.sal.hut.fi/Personnel/Homepages/RaimoH.html

[3] http://www.esasaarinen.com/?sivu=86&kieli=en

We propose that the following forms of change-creation should be conceived in terms of Systems Intelligence in action:

- Job rotation, as a result of which people gain deeper understanding of the whole organisation
- The mirroring technique of certain forms of family counselling, where both parties are asked to repeat what the other just said, in order to show he or she has understood and is willing to listen to what the other just said (see e.g. Hendrix 1990).
- Parents talking to their child well before she shows any signs of learning a language.
- The first two axioms of to Alcoholics Anonymous (1939) that say: "We admitted we were powerless over alcohol – that our lives had become unmanageable" and "Came to believe that a Power greater than ourselves could restore us to sanity". (For a discussion of AA from the systems perspective see Bateson 2000.)

Harri Kontturi (2004), a Finnish attorney-at-law tells, relates in Hämäläinen and Saarinen (2004 a) a story of a an old sea captain who in his last will indicated for each of his valuable memorabilia the recipient and connected in his will the memorabilia with a personal message that identified the reasons for the decision on a human and emotional level. "The sea painting from the dining hall I give to my daughter Kaisa because when I returned from the seas she always wanted to sit on my lap in front of this painting and hear my adventures on the voyage from which I had just returned." "Let this painting be an eternal window to those cherished shared moments and to voyages you can return to in your memories again and again." Thus the will continued for seventy seven pages. As the attorney came to the end, everybody was touched and nobody challenged a detail of the will. The sea captain's Systems Intelligence bypassed the systems of envy and greed that so often poison similar estate inventories.

Virtues as Intelligence for Practical Life

Systems Intelligence links with the ancient promise of philosophy that challenged people to ask: How to live a good life? Systems Intelligence aims to enhance the prospects of good life and in doing so it relates to what Aristotle called practical reason rather than theoretical reason. The theme of Systems Intelligence is a "know how" rather than "know that". The understanding required will be judged by its practical outcome and manifestation in conduct.

Traditionally, virtues were perceived as excellencies of life. Virtues such as wisdom, courage, prudence, justice, politeness or mercy related people to other people around them as well as to the bigger picture of life. When people strive to be virtuous, they produce a better city together – a better whole, community, a better system to live in.

Virtues are Systems Intelligence. They point the subject's perspective and actions beyond her immediate benefit and egoistic concerns to a whole-in-the-making, with the possible outcome of contributing successfully to the workings of that whole.

The more we deal with other people in our environment without clear-cut roles and without command-and-control, and the more the innovation involves productivity-together, the more we need internal motivation. But internal motivation in an environment of co-operation and innovation, will amount to the re-emergence of virtues such as courage, moderation, wisdom, justice, generosity and friendliness.

Greed is often thought to be the key driver of market economy. We believe this emphasis is misplaced. A more sustainable basis of innovation economy is in the ancient virtues. This amounts to acknowledging others on a par with oneself and will direct focus to the whole. It is a

call for thinking that will seek creativity and innovation from communal contexts characterized by enthusiasm, joy, peer respect and strive for the meaningful. Creating such contexts, in turn, calls for Systems Intelligence.

In innovation economy, human sensitivity makes good business sense.

Seeking an Impact on Thinking

Systems Thinking starts by viewing the environment and one's involvement with it in holistic terms. The environment and one's place in it are perceived in terms of interconnectivity and interdependence rather than separation and disconnection.

But as pointed out in the Systems Thinking literature, our conceptual apparatus, as well as our established ways of perceiving the world, are severely biased against such an approach. The temptation is to conceive the world in terms of separate "things" rather than in terms of systems and interconnections.

Systems Thinking can be defined as the theory, methodology, and practice of perceiving and operating in terms of holistic structures. Anti-reductionism and holism characterise the worldview of Systems Thinking.

The systems perspective wants to see the world as composed of systems, to examine these entities as wholes and assumes the wholes to be primary to their parts.

Yet wholes are abstractions. They are mental constructs, which are relative to the perspective adopted. As a result, there is a relativistic and perspectival undercurrent in Systems Thinking. Boundaries of a system can always be redrawn.

The human being perceives the world around herself in many ways as static and unchangeable. Systems perspective explains some of this by reference to hidden dynamic systems that generate a state of equilibrium and play down short-term change.

Systems Intelligence in the sense in which we conceive it wants to push Systems Thinking towards action and concrete, actual life. The effort could be described as follows:

(1) Systems Intelligence follows Systems Thinking in setting out from the primacy of the whole, from acknowledging interconnectivity, interdependence and systemic feedback as the key parameters.

(2) Like Systems Thinking, Systems Intelligence wants to account for change. Unlike Systems Thinking, Systems Intelligence involves driving change and actively embracing change.

(3) Unlike Systems Thinking, Systems Intelligence is primarily outcome-oriented and not a descriptive effort; it is intelligence-in-action on its way to create successful systemic change.

(4) Unlike Systems Thinking, Systems Intelligence is a capacity in the human being that involves instinctual, intuitive, tacit, subconscious and unconscious and inarticulate aspects that cannot be straightforwardly reduced to a full-fledged and transparent cognitive dimension.

Systems Thinking is an expert discipline and a field of theoretical study. The literature is often technical and thus remains inaccessible to the layman. While not dismissing the significance of such a study, our aim with Systems Intelligence is to emphasize the applicable dimension. We seek to have impact on people's thinking, and not merely to describe models of or ideals for thinking. One might observe with regret that contributions to the theoretical understanding of

Systems Thinking might not amount to any increase in Systems Intelligence, any more than contributions to academic philosophy typically result in an increase in philosophical reflection in the actual conduct of people's lives.

Personal Mastery

Peter Senge's groundbreaking book *The Fifth Discipline* (Senge 1990) identifies five key themes as cornerstones of learning organisations:

I. Personal Mastery

II. Mental Models

III. Shared Vision

IV. Team Learning

V. Systems Thinking.

We propose Systems Intelligence is the fundamental link between I and V. The way we see it, Systems Intelligence is Systems Thinking having become an integral part of a person's Personal Mastery. Like Senge's Personal mastery, it is about the way a person conducts her life, and at the same time, it is about Systems Thinking, i.e. the focus is on the impact and workings of the holistic and systemic structures that encompass the environment of the person.

The way we propose to interpret Senge's notion of Personal Mastery is: Personal Mastery is the ability of an individual to use her unique potentials as fully as possible to the enrichment of a good life. Thus understood, it is clear that one's ability to manoeuvre successfully in the various systems structures that constitute the environment is a key component in what Senge calls Personal Mastery.

Mental Models

Behaviour reflects one's models of thinking and of what Senge calls "mental models". Our mental models largely determine what actions are considered necessary and possible. They are a key driver for the human being in her actions. The aphorism, "As a man thinks in his heart, so he is" highlights this familiar fact. Thinking transforms into actions, and repeated actions into habits. Eventually, thinking and habits constitute to a large extent the person's mode of being, personality and existential condition.

But as observed by Senge and others, we are mostly unaware of our mental models, i.e., the modes of thinking that govern and direct our actions.

What kind of mental models support System Intelligence? We propose that particular attention should be focused on:

- *Mental models that relate to one's self-reflective behaviour and to meta-level mental models in general:* – "Can I change my thinking"; "Is there a possibility that my thinking might be one-sided?"; "Where do I adopt the Advocate mode, as opposed to Inquiry mode?"; "What are my key forms of egoism that I legitimate and rationalize as unchangeable aspects of me?"
- *Mental models that relate to belief-formation:* – "How can I become more active a subject in the constitution of my beliefs"; "Why do I believe life is not all that miraculous, grand, exciting, full of opportunities?"

- *Mental models that relate to the subject's beliefs regarding the beliefs of others:* – "Could it be that she does not convey her meaning accurately in her actions?"; "Could it be that her way of talking hides her true aspirations"; "Could it be that I am misled by appearances?"
- *Mental models that relate to co-operative possibilities:* – "Could we succeed spectacularly together?"; "Have we reached the top?"; "What would trigger excitement in others and help us create a magical uplift?"
- *Mental models that relate to possibilities of human change:* – "Could I change at the age of 52", "Is mesmerizing love still possible as a trill after all these years"; "Is my human style fixed at the age of 40?"; "Are meetings in our company necessarily boring?"

Our beliefs reflect our experiences but are also influenced by highly idiosyncratic coincidences. Our beliefs could be something dramatically different from what they are now, had certain particular incidents not occurred. In particular, our beliefs regarding other people in our neighbourhood as well as *their* beliefs, could be different from what they are. Yet we believe, regarding our entire mental realm, that it simply mirrors the actual states of affairs.

One's beliefs might seem unchangeable and yet they can be subject to massive redefinition in an instant. You come home one day, and suddenly everything is different – because your mother has died, because you almost drove over a kid running after a football, because you have found a new love after contacting an old school mate, or perhaps because you have simply thought about the words of a familiar song with insight and sudden inspiration.

To the extent beliefs determine action, the possibility of change in beliefs amounts to a major window of opportunity of change for the individual in question. It is because of this that Systems Intelligence, as skilfulness in complex human systems environments *that always will involve beliefs,* will call for the ability to work with beliefs within oneself and in others.

Belief management and belief leadership, accordingly, will become cornerstone of Systems Intelligence. Systems Intelligent people can manage their won belief systems, the belief systems of others as well as the systems these beliefs systems together constitute, better than those low in System Intelligence.

We acknowledge three particularly critical dimensions of the Systems Intelligent belief orientation:

- Thinking (believing) about one's own thinking (and believing), and realising the opportunities therein.
- Thinking (believing) about what others are thinking (and believing), and realising the opportunities therein.
- Thinking (believing) about the interaction systems, rituals, social habits and their chains, and realising the opportunities of influencing those systems.

Thinking about Thinking

Thinking about thinking is a meta-level capability fundamental to man as a self-corrective system.

Thinking about thinking is a key to learning Systems Intelligence. This involves the following:

(1) Acknowledging that one's action and behaviours are a function of one's thinking (mental models, beliefs, assumptions, interpretations, etc.);

(2) Acknowledging that one's thinking is likely to be highly idiosyncratic, one-sided, egoistical, and a far cry from an accurate, multidimensional grasp of the bigger picture; the holistic system around self is likely to be mirrored in one's thinking only partially and possibly in a highly distorted form.

(3) In order to act more intelligently in the holistic systemic environment, I need to mirror mental models and engage in meta-level thinking regarding my own thinking, in order to change my behaviours and actions to be more in line with my true aspirations, interests and the parameters at hand, as they appear in the environment in which I operate.

(4) One's framing of the environment and its holistic, interactive systems is likely to be severely subjected by idiosyncratic limitations. Meta-level reflection on my own framing systems is thus a particularly promising path to more intelligent behaviours in the context of such systems.

It is a well-known fact of cognitive science and creativity research that re-framing is a key to new opportunities, higher productivity and to creativity at large. Thinking about thinking is about identifying one's favoured framing patters, challenging them and adjusting them accordingly. It is clear that the possibilities to re-frame the holistic, feedback-intensive structures around self, as well as their relation to self, are literally limitless. At the same time one is likely to have gotten stuck and stationed to some particular framing.

A Systems Intelligent person will acknowledge the limitations of her thinking and mental models particularly when it comes to conceiving the interactive environment, looking for fresh openings through challenging her own thinking.

Systems Intelligence begins when the person starts to re-think her thinking regarding her environment and the feedback structures and other systems structures of that environment.

We Have a Dream

Our views might be distorted regarding our environment. Our views might be distorted regarding what people are like – team members, the boss, key customers, our spouse, our aging father.

As a result, we approach a situation from an angle that might trigger negative reactions in the other people involved. Seeing the reaction, we react accordingly. A self-maintaining and self-verifying system takes over. If nothing from outside disturbs the system, it can reach a seemingly unalterable state, and all people involved believe that their picture of each others is totally accurate – in perceiving others as fundamentally negative and down-putting. "It is a little miracle I can survive in the first place in the company of such frustrated and cynical people."

You might entertain the dream of having a totally different type of people to work with, a different spouse, and different personalities in your immediate neighbourhood. How different you could be, how much more the true yourself – so generous and so caring, so attentive and so productive – if only the others would change.

But other people around you might have exactly the same thought, the same wish, the same exact dream. In fact, this is what they are likely to have.

A major motivation for the work at hand comes from the experience of Esa Saarinen from the context of his Socratic company lectures. In the course of his hundreds of lectures and seminars for all kinds of companies and organisations for over a decade, it became apparent to Saarinen

that 95% or more of all people in any organisation want the same kind of humanly relevant qualities from their everyday – qualities pertaining to human basic behaviours such as listening, humour, empathy, presence, expressing gratitude, showing respect, etc. No matter how easy it is to generate such behaviours technically, the behaviour might get generated, due to the nature of the interaction patters of their everyday. The systems people play together, the systems they form and generate, help sustain and believe unchangeable, destroys the prospects of a good life.

How can people get caught in seemingly unalterable systems that lead people to deliver behaviours almost nobody want?

They make up systems that nobody wants.

It seemed appropriate to ask, how can people get caught in seemingly unalterable systems that lead people to deliver behaviours almost nobody wants and behaviours that do not reflect their own true aspirations?

This is the key question of Systems Absurdity and Systems Dictatorship as opposed to Systems Intelligence and hope.

Seeing the Situation through the Eyes of the Other

> Systems thinking starts when a person looks at the world through the eyes of another person. (C. West Churchman 1968)

Becoming aware and exploring the views of other actors and from the outside perspective is one way to enrich one's own viewpoint. Exploring the views of others is one way to grasp features of the system in a given situation, and to understand ones own input into the system.

The following techniques are likely to be of particular use for an enhancement of Systems Intelligence:

(1) Inquiry-mode in the sense of Senge, as opposed to "advocate mode".

(2) Dialogue techniques.

(3) Listening to -techniques.

(4) Facial expressions and bodily gestures that express openness and human acceptance, rather than prompt out fear.

(5) Meta-level techniques that reinforce the subject's awareness of the interpretative nature of her images and internal representations of the people around.

Such techniques have been described in the literature intuitively and technically but notice that ultimately the question concerns the age-old human behaviours that are not technical at all. We might be able to force ourselves to see the world through the eyes of our spouse better as a result of a family therapy weekend that teaches us a "Listening to Your Lover" -technique. That escape from the current system of interaction with your spouse might be welcome but it does not change the basic fact that it is the system that counts – more so than your individual needs, aspirations and even love in your heart.

Systems Intelligence is about compassion and love that makes good pragmatic sense.

Seeing Oneself in a System

> The human experiences himself, his thoughts and feelings as something separated from the rest – a kind of optical delusion of our consciousness. (Albert Einstein, quoted in Senge 1990)

There is a difference in how people see themselves as opposed to how they see other people. We do not observe ourselves as we observe other people. We do not judge ourselves the same way as we judge others. Self-centeredness is a prominent feature of the human perceptual apparatus and of our mode of thinking.

It is this self-centeredness that Systems Intelligence tries to challenge. In Systems Intelligence

(1) The agent perceives herself as part of a system environment, breaking away from her own limited personal perspective in favour of a more holistic perspective;

(2) The agent, perceiving herself and her environment from a systems perspective, acts intelligently in that system.

As pointed out in Systems Thinking, cognitive science and philosophical literature repeatedly, our mental apparatus tends to want to decompose the observed reality into separate disjoint categories. Bipolar subject—object -distinction lurks deep in our conceptual apparatus.

In bipolar subject—object thinking, the person either perceives herself to be a subject that acts upon an external system, seeking to cause an impact, or else the environment as a subject acts upon her as an object. Notice that when an agent in a system (an employee or employer in a work-system, husband or wife in a marriage-system, parent or a child in an upbringing-system) perceives herself in these modes, her options of rational behaviour are immediately restricted.

In Systems Intelligence, the agent operates with a far vaster universe of options for possible behaviours:

(1) Me as a subject operating on an object, or on another subject treated as an object.

(2) Me as a subject reacting to having been treated as an object.

(3) Me operating in a system with the intention to change a feature of a system.

(4) Me and the others forming a system, with my perspective focused on changing a feature of the system, influencing others in the system, and creating a snowball effect through the leverage as created by the other agents in the system.

The child gets mad and throws herself on the floor. A High Systems Intelligence mother, instead of getting angry at her or trying to calm her down by pointed calm and rationality, also throws herself on the floor and pretends to act like a child in rage. The High Systems Intelligence mother is likely to stop the child from acting in rage. Her surprising behaviour changed the system.

A manager is not satisfied with a team member and tells about the problem. The team member reacts very negatively. The High Systems Intelligence manager listens to the angry team member and gives him an extra bonus salary citing as the reason the team member's clearly demonstrated commitment, but still confirms the need for a change.

A wife attacks her husband with frustrations that the day has generated. It seems like she is accusing him. The High Systems Intelligent husband, however, does not take the wife's words as personal criticism but perceives her need to let some steam out. With compassion, he adjusts to a productive role in a faith-in-life increasing system, as opposed to a cynicism-increasing system taking place with the couple next door.

Seeing oneself as part of a system is likely to involve the following aspects:

(1) The impact of one's behaviours and possible changes in interaction patterns upon the behaviours and possible interaction patterns of other agents in the system.

(2) The impact of one's behaviours and possible changes in interaction patterns upon the behaviours and possible interaction patterns of other agents in the system, as these feed back to my behaviours and possible changes in the interaction patterns.

(3) The impact of the current system on all of us, in the long run.

(4) The impact of one's behaviours and possible changes in the interaction patterns upon the behaviours and possible interaction patterns of the other agents in the system, as these feed back to my behaviours and possible changes in the interaction patterns, in the long run.

(5) The modes of adjustment that I have already adopted as a result of conformity, history, established practices and unimaginative, flat thinking.

(6) The modes of adjustment that others have already adopted as a result of their conformity, history, established practices and unimaginative, flat thinking.

(7) The desired ideal state I would like to reach with others.

(8) The dream we are likely to share.

Optimism for Change

Change starts somewhere. It might emerge from something incremental, marginal, even trivial. And yet it might amount to a huge restructuring of the fundamental aspects of the entire system – because of the leverage created by

- change in the way people perceive other agents of the system as a result of a small change in the other's behaviour
- change in the way people perceive their own possibilities of acting within the system as a result of a small change in the system
- change in the way people perceive the likely structure of the system in the longer run.

When Ms Rosa Parks refused to give her seat to a white man in a Montgomery city bus in 1955, most people had not heard of Rosa Parks, considered the bus systems a technical and routine matter, did not perceive the city of Montgomery as anything particularly significant, and considered totally uninteresting the question of a particular bus seat on a particular bus leg. But as Rosa Parks was arrested the civil rights movement had reached a tipping point (Gladwell 2000) and the marginal incident caught fire, created an avalanche that eventually reached epic proportions. Change was on the way to reshaping the entire system of race distinction in the most powerful country in the world.

"The moral, rhetorical, and political brilliance of Martin Luther King, Jr.", write Paul H. Ray and Sherry Ruth Anderson in their *The Cultural Creatives* (2000), "was his ability to expose the old frames and to reframe segregation as an *American* problem." (p. 120)

Our philosophy of change is optimistic because of the overall view we have of people's beliefs. Our conviction is that many of the core beliefs of people around us do not show up in their actions as the actions reflect the assumed nature of the current system. People have adjusted to what they believe is the system – e.g. regarding "negroes". But when the system is brought to focus, the latent beliefs might trigger a revolution, spreading like an epidemic. Given a small but

critical change in the system, deeply held aspirations might suddenly leverage, adding exponentially to the momentum. Such a chance is created by the nature of beliefs and the fact that externally we must be content with the interpretations of other people who in fact might be adjusting to systems in the way they express externally their beliefs.

Beliefs are distinctive in having a fundamentally ephemeral essence. For Systems Intelligence, this is a tremendous possibility as people's beliefs affect their actions and therefore other people.

People might hold back, each one individually, because of a system nobody endorses.

Beliefs are distinctive in having a fundamentally ephemeral essence. They can be changed dramatically, massively, instantaneously, and with incremental input. For Systems Intelligence, this is a tremendous possibility as people's beliefs affect their actions and therefore other people.

The dominating paradigms of change conceives change in terms of notions such as

- linear cause-and-effect
- hierarchy
- control
- predictability.

Systems Intelligence focuses on changes as leveraged by the dual force field of the human mental world and the systemic nature of life around us. Because the system itself can change as a result of a small intervention, constrained mainly by ephemeral beliefs, there is a possibility of enormous leverage built into the systems perspective.

Systems Intelligence acknowledges that beliefs influence actions and actions influence beliefs. But *one might be massively misguided with respect to the representations of what the others truly believe.* There might be a systematic flaw in the way a group of agents perceives the way others think and what they truly want. As a result, the possibilities of co-operation among the whole group might be severely curbed as a result of the beliefs each has of the others as participants of the currently prevailing and dominating system.

Systems Intelligence is based on a principle of dynamic humbleness, which acknowledges that my perspective of others might be drastically mistaken, particularly regarding what the true aspirations of those others might be. A relatively small change, an incremental and even trivial change in my behaviour might intervene with their beliefs regarding me, and thus trigger a chain of changes in the actual behaviours in each of us and in the system we form together.

To the extent there is a veil of ignorance in our beliefs regarding the beliefs of others in the system, there also is a possibility of a cumulative enrichment and improvement. Systems Intelligence is a philosophy of realistic optimism, based on acknowledging the possibility of such an upward-spiralling movement.

This sort of leverage thinking is often bypassed. It amounts to an articulation of some of the seemingly miraculous mechanisms of actual human life. Senge (1994) for one points out in *The Fifth Discipline* that "Small changes can produce big results – but the areas of highest leverage are often the least obvious" (p. 63). The highest leverage points might indeed be hiding because they are likely to lurk in the shadows of the beliefs systems of oneself and others plus in the subtle system of interconnections we make up together.

Without going into the details, we observe that many key successes of so-called Brief Therapy (Haley 1986) and other solution-oriented forms of therapy (Baker 2003) can be understood in terms of changes in belief systems and in terms of Systems Intelligence. Similarly, Tannen's ground-breaking work on intimate communication can be understood as identifying Systems Intelligent structures in the way a couple or families communicate, and the possibilities of positive change that such a perspective opens. (Tannen 1986 and 2001) Radical changes in business logics as a result of new technologies and similar discrepancies can also be understood in systems terms.

Changing the System

Bringing about change in a system is likely to take one of the following forms:

- Intervention or disturbance from outside (external catastrophe; major change in the market situation; the doctor's diagnosis that you have cancer, a new technology that revolutionalizes a business).
- Intervention from within the system such as: the boss surprisingly stops and suddenly listens; the husband comes home and without taking his coat off, but taking his shoes off, goes immediately to hug his wife of 20 years; the CEO of a supplier calls the customer's lower level people in order to hear it straight from the front line; Richard Branson as the head of Virgin Airline greeting people on board of a routine flight to New York).
- Internal change of a relationship such as: the supplier and its customer decide to share the same physical site for their joint actions; President Nixon visits China; husband and wife agree to listen to each other for a minimum of ten minutes each day.
- Planning ahead; scenario working.
- Communication with other agents in the system.

Optimism is a cornerstone of our change philosophy due to the fact that changes in a system are often the result of a relatively small disturbance.

Higher Order Change

In their classical work *Change*, Paul Watzlawick et al. (1974) conceptualise change in terms of a type theory. They follow the ideas of Gregory Bateson (2000) in what has become a groundbreaking work in the field of short therapy:

"To exemplify this distinction in … behavioural terms: a person having a nightmare can do many things in his dream – run, hide, fight, scream, jump off a cliff, etc. – but no change from any one of these behaviours to another would ever terminate the nightmare. *We shall henceforth refer to this kind of change as first-order change*" (Watzlawick et al. 1974, p. 10, their italics). "Waking, obviously, is no longer part of the dream, but a change to an altogether different state. *This kind of change will from now on be referred to as second-order change.*" (p. 10–11, their italics).

A first order change takes place within a type, while a second or higher order change takes place among alternatives each of which consists of lower order possibilities.

In many cases the first order change is superficial, illusory or non-effective. It might amount to not more than running away from the true problems at hand, and the necessary changes of a deeper level that in fact are called for.

Very often, an effective change will involve a change in the perspective regarding the way the problem is perceived, and with that will involve a shift of thinking that introduces possibilities of change of a higher order.

Similar distinction is helpful when conceptualising possible solutions to a problem one faces. A solution might be superficial and only temporarily hide the real problems, yet it might seem natural and advisable given the alternatives. We might fail to look for genuine, more productive solutions because they are situated in a box or category of a different type. We might fail to perceive them, because they might point to directions we are not accustomed to taking. They might seem to carry a cost in the short run and only pay off in the long run. They might seem counterintuitive or challenge some deeply held convictions of the given industry. They might involve us getting out of the box – the box of alternatives as they present themselves seemingly exhaustively right now.

For instance, if a person with a canoe tries to fight a strong current by struggling to slow down by sticking the paddle between the rocks, trying to choose the right rocks, the current is likely to defeat the paddler. The most successful way to paddle in a foaming current is to paddle faster than the river. But this might seem counterintuitive to a layman who reacts to speed already too high.

Systems Intelligence is about getting out of the reactive loop and onto the tracks of higher-order possibilities. A systems intelligent person acknowledges the fact that her perception of the system in which she operates might be distorted, one-sided or mistaken. She is constantly on the look-out for possible redefinition of her very perception of the system – for possibilities of a higher order.

Explosive Possibilities of Co-operation

A person's beliefs about co-operation are a limiting factor on her conception of, perception of and success in human interaction. They limit her Systems Intelligence.

How an individual acts with other people, approaches them and frames herself and the situation are all influenced strongly by his co-operative beliefs. The urge to make room for new forms of co-operation is a major driver of Systems Intelligence.

An illustration provided by J.T. Bergqvist, a senior executive in the Nokia Corporation, will illustrate the kind of possibilities we have in mind here.

Let us consider a project team consisting of six persons. They meet in a meeting room:

1 1 1 1 1 1.

In the meeting room they interact meaning that their individual effects multiply. Let us illustrate this phenomenon or overall impact of the interaction by multiplication:

$1 \times 1 \times 1 \times 1 \times 1 \times 1 = 1.$

In real life, however, things do not work that way, given the perceptions and beliefs that people have about one another.

Let us use a story to illustrate the case. Imagine a situation where the first person to come into the meeting is a Finnish engineer, Jaska, 50 years of age. Technically a top professional but somewhat introvert and not comfortable with spoken English. As he comes in, he is thinking about Mark, 32, an Australian engineer. Like many of these Aussies in Jaska's experience, Mark is incredibly self-

assured and articulate – he speaks his own mother tongue – a tremendous man-of-the-world who believes he knows everything. Arrogant guy, Jaska finds him, a person who never listens, particularly someone like himself who is a pretty awkward with his spoken English. Jaska is put down by this advance projection, losing some of his excitement and best energy. Some 20% of his best edge is cut off and he enters the room as 0.8.

Mark is approaching the room through another corridor, already put down by what he expects the meeting to be. These Finnish guys, such a depressive lot. They might be pretty good technically but you would expect them to be able to say something without three beers. I'm tired of sitting in the saunas all the time, in order to have a discussion, Mark thinks. I try to be a little bit provocative in order to open the discussion but usually to no avail. He loses some of his best edge, say 20%, and enters the room as 0.8.

A lady is also coming in, quite feminine, a controller, who finds it irritable that she always has to act like a "tough bird". She can do it, but she loses some of her sensibilities as a result. She is a loving mother of two fabulous children but she can never talk about her children, not with these guys that act so touch and work-achievement oriented all the time. She loses some of best energies, say 20%, and enters the room as 0.8.

A senior 54-year old market guy also shows up, a bit weary because he knows what this meeting will be like. These young hungry lions. They believe they command the world. To be sure, he himself is not quite so eager to board the next plane to HK as in the old days. But you would expect there to be some respect for experience in our company. But no. He loses some 20% of his best creativity and enters the room as 0.8.

Each enters the room as 0.8. They interact as 0.8s but interaction multiplies the effects. Thus the actual outcome is

$$0.8 \times 0.8 \times 0.8 \times 0.8 \times 0.8 \times 0.8 \times 0.8 = 0.26.$$

This is a far cry from the 1 they could have achieved as an outcome. But even more, there would have been the higher-order possibility all along for Jaska the Finnish guy, when coming to the room, to think how lucky it is that Mark could make it. That guy is so quick on his feet. A tremendous articulator. He knows that when it comes to the technical side of things, I'm pretty good. Jaska the Best he calls me. And he knows I'm not that comfortable with my English language nor with situations where you have to impress a lot of other people. It's great to have Mark by my side, Jaska thinks. He enters the room as 1.2.

How lucky I am, Mark is meanwhile thinking, to have such colleagues. Colleagues such as Jaska the Best. A bit shy, Jaska is, a bit innocent even – a tremendous guy of integrity. It feels great to be able to contribute in so many ways, not only as a professional – my articulation powers are an additional bonus here, something I never thought of when working in Australia. He approaches the room as uplifted by his projection of the immediate future, getting a boost of some 20%. He is 1.2.

Each enters the room as uplifted by the projection they have of one another. They start to interact, but interaction multiplies the effects:

$$1.2 \times 1.2 \times 1.2 \times 1.2 \times 1.2 \times 1.2 = 2.98.$$

Systems Intelligence is based on the assumption that human interaction is a system of tremendous leverage, i.e. that the possibilities avoiding 0.26 and reaching 2.98 are always there, by positioning oneself not in the 0.8 but in the 1.2 mode.

But the upscale possibility what we here represent by the 1.2 mode and 2.98 outcome most often goes unnoticed. The reasons are

- People do not see themselves as contributing agents of an interactive system but they see themselves as individual agents affected and limited by others and the interaction patterns of the environment;
- People do not see themselves as contributing agents of an interactive system which could change;
- People do not perceive the way they themselves contribute to the way the prevailing system increases scepticism and lessens the possibilities of massive positive change in other people and the system;
- People do not perceive how much they could be themselves are individuals if the system would change and encourage individual growth instead of promoting systemic down playing on the individual level.

Systems That Drive Downwards

The 1.2/2.98 mode described above is an example of an enriching system. But most human systems, and we mean this literally, work the other way, pushing people down rather than up as individuals and as group members.

How am I treated? This is a question nobody can fail to ask internally. No matter what the system, the first impression a person gets is in terms of the effects upon oneself. But

(1) People are more sensitive to ill-treatment imposed from outside upon oneself than to the ill-treatment oneself generates upon others. It is easier to become aware of small incremental misdeed others impose on me than to become aware of the small incremental misdeed I myself do upon others. As a result, most human systems generate ill-treatment upon its members, even when no intention to that effect exists among the group members.

(2) It is natural to assume that people are what they seem to be. If people seem inconsiderate, rude, nonattentive, unexcited, indifferent and frustrated, that is what they are. If your husband seems unromantic year after year, this is what you believe he is to the core.

(3) It is hard for a human being to stand out for her own ways of acting and to her own principles regarding other people, if you feel alone with those ways of acting and those principles. If it is part of the culture that people come late to meetings and do not really listen to each other, it is hard to come on time and be fully attentive week after week.

A key conviction of our Systems Intelligence Theory is that all human systems have a tendency to slide towards the negative, unless a conscious and creative effort is launched to counterbalance the tendency.

Your presentation has already begun, and no sign of the boss as yet. So typical. A couple of the sales guys seem bored. So typical. You push on, you make it decently, but you realize you are 0.8. That's the way it is around here, no option for anything better.

And next time somebody else is making a presentation, you seem fairly bored.

All human systems have a tendency to slide towards the negative, unless a conscious and creative effort is launched to counterbalance the tendency.

The mechanism being described here is the *System of Holding Back in Return*. Systems Intelligence is based on the insight that such systems prevail everywhere, and yet do not tell the whole story. In fact, an entirely different story is hiding beneath the surface – and it could be triggered out by a marginal change. This is because most people hate the prevailing system. They just adjust to it, believing it cannot be changed.

In their view, you are one of those that support the system.

The System of Holding Back in Return is remarkably easily identified by people of various ranks and files, irrespective of age or education, Saarinen has observed in the context of his lectures. Pointing it out and naming it has often triggered astonishing change in various groups of people and organisations. It is a paradigmatic archetype of the kind of a system a Systems Intelligent person tries to challenge and change.

Collapse of Systems Intelligence

There are a number of limitations for the growth of Systems Intelligence. The bugbears of systems intelligence include:

(1) *Reactionary Mindset.* Notice that the Systems of Holding Back in Return is fundamentally based on reactionary modes of thought and conduct.

(2) *Fear.* Systems Intelligence aims at growth. Fear feeds systems dictatorship and subservience to the status quo rather than creativity and co-operation.

(3) *Static State Thinking.* The world is not a collection of individual states. The world is not static. But one's mental models, modes of thinking and talking, patterns of conceptualization and of discourses might presuppose otherwise.

(4) *No-Growth Thinking.* If no growth is possible, no need to look for it from within or from surrounding systems of interaction and feedback.

(5) *Mechanic Improvement Thinking.* You might focus your efforts to generate growth to technical arrangements only, thereby losing the change for super-productivity. Most management thinking falls into this category.

(6) *Command and Control -Thinking.* If all is well already, no need to seek out fresh perspectives and avenues for growth through systemic changes in the way people interact.

(7) *Elementalism and Individualism.* Seeing people as insulated objects narrows down perception and the space for opportunities. It leaves out human processes and wholeness, and one becomes blind to the crucial parameter of the human systems.

(8) *Cynicism.* Systems Intelligence presupposes the possibility to improve life beyond the obvious. Perceiving the fundamental role interactive systems have in life, Systems Intelligence is a philosophy of optimism and faith in life, as opposed to cynicism, which assumes there is an upper limit to everything that can be done and to everything that people can become together.

Minimal Input, Maximal Output

Systems Intelligence is based on the possibility of systemic change on the basis of an input, sometimes minimal input. A key question concerns the most productive forms of a systems-enhancing input.

By a systems intervention we mean an element which when introduced to a system will generate a change in the system and in its output. Our optimism concerning the possibilities of Systems Intelligence is based on the following ideas:

(1) In most human contexts the possibility of a systems intervention is always hiding. The current system does not tell the whole story.

(2) An intervention of potentially enormous effect can be minimal in external terms. This is because ultimately what counts is the way the intervention is interpreted in the belief systems and meaning systems of the people involved. In particular, even a minimal change might symbolize something essential, leading to a change in the interpretative perspectives of the subjects involved, and triggering an effect of potentially enormous proportions.

(3) People adjust to systems instinctively. If a system is changed, people also change their behaviours. This leads to further change.

Notice first the highly illustrative case of New York's subway system in the later 1980s, or more generally what Gladwell (2000) calls the Broken Window Theory. The dramatic drop in New York's crime rates can be interpreted as having its origin in the small changes in the City's subway lines where a zero-tolerance approach was adopted about graffiti. Dirty cars were never mixed with clean cars. The idea was to send a message to the vandals that the system had changed. But it turned out that all kinds of other minor felonies also went down on clean cars. It is almost like a person entering a dirty subway car would enter a system that says, "You need not pay here, and please feel free to piss to the corner if the need arises". But a clean subway car is a different system.

Our assumption is that people read situations from a systemic point of view and interpret any given context in systemic terms. Then they adapt to the system. But obviously the system could be different from what people believe it to be.

As a result, there is a tremendous leverage built in any human context, if only people would interpret the system as having changed.

Here lie the chances of systemic intervention. An intervention is a change but any change is interpreted in the human context as a symbol. Therefore a clean subway car can become a powerful symbol of a new era.

The interpretation of an event, incident or a change as symbol in the human context is highly variable upon subjective, intuitive, interpretative, emotional etc. human factors. In the context of human change of the kind being discussed here, in most interesting cases, the logic is not "If X then Y". One needs to be sensitive, in order to grasp what needs to be done in order to produce a relevant outcome. It is sensitivity to such parameters that Systems Intelligence wants to highlight. As such parameters typically point beyond traditional engineering territory, Systems Intelligence extends the realm of engineering thinking considerably here. Indeed, we believe Systems Intelligence here identifies a vital connection of engineering thinking with human sensitivity.

We touch upon some fundamental existential themes. This is because the most forceful forms of intervention are likely to be ones that touch symbolically upon basic human aspirations, especially:

(1) A subject's sense of worth and desire to be respected;

(2) A subjects desire to feel connected to the company of others;

(3) A subjects desire to feel connected with something meaningful.

A systems intervention that touches upon a person's basic existential needs is likely to transform into a change factor through the internal system of that person. (For a good down-to-earth discussion of the existential realm, see Koestenbaum and Block 2001.)

Consider now an example used by Saarinen in his lectures.

Most Finnish men do not buy roses for their wives on normal weekdays. A *Non-rose buying system* is in place, generating behaviours and lack of rose buying. The system is invisible however, and remains unchallenged: it is not perceived to be the reason for the actions of an individual man. Yet it is the system that decides whether a given man buys roses or not – ruling out that option. The guy himself is not consulted.

The system is in place partly because the guy himself has felt neglected for a number of years. His wife never puts lipstick for him as he comes home. No sexy underwear, either. The husband reacts to what he feels is the wife's overtly pragmatic approach to each given day. But the same is true of the wife: the two are caught in a system of mutually holding back in return and also in advance. They create a system together but soon the system takes over and reality seems to be fixed to something flat and boring, everydayish and uncreative – with no possibility to change anything, because of the way "the other one is".

Suppose, however, the guy would one day come home with a rose and without making a number of it, would smuggle it into the bedroom, put the rose in an empty wine-bottle, leaving it there for the wife to find. Maybe that would be an opening…

For most men, if you have not already bought roses to your wife, it is difficult to start it all of a sudden. She might react negatively – because she might suspect you are trying to buy her somehow, or maybe she would be reminded of all the times she did not get the roses. In short, she might not take a sudden bucket of roses as a symbol of love or appreciation. Therefore the roses as a systems intervention might not lead to a positive change in the overall system because the intervention would not touch symbolically upon the wife's basic aspiration to feel respected.

In setting out an intervention that works, sensitivity and prudence is in order. But notice that this in itself is not news to engineering thinking to the extent *it wants to make things work and to fix whatever does not work.*

Systems Theory and Systems Intelligence

Finally we want to relate some of the topics described above to the technical concepts and descriptions used in engineering systems theory. We feel that some of the basic systems theoretical concepts are quite useful when describing systemic phenomena and situations of the kind we are here exploring. These will also help us understand the difficulties and challenges that systems pose to us.

In systems theory a system is defined by first identifying the system inputs, i.e. the control, intervention, decision or stimulus variables and the system output variables, i.e. the responses or reactions. There can also be exogenous inputs sometimes called disturbances. An input causes the state of the system to change. The term forcing function is also used for the input (see e.g. Luenberger 1979, Rubinstein 1986).

The outputs of a system are the variables that we observe directly. The state of a system consists of the state variables representing the elements in the system. The real system and its state representation model need not to be the same. One can have many different state representations

for a given system. An element in a system can also be a subsystem. The states possess the relevant history of the system and they together with the inputs determine the future behaviour of the system.

Elements and subsystems can be interconnected in different ways. Feedback refers to a connection from an output variable to an input variable. The role of a feedback connection is often to stabilize, i.e. regulate the state and output to given desired goal values. Negative feedback acts to decrease, i.e. to stabilize, the deviations from the goal. Depending on the system structure a strong negative feedback can also result in a too strong of a corrective response, which can result in instability. Positive feedback loops reinforce deviation and act to increase deviations and are usually destabilizing but on the other hand they produce growth.

A system is adaptive if it is able to learn and accommodate changes in its parameters by itself.

Typical dynamic elements in a system represent phenomena such as time delays, integrative accumulation or the build-up of potential.

A system is controllable if we can bring it with the available control variables from one state to any other state in a finite time. A system can have subsystems or elements which are not dependent on the controls used. This means that all changes in the system state cannot be achieved by the inputs (decisions, controls, interventions) available. In an uncontrollable system the structure can be the reason for behaviour i.e. then the structure produces behaviour.

A system is observable if one can identify the state of the system in a finite time by observing the system output under changes in the input. Systems are not necessarily identifiable unless forced or disturbed with sufficiently rich inputs.

Systems can have triggering states or controls which lead to a bifurcation path with a completely new overall behaviour. Such phenomena are called chaotic. This does not need to represent chaos in the normal sense but a sudden unforeseen essential change of mode. Systems can also be trapped in limit cycles where the behaviour oscillates back and forth around a focal point.

The above described concepts may seem technical but they are directly applicable in the characterization of Systems Intelligence. The framing of a problem corresponds to the definition of the inputs, outputs and state variables. We can have different framings for the same problem. A systems intelligent person is aware of this and willing to explore the effects of changing the frame. She also recognizes that in addition to the obvious system state variables there can be important hidden ones e.g. related to the mental dynamics of the people involved. Even if a system mainly consists of human agents the overall behaviour can be determined by the seemingly invisible non-human elements included which represent active or inactive physical entities and dynamic structures such as time delays or sequential communication patterns. An example of this is the famous Beer Game used in management training (see e.g. Senge 1990).

In most human systems and organizations the true system often includes hidden subsystems such as processes of fear or trust generation.

A systems intelligent person is able to understand these systemic phenomena. She is aware of the fact that in most human systems and organizations the true system often includes hidden subsystems such as processes of fear or trust generation. The inputs i.e. interventions available usually control both systems. The challenge is to understand how the inputs should be used to activate all the states of the system. It is very easy to forget to use nonphysical input variables.

This is reflected in the fact that the related output, such as fear or trust, of the hidden subsystems is ignored, even if it is a major driver affecting the overall system. Thus, Systems Intelligence includes the ability to take a metalevel perspective on the inputs and interventions used. The question of observability is an important one. With partial or limited outputs one cannot always understand or see the true inner dynamics. In systems thinking vocabulary this is reflected in the saying of Churchman: Systems thinking starts when a person looks at the world through the eyes of another person. By taking a new perspective we can reveal more of the system. If we do not consider, measure or observe some factors, e.g. such psychological products as trust, then we do not know whether they are produced or not. Yet, to understand the system, it can be more important to know what is not produced than what the standard product is.

A Systems Intelligent approach acknowledges and aims to identify and understand both the visible and the invisible part of the system and control their behaviour in a positive way. An unobserved process, such as fear generation, non-support generation and similar examples, left without attention in organizations can easily steer the whole organization to a bifurcation path with chaotic or collapsing behaviour. An opposite example is the buying-of-a-rose phenomenon where a seemingly minor act, a new input signal, can move the system to a radically new, positive bifurcation path. A systems intelligent person is adaptive and sensitive to changes in her behaviour and is ready to understand changes in the structures of the system and adaptively revise her behaviour in new situations.

Game Theory and Ecological Systems Intelligence

The theoretical models of co-operation are discussed in the literature on economics and game theory. We wish to point to this research, as the related concepts are also relevant in Systems Intelligence and can be very useful in understanding human behaviour. Human decision making does not follow the axioms of rationality assumed as the basis of economic theory. Human choice behaviour strongly reflects the decision environment and the process i.e. it is adaptive. Gains and losses are seen differently and often mechanistic optimizing is replaced by searching a goal (see e.g. Newell and Simon 1972, Kahneman and Tversky 2000). These phenomena are studied under the term Bounded Rationality (see e.g. Gigerenzer et al. 1999, Simon 1982, 1997). People are postulated to possess an adaptive toolbox of ecological rationality for tackling complex problem solving and decision making situations (see Gigerenzer 2000, Gigerenzer and Selten 2001). We see Systems Intelligence as one basic human capacity, a form of ecological rationality, in such an adaptive toolbox.

Game theory studies decision making behaviour in situations where two or more decision making agents are interacting. Systems, which consist of independent goal seeking agents, can be described by game settings. The overall behaviour depends on the form of agent interaction. When each agent always reacts by one-sided optimization the result is the generation of a prevailing myopic non-cooperative Nash equilibrium. It becomes the local status quo an escape from which is not possible by self-interested rationality. This is the case in the famous problematic phenomenon and paradox of game theory called Prisoner's Dilemma. In this situation the agents end up in an inferior non-co-operative equilibrium solution even if a jointly dominating solution would also be available by co-operation. This reflects the system of holding back discussed earlier in this paper. However, evolutionary processes as in biological and human systems do exhibit the spontaneous emergence of the evolution of co-operation generating superior dominating overall behaviour for all the actors (Axelrod 1984, Gintis et al. 2003). This can be interpreted as a manifestation of ecological Systems Intelligence. A system can also include a coordinator or an organizational structure which is able to introduce rules, explicit or tacit, or interaction mechanisms to induce co-operation by incentives. Such incentives which are conditional on the

actors' own behaviour can reflect organizational Systems Intelligence as they can produce stable self enforced co-operation. Human organizations and societies have done this by means of e.g. social and moral rules with sharing and positive reward mechanisms. For related literature see e.g. Simon 1980, Maynard Smith 1982, Axelrod 1984, Fiske 1993, Bateson 2000, Smith 2000, Gigerenzer and Selten 2001, Gintis et al. 2003.

Conclusion

In this paper we have indicated some fundamental characteristics of Systems Intelligence. We believe that Systems Intelligence is a key form of human behavioural intelligence. We hope to have demonstrated that this concept is useful for understanding a number of fundamental, interrelated, yet seemingly distinct phenomena. Also, we hope to have shown that the concept of Systems Intelligence is highly intuitive and that it therefore is potentially applicable for practical purposes. The other essays in this volume also demonstrate the variety of contexts where the concept is useful. We hope the present volume will stimulate further research, as well as practical applications, in fields such as education, organizational life, leadership, personal growth, counselling, cultural studies, anthropology, law, etc. The Systems Intelligence web site will provide access to our future work in this area and links to other related sites.

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CHAPTER 4

Beyond Paradoxes: Bifocal Thinking and Systems Intelligent Leadership

Jouni Kauremaa

This article discusses the inherent paradoxical nature of systems intelligent leadership. Systems intelligent leaders show a fluent ability to act as the situation calls for and exhibit bifocal thinking to transcendent seemingly oppositional positions to exploit the emergent potential. Selected paradoxical aspects of systems intelligent leadership are highlighted: acting intelligently without knowing the system completely, balancing control and emergence, and demonstrating utmost selflessness along with stern resolve. The article concludes that seeing beyond different kinds of paradoxes is at the heart of both systems intelligent thinking and leadership.

Introduction

> [G]reat leaders … are like chameleons, capable of adapting to the demands of the situation they face and the people they lead, yet they do not lose their identities in the process. … [They] remain focused on where they are going but never lose sight of where they came from. (Goffee and Jones 2005, p. 88)

Leadership is a paradoxical discipline. Some of the most outstanding leaders are signified with the ability to think in pluralist ways, to reach beyond what seems the most obvious, and to exhibit seemingly contradictory behaviour. In what has emerged as a novel opening towards conceiving human systems, the systems intelligence initiative has set out to study "intelligent behaviour in the context of complex systems involving interaction and feedback" (Hämäläinen and Saarinen 2006) with the aim to enhance the human interaction systems we are involved in daily. As leaders have as their main task to make people capable of joint performance and to guide and change human systems, systems intelligence is as such relevant for leadership. We hold that systems intelligent leadership is synonymous with good leadership by making things work better and explore in this article the paradoxical nature of this discipline.

Lewis (2000, p. 760) defines paradox as denoting "contradictory yet interrelated elements – elements that seem logical in isolation but absurd and irrational when appearing simultaneously". She notes that a paradox holds an "enlightening potential" and this can be captured by managing the paradox. According to Lewis there are three key ways of doing this:

acceptance, confrontation, and transcendence. While acceptance simply means learning to live with the paradox and confrontation making the paradox more understandable, transcendence connotes a capacity to think paradoxically. Lewis points out that to think paradoxically transcendences traditional first-order thinking or "slight alterations to the logic and behaviors … used in the past" to second-order thinking that involves "critically examining entrenched assumptions to construct a more accommodating perception of opposites". The transcendental capability, ability to think paradoxically, resembles closely the ability to see beyond simplistic symptomatic solutions (Senge 1990) that only postpone the real problem. This bifocal[1] quality, we propose in this article, is at the heart of systems intelligent leadership.

To think paradoxically transcendences traditional first-order thinking. This bifocal quality, we propose in this paper, is at the heart of systems intelligent leadership.

The structure of the article is as follows. We start by briefly reviewing the most relevant notions of the systems intelligence framework for our discussion. Next, leadership is discussed as an inherently bifocal discipline. After this, selected paradoxes of systems intelligent leadership are treated, using three renowned US military leaders during World War II (George S. Patton Jr, Dwight D. Eisenhower, and George C. Marshall) as case examples of systems intelligent leadership in action. The article ends with concluding remarks.

The Systems Intelligence Framework

Systems intelligence is defined as intelligent behaviour in the context of complex systems involving interaction and feedback (Hämäläinen and Saarinen 2006), more specifically, in the context of human interaction systems. It is a concept coined by Professor Raimo P. Hämäläinen of Helsinki University of Technology, and driven further by research initiative facilitated by Hämäläinen and Professor Esa Saarinen. The initiative could be summarized as "an effort to combine human sensitivities with engineering thinking that approaches matters with the idea of making things work" (Hämäläinen and Saarinen 2004, p. 3). The initiative has its roots most notably in the work of Peter Senge (1990) but at the same times holds that systems intelligence goes a step further in recognizing the importance of perceiving what could be better instead of what is wrong currently. Along with the definition given above, it should be noted that systems intelligence evades a definite description; Hämäläinen and Saarinen (2006) propose it to be a general capability all humans have. Therefore, to supplement the general definition, a number of elaborations of the concept have been provided. Here we refer to two works which capture some of the essentials of the systems intelligence framework, needed as an important background for this article.

Saarinen and Hämäläinen (2004) provide the so far single best complete account on the systems intelligence perspective. Some takeaways of this article for our discussion are:

- Systems intelligence is about betterment in human life by enhancing the human interaction systems.
- Systems intelligence is based on the notion that minimal input can amount to unexpectedly large outcomes when the inputs are directed at the crucial points.

In a more recent work, Hämäläinen and Saarinen (2006) emphasize, among other things, that:

[1] The succinct term "bifocal" is adopted from Deal and Peterson (1994).

- Key aspect of systems intelligence is thinking intelligently while acting.
- One has to act without complete prior knowledge of the system.

The overarching feature in these two selected accounts is the focus on improvement of human systems by conscious actions of an individual. This makes systems intelligence a relevant perspective for the art of leadership.

Leadership as an Inherently Bifocal Discipline

The basic function of leaders of an organization is to make people capable of joint performance (Drucker 2005, p. 4). Kotter (1988) holds that leadership refers to the "process of moving a group … of people in some direction through (mostly) noncoercive means" (ibid., p. 16) and that good leadership accomplishes this movement to a direction that is genuinely in the real long-term best interest of people (ibid., pp. 16–17). In doing so, the leader has according to Kotter, two main tasks: (1) to create the agenda for change and (2) to build a strong implementation network for the change. Kotter's position of leadership is synonymous to accomplishing change. But this is not a surprise; more often than not great leaders are associated with changes they have pulled through – for example societal reformers such as Gandhi and Martin Luther King, or business transformers and captains of industry such as Alfred P. Sloane (Gardner 1995). Gardner (ibid., pp. 8–9) for his part defines leaders as "persons who by word and/or personal example, markedly influence the behaviors, thoughts, and/or feelings of a significant number of their fellow human beings". Leaders, then have as their main task to influence people and set a shared goal and a vision, and in essence, to provide meaning. At the same time leaders have the responsibility of keep things up and running. Jack Welch, the legendary CEO of General Electric acknowledged this in a MIT seminar by noting that one of the paradoxes of leadership is "managing short and thinking long" (MIT 2005).

Collinson (2005) observes that typical distinction made in the leadership literature is between leaders and followers. While citing briefly a range of other "apparently opposing binaries" – such as rationality/emotion, theory/practice, quantitative/qualitative, and local/global – Collinson recognizes how on the one hand we as humans need simplifications to understand the world, but on the other hand, in complex situations black-and-white thinking leads to problems. Among these lines emerges Collinson's main thesis: a dialectical perspective can facilitate new ways of thinking about complex, shifting dynamics of leaderships. The dialectical approach "focuses on the simultaneous interdependencies and asymmetries between leaders and followers as well as their ambiguous and potentially contradictory conditions, processes and consequences" (Collinson ibid., p. 1422).

Collinson thus proposes, instead of a new dichotomy, thinking leadership as a dynamic phenomenon incorporating the various dualisms. This call is voiced also by Fairhurst (2001) who observes through study of several fields in leadership communication research how each field uses some kind of dualism and is in favour for one polar end. Fairhurst (ibid.) concludes that to understand leader—follower communication better, a systemic view – with dualistic (in our terminology bifocal) thinking that perceives "both opposing poles … important regardless of how visible or dominant either pole might be" – is needed.

Leadership, the two cultures, and the challenge of bifocal thinking

Snow (1959) put forth the famous proposition of a great divide between two cultures, the "sciences" and the "literary intellectuals". Sciences, especially physical sciences in Snow's address, are typified by rational, objectivist thinking but also admirable optimism as scientists are

"impatient to see if something can be done: and inclined to think that it can be done, until it's proven otherwise" (ibid., p. 7). Literary intellectuals, on the other hand, represent the "traditional culture", which can be interpreted more generally as the humanities. Be the division into two cultures, "technical" and "humane", if you will, an oversimplification or not, it still remains a powerful metaphor of the classic division between the objectivist and subjectivist perspectives, discussed for example in the seminal Burrell–Morgan grid (Burrell and Morgan 1979).

Now, of particular interest for the argument developed here, is Drucker's (2005) insightful remark: he regards that management[2] as a discipline stands in both of Snow's cultures. On the one hand, then, leadership, immersed heavily in action and application, and as having results as the ultimate test, is clearly a technology and thus part of the objectivist approach. However, dealing with people and his values, growth, and development, the leadership-discipline is at home also among the subjectivist perspective. Thus it seems apparent that leadership has a strong embedded dualism: the combination of technical and humane aspects of human life. Successful leadership, it then can be argued, is a result of bifocal thinking – a successful balancing act between two seemingly opposing positions, utilizing the best of the both worlds without reverting to downplaying the role of either.

Management as a discipline stands in both of Snow's cultures.

Bifocal thinking, however, is not easy, as Gardner (1995) shows. He offers a plausible description of the development of human mind in relation how we as humans learn to deal with the paradoxes of life. Gardner proposes that we pass through four phases in our development (ibid., pp. 43–45):

(1) Rigid dualism

(2) Fair to a fault

(3) Revels in relativism

(4) Personal integration

The first phase, *rigid dualism*, Gardner associates broadly with the mind of a "five year old" (note that the ages given in the model are illustrative, rather than definite). The mind of the five year old is connoted with a strict Manichean view: things are perceived as either extremely good or extremely bad. There is no understanding for the "bad view" because it is fundamentally flawed. The second phase, *fair to a fault*, is associated with the mind of a "ten year old". In this perception, the beholder has an unwavering belief in the righteousness of own view, but can to a certain extent acknowledge some aspects of the opposing viewpoint. Further in the model an "adolescent fifteen-year" old *revels in relativism*. In this phase the mind is at an extreme polar end towards "rigid dualism". The fifteen-year old perceives that every issue can be conceptualized from multiple viewpoints – no view is any better or worse than any other. Finally, at the fourth phase *personal integration* takes place. Within this view, resembling the mind of an average mature adult, there is an awareness of relativity of values; at the same time, however, the individual arrives at a single position that dominates other positions.

There are two important takeaways from Gardner's model. Firstly, Gardner notes that although he describes the four stages with illustrative age-anchors, even adults may, and indeed do, resort to other phases, most notably rigid dualism. This is according to Gardner especially true for

[2] Drucker's use of the word "management" is interpreted here in the meaning of "the collective body of those who manage or direct an enterprise" (Webster 1986).

grown ups in a field where one is not an expert. Ignorance leads easily to bipolar views and taking extreme sides. And the choice of side might well be ideology based, rather than purely rational. Secondly, we as humans tend to hold a position over others. Otherwise we become inoperative. If we just "revel in relativism" we end up in endless "on the one hand – on the other hand" pondering and get nothing ever done. This last point is extremely important for this discussion on paradoxes. It alludes on the challenges to transcend paradoxes; it takes effort to cope at the same time with seemingly contradictory positions. Bifocal thinking masters this.

The manager—leader distinction and leadership with behavioural complexity

A classic dualism in the leadership literature is the manager—leader distinction. Deal and Peterson (1994), studying paradoxes in school leadership, concretize this by stating that the paradox of good school principal is to be both a "technical engineer" and a "spiritual artist". At the same time the leader has both to manage administrative details and to depict a vision for the organization.

The distinction between leaders and managers is besides prominent, also ambiguous. Buchanan and Huczynski (1997) observe that while the terms "manager" and "leader" are closely related and overlapping, using them interchangeably would be an oversimplification. The classic distinction made between these two concepts is that while a manager is seen as an "operator", "technician", "fixer", and "problem-solver", a leader is perceived as a "visionary", "prophet", "catalyst" and "mover-shaker" (Buchanan and Huczynski ibid., p. 594). Kotter (1988) also holds in accord that management and leadership are not mutually exclusive, while on the other hand he submits that there is a clear distinction: management is, compared to leadership, more administration oriented, more tool-oriented, and a more copyable set of practices.

The classic behavioural division is made between people oriented (democratic) and task oriented (autocratic) leadership (Buchanan and Huczynski 1997, p. 598). However, the contemporary leadership theories suggest, as do Deal and Peterson (1994), that there is no one universally best leadership style, but the appropriate style depends on the context and thus effective leaders are both people and task oriented – leader needs to get the job done while at the same time maintain group relationships (Buchanan and Huczynski ibid., p. 598, p. 625).

Denison et al. (1995) call this multiplicity of behavioural schemes "behavioural complexity", defined as "the ability to exhibit contrary or opposing behaviors … while still retaining some measure of integrity, credibility, and direction" (ibid., p. 526). Denison et al. propose that good leaders fit their behaviour with the context. Collecting data from 176 executives (both from their subordinates and superiors), the authors compare how well and poor performing executives compare in terms of behavioural complexity. The outcome of their study verifies their main proposition: successful leaders show a greater variety of leadership roles than less successful ones. Thus when needed, good leaders can be both coordinators and innovators, and both mentors and directors, for example. The particular strength of the Denison et al. paper is that they subject the leadership paradox under empirical test. Behavioural complexity is, however, only one aspect of leadership paradox. As the authors themselves note, further studies would do well by examining other paradoxes, such as symbolic vs. literal dimensions of leadership.

Systems Intelligent Leadership in Action

We have so far posited that leadership as an art and practice incorporates both objectivist and subjectivist approaches, being both a technique and a humane art, and making it thus an inherently bifocal discipline. Successful leaders employ bifocal thinking and express behavioural complexity, being proficient to surpass seeming dualisms and incorporate versatile action schemes. Next we turn to case examples of successful leaders and use selected features of their leadership to discuss the more profound features of leadership paradoxes, perceived through the framework of systems intelligence. The key source used to supply case material is Edgar F. Puryear's (1981) insightful analysis of the leadership styles of several US generals during World War II. Puryear uses as his sources military memoirs and biographies of prominent people during World War II; in addition, Puryear has interviewed well over 100 people, who in Puryear's own words "comprise the 'who's who' of [US officers during] World War II". As Puryear stands as an account of its own, we refer directly to Puryear and not to his sources.

More specifically, in what ensues we examine three US generals in their most prominent World War II roles: George S. Patton Jr (1885–1945), the commander of the US Third Army from August 1944 to November 1945, his superior Dwight D. Eisenhower (1890–1969), Supreme Commander of the Allied Forces in the European war scene, and George C. Marshall (1880–1959), the US Army Chief of Staff. Eisenhower later became the 34th President of the United States, Marshall the US Secretary of State, father of the post World War II Marshall Plan for the reconstruction of Europe, and a Nobel laureate for peace[3].

General George S. Patton Jr: "Forward, [intelligent] action at any cost"

One of the more profound paradoxes of systems intelligent leadership is the fact that one should act, without knowing completely the system within which the action should occur and without the benefit of a complete solution. This being a (seeming) paradox stems from dualistic thinking that separates solution and action, presupposing the first to enable the latter. But if we were to demand complete solution before we could move an inch forward, we would be sitting put long after the window of opportunity is gone. Systems intelligent leadership sees no controversy in acting without a complete solution. The reason is the bias towards the existence of a solution, the Snowian optimism of a scientist "to think that it … can be done, until it's proven otherwise" (Snow 1959, p. 7). And while the existence of solution is certain, the complete solution as such, *ex ante*, may not be at hand.

One of the more profound paradoxes of systems intelligent leadership is the fact that one should act, without knowing completely system within which the action should occur.

George S. Patton Jr, the legendary and controversial general in the US Army during World War II, is *the* embodiment of call to action. "A good solution applied with vigor now is better than perfect solution applied ten minutes later" is only one of the many proverbs accounted to Patton (Province 1995, p. 21). To acknowledge Patton's ferocious predisposition towards action, Puryear (1981) even entitled a chapter on Patton in his book as: "Forward, action at any cost".

[3] The information in this passage on Patton, Eisenhower, and Marshall is from Wikipedia. See the list of references.

One particular instance where Patton was true to his principle was the swift change of direction of attack during the Battle of the Bulge or the Ardennes Offensive[4]. In the late 1944 the Germans made their last desperate effort to change the course of war and succeeded gaining some results, most notably surrounding US troops in the Ardennes region. Patton, operating his Third Army south from this area saw quickly the possibilities he could do with his Third Army to mitigate the situation – to move contingencies unexpectedly fast to the Ardennes. After a joint meeting with generals and acceptance by General Eisenhower, Patton executed the bold move, and to the astonishment of all, succeed to move the bulk of his army – 250 000 operationally capable troops – to the scene of action, with the first divisions attacking in only less than 48 hours after the decision to start the operation. With this move Patton showed that despite the uncertainties of war, one has to act. He saw vital to produce a response and that at this occasion helped to solve the crisis and beat off the Germans.

However, Patton's action, although produced in an exceptionally short time, was not rash. Or as Patton puts it "haste and speed are not synonymous" (Province 1995, p. 42). The point is that Patton had a strong intuition on what he was doing. He had devoted all his life to the study of military arts and owned, except for General MacArthur, the largest private collection of related literature, over 7000 volumes (Puryear 1981, p. 382). In one instance Patton compared himself as a military leader to a surgeon who in the course of operation needs to make decisions – ones based on "knowledge, experience, and training" (Puryear ibid., p. 382). The task of systems intelligent leader then becomes to act, without knowing the complete solution, but to act intelligently.

General Dwight D. Eisenhower: Balancing control and emergence

The paradox of "balancing control and emergence" has it that a leader has to both keep things in control and on the other hand delegate to subordinates. For a systems intelligent leader the paradox takes a slightly alternative meaning: as systems intelligence relies heavily on emergence, letting things develop on their own, inducing action only perhaps with slight push, the systems intelligent leader balances giving inputs and pushes while letting the system operate on its own. Military leadership at its best can be thought of demonstrating this wise balance of control and emergence. The key is that leaders on the one hand keep the ultimate responsibility themselves and at the same time employ trusted subordinates that are given all the necessary leeway to operate.

Puryear's (1981) analysis provides us with material on this balancing act, as employed by General Eisenhower. First note how Eisenhower was very careful in selecting his staff as he told them:

> You are handpicked experts in your fields. I expect you to get your jobs done without supervision. Otherwise, I made a mistake in selection. (Puryear 1981, p. 212, citing Eisenhower)

Eisenhower's principle of giving leeway to trusted subordinates is further elaborated with the expressive anecdote reported by General Alvan C. Gillem Jr. Gillem was out of his headquarters, taking a few days off after the heavy fights during the Ardennes Offensive. However, while on his short vacation, Gillem received a notification that Eisenhower had turned up on a surprise inspection visit and rushed back to the headquarters:

> … and as I arrived General Eisenhower and several staff officers emerged. I reported and stated my regrets at not being present to meet him when he arrived. He informed me, with a

[4] This account is based on Blumeson (1985).

> broad smile, that his visit was unexpected, and that, as a matter of fact, it was better to inspect a Headquarters when the Commander was away, for if it could not function under such circumstances it was not efficient. He further stated he was eminently satisfied and that he would not return, that he had obtained the viewpoint he wanted and that he regretted he must leave. He congratulated on my command and expressed his pleasure at what he had seen of the conduct of the Corps during the recent battle. We shook hands and he departed. That was the last time I heard from him or his Headquarters until the final days on the Elbe River. (Puryear 1981, pp. 226–227, citing General Gillem)

Two points should be noted. First, the principle that a well functioning system operates smoothly without its leader and the success of a leader is measured to the extent the system can cope without his direct supervision. Gillem had conceived his staff as such a system, and Eisenhower, a man supporting this principle was apt to acknowledge Gillem's competence as a systems intelligent leader. Second, Eisenhower never again returned to inspect Gillem. With the visit he obtained further corroboration that Gillem was a capable commander and the best thing to do would be not to disturb him.

But while providing leeway to his commanders, Eisenhower was strict to control critical issues himself. The decision on the specific time of the Normandy invasion in the summer of 1944 is a good case in point. Puryear (1981) cites the story of how Eisenhower finally made this decision, touching directly the lives of 2 million soldiers in the attack force and indirectly millions of people more. The particular question was whether or not to launch the main attack in the early hours of June 6th. However, the weather, perceived as playing a crucial role in the success of the operation, was not looking very promising.

> The meteorologists were brought in at once. There was the ghost of smile on the tired face of Group Captain Stagg, the tall Scot. "I think we have found a gleam of hope for you, sir," he said to General Eisenhower, and we all listened expectantly. "The mass of weather fronts coming in from the Atlantic is moving faster than we anticipated," the chief meteorologist said and he went on to promise reasonable weather for twenty-four hours. Ike's advisers then started firing rapid questions at the weather man. When they had finished asking questions there was a silence which lasted for a full five minutes while General Eisenhower sat on a sofa before the bookcase which filled the end of the room. **I never realized before the loneliness and isolation of a Commander at a time when such a momentous decision has to be taken, with full knowledge that failure or success rests on his judgment alone**. He sat there quietly, not getting up to pace with quick strides as he often does. He was tense, weighing every consideration of weather as he had been briefed to do during the dry runs since April, and weighing them with those other imponderables. Finally he looked up, and the tension was gone from his face. He said briskly, "Well, we'll go!" (Puryear 1981, pp. 357–358, citing General Walter B. Smith, emphasis added)

We thus see how Eisenhower balanced control and emergence, making the critical decisions himself, having trusted people as subordinates, and leaving them to handle the systems themselves. He supported emergence from these sub-systems to the overall system and showed accordingly an application of a systems intelligent thinking model.

General George C. Marshall: Dynamic humility

Selflessness is a key ingredient of good leadership, but is not as such enough: truly outstanding leaders combine selflessness with exceptionally bold personal perspective. This is the paradox of

"dynamic humility"[5], which, for a systems intelligent leader is no more paradoxical than seeing the both sides of the coin, or acting as the situation demands. The utmost selflessness while retaining own identity and driving own agenda is the ennobling feature of great leaders.

The paradox of dynamic humility is vividly elaborated by Collins (2001). He studied 11 good-to-great companies – companies that had sustained a shift to a higher level of cumulative stock returns over a prolonged period – and by means such as comparing them to a comparison group – 11 similar companies that had not sustained such a shift – aimed to explain the reasons for their success. Based on the extensive 5-year study, Collins concludes that the key factor is "level 5 leadership", leadership that "blends extreme personal humility with intense professional will". The level 5 leader is both "modest" and "willful", both "shy" and "fearless"; "compelling modesty" is blended with "stoic resolve to make decisions". The CEO of one the "good-to-great" companies in the study, Darwin Smith of Kimberley-Clark, Collins describes as having "lack of pretense", and "fierce, even stoic resolve towards life". In essence, the level 5 leaders have ambitions for their companies, not for themselves, and with their extreme humility they leave behind a company that will be great also without them.

George C. Marshall, who in numerous instances put the advantage of the nation before his personal one, is a fine example of dynamic humility in action[6]. Marshall was an exceptional staff officer – starting from World War I he displayed astonishing proficiency in administering war operations, resulting in his fast ascendance in ranks. However, Marshall's true aspiration was field command; he wanted to be where the action is. But Marshall never objected his superiors' opinions when time after time they assigned him to – ever more demanding – staff positions, leading eventually him becoming during World War II the highest ranking staff officer in US Army, the army Chief of Staff. One of the most startling acts of his selflessness is illustrated through the selection process of Supreme Command, the selection of the leader who would command the allied forces in Europe, with the first major task of pulling through the invasion to the continental Europe in 1944. Marshall was the prime candidate. US President of the time, F.D. Roosevelt, expressed thoughts that it would surely be the position for Marshall, besides him being the most capable one of bringing the task down, it would be for Marshall the time he could rise from relatively unknown man in the back to the limelight and claim a position as one of the great generals in history. But it was decided otherwise. After deliberation, key people in Washington, including Roosevelt, arrived at the inevitable conclusion that no one could par Marshall as a chief of staff and that the staff operations would be severely crippled with Marshall's absence. All in all: Marshall "was too important to the harmony of the Joint and Combined Chiefs organizations to be spared". It followed:

Truly outstanding leaders combine selflessness with exceptionally bold personal perspective.

> Then the President [Roosevelt] announced his decision. He told General Marshall, "I've been thinking this matter over and have decided that I will keep you as Chief of Staff and put Eisenhower in as head of Overlord [the code-name for the Normandy invasion]." Marshall accepted the President's decision **without displaying any emotion**. He discussed the meeting with McCloy [Assistant Secretary or War], right after it had taken place, and McCloy observed that Marshall **did not "seem as he were a very greatly disappointed man"**. But Stimson [Secretary of War] averred that "I think I know better. I know his deepest ambition

[5] The term was inspired by Hämäläinen and Saarinen's (2006) term "dynamic humbleness".

[6] The following account on Marshall is based on Puryear (1981).

> in his heart is [sic] and it was to command the invasion to France. It was **simply his matchless power of self-sacrifice and self-control** that **gave the other expression**. (Puryear 1981, p. 342, quotations drawn from Stimson's diary, emphasis added)

We should note two crucial aspects in this passage. First, the obvious. Marshall was the embodiment of selflessness. More than anything in the world, he would have liked to have the position of Supreme Command. However, he at the same time realized painfully clearly that he truly was indispensable in the position of Chief of Staff, and that the system would be much better off him remaining at the position. Secondly, he did this selfless act without a noise; he did not put up a scene. Nor he did he go from people to people to tell his story and let everybody know how selfless he was. No, right after the decision he had a conversation and "did not 'seem as he were a very greatly disappointed man'". With this Marshall touched the core of proficient systems intelligent leadership: holding the interest of the system as paramount. Marshall, operating with utmost humility, would only have broken the harmony by behaving in another manner.

Now, the other side of the coin, the paradox if you will. Marshall was amazingly bold in his perceptions, and he would be the least to be accused of being a yes-man towards his superiors. An example of this is given by Puryear (1981):

> One afternoon, shortly after he had become Chief of Staff, Marshall returned from a meeting in the White House and told a member of the his staff, "I probably will not be Chief of Staff tomorrow." It seems that he had just crossed the President by insisting that the heads of the aircraft industry must be made aware of the fact that the international situation was extremely serious and that they had to give first priority to the defense of the country. The uncooperative attitude of many aircraft industry executives had reached the point where something had to be done. "The President", said General Marshall, "was quite perturbed at my forthright stand." (Puryear 1981, p. 89)

Marshall was, of course, kept in his position. Puryear's opinion is that "[n]o more than Marshall himself did Roosevelt want be served by yes men". In another example, Puryear (1981) describes vividly Marshall's fierce resolve, how he had high expectations for his sub-ordinates and was apt to throw aboard those who would not live up with them.

> General Marshall was always an active thinker and it was a sore point with him that many of his fellow officers were not. He often said, "Give me an officer who can and will think for himself. Deliver me from the lazy thinker." He was patient with officers and enlisted men with limited capabilities for thinking and reasoning, but very tough on those who had ability but failed to use it. … With his talent for analyzing the capacities of his men, he could quickly recognize the "dead beat" and was equally quick in dealing with them. (Puryear 1981, p. 99)

We arrive at the conclusion that Marshall would clearly have had the capacity to object his superiors, and with his admirable persuasion skills and impenetrable argumentation that earned him his good reputation, he could have run for the position of Supreme Command. But he did not. He chose to support the system. This is systems intelligent leadership in action.

To reflect, some explanations on the rationale of dynamic humility can be found from the works of Ury (1991) and Gintis et al. (2005). Ury (ibid.) suggests an ingenious way to success in negotiations. The essence could be summarized as holding one's own interests while seeing the whole system and thus the other's point of view – an act of combined selfishness and selflessness, or as Ury puts it "letting them have *your* way" (ibid., p. 10, emphasis in original). In Ury's model the wise negotiator has clear objectives for the negotiation but at the same time is prepared to

bend. The overarching economics stems from increasing the size of the pie by having a win-win resolution by "joint problem solving" instead of ferocious pie-sharing and win-lose battles.

Gintis et al. (ibid.), on the other hand, report how people do not just maximize their own profit but behave altruistically, having sympathy for others. The authors cite numerous experiments that have shown this to be the main case in human interactions. Perhaps the most striking observation comes from the so called ultimatum game: in an experimental setting involving two people (a giver and a receiver) with the game of dividing a fixed amount of money by way of one player (the giver) proposing a distribution scheme, and the other (the receiver) either accepting the scheme, in case both have their money as per the proposed and accepted scheme, or rejecting the scheme, when both get nothing, the givers do not offer minimum possible share to the receivers, neither do the receivers accept any minimum amount proposed. People thus seem to work from certain inherent aspect of collectivism, summarized by Gintis et al. (ibid.) as the notion of strong reciprocity, or the "predisposition to cooperate with others, and to punish (at personal cost, if necessary) those who violate the norms of cooperation, even when it is implausible to expect that these costs will be recovered at a later date" (p. 8). In essence, Gintis et al. argue quite compellingly that acting in an unselfish way in fact makes sense.

To summarize, Marshall demonstrated both extreme selflessness towards the system and unwavering resolve to defend his own position – the combination termed here as dynamic humility. This systems intelligent perspective operates with a stern resolve to use personal actions to improve the surrounding systems. Marshall was fluent in combining a key dilemma within systems: seeing the system and operating from the system perspective while retaining own identity and being an active actor to enhance the system.

Concluding Remarks

This article has discussed the important role of paradoxes within the systems intelligence perspective. Rather than providing an all-encompassing taxonomy of paradoxes, we hope to have demonstrated that when examining leadership in general, and leadership with systems intelligent stance in particular, one is prone to face paradoxes but at the same time, these seeming dualisms should not overwhelm the student of systems intelligent leadership. On the contrary, the primary goal should be the transcendence of the paradoxes – that is, to incorporate fluent bifocal thinking. Systems intelligent leadership does this, along with the expression of behavioural complexity – acting as the current situation calls for, in order to make things work better.

Leadership with systems intelligence incorporates the continuous and active aspiration towards better systems.

Bifocal thinking is just a representation of one fundamental principle in the systems intelligence framework: thinking system-wise one step beyond. When an initial position is critically evaluated by thinking a bit further about the systemic consequences, one is expressing bifocal thought. The challenge becomes to sustain this skill fluently. Great leaders strive continually towards this pluralist point of view, for every seeming paradox hides a potential. While single-minded dualism is prone to prefer dogmatically one way over other, bifocal thinking opens up new possibilities and avenues for higher-order productivity within human interaction systems. Having said this, we conclude by stressing that bifocal thinking is only part of the systems intelligent framework. Leadership with systems intelligence incorporates the continuous and active aspiration towards better systems. Within this aspiration bifocal thinking is only a means to an end.

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CHAPTER 5

Superproductivity: The Future of Finland

Dr J.T. Bergqvist

The industrial future of the country has been much debated in Finland over the last months and years. Whilst it is evident that the old paradigm of manufacturing industries such as metal and textile and lately, electronics assembly, has faced the same (cost) problems as in any developed high-pay countries, no clear proposals have been presented on what would be the new strategic guidelines for the country's industrial endeavours. In this article, the notions of strategy and superproductivity games are introduced as the most potential sources of sustainable competitive advantage for the Finnish companies in the global industrial economy.

The Common Theses

In public discussion, the Finnish industrial competitiveness is repeatedly covered under such common theses as "we have a lot of good know-how in Finland", "Finland will lose to e.g. China and India significant number of industrial jobs" and "globalisation is for us a threat and an opportunity". But rarely, one sees practical discussion, let alone advice, on what should be done at the level of industrial enterprises in order to operate successfully in the global environment thus set up.

In the following, an everyday perspective to industrial company life and decision-making environment is taken to throw light on the factual essence of these claims, to combine them from a company perspective and to deduce the industrial critical success factors that have to be embraced when building competitiveness and promoting long-term welfare in Finland.

Thesis No. 1: "There is a lot of good know-how available in Finland"

What do we mean by good know-how? The claim gets different interpretations depending on whether we mean e.g. engineering knowledge, service-mindedness, handicraft, manufacturing work, marketing skills, patent and IPR (Intellectual Property Rights) know-how or consumer behaviour expertise. When contemplating these know-how disciplines, one notices that in some of them Finns have been traditionally good, in some of them only recently so, in some of them not anymore that brilliant and in some of them not yet world-class.

For the sake of argument, let us choose here as the example engineering knowledge which in one form or another is clearly one of the cornerstones in building global economical success stories. The following questions arise. Do we in Finland have the right-kind of, future-proof engineering know-how available? And, is this a necessary or even sufficient condition for the success of the Finnish industries, going forward?

The answer to the former question is all too often passed by repeating the politically correct utterance that "there is a lot of good and versatile engineering know-how available in Finland". But the real core of the above questions is what we in a small Western country are aiming at achieving with that know-how and – even more important – how Finland will be positioned in the global competition as regards the know-how relevant for the future industries. A crucial corollary question is, therefore, whether in other parts of the world there would also be "a lot of good know-how" or "less good know-how" or perhaps "more good know-how" than in Finland and, depending on the answer, what would be the consequences for the Finnish enterprises.

Mere availability of good engineering know-how does not guarantee future industrial competitiveness.

A quick look into the matter reveals that the amount of global engineering know-how is growing at record speed. America has produced already for a long time significantly higher annual number of engineers and researchers than the European Union. Now, the centre of acceleration has moved clearly to Asia that yielded last year around one million engineers, of which over 400,000 thousands in China. On top of that Asian number, there are over 200,000 new Russian entrants to this know-how market. Altogether, the number of engineers and researchers grows by over 2,000,000 each year, with disciplines varying from information and computer technology, telecommunications and electronics to mechanics, laser-optics, energy, biotechnology, space technology and nanotechnology.

As Finland can be proud of only around 7,500 new engineers yearly, or 0.4% of the global output, one simply has to face the fact that there is some rather substantial "good know-how" forming in also other parts of the world than Finland, to say the least. This comparison is true for any small country, however advanced in schooling system and sciences. The sheer numbers show that having a lot of good know-how available in the country does not constitute a sufficient global competitive factor but just a necessary foundation for building competing power. The future of the Finnish industry is not secured by proposing simply more investments in education, as there will likely be global overcapacity in many know-how fields. As a consequence, one is lead to ask whether the *know-how game* is really the game we want to play.

Thesis No. 2: "E.g. China and India will steal significant amount of jobs from Finland"

One sometimes hears desperation in tone when the overwhelming cost benefit and the resulting impact on industrial employment of rising economic superpowers like China and India are discussed. It is inevitably true that e.g. in China, the manufacturing wages and related costs are only about one sixth of the corresponding costs in Finland. With an assumed annual production fixed cost growth of 2% in Finland and 6% in China, China would reach the Finnish cost level only around year 2050. Now, this indeed means tough cost competition times ahead for the Finnish industries.

India, on the other hand, has worked hard to define itself as the new global power economy, particularly in computing services, R&D services and pharmaceutical research, in addition to

heavier industries. Today, one can estimate that the R&D salary costs and related items are 60–70% lower in India than in Finland. Extrapolating the relevant current annual salary costs growth of 3% in Finland and 8% in India, the two countries would match their competitiveness in about 25 years time. This is another not so favourable perspective for the Finnish industries.

The labour cost difference is so large that it has to be factored in when laying out Finnish industrial scenarios.

In both cases – i.e. regarding manufacturing and R&D services – the labour cost difference is so large that it has to be factored in when laying out Finnish industrial scenarios. The cost difference will not vanish anytime soon, and if it would be the only contributing factor, one would indeed have to expect a serious flight of employment opportunities from Finland to countries like China and India, as part of a permanent shift in global industrial employment power balance.

In order to prevent the cost difference impact from growing even larger, the labour cost increases in Finland must be kept moderate. Still, as there are examples of companies that seem to be able to survive and succeed in spite of the cost disadvantage, one has to ask whether this is a simple cost game, either.

Thesis No. 3: "The globalisation is both an opportunity and a threat"

The two first theses describe the phenomena of globalisation, from the know-how and labour cost points-of-view. As the labour and know-how have become uniformly measurable and comparable throughout the globe and as the economical boundaries between the states and continents have started to blur, it is no wonder that some can see the globalisation as a threat. But the globalisation has indeed clearly auspicious traits, as well.

The global communications connections have developed amazingly rapidly. Still around 15 years ago, the only practical way to communicate with the majority of the countries in the world was by sending and receiving the utmost clumsy telex messages. Now, almost all the countries have been equipped with ultramodern digital mobile telephone systems, and sizeable broadband network projects are run in all growth spots of the world, irrespective of the gross national product level in the countries is question. Internet has indeed revolutionised the notion of distance and removed the barriers for free search and distribution of information.

An ever declining investment is required to get access to an ever expanding information base and market.

Similarly, the globalisation of the markets can be easily observed. The same trade marks welcome the globetrotter in all corners of the world, be it for consumer goods or industrial goods. The goods distribution has become less expensive thanks to greatly improved transport operating efficiencies and logistics innovations. A stunning example is that the major harbour container areas have barely grown larger during the last ten years though the container traffic has increased threefold. As a remark, the Finnish crane company Konecranes has been amongst the major architects of this productivity jump.

One can obviously criticise the globalisation of the markets from the point of view of deterioration of distinctive national or tribal cultures but, otherwise, one has to point out that the world has developed at an unforeseen speed during the last 15–20 years.

The above communications and market dimensions are examples of the huge potential the globalisation represents to Finland and the countries alike. From a small country's perspective, the fact that an ever declining investment is required to get access to an ever expanding information base and market makes the globalisation industrially an indisputably propitious phenomenon.

The Obvious Connection

How would the above theses help to characterise the industrial future of Finland? What is their connection? The obvious and undeniably logical bond between the three presented theses is that because good know-how will exist everywhere in the world and because the results from good know-how can be spread all over the globe more easily and inexpensively than ever before and because the labour costs are significantly more elevated in Finland that in many growth spots of the world, the industrial future of the country cannot be built solely on "good know-how" or cost competition.

The industrial success of a country like Finland will be decided in the so-called strategy and superproductivity games.

But if we deduce that building the future is neither a pure know-how game nor a labour cost game then what game is it? To answer that, it is not sufficient to refer to constant retraining of the labour force, further intensification of university education or redirecting the broad technology interest towards the new favourite disciplines such as new materials or biotechnology.

Increasing the educational investments as well as limiting the rise of labour costs are of course absolutely indispensable for setting the ground for future industrial success but they do not change the macro equation that the industrial success of a country like Finland will be decided in the so-called strategy and superproductivity games that will be described in the following.

The Strategy and Superproductivity Games

By the strategy game one means the selections a company has to make concerning its position in the market and against the competition, its targeted value-chain position and customer orientation, earnings logic and margin structures, required competences in leadership, managerial, engineering, marketing and other fields of expertise, target setting in terms of growth and profitability and means to reach those targets. Construing from the rate at which new, sizeable industrial success stories have been emanating from Finland, this is clearly a game in which Finns have a lot to improve.

From the engineering know-how point-of-view, an essential planning dimension in the strategy game for any Finnish company is to decide which part of the product development and production manpower will be based in Finland and which part in other countries and why. It has to be noted that, if the products of a company are advanced and sustainably competitive such that the customer pricing allows a relatively high level of gross margins to be maintained, both product development and manufacturing can be located in high labour cost countries. There are a high number of American companies of various sizes in this category, and a Finnish example could be the weather measurement company Vaisala.

But if the customer prices are under heavy competition and the margins are thus average or on the low side, it may be necessary to transfer a significant part of the product development efforts and perhaps the whole manufacturing operations to lower cost countries. This basic rule is

especially true for smaller and mid-size industrial companies operating in international markets. On the other hand, if the company size is large enough, it can have major long-term research and development operations and even manufacturing resources also in Finland provided that a sufficiently large portion of the work force and cost base is in lower cost countries. Thus, the average labour cost in the company has been adjusted to be competitive. Examples of such companies are the elevator company Kone and, of course, Nokia.

Derived from this quest for the average labour cost equilibrium, a critical component of the strategy game is the size or growth target set for the company. In other words, under the globalisation circumstances, we have to create to Finland also new large enterprises in order to maintain the extensive use of Finnish industrial workforce cost-wise competitive.

The average labour cost equilibrium tells that a critical component of the strategy game is the size or growth target set for the company.

Above, the product development work was associated with manufacturing operations when contemplating the average labour cost equilibrium. Wasn't the product development supposed to be creative, unique type of work that would be the industrial saviour of countries like Finland? Certainly, there is also rare kind of product innovation skills but the main point is that, as from productivity point-of-view all product development work is not evenly matched, one has to seek for the average labour cost equilibrium also for a big part of the development work.

In Seek for Superproductivity

Continuous productivity gains are obviously necessary for any industrial enterprise when planning both revenue stream increases and advances in cost efficiencies. But whenever, through an individual or team innovation, a non-linear productivity gain is reached and a jump to a new development curve occurs, one talks about superproductivity.

As especially the Far Eastern companies have over and over again shown their supremacy in relentless gradual improvements of productivity, and given the significant differences in cost competition starting points between those companies and the Finnish enterprises, it is overwhelmingly clear that the search for superproductivity jumps is the game that the companies willing to remain competitive in Finland must concentrate on.

The innovations and planning results that change company processes, business models, value chain position or indeed products such that new sustainable competitive advantage is yielded are clearly phenomena of superproductivity. Examples of business model and value chain innovations are the new real estate agency Igglo, the furniture giant Ikea and, of course, the sporting goods marketing wizard Nike. Examples of superproductive product innovations are the original machine room-less elevator from Kone Corporation, the by-its-time unbeaten automatic break system (ABS) by Mercedes-Benz and a so simple thing as the red TrackPoint mouse button on an IBM laptop computer. Process innovations include the net working capital wonders of retailer Wal-Mart, computer company Dell and mobile handset manufacturer Nokia.

When, through an individual or team innovation, a non-linear productivity gain is reached and a jump to a new development curve occurs, one talks about Superproductivity.

A common way to protect and prolong the competitive advantage reached through superproductive innovations is to use patents. The world knows many examples such as the early photocopying machine monopoly by Xerox, the numerous patents filed and exploited by Philips and, most recently, the successful use of intellectual property rights by the American communications technology company Qualcomm. The patents are a way to protect one's superproductivity that the Finns are just about to learn to take advantage of.

Through superproductivity, it is possible to create prosperity clearly over the average labour input-output ratio and thus maintain and develop businesses successfully, even under harsh global competition conditions. But, although we can list tens of examples of industrial superproductivity achievements, it seems difficult to deduce from the examples how exactly superproductive phenomena are created in the companies. It is, therefore, necessary to study how a company works as a system constituted by people contributing to it and yielding an output superior to that of its components. Also, it is pivotal to examine how superproductivity conditions, or a superproductive atmosphere, at a company can be set up.

How to Create Superproductivity – The Company as a System of People

The people interactions within a company follow a system model at its purest. In this model, the people (subsystem) interactions can be either positive or negative. Even a small positive interaction delta in people dealings can have a greatly amplified effect on energy creation, job satisfaction and, more than apparently, on innovation capability.

A key observation is that the energy creation through human interactions follows a multiplying, not an additive formula. In a simplified model, each individual has a capability to either consume or generate mental energy or enthusiasm around him or herself. In this model, a consuming effect can be portrayed by an interaction coefficient having values below 1.0 and a generating effect by a coefficient with values above 1.0. When people with different attitudes and energy levels meet or interact, their coefficients are multiplied with each other.

E.g., a five-people brain storming session can yield a $0.8 \times 0.8 \times 0.8 \times 0.8 \times 0.8 = 0.8^5 = 0.3$ unit mental energy, evened out in the team, if negative behaviour models such as late arrival to the occasion, no listening, simultaneous e-mail checking or numerous small side meetings are prevailing. On the other hand, a similar meeting in a positive enthusiastic atmosphere can produce $1.2^5 = 2.5$ unit mental closing energy that is around ten times higher than in the previous example.

But even if one would not trust the mathematical occupational psychology models, the energy consuming or generating situations as described above repeat themselves in everyday work life, each day and each hour. When the management has recognised the possibility to generate mental energy within the company and when appropriate people skills and educational backgrounds as well as other business critical resources have been confirmed, the conditions for innovation and superproductivity have been established. Though it may be impossible to secure the success of an innovation or a creative planning process, the claim is that it is possible to create circumstances that foster and are likely to generate superproductivity. This induction mechanism has also been called systems intelligence.

Ability to create circumstances that foster and are likely to generate superproductivity is also called Systems Intelligence.

It has to be noted that a company's strategy and the search for superproductivity are inter-linked. The strategic choices such as business idea selections and risk investment decisions made in a company are related to the prevailing productivity level and projections. If the risk investments lead to superproductivity in some operational areas, it may be necessary to adjust the strategy to a more aggressive one. And, correspondingly, if no non-linear productivity jumps are achieved, the strategy may have to be redefined altogether. This reminds us of an important but sometimes surprisingly forgotten aspect of any entrepreneurial endeavour. Leading a successful company requires calculated risk-taking by its owners and management, a company never is a money-making automatic machine. And aiming at superproductivity is clearly a very healthy form of risk-taking.

Building a Superproductivity Atmosphere

The company top management and superiors at all levels that have understood the meaning of the systems intelligence take care of not only the professional training of their subordinates but also ensure explicitly that a superproductivity atmosphere be created in the company. There are certainly many ways and leadership styles to create such an atmosphere but, in the following, a number of guiding principles that have to reign at every management level is listed.

TABLE 1. The Superproductivity Atmosphere: The Leader's Catechism.

- Show example on how to live (rather than do) one's work, radiate the company values

- Keep the organisation knowledgeable about the strategy and the progress made
- Encourage people daily in their endeavours
- Celebrate even small advances in the plan

- Allow people to make mistakes and to, therefore, learn from them
- As the superior, talk about your own mistakes (and the lessons learned)
- Beg pardon if having hurt somebody, whether unintentionally or without premeditation

- Listen and give space to other people's opinions
- Show that you listen through gestures, utterances and brief comments
- Learn to love other people's (good) ideas
- Show that you foster diversity by encouraging diverging ideas

- Cut personal criticism in the absence of the person criticised, mediate quarrels
- Be pointedly fair, objective and consistent in your leadership approach

An interesting observable fact related to superproductivity conditions is the associated threshold or hysteresis phenomenon. In an organisation, there can be a number of development ideas floating around but the related productivity jump may be latent until an assembling innovation energy pulse is brought in, typically by someone new to the team(s). Similarly, a superproductive innovation can carry the organisation forward even if general mental energy level be temporarily lowered.

The Future Industrial Winners – Why the Finns Will Make It

The simple assertion is that the industrial future of Finland will have to be based on mastery of the strategy and superproductivity games. In addition, one has to guarantee top performance regarding operational and quality improvement and the resulting continuous productivity gains, thus complying fully with the rules of the know-how and labour cost games. The future industrial winners are the companies having understood deeply these premises and acting accordingly.

Different cultural backgrounds are differently suited for practicing consistently the guidelines for creating superproductivity atmosphere.

It was concluded that from a small country's perspective, an ever smaller investment is required to get access to an ever extending information base and market. This makes the opportunities big and tangible. Under the strategy game, a company must make constantly selections on market, competitive and long-term operational goals and move swiftly about decisions concerning the average labour cost equilibrium.

Outsourcing and continuous cost-optimisation shall be strived at whenever operational tasks become repeated and therefore eventually better performed by specialised service companies, with a regional or global scope. But all the other tasks within a company follow the other rule, that of unleashed superproductivity. Therefore, a relentless pursuit of superproductive innovations in key tasks of product conception, strategic marketing, customer relations management, process and people development and logistics, to name a few, is required.

Creating superproductive atmosphere is, as induced earlier, not rocket science. The required leadership skills are entirely learnable but it is clear that different cultural backgrounds are differently suited for practicing consistently the as such simple guidelines. And this is where the Finns should be at their best. Because of the rather egalitarian, fair and unprejudiced Finnish value base, adoption of superproductive atmosphere principles by Finns and by organisations run by Finns seems to happen more smoothly than in many hierarchically orientated environments.

Obviously, superproductivity has been and will be achieved in the hierarchical cultures, as well, but that happens typically through spectacular individual, top-down performance. In contrast, creating a comprehensive superproductive leadership atmosphere unleashes the mental potential of the whole people organisation. The simple claim is that a primary potential source of unique competitiveness for the Finnish industrial companies is systematic fostering of superproductive conditions and, consequently, search for superproductivity phenomena.

Finns with egalitarian and fair values platform are well positioned in unleashing the superproductivity potential of entire organizations.

About Industrial Employment

Even under superproductivity circumstances, one has to observe the possible fact that the industrial enterprises may not be able to employ all trained industrial people in Western countries. One has to remember that availability of good know-how in a country is not sufficient if operational tasks can be and therefore have to be outsourced from lower-cost environments. Thus, a modern growing company that doubles its turnover per headcount and does this through extensive use of partnering and subcontracting can increase its value-added (calculated as profits per salaries) and taxes it pays markedly but will not necessarily employ more people in its home country. The industrial companies will, therefore, very unlikely offer to Finland enough of employment opportunities, no matter how well the strategy and superproductivity games are played. Finland is, along with at least other Nordic countries, beyond the point of return on its way to a society where the services rendered to private people and families will play a major employment role. But, that is an entirely other story.

Summary

The systems intelligence view of company operations, combined with the lessons learned from know-how game, cost game and globalisation of markets, suggests that the future industrial winners are companies mastering both strategy and superproductive games. For educational institutions, this observation means that in addition to teaching technical, commercial and marketing disciplines, systematic tuition of strategic selection patterns as well as superproductivity-enabling leadership skills will have to be introduced. Helsinki University of Technology is one of the forerunners in this quest. And, overall, the Finns being eager to learn and building on a rather egalitarian and fair values platform are well positioned in front of this challenge, unleashing the superproductivity potential of entire organisations.

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CHAPTER 6

Systems Intelligent Environmental Leadership

Pentti Viluksela

As a result of increased human impact, environmental problems and challenges are becoming more and more commonplace worldwide. Many of these problems are large and complex, transcend national boundaries and involve many different stakeholder groups. New environmental leadership is needed to resolve conflicts and find acceptable and sustainable solutions to problems. Systems intelligence may contribute to not only achieving compromises in complex situations, but also to creating a powerful way of working together towards new and sustainable solutions.

Introduction

Hurricane Katrina causes destruction in New Orleans. Persistent droughts have a devastating effect on people's lives in many parts of Africa. Heavy flooding causes human suffering and material losses in East Africa, China and Central Europe. Oil spills from shipwrecked tankers or war-torn refineries pollute ecosystems. The ozone hole above Antarctica is getting larger, while the increased ground level ozone concentrations lead to health problems in industrialised cities. The shrinking ice cover around the North Pole is threatening to disturb the balance of the Atlantic currents. The list continues into the haze of smog in the horizon.

It seems that the environmental capacity of our planet is reaching its limits in many different ways. There is a consensus among the scientific community that the activities of man are the cause of a significant part of the problems. Regardless of the reasons, the environmental forces are causing human suffering, and the disadvantaged third world communities are those hardest hit. Can we do something to improve the situation?

The problems and threats facing mankind are so big that they could be assumed unsolvable. However, looking at it from a systems intelligence point of view, the problems can be regarded as challenges – big, but solvable. Minor interventions can lead to major changes in the system. By studying the systems and their dynamics, we may be able to recognise and make the necessary interventions leading to the desired changes.

To enable and facilitate the changes, we need effective environmental leadership and leaders. Up to now, too little attention has been paid to the concept of environmental leadership. To solve the environmental challenges, we need concerted action on many levels and fronts. To design, initiate

and coordinate that action, we need systems intelligent, visionary and result-oriented leadership. Gordon and Berry (2006) have defined environmental leaders as people who are capable of solving environmental problems. Thus, you and I have the potential of becoming environmental leaders, at least in our own, often small, systems. Business executives, public administrators, politicians, investors and environmental activists have the same potential of environmental leadership on a larger scale. Systems intelligence can help us all to realise that potential.

Environmental Challenges of Our Generation

What are the problems and threats faced by mankind? Jared Diamond (2006) has analysed the collapses and survivals of past societies, and claims that most collapses have been caused by environmental problems. He draws a list of the twelve most serious environmental problems facing us today; these are summarised in TABLE 1 below.

TABLE 1. The most serious environmental problems of today.
(Summarized from Diamond 2006, pp. 487–496)

Group	Problem	Notes
Destruction or loss of natural resources	Destruction of natural habitats	E.g. deforestation
	Declining sources of wild foods	E.g. over-fishing
	Diminishing of biodiversity	Extinction of species has an impact on whole ecosystems
	Damage to soil	E.g. erosion, salination
Ceilings (soft ceilings that can be extended but only with increased costs and impacts)	Ceiling of easily accessible energy resources	Extraction of oil and gas from sources deeper underground will be more expensive and cause more environmental impacts
	Limited freshwater resources	Increasing utilisation of water for irrigation and industry and the expenses of desalination
	Photosynthetic capacity	Less sunlight available for natural ecosystems as more is used or "wasted" by man
Harmful substances, species etc.	Release of toxic chemicals into the nature	E.g. pesticides
	Release of alien species	E.g. rabbits in Australia
	Emission of greenhouse gases	E.g. carbon dioxide and ozone depleting substances contribute to climate change
Population increase	Growing global population	Growing requirements for food, space, energy and water
	Increasing living standards of third world population	First world citizens use 32 times more resources and produce 32 time more waste than third world citizens

One might ask which are the most important of these problems, and concentrate on solving them. The shocking news, according to Diamond (2006, p. 498), is: all of them are crucial, – we have to solve every one of them. This statement reveals the magnitude of our challenge. We can also see that it is not only environmental and ecological issues that need to be addressed. We also need to

look at financial, social and human factors. The systems under observation must be expanded to include all these relevant areas.

To facilitate our search for solutions to these challenges, we should observe the key characteristics of environmental problems. Gordon and Berry (2006) identify six factors that make environmental challenges particularly difficult to solve:

(1) Most environmental issues have a very long time frame.

(2) They include complex interactions of natural and man-made processes, where people also play a central role.

(3) The scientific base for understanding the problems can be weak and scattered.

(4) Dealing with the complex issues requires integration and exchange of knowledge across different disciplines.

(5) The attitudes of the different stakeholder groups can be emotionally charged and confrontational.

(6) Surprises and unintended consequences are often encountered along the way.

Thus, decisions related to the environmental problems need to be made now, based on incomplete scientific data and trying to resolve the conflicting interests of many stakeholder groups. The problems themselves are complex and long-term, affect more or less every living being on Earth, and are caused by a changing combination of human activities and natural processes. Systems Intelligence can be a helpful decision-making tool, since its basic assumptions and key ideas fit the above characterisation well (Hämäläinen and Saarinen 2004, 2006). Especially promising are the factors dealing with human sensitivity – mental models, beliefs, co-operation and change.

Overcoming the Causes of Collapses

What factors enable a society to survive? Diamond (2006, pp. 421–437) proposes four main categories of factors that can drive societies towards collapse.

- A society may fail to anticipate a problem before it arises: This may be caused by lack of experience or by using false analogies.
- A society may fail to perceive a problem once it arises: The problem can be imperceptible, concealed by normal fluctuations or too slow or distant to be noticed.
- A society may fail to solve a problem after perceiving it: The decision-makers may ignore a problem affecting others but not themselves (so-called rational behaviour), consider other values – e.g. economic, religious – to be stronger than the environmental threat (so-called irrational behaviour), or the problem may be related to a common resource that is over-used (known as tragedy of the commons).
- A society may try to solve a problem but does not succeed: the problem may not be solvable with the resources available.

It seems that our present-day society is well equipped to deal with the first two categories. Environmental awareness and scientific progress have put us in a good position to anticipate and perceive forthcoming problems. In order to reach the fourth category, we have to overcome the third, which is the real challenge. This is where systems intelligence can make an impact.

Environmental issues are sometimes pushed aside by more important, often shorter-term, issues. Economic arguments have been widely used. George W. Bush, president of the U.S.A., refused to sign the Kyoto treaty, claiming "that adhering to the Kyoto treaty on climate change would have 'wrecked' the U.S. economy" (MSNBC 2005). However, according to the Natural Resources Defence Council (2005), "the White House Council of Economic Advisors concluded that the costs of implementing the Kyoto Protocol would be 'modest' – no more than a few tenths of 1 percent of gross domestic product in 2010". Another study by the Department of Energy shows that increased energy efficiency would make the US not only comply with the Kyoto Protocol but even improve its economic performance in the long run.

Another case of economic versus ecologic and social interest is the utilisation of the forests in Northern Finland. The landowner, the Finnish state, wants to make economic gains by logging and selling the wood to the paper industry. The indigenous Sámi people want to preserve the forests, since they provide food and shelter for the reindeers. Environmental organisations side with the Sámi, emphasising the role of the forest in protecting biodiversity. Systems intelligent approaches to solving these conflicts have been studied and proposed (Kyllönen et al. 2006, Siitonen and Hämäläinen 2004).

On an individual level, many people are strongly in favour of environmental protection as long as it does not affect them personally. Finnish people consider car-sharing environmentally friendly, but do not themselves want to practice it. Incineration is regarded as a good solution to treat household waste, provided that the plant is located "not in my back yard" (the so-called Nimby principle).

To achieve solutions to environmental problems, our attitudes and values need to be re-examined and changed. There are many encouraging examples of major changes, initiated by changes in values or beliefs and powered with small actions. Let us look at some cases where the mechanisms for major changes are demonstrated, and try to learn from them.

Little Interventions, Big Effects

The Nobel Peace Prize of 2004 was awarded to Wangari Maathai, environmental activist and founder of the Green Belt Movement in Kenya in 1977. Her movement responded to the problem of rural communities no longer being able to sustain themselves due to the degradation of the environment and the effect of commercial farming. The needs were expressed by women, the primary caretakers of rural families, most sensitive to environmental damage. The movement started to plant trees – a simple and attainable activity leading to quick results. Trees provide energy, shelter, food as well as income to support household needs and children's education. Trees also create employment, improve soil and prevent erosion. Through tree planting, the participating women were empowered to address their own problems and improve their lives – a revolutionary thought for people who have been led to believe that they lack the capital, knowledge and skills required to improve their lives without external assistance. (Maathai 2004)

… a revolutionary thought for people who have been led to believe that they lack the capital, knowledge and skills required to improve their lives without external assistance.

The movement not only awoke the awareness for the environment and the hidden human potential, but also discovered the strong connection between environmental responsibility, democracy and peace. The tree became a symbol for human rights and resolution of conflicts. Citizens were encouraged to overcome fear and helplessness and to defend democracy by challenging corruption, abuse of

power and mismanagement. The commitment of the civic society organisations, including the Green Belt Movement, led to a peaceful transition to a democratic government in 2002.

In 1974, Muhammad Yunus lent the sum of 27 $ to 42 poor villagers in Bangladesh. Since commercial banks considered the poor not creditworthy, Yunus established Grameen Bank (Village Bank) in 1983 to give collateral-free credits to the poor. The bank's activities have proved to be a cost effective way to fight poverty. Today the bank also accepts deposits, provides other services, and runs several development-oriented businesses including fabric, telephone and energy companies. In 2006, Yunus and Grameen Bank shared the Nobel Peace Prize (Yunus 2006). Prof. Yunus has recently been asked to enter into politics to "save the nation", and to establish a Grameen Bank in China (Ramesh 2007).

The fact that a banker and an environmental activist received the Nobel Prize for Peace – not for Economics or Biology – underlines the strong connection between the three dimensions of sustainability: economic, environmental and social. It further strengthens the idea that in order to solve environmental problems, other interconnected systems must be taken into account.

Malcolm Gladwell examines the little changes that cause big changes in his book The Tipping Point (2000). His prime example is the dramatic drop of crime rate in New York, initiated by the efficient removal of graffiti from subway cars and the police action against fare-beating. Gladwell concludes that there are three common factors behind these dramatic developments: contagious behaviour, little changes that have big effects and the epidemic speed of transformation.

The UK Government commissioned a study on the financial implications of climate change from the ex-director of the World Bank, Nicholas Stern. By putting a price tag on climate change, the Stern Report, published in 2006, broke the issue into the awareness of politicians, business leaders and the public. The main finding of the report was that if no interventions are made, the costs of climate change could reach up to 20% of GNP in the industrialised countries, but by investing in the prevention of and adaptation to the climate change, the costs would stay around 1% of GNP. However, the real costs of climate change will be measured in human lives, not money, as George Monbiot (2006) points out.

This leads to our next question: who are the leaders that initiate and support the changes, and what are the mechanisms that could lead to dramatic results?

Opportunities and Responsibilities of Change: The Systems Intelligence of the Public and Businesses

Jared Diamond describes himself as a "cautious optimist" when affirming that the problems we are facing are not insoluble. Nor do we need new technologies to solve our problems – we only need the political will to apply solutions that are already available. Based on his analysis of the collapsed and surviving societies, Diamond claims that there are two choices we have to make in order to survive. The first is long-term planning, and the second is reconsideration of our core values. Both choices also play an important role in our daily lives. (Diamond 2006)

Both the long term view and the change of values pose challenges. Businesses that aim for short-term profits often operate in a way that damages the environment and hurts people. According to Diamond, the solution is effective legislative regulation combined with an environmentally aware public. Diamond also claims that the public is ultimately responsible for allowing conditions where companies can make profit through non-sustainable activities. Thus, the public can, with

their own actions and choices or through their elected politicians, make damaging business activities either unprofitable or illegal. (Diamond 2006, p. 483–485)

The thought that we, the public, are responsible for saving the planet, is both hopeful and intimidating. The task is enormous, but it can be supported by 6 billion pairs of shoulders. There are numerous ways each of us can contribute to the change. Countless sources, e.g. the web page of Al Gore's film, An Inconvenient Truth (2006), lists many different actions that can be taken, starting from saving energy at home, buying green energy and locally produced food, choosing the right transport and promoting sustainable policies. Our different roles as consumers, parents, citizens, employees, leaders, investors and activists give us many powerful opportunities to work towards change. We could call it the *systems intelligence of the public*.

A similar approach – the *systems intelligence of business* – works through different stakeholder groups that can influence business decisions. Where consumer businesses depend on the buying behaviour of the public, business to business ventures must respond both to the regulations and to the requirements of their business networks. Pressure may be exerted from many different directions. For example, we buy a certain book, magazine or newspaper because of the content, not on environmental grounds. Thus, publishers may not face direct pressure for environmentally sustainable practices from the consumers. This emphasizes the importance of regulation and indirect pressure. A good example is the Greenpeace Book Campaign, which has enlisted bestseller authors, like J.K. Rowling, Ian Rankin, Günther Grass and Isabel Allende, who demand that their books be printed on "ancient forest friendly" paper (Greenpeace International 2007). In the US, the Food and Drug Administration demanded the meat industry to abandon practices which risked the spread of mad cow disease. The meat packers refused for five years, claiming that the rules were too expensive to be followed. When McDonald's, the owner of the "world's biggest shopping cart", made the same demand, the industry yielded. The opportunity – and the responsibility – of the environmental leaders is to identify the points in supply chains and business networks that are most sensitive to pressure (Diamond 2006, p. 484).

The thought that we, the public, are responsible for saving the planet, is both hopeful and intimidating.

Another opportunity was opened by the publication of the Stern Review (Stern 2006). By presenting the economic advantages of reducing emissions, Stern shows that financial interests often coincide with ecological benefits. Environmental activists and big businesses may, after all, have more common ground than previously assumed. If arguments of opposing sides point in the same direction, difficult decisions can suddenly become easy.

By acting intelligently within our systems, we can identify the windows of opportunity and the pressure points through which changes can be made. We must all take the role of environmental leaders, i.e. "people who are capable of solving environmental problems". When our expanding group of leaders interact within our various systems and networks, through other leaders in businesses, administration, organisations and the scientific community, we can create a strong move toward our common goal (see FIGURE 1). Leaders and their followers form a set of interdependent systems where small interventions reinforce each other and lead to change.

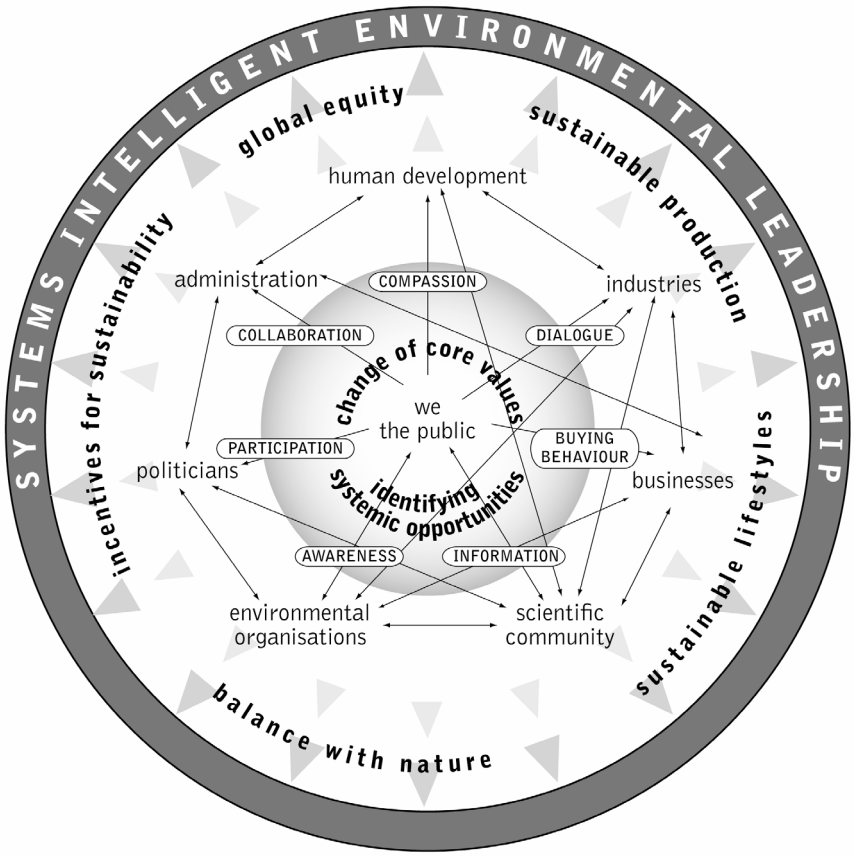

FIGURE 1. The compass of systems intelligence. By changing our values and acting intelligently within our systems and networks, the planet can be saved.

What, then, are the factors contributing to efficient leadership? What are the best ways for us and others to facilitate change?

Leadership, Values and Change

A very good example of positive change is the South African transition from apartheid to democracy. The values, beliefs and examples set by Nelson Mandela and his colleagues laid the foundation for success (see *On the Systems Intelligence of Forgiveness* by Laila Seppä (2007) in this publication). Against all odds, the heroes, released after decades of imprisonment, showed forgiveness, humility and compassion instead of hatred and revenge. The transformation was made possible because of these values and the intrinsic understanding of positive systems impacts.

The Green Belt Movement achieved momentum by challenging the basic belief that the poor cannot improve their situation without external help. The same idea is presented by James MacGregor Burns (2003, p. 215–216). Burns criticises the dichotomy of structure (organisation, company, etc.) and agency (people, actors) and remarks that structures are not giant machines but collections of people, organised in multiple systems. These systems are subject to change, and change can be initiated and controlled through human leadership. Thus, by acknowledging that systems are constructed, man-made, and can be influenced and improved by ourselves, we are empowered to initiate and achieve change.

According to Burns (2003, p. 240), great leaders may initiate change, but it is great people that achieve transformation. Burns points out that the key for the leader is to empower people, to make them adopt new beliefs and ways of thinking, grasp the opportunity in order to realise their ultimate goal, the pursuit of happiness. The result is what really matters, not the leader.

To change established business values is a major challenge. Companies are created to make profit, which is reflected in financial legislation: to intentionally reduce profit is illegal (Diamond 2006, p. 483). A Finnish industry leader compared a company to an ice hockey team, pointing out that only maximal performance is acceptable. Muhammad Yunus talks about Social Business as opposed to Profit-maximising business as an alternative (Yunus 2006). In addition, the Corporate Social Responsibility movement is gaining momentum, leading towards the recognition of a triple bottom line – social and environmental results in addition to the financial ones. Environmental leadership can supply the push towards adopting new business values.

Changing values and beliefs is always difficult. Those who have reached a certain standard of living might feel that they have to downgrade, reduce their living standard, in order to live in a more sustainable way. But changing our focus away from material wealth has a great potential for enriching our life in the social, mental and spiritual areas. Poor people, on the other hand, are more concerned about their daily bread than about environmental matters. Change agents are needed to break these systems of holding back, be it by providing collateral-free loans or by leading us to re-examine our core values. By rethinking our thinking and changing our behaviour, we can all set examples for others – and become environmental leaders.

Profile of an Environmental Leader

The leadership characteristics of systems intelligence, as presented by Hämäläinen and Saarinen (2007) in this publication, match the challenges of environmental leadership:

- *Human-centred characteristics* like the qualities attributed to Abraham Lincoln, "kindness, sensitivity, compassion, honesty, empathy" benefit a leader in building mutual trust and resolving conflicts by bringing opposing parties together.
- A *holistic and systemic approach* helps a leader to find, understand and communicate information on complex issues, taking into account the human, biological and technological dimensions.
- Working *from within* the system is essential for interacting with various stakeholders, using all available resources and utilising the opportunities provided by the dynamics of the system.
- Observing the systemic feedback and the small signals enables the leader to make intelligent decisions and *act in uncertain situations*.
- By promoting high-performance practices, a leader can *generate positive outcome*.

Typical for environmental leadership, according to Gordon and Berry (2006) is that "different people will lead at different times regardless of organizational hierarchy or structure". Thus, leaders may become followers and vice versa. This theme is strongly discussed in the book Transforming Leadership by Burns (2003). According to him, leaders and followers not only interact but also empower each other. In the beginning, leaders empower followers to address their wants and needs and to achieve self-determination and self-development. Followers, in turn, need to empower the leader to continue the path toward the common goal. Who, then, is the leader and who the follower? This dilemma which he calls the Burns Paradox, will disappear if

the leader–follower process is viewed as a system. The roles are not important, which may contradict our traditional view of a leader.

Similarly, we could ask who is the leader in deciding which goods and services are marketed to the people. Is it the industry or the businesses that lead – and decide how ecological or ethical the goods and services are – or are consumers the real leaders by deciding how to use their buying power?

Modesty and humility may be required from a leader who is willing to change places with his/her follower. Jim Collins (2001) presents humility as a key characteristic of truly great leaders. These leaders also demonstrate a strong will to strive for the shared vision of the organisation. They also try to help the next generation of leaders to reach even better results. Purpose and achievement are more important than the ego of the leader.

Who, then, is the leader and who the follower? This dilemma which he calls the Burns Paradox, will disappear if the leader–follower process is viewed as a system.

Another characteristic of a true leader, closely related to modesty and humility, is to act as you preach – this should definitely apply for environmental leaders. Mark Starik (2004) encourages all environmental leaders and managers to incorporate sustainability into their lives outside the office by utilising the countless opportunities of putting environment-friendly theories into practice. This applies to the personal and household choices, our roles in local and regional communities as well as in other non-work activities.

Military historian John Keegan (2005) analysed the leadership characteristics of four famous generals and summarised his findings as five imperatives of successful generalship. Despite the military context, Keegan's findings have a lot in common with the characteristics of systems intelligent leadership. Keegan's five imperatives can easily be applied to environmental leadership:

- *Imperative of Kinship:* The relationship between the leader and the followers, a "familiar reverence" at best, highlights the human connection in an endeavour toward common goals. This reflects common values and objectives, shared by leaders and followers.
- *Imperative of Prescription:* The skill of communicating vision and objectives is essential in defining the direction of the action – to inform, negotiate and motivate, but also to inquire and listen.
- *Imperative of Sanction:* The power to motivate, empower and reward is a requirement for initiating and sustaining the action. Empowerment is often mutual and the rewards usually immaterial.
- *Imperative of Action:* Knowing and seeing the situation and selecting and performing the optimal action is a complex process. Sometimes, leaders must take action in very uncertain circumstances.
- *Imperative of Example:* Demonstrating one's values is closely connected to the imperatives of kinship and sanction, and may be the first measurement of the leader's worth.

Are these leadership characteristics universal? Can they be applied to any leadership context? And which are the contexts which we could use as models or examples for successful, systems intelligent environmental leadership?

Freedom Leaders

Burns (2003) recalls the failure of the top-down approach of the Indian government in the 1960s and 1970s in introducing family planning to the rural population. Government policies were based on population statistics and western ideas, and failed to take into account the realities and values of the systems of everyday life. In contrast, the ground-up approach of the small Village Health Workers programme achieved dramatic results that even exceeded the goal – the drop of the birth-rate – and spilled over into other areas of activity. The programme, initiated by two Indian doctors, operated in rural villages by involving the villagers and mobilising and training local leaders.

Today, we can read about many similar success stories; cases, where good results have been achieved by ground-up action. Smith and Simington present the case of URDT, Uganda Rural Development and Training Program (Senge et al. 2006). URDT is created and led by Ugandans, and builds on organisational learning principles applied in a village context. The villagers do not receive handouts, but are trained to assess their own situation, build a vision for the village and take action to realise that vision. The action often starts with basic health care and sanitation, and continues to a variety of activities including credits, farming, education and conflict resolution.

Epstein and Kim (2007)[1] report on the successes of the microfinance programme called IMAGE (Intervention with Microfinance for AIDS and Gender Equity) in South Africa. The achievements of the Nobel laureates Wangari Maathai (2004) and Muhammad Yunus (2006) are based on the same principles and practices. In all of these cases, changes are initiated by individuals who have the skills, energy, and determination to provide leadership based on local circumstances and the wants and needs of the people. Burns (2003) calls these kinds of individuals *freedom leaders*, and draws up a plan to employ thousands of them to fight poverty all over the world.

According to Burns, freedom leaders would work towards the values and standards laid out in the Universal Declaration of Human Rights. They would achieve results by changing beliefs and opening new possibilities and opportunities. The partnership of leaders and followers involve listening, mentoring, training, doing together and elevating people to their highest potential. Local leaders would be enlisted to carry on the work, and the collective effort "unites them into a transforming force that may surpass the causal role of the original leadership. In this way people make change and eventually make history." (Burns 2003, p. 240.)

This description of freedom leaders and how they would operate is an excellent model for systems intelligent leadership, and directly applicable to our quest for saving the planet. Freedom leaders are not only needed to fight poverty in developing countries. They could play other important roles in other places, too. They could operate in businesses, environmental organisations, political parties, families; as managers, employees, civil servants, grassroots activists, consumers, engineers, students and teachers. Everyone is needed, all can contribute – we can learn from the third world examples above.

Conclusion

The key ideas of systems intelligence provide renewable energy to environmental leadership. By acting intelligently within and through our systems and networks, cultivating positive outputs and discovering our hidden potential, new visions and solutions to the complex problems can

[1] See also the article of Hämäläinen and Saarinen (2007) in this volume.

emerge. Human sensitivity and values enable us to interact with people who form these systems, to build trust, resolve conflicts and create common visions. A collective push for action on many different fronts can lead to desired snowball effects.

But it is not only environmental leadership that benefits from systems intelligence. Most big problems facing us today share many of the characteristics of environmental problems: complex, confrontational settings, uncertain basis for decision-making, long timeframe, unexpected developments. Systems intelligent leadership can be applied to all human activities.

There are many examples of dramatic changes with small and gradual interventions: India got her independence without a major war. The Berlin wall fell without bloodshed. South Africa managed to transform from apartheid into democracy peacefully. There are also many examples where attempted changes have not taken place despite forceful and sustained efforts using almost unlimited resources. Why?

It seems that successful changes take place – and successful leaders operate – from within the prevailing systems, utilising the values, dynamics and feedback connections of the systems to achieve sometimes gradual, sometimes rapid changes with relatively little effort. The agents behind these successful changes may be charismatic leaders like Nelson Mandela or committed civil servants or activists unknown to the public. In the big failures, on the other hand, the attempt for change is based on exerting pressure and sometimes brute force from outside the system, not taking into account the forces and interconnections within the system. These attempts may often be based on confrontational, dualistic and exclusive approach: good against evil, with us or against us, wise donors helping the ignorant disadvantaged. This strategy is unsuccessful. Even seemingly weak systems have proved to be incredibly resilient against external forces or the best of intentions.

In our mission to save the planet, we cannot afford to fail. Therefore, we must take a co-operative, inclusive and systemic approach. We, as individuals and parts of our respective and interdependent systems, are responsible for the success of this mission. We must start by re-examining our own values, beliefs and attitudes, and by learning from the good examples emerging all over the world. Systems intelligence provides us an excellent framework for the mission.

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CHAPTER 7

Emotional Energy, Humility and Systems Intelligence in Leadership

Jari Kiirla

Emotional energy (feeling of confidence, elation, strength, enthusiasm, and initiative) has an effect on all our activities. In leadership the dimension of emotional energy is essential. To utilize the possibilities that emotional energy opens up fruitfully the leader needs humility. Humility has been acknowledged as vital strength of leadership excellence. I suggest that Systems intelligence takes that insight one step further. By giving better understanding of systems we are in, uncovering the excellent actions and the significance of the context the Systems Intelligence opens up fruitful way to improve the systems we are in.

Introduction

Think about your feelings: have you felt today enthusiasm, elation or excitement? How about yesterday? Could things be different? Is enthusiasm possible? Is it possible in the workplace? It is amazing how easily the day can be filled with standard activities and lukewarm feelings that accompany them. Our interactions in the workplace are often emotionally controlled and goal-oriented. The spark of life can get lost. However, every interaction includes possibilities.

When did your colleague, workmate, subordinate or superior feel enthusiasm, elation or excitement? Have you contributed to someone's enthusiasm? We are easily trapped in our own subjective worlds and see others as objects. Our perspective inhibits us from seeing what is really significant and what is not. Humility is a great contributor to correcting that perspective.

Do you want the enthusiasm, elation and excitement in your workplace? Are you trapped into the systems which overrule your noble ambitions? This easily happens in our holding-back-systems, Hämäläinen and Saarinen (2006, p. 24) have emphasized. Systems intelligence seeks to highlight the problem and offers the tools for change.

This essay deals with all these important factors – emotional energy, humility and systems intelligence – from the leadership point of view. The aim is to look at emotional energy and humility in leadership and show how systems intelligence can vitally contribute when added in this context.

Emotional Energy

Randall Collins defines emotional energy (EE) in an individual as "a feeling of confidence, elation, strength, enthusiasm, and initiative in taking action" (Collins 2004, p. 49). He also says that emotional energy is a long lasting, strong, steady emotion. It correlates with the character strength of vitality as defined by Peterson and Seligman (2004, p. 274). "At the psychological level, vitality reflects experiences of volition, effectance, and integration of the self at both intrapersonal and interpersonal levels". They see vitality as a positive emotional state which is active.

Collins shows that emotional energy is one outcome of a successful interaction ritual. The interaction ritual he defines as:

> "[R]itual is mechanism of mutually focused emotion and attention producing a momentarily shared reality, which thereby generates solidarity and symbols of group membership." (Collins 2004, p. 7)

In the centre of the interaction ritual is the common object, action or event. During the interaction ritual the common focus may change. Collins lists the following ingredients of the interaction ritual:

- Group assembly: "Two or more people are physically assembled in the same place, so that they affect each other by their bodily presence, whether it is in the foreground of their conscious attention or not." (Collins 2004, p. 48)
- Barriers to outsiders: "There are boundaries to outsiders so that participants have a sense of who is taking part and who is excluded." (ibid., p. 48)
- Mutual focus of attention: "People focus their attention upon a common object or activity, and by communicating this focus to each other become mutually aware of each other's focus of attention" (ibid., p. 48)
- Shared mood: "They share common mood or emotional experience." (ibid., p. 48)

The successful interaction ritual has the following outcomes:

- Group solidarity: Participants have a feeling of membership. This membership builds on the theme of interaction rituals where it is created. How much members appreciate the membership depends on the emotional energy which they get in the interaction rituals.
- Emotional energy in individual: "A feeling of confidence, elation, strength, enthusiasm, and initiative in taking action" (Collins 2004, p. 49).
- Symbols that represent the group (sacred objects): Visual icons, words and gestures can be the symbols which represent the group to its members and are pumped up with feelings of group solidarity.
- Standards for morality: Respecting group's symbols and protecting them from violation.

In unsuccessful interaction rituals, according to Collins, "there is low level of collective effervescence, the lack of momentary buzz, no shared entertainment at all or disappointingly little." (2004, p. 51). As an outcome the group solidarity is lacking, the individuals' emotional energy has decreased and the solidarity for the group's symbols is missing.

Interaction rituals constitute a chain. "Interaction rituals are connected in chains over time, with the result of the last interaction (in emotions and symbols) becoming input for the next interaction; thus EE tends to cumulate (either positively or negatively) over time." (Collins 2004, p. 118) However, Collins also points out that emotional energy is specific to particular kind of

situations or themes. It is possible to have low emotional energy at work but have high emotional energy in some hobby.

Power rituals as Collins describes them, operate in the micro-interactional level and power relations of agents are obviously relevant. Suppose somebody (or several persons) dominates the other in an interaction ritual. The dominant person's emotional energy might well increase in the interaction while the ones who have been dominated might suffer from emotional energy decrease; the bigger the power difference the bigger the emotional energy difference.

Status rituals as Collins defines them do not mean a hierarchical difference but sense of belonging or not belonging; in the micro-level inclusion or exclusion. He lists four different ways how individuals can differ in they status group participation. First one (micro-level) he calls ritual intensity which defines how much emotional energy is generated in the ritual. Second one (micro-level) he calls central/peripheral participation which defines the individual position in the interaction ritual. Third one (meso-level) he calls social density which defines how much time people are in each other's physical presence. Fourth one (meso-level) he calls social diversity (also called localism/cosmopolitanism) which he defines as the diversity of the group in the interaction ritual.

Emotional Energy and Leadership

According to Collins the emotional energy has an effect on our decision making process. "[I]ndividual behavior is motivated immediately and directly by EE-seeking; indirectly and implicitly individuals are driven to produce material goods, to just the degree that these resources are demanded by their favorite rituals" (Collins 2004, p. 173). Collins also presents the following formula.

$$\max\left\{\frac{benefits\ (\mathrm{EE})}{costs\ (\mathrm{EE}+\mathrm{material})}\right\}$$

This leads to the outcome that individuals are seeking interaction rituals which produce maximum EE and avoiding interaction rituals which do not increase EE or decreases it. If the work itself is not able to produce EE, the production of the material resources needed for the favoured EE-rich activities becomes the motivation for the work.

The organization hierarchy creates power and status difference. I would say that this difference creates emotional energy to leaders by its nature. This makes them more enterprising and loyal to the company. How leaders use the power and status difference offered for them effects to emotional energy of workers. Today, it is important to work efficiently in all levels of organization. Thus the emotional energy of workers should be taken into account in leadership.

Ghoshal (2005) reflects on negative and positive assumptions about people and how these affect management practices taken in use. These assumptions behind the theories in the science of sociology are self-fulfilling like Gergen (1973) points out. The emotional energy that workers shall get in the work place is closely related to leadership and the assumptions about the people that leaders have. Next we shall look at two different kinds of assumptions behind the leadership and how they affect emotional energy in the workers.

First assumption is that an individual is a *homo economicus*[1]. Ghoshal (2005) uncovers that this leads to pessimistic assumptions about the individuals and institutions. Individuals are seen to maximize their own benefit. This makes the leader to believe that the workers are just seeking a maximum salary with a minimum input. The obvious conclusion is that the motivation comes first and foremost from the material benefits (salary, bonuses and other material benefits). By connecting this to what Collins has said, it seems that workers are trying to maximize the emotional energy they will get from free time activities by maximizing the material benefits they can get from the work.

The other way to maximize the emotional energy is to maximize it in the work place. If it happens based on this homo economicus assumption I would say that it leads to seeking emotional energy via organizational status and power. This status and power difference compared to workers can even be a motivator because of the emotional energy it creates. In this case the power difference and status is not hidden but kept present in interactions. This kind of leader decreases emotional energy of the workers while increasing his own. From the company point of view this does not lead to optimum performance as workers emotional energy is decreased. If the leader also sees subordinates maximizing their own benefit with minimum input, the leadership style involves tight control, strict objectives and payment by measured results. As can be seen, this "ideology-based gloomy vision" like Ghoshal calls it, leads to the system of mutually holding back. "Holding back is a key form of human interaction. System of holding back traps us from everywhere … Such systems trivialize reciprocity, decrease vitality, and depress human life." (Hämäläinen and Saarinen 2006, p. 24)

Alternative assumption is what Hämäläinen and Saarinen (2006, p. 23) call basic human aspirations:

(1) A person's sense of worth and desire to be respected

(2) A person's desire to feel connected in the company of others

(3) A person's desire to feel connected with something meaningful

This leads to optimistic assumptions about individuals. If these basic human aspirations are valued in the workplace, the individuals can develop reciprocal relations in the company. It can be fairly claimed that these basic human aspirations mentioned correlate positively with emotional energy. If the workplace resonates with these basic human aspirations, it produces successful interaction rituals which produce emotional energy to individuals and group solidarity. This moves the main motivation from material benefits to interactions with the group and to daily activities. The result is that workplace as a system is now increasing the emotional energy of the individual. This makes the individual more vital, gives a feeling of confidence, and makes people take initiative. This correlates with productivity.

"Positive emotions, positive energy, and positive human connections lead, in other words to mutually reinforcing upward spirals of meaningful experience and extraordinary performance." (Cameron et al. 2003, p. 364) The basic assumptions used in the systems intelligence seem to be powerful when maximizing emotional energy in the company. Systems intelligent leadership opens up a practical way to do it. This increases productivity to a new level.

[1] Wikipedia: Homo economicus, or Economic man, is the concept in some economic theories of man (that is, a human) as a rational and "self-interested" actor.

Humility and Leadership

Giving up old assumptions about the individuals and the immediate need to increase one's own emotional energy is a challenge. It requires new perspective; ability to see things from the system level. When one is able to see himself as one actor in the system he is more capable to see other actors correctly. To see them as individuals who has previously mentioned basic human aspirations. This new perspective is closely related to virtue called humility.

Another problem emerges when one objectifies others. That easily leads one to one-sided conclusions and may even hide the humanity in others. After that the immediate touch is lost. The sensibility is gone. Humility gives the essential perspective needed to avoid the objectifying bias.

The essence of humility is the willingness to see oneself accurately, to feel no pressure to see oneself better than one actually is.

Humility is in a way the most hidden virtue because the one who boasts with humility proves that he does not have that virtue (Comte-Sponville 1995). Still I think we can easily sense humility and especially the lack of it. As Collins (2004, p. 54) says we monitor each other's actions when we are in the same room. The leader is likely to be monitored even more intensively. The microbehaviour is something that we cannot easily control. Real humility (or the lack of it) in the leader is visible in the micro-level behaviour. Minor details can well communicate the real attitude of the leader: e.g. going before someone in an elevator queue. If the leader's actions are not in line with his spoken words, problems are in the offing. Very often actions speak more than words.

Tangney (2002, p. 413) lists some key features in humility:

- An accurate assessment of one's abilities and achievements (not low self-esteem, self-deprecation).
- An ability to acknowledge one's mistakes, imperfections, gaps in knowledge, and limitations (often vis-à-vis a "high power").
- Openness to new ideas, contradictory information, and advice.
- Keeping one's abilities and accomplishments – one's place in the world – in perspective (e.g., seeing oneself as just one person in the larger scheme of things).
- A relatively low self-focus, a "forgetting of the self," while recognizing that one is but part of the larger universe.
- An appreciation of the value of all things, as well as the many different ways that people and things can contribute to our word.

Peterson and Seligman (2004) emphasize that humiliation does not create humility. Negative views of self i.e. shame, embarrassment and disgust with the self usually create a need to over-emphasize oneself and this decreases humility. In opposite to this "humble individuals have quite positive opinions of themselves if they base their sense of worth on their intrinsic value, their good qualities, a sense of compassion toward the self, their connections with other people, or their alignment with higher power", Peterson and Seligman (2004, p. 23) emphasize. The essence of humility is the willingness to see oneself accurately, to feel no pressure to see oneself as any better than one actually is. When one sees his strengths and weaknesses accurately, he is able to improve himself efficiently.

In his well known paper, Jim Collins (2001) argues that in order for a company to become great it needs a level 5 leader. A level 5 leader differs from merely good leaders by having a fierce resolve and humility. He channels ambition into the company and not to himself. He does not bring himself up in the time of success but gives credit to others and external factors. When things are not running smoothly he does not blame others or external factors but looks where he might have failed and what he could do better. He is never boastful but instead demonstrates compelling modesty. He motivates through inspired standards and not through inspired charisma.

How to develop humility? At first glance it seems that there is not much you can do. Humility seems to be something that you have or do not have. Indeed, Peterson and Seligman (2004) and Collins (2005) say that it is still unclear how humility can be developed. However, Peterson and Seligman (2004) give some ideas which may promote humility development.

- Sense of security. This seems to be connected to basic assumptions of the individuals and I would call it emotional platform for humility.
- Close relationships. They make life deeper. Peterson and Seligman connect this to a character strength called perspective.
- New perspective. This is the change from self-focus to system-focus. Others are no more objects but subjects in this same system. It can be compared to a change from geocentric thinking to heliocentric thinking.

Systems Intelligence and Understanding the System

"By systems intelligence we mean intelligent behaviour in the context of complex systems involving interaction and feedback." (Hämäläinen and Saarinen 2004, p. 1) Systems we are involved in are like this by nature. "We have to act without knowing for certain what our choices will bring." (Hämäläinen and Saarinen 2006, p. 1) Systems intelligence is acting intelligently in these systems.

To be able to act intelligently one needs to understand the ongoing system as well as possible. For this reason handling two or more different and even opposing perspectives simultaneously is important. Especially important are two perspectives based on insider's (subjective) view on the system, as opposed to an outsider's (objective) view.

Insider's view to the system

"[O]ne needs to be sensitive, situation-conscious, emotionally alert, sufficiently distanced, and sufficiently connected; one needs to be fine-tuned to the nonrational undercurrents in the context in order to make things work and in order to flourish." (Hämäläinen and Saarinen 2006, p. 23) In systems intelligence being correctly tuned and sensitive is important. It enables one to recognize the weak signals that are undercurrent but important in the interaction.

The system tunes the individuals and individuals tune the system.

The system tunes the individuals and individuals tune the system. Stacey (2001) claims that we resonate bodily. Collins (2004, p. 75) talks about the microbehaviour and says that according to several studies speakers and listeners start to time bodily movements to the rhythm of the words been spoken. Whatever the exact mechanism of tuning is, it seems to happen at least in emotions and in the mental state. This tuning enables us to get more accurate view of another person's thoughts, feelings and intentions. Goleman (2006, pp. 88–90) sees this as one factor of social intelligence and calls it empathic accuracy.

If we look at the system from the outside objectively, this tuning does not happen. In an objective study we lose this component. In his power lab studies Barry Oshry (1999) has taken an outsider's and an insider's view to the system. He gives the following advice when one is inside the system. "Let your systems wash over you. Attend to your feelings. Use these feelings as clues to the condition of your systems and your relationship to them, and as cues to what action you need to take." (Oshry 1999, p. 187)

An insider's view requires tuning to the system by feeling and sensing the system; being a subject in the system. Feelings and thoughts that emerge to consciousness can be the trigger to take an outsider's view to the system.

Outsider's view to the system

We need to be connected enough to have emphatic accuracy. However, if we are too connected, we lose control to the system. We are not able to see the ongoing system. While being connected to the system one needs to be distanced enough to see the system also from a wider perspective. What does the ongoing system look like when you look at it from the outside?

While being connected to the system one needs to be distanced enough to see the system also from a wider perspective.

An outsider's view is detaching oneself from the system emotionally and mentally. It is challenging to do it on the fly. Emotions and mental tuning bind you to ongoing system. What you can do is to try to see yourself from outside as an agent in the ongoing system. The humility contributes well for unbinding yourself emotionally and mentally from ongoing system to be able to see it from new perspective. For humble individual the ongoing system is not defining his worthiness.

The outsider's view makes one capable of recognizing the "System Story" as Oshry calls it. "[T]he ability to recognize the System Story as it is happening, step out of the story, and create a new story." (Oshry 1999, p. 94) However, the insider's view gives some essential information of the system so that one is able to understand it more deeply than just having an outsider's view.

Systems Intelligence and Leadership

An individual's emotional energy is important from the company point of view. It enables him to work initiatively using the competence he has. It is also important that everyday work increases the individual's emotional energy. It motivates him to work. Humility in leadership is an important factor when creating a work environment where emotional energy is generated to individuals. It redirects the focus from what is best for me to what is best for the whole system. It is still possible that the system overrules our good intentions and the best for the system is not reached. Systems intelligence recognizes the influence of the system on the individuals and the overruling possibility it holds. It also makes visible the intelligent practices which can change the overruling system better to the individuals. Systems intelligent leadership is leadership which puts this intelligence into the practice.

Systems intelligence and emotional energy

In systems intelligence the interaction rituals are seen as a systems. These systems have some common characteristics but every system also has its own unique characteristics. To understand these common and unique characteristics of the systems one needs to be sensitive to the system and also see it in a wider perspective: to have an insider's and outsider's view. The emotional energy in an individual can be seen as an output from the system. The characteristics of the

system define how much emotional energy is generated to the individual. A systems intelligence leader recognizes the characteristics of the system and improves them. The result is that more emotional energy is generated to individuals.

For a systems intelligent leader the initial setting for interaction is "respect the other".

A systems intelligent leader is careful about his assumptions concerning others. He recognizes that it is easy to make conclusions about others according to their behaviour. Still the behaviour is dependent on the system. A systems intelligent leader keeps in mind the human basic aspirations and acts according to them. For him the initial setting for interaction is "respect the other". By this initial setting the interaction system gets better tuning from the beginning. It affects the shared mood that the system generates. This enables a deeper encounter. In the most optimal case it can be a "shared flow" as Nakamura and Csikszentmihalyi (2002) call it.

Systems intelligence and humility

To be able to improve systems, the systems intelligent leader needs humility. Systems intelligent actions are often not so visible. Like humility they are hidden but work efficiently. Everybody feels that the system works better but often participants are not able to name the reason; someone or some actions that somebody has taken. In many cases the systems intelligent leader does not get applause for the systems intelligent actions he has taken. The reason is that all the agents in the system can act better but the trigger which changed the system is not visible. The systems intelligent leader just triggers the change in the system.

As can be seen one needs a perspective to be able to step aside and let others flourish. This perspective comes from a systemic view. Tutu (1999) brings up a broad view where the systemic connections between individuals are realized with the term *Ubuntu*. It is a central part of South African world view. It means that we are connected to each other. My humanity is connected to you and intertwines with your humanity.

To be able to have a neutral view of the system one often needs humility: the ability to acknowledge one's own contributions and mistakes, to be able to see what the system really is and still feel worthwhile. This base-feeling of worthiness maintains the systems intelligent leader's capability to act. The ability to see the system correctly makes him able to act intelligently.

Beliefs and belief leadership

"Belief management and belief leadership, accordingly, will become cornerstone of systems intelligence." (Hämäläinen and Saarinen 2004, p. 10) Here lies the emergent possibility which systems intelligence utilizes. Hämäläinen and Saarinen (2004, p. 10) list three critical dimensions of the systems intelligent belief orientation:

- Thinking (believing) about one's own thinking (and believing), and realizing the opportunities therein.
- Thinking (believing) about what others are thinking (and believing), and realizing the opportunities therein.
- Thinking (believing) about the interaction systems, rituals, social habits and their chains, and realizing the opportunities of influencing those systems.

The quality of one's thinking and believing of others is crucial and contributes much to the shared mood. One's own thinking about others is visible in one's microbehaviour. The others can see the

microbehaviour and sense one's beliefs about them. It seems that they more or less start to embody one's beliefs in their behaviour if they have lower emotional energy or power in the ongoing system. This decreases their emotional energy if one's beliefs about them are negative. If one's beliefs about them are positive, it increases their emotional energy and gives them the possibility to express those attributes. A systems intelligent leader is able too see realistically the contributions of others but at the same time he keeps in mind that there are some possibilities in others which can become visible if the system changes to better. The task of a systems intelligent leader is to make the system better.

"Systems intelligence is based on a principle of dynamic humbleness, which acknowledges that my perspective of other might be drastically mistaken, particularly regarding what the true aspiration of those others might be." (Hämäläinen and Saarinen 2004, p. 15) Everyone more or less adapts to the system. In particular, those who have lower emotional energy or power in the ongoing system adapt more. In this case they true thinking and believing is not visible in the system. The systems intelligent leader keeps in mind the basic human aspirations and reflects own beliefs of others actions, thinking and believing based on those. If there is a paradox between these, the systems intelligent leader acknowledges that the information which he has might be insufficient to make exact conclusion. Handling the paradoxes is important in the leadership like Kauremaa (2007) points out.

Systems intelligent leadership highlights this possibility – the uniqueness factor in us.

Interaction systems and social habits play a significant role in producing emotional energy. Often these can be improved in bringing some small change. This can be done by bringing something new which makes the system humanly richer. For example, having a relaxing conversation in the beginning of a meeting instead of going straight to the business leads to a different kind of shared mood. The systems intelligent leader is able to recognize interaction systems and social habits which do not provide sufficient quality to a shared mood. He is also able to see what actions would improve the system.

Systems intelligent leadership in practice

There is no strict definition of what the systems intelligent organization means in practice. The system is always constructed from parts. The possible combinations that can be made from the parts seem infinite in human systems. Also the interactions between the humans seem to happen in many layers. It can happen at least in emotional, mental and spiritual layer but probably better and more exact naming can be done someday. Anyhow, I would like to emphasize the uniqueness possibilities that every interaction includes. The system can flatten out this uniqueness but the possibility for better is still there. Systems intelligent leadership emphasize this possibility – the uniqueness factor in us. It promotes the interaction forms where the individuals are able to find and use their strengths. Nevertheless, there is not a fixed form for this. The complexity of individuals and systems makes the standard agenda impossible. However, there are some attributes that can be connected to a systems intelligent organization. This kind of attributes are usually accepted, appreciated and expected in systems intelligent organization.

- Atmosphere of safety
- Appreciating diversity
- Giving attention
- Giving appreciation
- Listening

- Giving positive feedback when ever it is possible
- Creating an environment that says back to people 'You matter'
- Seeing the great possibilities in others
- Every interaction is taken as unique

Think about Marion Keisker in the Sun records studio Memphis in July 1953[2]. Young truck driver walks in and says he wants to record two songs. This 18 years old man looked very different with his long sideburns and his loud clothes. Marion did see the possibilities in this young man. She recorded one and half songs and played them to Sam Phillips and the rest is history of rock music. It was impossible for her to guess what her actions started and what this young man became. Everyone holds potential which does not have to be as huge as Elvis's, but still it has significance to some system if cultivated. Seeing possibilities in others helps them to cultivate and bring up the hidden potential.

The systems are always on the move. There are some states in the system that seem to be unchangeable but still the system is on the move. The changes can be so small that we do not notice them. Heraclitus[3] brings this fact clearly visible. He says you cannot step two times in the same river. The water and you are not same anymore in the second time. Every interaction is unique. It seems that same habits are repeated. Still there is some variation.

Conclusions

This article has argued for the importance of emotional energy, humility and systems intelligence for leadership. Starting from emotional energy and its significance to performance and motivation of an individual. Moving on to leadership which utilizes emotional energy for the benefit of the company. This leadership requires humility. The importance of humility for leadership and for an individual has been brought up. Systems intelligence in understanding the system better by opposite views was looked at. Finally systems intelligence was connected to emotional energy and humility and the systems intelligent leadership was presented. Special attention was given to beliefs and belief leadership which are a key part of systems intelligent leadership. Finally some issues about practical systems intelligent leadership were dealt with.

Key notions of this article are:

- The basic human aspirations need to be taken into account in leadership.
- Humility is an essential part of leadership.
- To be able to understand the system and lead the system one needs subjective and objective views simultaneously.
- Understanding significance of beliefs is important in leadership for one to be able to improve systems with systems intelligence.

The interaction systems are an important part of leadership. They bring in practice the leadership and the values. Leadership which is based on the value of virtues builds an effective and healthy organization. Systems intelligence leadership brings these virtues to daily life.

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[2] http://www.elvispresleynews.com/WhoDiscoveredElvis.html

[3] http://en.wikipedia.org/wiki/Heraclitus

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CHAPTER 8

Architecture, Leadership and Systems Intelligence

Maija Ojala

Belief in the significance of architecture is premised on the notion that we are, for better or for worse, different people in different places – and to the conviction that it is architecture's task to render vivid to us who we might ideally be.

Alain de Botton

Architecture is a complex and fascinating phenomenon that daily touches our lives on many levels. This article first discusses the scopes of architectural occupation and outlines the ways our physical environment influences us. Furthermore, the parallels between architecture and leadership are traced through the similarities in the ways they affect our behaviour and shape our possibilities. After discussing some fundamental aspects of systems intelligent action, this Systems Intelligence perspective is then applied to the implementation of architecture.

Introduction

Thinking of architecture as a phenomenon inside society, I feel very much tempted to examine it as extending into the field of social sciences. This is by no means a novel perspective in discussing architecture; in fact the very roots of early Functionalism reach back to the chaos and inhuman living conditions of the people who filled the cities by the end of the 19th century, during the mass migrations caused by Industrialisation. Throughout the 20th century there has been a significant side stream in architecture that focuses on serving the people's needs. But just as the noble intentions of Functionalism turned into the formal straitjacket of modernism in the mainstream of architecture, many architectural aspirations that start with true insight of humanity turn far too easily into artificial and fashionable use of shallow forms. This is why it feels so important to return to the basics of architecture time after time, to keep the light in the lamp that signals: "Architecture is made for people".

Although there can be no true architecture without a great concern for – or at least an instinct for! – artistic values[1], in architecture itself this aspect only comprises one part of the phenomenon. It must be admitted that this part is essential and more often than not, this is the basis of valuing architecture, amongst the professionals as well as by the laymen.

Architecture is nevertheless no branch in the tree of free arts. A painter for instance can, lacking profitable commissions and unwilling to compromise her visions, go on working with cheaper paints and canvases in hope to gain appreciation in the future. Architecture, on the contrary, is far from independent; in fact, it must be one of the most bound activities ever. To be engaged in architecture – designing and building – means dealing with numerous aspects and restrictions in almost every field of science and social activities: physics, geography, meteorology, law, economics, culture, politics – you name it, and almost certainly it has a contact point with architecture. The "input" in architecture is thus vast and complex. No wonder then, that also the outcome of this activity has such widespread effects on many levels of society.

Architecture is far from independent; in fact, it must be one of the most bound activities ever.

Professionals in every field yearn for the appreciation of their colleagues. This inclination is probably present, at least on a subconscious level, in almost every professional activity we engage in. But the effects of architecture are not limited to those who "understand" it. Von Hayek (1974) speaks in his Nobel-lecture "Pretence of Knowledge" about economics, including it to the "phenomena of organized complexity", whose theories, whether they are right or wrong, have a great influence in forming the social environment we live in. Architecture is no less a "phenomenon of organized complexity", and it influences our living-world in a number of ways. We may well apply von Hayek's words also to architecture:

> But the influence (…) that mainly matters is an influence over laymen: politicians, journalists, civil servants and the public generally.

When the things we do have a very concrete influence on the everyday lives of people, we have in our actions a very different responsibility compared to those, who deal with mere academic theories or independent forms of art. The least we can do is to be conscious of this fact. To go a bit further, we could try to understand the nature of this influence. The ultimate goal is, of course, to be able to contribute to the forming of our built environment in a positive, inspiring and innovative way. These are the steps I will try to outline here.

Some Aspects of the Architectural Profession

The roots of architecture lie, as well as in the arts, also in the technical sciences and practices and, which is still far more demanding, in the needs, aspirations, hopes, possibilities and dreams of individuals, communities and even nations. The constituent parts of the architectural occupation have varied a great deal over the course of time and still vary to some degree both in the architectural education and in the practices in different countries.

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[1] The field of architecture comprises all the aspects of our built environment, which are designed and/or built with the intention to make a positive contribution to our living-world. Thus much of the vernacular building throughout the world naturally belongs to the denomination of architecture, although no actual architect was involved in the building process. On the other hand, the mere technical problem-solving-building doesn't achieve the status of architecture, despite its undeniable effect on us in our environment.

The oldest surviving texts illuminating the scope of the architect's tasks are based on the writings of Vitruvius, which date back as far as 30 B.C.[2] At that time the architect's work ranged from city planning to one family villas adorned with statues, from fortresses and ports to war machines and water clocks, from knowing the specifics of different materials and their proper use in construction to handling the whole building process (including the economy and hiring the people to do the jobs). Many of these tasks have since branched out to form their own specialised professions: today we have, for instance, many kinds of technical designers and engineers, construction firms and building masters.

Still the definition of architects' profession is not the same everywhere. In the Anglo-American world the architects' professionalism reaches much further to the fields of civil engineers and building masters than in the northern countries. In Scandinavia much of the technical expertise even in a one family house design task is provided by engineers, which specialise in construction, electricity, water systems and heating/ventilation. The design scope, on the other hand, stretches the whole scale from furniture to vast environmental entities, whereas the latter in many countries is separated to town or city planners.

With the rise of Industrialisation, construction possibilities started to increase considerably through the introduction of new materials and construction ideas. As a consequence the architect was given a much freer hand with the design of buildings. Nevertheless, apart from some decades in the 20th century, architecture has never been considered a free art form. Ironically, this phase started under the name of Functionalism, which from its very fine starting points developed to a kind of "architectural dictatorship". As the designer possessed the ultimate knowledge of how things ought to be, she could, would and to some extent was even expected to, ignore the needs, likings and even the financial resources of her client, all in the holy name of Art.

No wonder therefore, that architects today are still paying a high price for this folly. As the architects chose to concentrate on the artistic part of their profession and to a great degree ignore the social and practical sides of it, society in turn started to doubt the profession and/or the professionalism of architects and began to pass over their views. This is a true tragedy, because there is no other profession that could better deal with the complexity of both the material and immaterial aspects of our environment.

I am confident that architecture and architects will regain their position in the society. Not as arrogant dictators ("the house is so beautiful, that it does not matter, whether it works or not"), nor as snuffed out errand-boys of the number-crunchers ("we're not trying to make art here; just put a little architecture on this stuff, so we get the building permissions"). What is needed, is true professionals, who can tie together the many threads of the designing task (that more often than not pull to opposite directions!) and generate from this hurly-burly a meaningful, enjoyable and integrating environment for the people it's going to serve.

Outlining the Scope of Architectural Influence

We cannot escape from the presence of architecture in our lives. Other art forms are much easier to avoid: we can put down a book that does not please us, or leave a theatre, whose program annoys us. The more money we have, the more we can choose or influence the environments where we spend our time in. But we are born, we live and we die in buildings. We work, rest and seek for pleasure mostly in built environments. Even if we would escape to the wilderness, the

[2] *De Architectura Libri Decem*. For an English translation see Morgan M.H. (1960).

first task after securing the water and food would be finding or constructing some kind of shelter against the weather and the beasts.

So the built environment and the ways the buildings and public spaces are designed, have an influence on us most of the time. Why then do we seem to let the knowledge of this impact into our consciousness only very seldom; mainly in the far ends of the scale *horrifying—fascinating*? Alain de Botton writes about our sensitivity to architecture in a very touching way (de Botton 2006, p. 13):

> But sensitivity to Architecture also has its more problematic aspects. If one room can alter how we feel, if our happiness can hang on the colour of the walls or the shape of a door, what will happen to us in most of the places we are forced to look at and inhabit? What will we experience in a house with prison-like windows, stained carpet tiles and plastic curtains?
>
> It is to prevent the possibility of permanent anguish that we can be led to shut our eyes to most of what is around us, for we are never far from damp stains and cracked ceilings, shattered cities and rusting dockyards. We cannot remain sensitive indefinitely to environments which we do not have the means to alter for the good – and end up as conscious as we can afford to be.

Nevertheless, the influence is there, whether we are aware of it or not. The environment draws near to us in many ways. I tend to depict the levels on which we relate to our environment with the following hierarchy (FIGURE 1):

In the focus of this system is a person, who is interacting with her environment. The innermost, that is, the most intimate sphere around a person is drawn with **feeling** as a radius. In the English language the concept of feeling is very handy as it combines the physical, tactile world with the mental, more abstract ideas. The radius of this scope is not constant, far from it. It reaches from the touch of the hand to the comforting warmth radiating from the fireplace and to the enlivening colours of the room. The unifying factor is, that no matter from how far or through which mechanisms we get these impacts, they come to or under our skin; they influence our feelings.

This is the level, where our personal choices are dominant. The environment may suggest that we sit on angular sofas in a glasshouse, but our choice can be, that we drag in our grandfather's old easy chair and close off the darkness of outside with heavy curtains. This is also the level, where personal differences are great. The effects of the environment differ, not only from person to person, but also with the same person in different situations, times and moods. Nevertheless, there are rules and parallels that can be established and used in the design of our environment. This is a big part of the study field of Environmental Psychology (see for instance Bell et al. 1978).

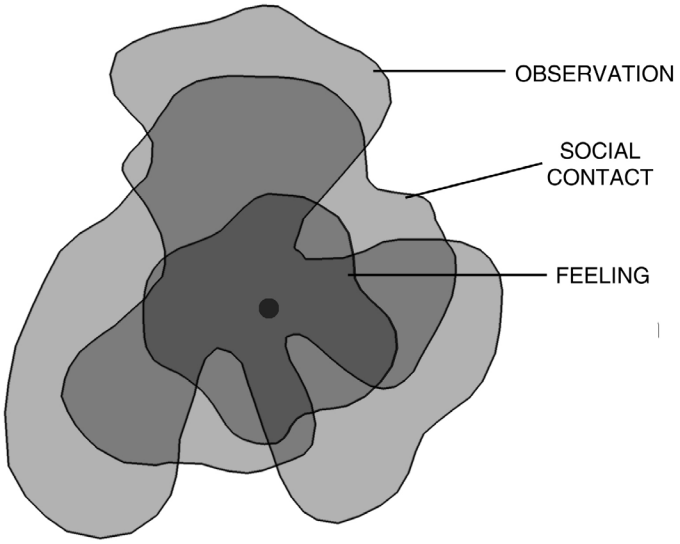

FIGURE 1. A diagram of the flexible spheres of human interaction with the environment.

The next scope is drawn with the radius of **social contact**. This radius also varies a lot, from the everyday occasions of the family life to coffee break conversations in the office and hailing to a friend across the street. This is the level, where the needs and habits of other people, organisations and officials come to play a greater part in our lives. The freedom to shape our environment diminishes abruptly, when we step outside the walls of our homes. Instead, the influence of the environment upon our actions increases considerably. We usually (with the exception of a few anarchists) accept this influence without even paying much attention to it. In every case, the environment has a great influence on **how** we do things with other people.

The third and widest scope is drawn with the radius of **observation**. And again, this radius varies from the details of the nearby furniture to the shapes of buildings around a square and to the distant landmarks of our cities. This is in a sense the most developed scope and assumes some degree of awareness. This also presupposes a certain "peacefulness" in the first two spheres: we are not very likely to admire the tiling in a room, where we are about to freeze. Nor are we likely to be impressed with the exquisite proportions of spaces where we have to fight every inch to gain a foothold.

The scope I am now interested in and which I try to take a look at in this essay is the middle one. This is the level where the environment has the most direct influence on our actions. Returning to de Botton's words: "We are different people in different environments". How are we different? Our appearance does not change (except maybe a difference in our posture), nor does our personal history. What really changes is our behaviour. And things that are powerful enough to change our behaviour deserve to be observed a little closer.

Where Does Leadership Come into the Picture and Why?

Leadership has many definitions and is a subject of a constant flow of writings, theories and books. Indeed, it seems that there is a new leadership slogan almost for every quarter. There must be a constant lack of leadership, if the old proverb "One speaks of the things one lacks"[3] has any truth in it.

[3] The author's free translation of the Finnish proverb: "Siitä puhe, mistä puute".

It is essential to understand that practising architecture also includes the exercise of power over others.

For me the first inspiration to search for the parallels between architecture and leadership came from professor Hämäläinen[4]. The concept of leadership is understood here in a much wider sense than as "enlightened management". Some leaders are born to their position, and they fulfil the expectations that come with the job, all according to their abilities. Some leaders are chosen or elected, but many rise to their position by the forces of their circumstances: they channel the necessities, dreams and desires of their fellow citizens. The characteristics required from leadership may vary considerably depending on the era, world situation, the position of the leader in the society, etc. There are some aspects that recur, though, both in old and new writings about leadership (e.g. Goleman et al. 2002, Peters 2003, Burns 2003). Here are some very basic ones:

- Leadership means working with and towards a vision.
- Leadership means affecting people's emotions.
- Leadership means creating opportunities.
- Leadership means influencing people's behaviour.

So leadership embodies the will and ability to shape the world and make people act, at least to some extent, towards a better life as seen by the leader. It is actually very easy to see here parallels with architecture: we could in fact paraphrase the above list to start with "Architecture" and get an equally relevant list. Good architecture has and must exhibit the same properties.

It is essential to understand that practising architecture also includes the exercise of power over others. Leslie Kanes Weisman states this very clearly in her book "Discrimination by Design". She writes (Weisman 1992, pp. 9–10): "Our buildings, neighbourhoods, and cities are cultural artefacts shaped by human intention and intervention, symbolically declaring to society the place held by each of its members." Furthermore, according to Weisman: "The cognitive map or mental picture of the physical environment that each of us carries around in our head is largely dependent upon the social space we occupy." As there is "an ongoing dialectical relationship between social space and physical space", this conveys, that the places we have access to, and which we are able or not able to use according to our needs and wishes, tell us who we are in our society. We really are told a lot of things about ourselves merely by our physical environment.

Tracing the Quality of Leadership in Architecture

In searching for a way to characterize the quality of leadership in architecture, the Nobel-lecture of the economist von Hayek (1974) has been most helpful. Von Hayek uses the term "phenomena of organized complexity" when he describes economics, and many of his observations on this theme can be directly adapted to the social influence of architecture. Von Hayek writes:

> Unlike the position that exists in the physical sciences, in economics and other disciplines that deal with essentially complex phenomena, the aspects of the events to be accounted for about which we can get quantitative data are necessarily limited and may not include the important ones. (…) While in the physical sciences it is generally assumed, probably with good reason, that any important factor which determines the observed events will itself be directly observable and measurable, in the study of such complex phenomena as the market

[4] Private communication with professor Raimo P. Hämäläinen in October 2006.

> which depend on the actions of many individuals, all the circumstances which will determine the outcome of a process, (…), will hardly ever be fully known or measurable.

This could not be more to the point concerning architecture even if it was written in a totally different context. Everyone working in the field of architecture must submit to the fact that they are always dealing, not only with practicalities and clearly determinable things, but also with a large variety of immeasurable elements: visions, feelings, emotions, intuitions, artistic views, values and many other human dimensions. There is no "one right answer" in architecture. There may be dozens or hundreds of right answers, all responding to different evaluations of the attainable information. There may even be no right answer at all, if the starting points pull very heavily into different directions, but even then the architect just has to make a choice of the emphasis.

The uncertainty of such a working environment sometimes leads to the quest for simplifying theories: it would be so much easier and much less stressful to work with fixed formulas. But with "phenomena of organized complexity" there are no universally valid formulas to be found, as every situation varies from the former and the following in massively many ways.

Daniel Goleman et al. (2002) write in the introduction of their book "Primal Leadership":

> The fundamental task of leaders, we argue, is to prime good feeling in those they lead. That occurs, when a leader creates resonance – a reservoir of positivity that frees the best in people.

Boldly paraphrasing from this, I argue, that the fundamental task of architecture is to prime good feeling in those it affects. And to these belong not only the users – occupants, employees, visitors, caretakers – but also the neighbours, the passers-by, the onlookers and the environment in general. This is a huge task to try to accomplish, and combined with the lack of valid formulas and direct causal relationships it may well seem impossible. And yet we all know that there are places, where this has been achieved in reality. Places that resonate, places that "send a message that hits the right chords" – borrowing the phrasing from Goleman et al. (2002, p. 19) – are places that make us feel at home, relaxed, efficient, pious; whatever sentiment is appropriate for us at that time. Places that resonate with us make us feel good about ourselves.

I argue that the fundamental task of Architecture is to prime good feeling in those it affects.

Many other modern leadership writers share Goleman's perspective on leadership. This pursuit to enhance the lives of people, and by doing this, to evoke the inherent talents in them, seems to be a growing tendency. Another quotation from leadership writings, which I find very closely related to architecture, comes from Burns (2003, p. 3):

> Hence I would call for the protection and nourishing of happiness, for extending the opportunity to pursue happiness to all people, as the core agenda of transforming leadership.

In his book "Re-imagine!" Tom Peters (2003, pp. 320–342) lists 50 qualifications for leadership. He starts with "Leaders Create Opportunities" and ends with "Leaders Do Things that Matter". Self-evidently, as Peters' list is about persons and not about "leading through creating built environment", only a part of it is directly adaptable to my point of view. Nevertheless, a very important one to be singled out in this context is no. 46: "Leaders express their passion".

Expressing passion, and the ability to make this passion comprehensible to others, is a very vital component in all architecture that aims at having a positive influence on people. Environments that show no passion from the side of their designers influence people very much the same way as a still, rainy November day in the northern countries: it's not very likely to enhance your life. On the other hand, a passion that is intelligible to the users of spaces may even gain forgiveness to some impracticalities.

On the Nature of Systems Intelligent Action

A very natural framework to study the complex relations and impacts between people and architecture can be found in the concept of Systems Intelligence (later also referred to with SI). Raimo Hämäläinen and Esa Saarinen introduce the concept and open up the context in their article published in 2004. In a recent article they adapt Systems Intelligence to organizational life (2006). The perspectives of Systems Intelligence are just as feasible with all "phenomena of organized complexity" and in almost any context that includes human factors. And as professor Saarinen pointed out in a private conversation[5], the task of an architect is in fact fundamentally a systems intelligent function.

> The systems intelligence approach acknowledges the systemic nature of the external world, but its main emphasis is on the concept of a system as a part of the *human* experience and orientation. A 'system' is a generative frame within which a subject experiences her life as taking place. (Hämäläinen and Saarinen 2006, p. 17).

So with systems intelligence we do not put ourselves outside the systems we are dealing with; to analyze, theorize, dissect or make pretence to fully understand them. We participate in the system, learn from the things that work and put this knowledge in practice. We learn from the things that do not work and change our input in the system accordingly. As von Hayek (1974) writes: "I confess that I prefer true but imperfect knowledge, even if it leaves much undetermined and unpredictable, to a pretence of exact knowledge that is likely to be false. "

One primary aspect to emphasize here is that with SI we are really focusing on action, not on theories. If something works in theory, but does not work in practice, in this SI concept the reality overrules the theory and not vice versa. If the outcome is not satisfactory or, indeed, is contradictory to what we want, there has to be a change in the ways we do things.

In the following list I sum up some of the most important aspects that the systems intelligence approach comprises, regarding the topic of this article:

- Making decisions although we cannot know all the facts (and being aware of this fact!)
- Acting and adjusting according to feedback
- Understanding that even small changes can put great powers in action
- Furthering alternative ways to think and perceive
- Believing in the enrichment of life, in flourishment and in the possibility of emergence

For a thorough look at Systems Intelligence I refer to the above-mentioned articles. To end this paragraph and to give a further insight I just quote another basic attitude of SI: "We do not fear

[5] E-mail communication with professor Esa Saarinen in November 2006.

the subjective or the emotional, the experimental or the phenomenological – indeed we embrace those things. Therein lies the source of emergence." (Hämäläinen and Saarinen 2006).

Reciprocity in Architecture

One fundamental motif in both leadership and systems intelligence is communication and reciprocity. This seemed at first to be a difficult thing observing architecture: not really limited by the possibilities of expression on the part of architecture, but by the shortage of the other party's opportunities.

There are as many ways of communicating through the characteristics of built environment as there are ways of dealing with people at large: we may e.g. suggest, encourage, ignite, force, suppress, forbid, tire out or – what is worst – even be totally indifferent. But the communication **with** architecture must consider the inherent sluggishness of this party. Architecture is a profoundly slow art. Time is an essential factor in every phase of architecture.

There are only some points, when a fruitful feedback to the direction of architecture is even possible. The first and most important of these is the predesign or programming phase. This should include, besides a thorough survey of the spatial needs and economic aspects, also a real participation on the part of the users. Or, if this is impossible, the design should be left partly "open" or flexible, to be adjusted to the users' needs at the time of introduction or thereafter.

The design phases should be slow enough to enable adjusting the designs according to the feedback and still keep the integrity of the design. And this actually goes for the construction phase, too; there should be no last-minute changes (usually due to problems in availability, pricing or schedules), that are not properly examined, to avoid hazardous surprises. All this is profoundly in discordance with the practices and the hectic pace of today, when everything ought to be ready at once.

The third possibility for architecture to respond to the users' needs and expectations is an inherent flexibility. This is by no means an invitation to design as neutral spaces as possible; rather the opposite. "Strong" environments seem to be much better able to adapt to the changes in use than those with a weak character. Moreover, contributing environments enjoy better maintenance and care, thus creating a better relation between the users and the environment.

One difficulty with this reciprocity is that many designers seem to find it unwanted, unnecessary or in any case too cumbersome. They do not see the participation of the other parties (at least after the starting point) as an asset, but sooner like a hindrance to their work. Or even if they would in principle be favourable to the idea, they may feel somewhat helpless in taking real action. This is where architecture could look for tools and endorsement in other domains, especially in sociology.

One recent approach towards the dialogue of architecture and sociology is made by the sociologists Ronald Smith and Valerie Bugni (2002), who in their writings adduce the concept of Architectural Sociology and survey the development, resources and potentiality of this field. They aim at "getting to a better future through architecture and sociology" and urge both fields to work jointly "toward the goal of connecting people to our designed environments".

Butterflies and Roses

Another unifying aspect in the concepts of Systems Intelligence and leadership is paying attention to details. They both acknowledge the trigger-effect of some seemingly unimportant things. For instance, the impact of attention that surpasses the bare necessities can be enormous. It can make people feel special, encourage them to develop themselves and make them contribute in unforeseen ways in the things they are doing.

In architecture I would interpret this to an absolute denial of offering the bare necessities. Our environment should be full of secret gifts; things that do not jump to our face but when we come to think of them, we notice that someone has thought this over. I love getting these subtle compliments: like when strolling on a Barcelona sidewalk you suddenly notice that the pavement tiles bear a motive from Gaudi. And I do not call for posh materials or expensive details here: it is more like shifting the emphasis from **what** you do to **how** you do it.

Our environment should be full of secret gifts.

There is one more theme I'd like to take a brief look at. Both systems thinking and leadership theories appreciate the "world of possibilities". There are countless opportunities that may be surfaced, even with such a small effort as a change in the point of view. There is a hidden surplus of energy to be put into motion, if we just find the right button. Behind all the drab and the commonplace there already exists a world of vigour, prosperity and gratification. And so, here we are again, in the deep sources of architecture. This is the very essence of the profession: to trace and unveil hidden possibilities inherent in our environment and to enrich our living-world by offering space for new interpretations of our existence.

Systems Intelligence Interventions in Architecture: Action!

What could Systems Intelligence induce, if we viewed architecture from this perspective? What kinds of systems intelligent interventions are possible in the practise of architecture?

I quote some points from the Systems Intelligence article of Hämäläinen and Saarinen (2006, p. 23):

> People thrive on meaning. As a result, the most forceful forms of systems intelligence intervention are likely to be those that touch basic human aspirations, especially:
>
> 1. A person's sense of worth and desire to be respected
> 2. A person's desire to feel connected in the company of others
> 3. A person's desire to feel connected with something meaningful

Taking these basic needs as a starting point we could survey what their implementation in architecture could bring out.

Worth and respect

As Nancy Kline searches for the requirements to create a Thinking Environment, she finds one of the essentials to be "places, that say back to the people: 'You matter'" (Kline 2007, pp. 84–86). Kline tells a very enlightening story of this principle put into practice (the project is the London Lighthouse, a centre for people with HIV):

> The architects were chosen, because they had no design plans, when they arrived for the bidding interview. They said that their strategy would be to talk with the people with HIV and with others who would be using the service and find out what they needed and wanted in the building. They said they would design the renovations to make it clear that the people who used the building were what mattered.

We all know environments that say back to us: "You don't matter". Sometimes it is in a form: "I am Art, I am Orthodox, you just better adjust". Sometimes it takes the form: "This is all you are worth, deal with it". And very often it's bluntly: "Couldn't care less".

Now imagine that these environments could be reshaped to say back: "What inspiring could I offer you today?" or "You are important and I will try to take care of your needs" or "The world is full of good things and possibilities". This could really make resound the "reservoir of positivity that frees the best in people", as Goleman et al. put it. If this "saying 'You matter'" was taken to a real guideline in architecture, very different environments would emerge compared to those, where the standard is derived from minimum input or where "showing off" rules. We would have environments that encourage us to participate, that offer incentive but do not overwhelm our senses. Districts where repetitiveness is spiced with lively variation and spaces with room for our own interpretations. And above all, environments that do not oppress us, do not force, undervalue or neglect us.

To respect someone means listening to her, paying attention and really "getting the message". It means asking the right questions, too, and placing yourself in the other's position. There are many practices in the fields of architecture and town planning that could be considerably amended regarding this. It is impossible to please everyone. But it is possible to hear people out and show them that they really count.

Feeling connected

Malcolm McCullough (2004, p. 39) writes: "Architecture consists of built social relations". When we design the environment we thus project, enable and mould certain patterns of social contact. This is done, not only by the design of actual spaces, but also – and maybe even more so – by the design and placement of furniture (in a smaller scale) and especially by the design of the spaces-between-spaces.

It is impossible to please everyone. But it is possible to hear people out and show them that they really count.

A very clear large-scale example to visualize the last notion is to think of the patchwork quilt of an American suburb and compare it with the dwelling quarters of the older European cities. In the former pattern the social activities are divided into separate locations; dwelling takes place in their own districts, working in others and recreation and shopping etc. still in other areas. The connections between these activities are conducted with cars, where people sit in their solitude, possibly many hours each day. Compared to the structures in the old cities, where all activities intertwine in a compact manner, we find a huge difference in the possibilities to connect with other people. In cities there are apartments above stores and workshops mingle with public spaces. The streets form an organic network that offer meeting places in every corner.

The segregation of social activities leads to monotonous and lifeless environments. The natural "encounterability" in the environment gets lost. It is hardly a coincidence that the large shopping malls that are being built everywhere in the outskirts of modern cities try to imitate the lost main streets of country towns. But like all imitations that take the form and lose the substance – in this case the diversity of the activities, the human scale and the familiarity of the encounterings – it really does not work.

To create places that enable all kinds of meetings, to design environments that invite people to come out of their cocoons and connect with others; these are real challenges in a time, when more and more interaction between people is conducted through electronic devices. There is no going back to old country towns. But there are countless possibilities to interpret the essence of encounterings in the building of our modern environments.

Regaining meaningfulness

For the environment to become meaningful to a person assumes that she can identify herself with her surroundings. Herman Hertzberger writes (1980, p. 38 and p. 40):

> One becomes attached to things only when one is able to relate to them, when so much of one's own effort and feeling has gone into them that they become one's own, incorporated into one's own world of experience.
>
> …
>
> The more involved a person is in the shaping and maintenance of his surroundings, the more appropriate they become and the more easily appropriated by him; but just as he takes possession of his surroundings so will they also take possession of him.
>
> This care and solicitude creates a situation in which a person appears to be needed by his surroundings. Not only does he have some control over them, but they in turn are a reflection of him, and have some control over him, too.

These sentences not only tell us, how meaningful places come into being; they also give a vivid example of the constant interaction between a person and the environment.

To give our designs a possibility to become meaningful for their users we should maybe aim at "building the unfinished", as Lars Lerup titled his book where he surveys the people's approach to architecture. Architects tend to consider their buildings as "finished" when the construction phase is over, whereas Lerup finds this to be a starting point. He argues that change should self-evidently be within the designer's focus. "To expect fixity in the environment appears absurd against the facts of steady social and personal changes among dwellers."(Lerup 1977, p. 142). Lerup calls for a many-sided view and takes real-life examples of Swedish fisher villages: these have grown organically and developed a multitude of formal variations in the buildings, still keeping the integrity of the wholeness.

This same yearning after things to be meaningful and one's possibility to connect with things, comes up in many fields in our society. Brian Eno, a British composer, record producer and visual artist, puts this thought into words as follows:

> An important aspect of design is the degree to which the object involves you in its own completion. Some work invites you into itself by not offering a finished, glossy, one-reading-only surface. This is what makes old buildings interesting to me.[6]

Conclusion

The very obvious parallels that can be traced between architecture and leadership point to the

[6] The original reference to this quotation is not anymore available to the author. However, Eno's lyrics and interviews can be found on the web pages http://www.enoweb.co.uk (accessed 10 March 2007).

need of a more people focused and socially responsible architecture. Unfortunately, the many openings that have been taken toward this direction often dry up or change into empty formalism in the pressures of today's economics and efficiency. New tools and perspectives are needed to really get better environments from the good intentions.

Taking the systems intelligence perspective in discussing architecture feels like "unfolding architecture in a different point". I find this approach very inspiring and hope to continue my quest at a later date. Right now I feel like just having found the treasure map and spotted the first landmarks; I am very curious about the contents of the chest!

To name a beacon, which should brightly guide us in designing our physical environment, I finish this essay with the words of architect Herman Herzberger (1980, p. 38), who states:

> It would be something if everything we made encouraged people to become more closely acquainted with their surroundings, with each other and with themselves.

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CHAPTER 9

From Emotional Intelligence to Systems Intelligence

Maija Vanhatalo

Emotional intelligence helps us to understand and manage our own emotions as well as other people's emotions towards us. Social intelligence, on the other hand, concentrates on social situations like how we interact with other people and how well we understand them. And then there is systems intelligence. Systems intelligence considers that human action always takes place in systemic settings consisting of both human and other kind of elements. Systems intelligent people understand why they act like they do – they understand their emotions. Systems intelligent people also understand social interaction connections. This is why people should, above all, focus on making themselves more systems intelligent.

Introduction

During the last decade emotional intelligence has received exceptional attention and for a good reason. We need to learn to manage our emotions as well as those of others in order to cope with modern organisations. Emotional intelligence provides a fruity ground for negotiation, co-operation, networking situations but something is still lacking. It is not enough that we understand the people who we are dealing with. We need to understand and manage our own actions in the system in which people are living in with all feedbacks and interconnectivities. We also have to admit that too often we still cannot understand everything in the system but we can still try to work in its favour. And what is incredible, is the fact that the system does not necessarily need a major input in order to work better. Sometimes a minor input can create a snowball effect. This is one of the ideas of systems intelligence.

In this article I will first discuss how evolution has created us emotional intelligence and how it is useful in our everyday life. From emotional intelligence we step towards social intelligence and ponder the behavioural laws in social interaction situations. Finally, I will end describing systems intelligence and how it includes both emotional intelligence and social intelligence in it and how its fundamental form will raise our intelligence onto a new level.

Intelligence Behind Emotions

"We are born with certain potentialities for behaviour" is how Oatley and Jenkins (1996) depict emotions. This means that emotions provide us a certain framework for social behaviour that we need in our everyday life. In addition, these emotions are then elaborated and given content by experience. One could say that our genes offer us a nice survival kit and with time we develop these gifts into good tools.

But how does the survival kit really work? In short, the nature is full of species which are able to work only with reflexes without thinking at all. For example a female tick goes hanging in the tree after mating. It stays there until it perceives the smell of a mammal. Then it releases itself falling with a hope of landing in the fur of a mammal. The warmth in the fur makes it seek its way to the skin to suck the blood. On the other end consider a figure like God. God is supposed to know everything about everything. He has a perfect mental model of the world so it is effortless for him to make decisions. And then there in between is a human. The life of a human being is not so simple that only reflexes would be needed for survival. Even though we have superb brains, the world is still too complex for us to perceive and understand all the interactions and details in it. So what we use is our emotions. Thanks to evolution, we have a heuristic that provides us a tool that is far better than just random guessing (Oatley and Jenkins 1996).

Emotions are the infrastructure of social life.

What emotions really do is that they serve as the language for human social life; they are the infrastructure of social life (Oatley and Jenkins 1996). In modern life we do not have to seek shelter from dangerous animals anymore. The reason, why humans are in the leading position, is social skills and cooperation. For this purpose emotions provide outline patterns that connect people to each other. Two great examples of emotions are happiness and anger. Happiness is an emotion of cooperation whereas anger reflects a conflict situation between people.

What also makes emotions powerful is their capacity to spread within a group. A good example is fear which is a basic survival emotion from the past. If we compare ourselves to other animals, it is truly emotions and the more complex brain that differentiates us from reptiles and other low level animals. Emotions have enabled us the great capability of dealing with other people. As Cummins (2004) says, the social brain evolved to handle the difficult situations and social status problems in a primate group. Later on, the brain developed to cope in cooperation, coordination and competition situations and this was the phase where our brain finally reached its relatively big size.

Still, emotions are not just a way to cope in the wild nature and in social circumstances. Damasio (1999) has studied the importance of emotions in our decision making processes. He investigated people who had had a brain injury in the frontal lobe and because of that had lost the capacity for feeling some emotions. These subjects were still capable of acting logically, but their decision making skills and strategic planning were poor. Especially situations with risk and controversy caused problems.

We also form and use emotional heuristics without consciousness. Damasio (1999) discovered that a man with a long term memory problem was incapable of remembering or consciously recognizing people. Still he ended up asking advice from the same people who had treated him well and he avoided less friendly people.

Extensive research has also been carried out on decision making and emotions. Bechara et al. (1997) have reached the following result. They suggest that our decision making and awareness is

actually purely about feeling and emotions. In their experiment, Bechara's group investigated normal individuals and patients who had some problems with decision making due to a prefrontal damage when they were performing a gambling task. Already before the normal subjects realized having discovered the best working strategy, they began to play advantageously. The prefrontal patients, however, were still choosing disadvantageous options after knowing the optimal strategy. The normal subjects were also reacting on giving responses measured on their skin when they were performing a risky decision. The patients, for one, never realized that there was a risky situation at hand, not even when they knew the correct strategy and when they were answering wrong. This all suggests that unconscious actions in our minds guide our behaviour long before conscious knowledge does. Without the help of these biases, the knowledge might not be enough to provide advantageous behaviour (Bechara et al. 1997).

King-Casas et al. (2005) have also studied the emotional centres in the brain related to decision making. In short, measurements of brain signalling have shown that emotions are crucial for the decision making process. Thus our knowing and decision making is strongly based on feelings.

Knowing is actually feeling.

This all suggest that the difference between our emotionally intelligent behaviour and logical thinking is consciousness. We cannot reason our emotions or evoke them. Emotions just happen and the intelligence is there no matter what. It does not mean that even if we can not reason something, there would not be hard core logic behind it. The nature has just evolved in such a way that we do not have to keep every single connection and event in our minds in order to make it work in a reasonable way. Our emotions work without our need to think and they work well.

Emotional Intelligence in Working Life

The term emotional intelligence was already invented in the mid eighties, but it experienced the final breakthrough thanks to Daniel Goleman's book "Emotional intelligence" in 1995. After that a great emotional intelligence boom has spread and it has received attention both in private and corporate life.

Emotional intelligence has been defined in a number of different ways. Goleman describes in his bestseller book "Emotional intelligence" that emotional intelligence generally relates to behaviour that is ignored in ordinary IQ tests. Emotional intelligence means that a person is capable of dealing well with other people and is able to behave reasonably in difficult situations like negotiation and cooperation. In Goleman's (1998) more recent book "Working with emotional intelligence" he specifies that emotional intelligence is "the capacity for recognizing our own feelings and those of others, for motivating ourselves, and for managing emotions well in ourselves and in our relationships".

Goleman (1998) has shown how emotional intelligence plays a key role in organizations. He asked managers to tell briefly which qualities make a successful worker. His research covered 181 different professions in 121 countries and the final conclusion was that 67% of the workers' qualities were based on emotional intelligence. In the case of top management, the results were shown to be even more drastic. This is not a surprise as it is the leaders who create the opportunities for a good working atmosphere. They decide in what direction the company is going. They can boost remarkably their workers but they can also easily destroy the atmosphere. Goleman mentions an example of a senior leader who did make the company profitable but who at the same time destroyed the spirit in the company. Finally, he was fired. A leader has to be able to listen to the problems of the workers and be enthusiastic. Above all, he has to be an

emotionally intelligent person. McClelland et al. (1994) also found that it is not the IQ that makes a good leader or worker in general. The study was carried out by comparing the success in Harvard's entrance examination with the success in working life later. Actually, it seems that the success in the working life can even have a negative correlation with IQ (McClelland 1994, cited in Goleman 1998). It is the emotional intelligence and a capability of being able to see the whole picture which makes the final difference.

Social Intelligence

In 2006, Goleman published his new book "Social Intelligence". He defines social intelligence to be both social awareness and social facility. Social awareness means that a person understands and feels other people's feelings and thoughts without the other having to express them aloud or explain them. A socially intelligent person is also attuned to the others, which means listening and caring and also that he knows how the social world works and he understands complicated social situations. Social facility means smooth interaction on the nonverbal level, presenting ourselves effectively, shaping the outcome of social interactions and caring about the others. It is not a guarantee that if a person knows how to interact that he would also be able to perform in that way in reality (Goleman 2006).

Goleman (2006) himself distinguishes emotional and social intelligence as follows: "When I wrote *Emotional Intelligence*, my focus was on a crucial set of human capacities *within* us as individuals, our ability to manage our own emotions and our inner potential for positive relationships. Here the picture enlarges beyond a one-person psychology – those capacities an individual has within – to a two-person psychology: what transpires as we connect."

So social intelligence is more general and thus includes emotional intelligence in it. One has to be able to manage one's own feelings before trying to understand those of the others. The reason why social intelligence is so crucial is that we have to use it in our everyday life. One single human being cannot achieve everything on his own. We have to make social connections and influence through them. As mentioned before, in an evolutionary sense it was profitable for us to start to cooperate and socialize. There are also remarkable results what our social connections mean to us. Goleman (2006) says that our connections both improve our quality of life and make us live longer. Kahneman et al. (2004) studied happiness and found that the most powerful influences on how happy the women felt, were the people with whom they spent their time, not their income, not job challenges nor their marital status. In brief, we, humans, are social and we can not act against our nature.

Some Problems Behind Reasonable Decision Making

It can be tempting to think that rational decision making is something truly challenging and extraordinary, whereas emotional intelligence would be something primitive or just feminine. It is useful to think of the most general problems called biases, researched on decision making behaviour, to see the limits of our understanding. These problems are called representativeness, availability, anchoring and adjusting (Tversky and Kahneman 1974, cited in Beach 2005), sunk costs and the problem of ultimatum game (see e.g. Beach 2005).

The representativeness heuristic describes a situation wherein we mistakenly assume that samples from processes or events really represent the whole process or event. For example if we meet a beautiful girl, we tend to believe that it is more likely that the girl is a model than a nurse even though the relative number of nurses is so high that even if the proportion of beautiful

nurses would be low, the total number of beautiful nurses is higher than the number of models. This means that actually it is more likely that the girl we met was a nurse.

Availability heuristic is caused by the belief that if something is easy to bring in mind, it also has to be frequent or probable to happen. Beach (2005) gives a nice example: we think that rock climbing is more dangerous than swimming, even though every year more people drown than get killed in a climbing accident. This is due to the fact that we remember easily events that are bizarre and this is why we think that they are more frequent.

Anchoring and adjusting heuristic refers to situation where people assess probabilities by adjusting a given number. Typically people are anchored to their starting value and alter their new estimation too little, so the adjustment is just not enough and they get wrong results. In Tversky's and Kahneman's (1974) experiment, students had to guess how many countries are represented in United Nations and they were given randomly a starting number (cited in Beach 2005). If the number was high, the students tended to response too high guesses. However, when it was small, students were anchored to the small number and their response was too small.

Sunk cost trap, for one, is a classical error that we make when we treat non-recoverable earlier expenditures as they were part of the later decision. A typical example is that if we have a computer that has just broken, we tend to continue with it if we have already paid some money for repair in the near past. We feel that it is more reasonable to fix it again but actually we should analyze the situation without taking into account the previous costs.

The so called ultimatum game is also a classical example how people have a kind of inner sense of justice that goes beyond our rational decision making. In ultimatum game there are two players who have to divide X euros for themselves. The first player decides how much money he gives to the second player from the sum X. If the second player accepts the amount, both players will get the share decided by the first player. Otherwise both of them will get nothing. When we think of this scenario rationally, the second player should accept any sum of money because he would still get something, but this is not the case in real life. If the first player suggests a too small amount of money, usually the second player is tempted to punish him. This is where our emotions come into the picture. In an MRI-experiment Sanfey (2003) found that when subjects were told that another player is deciding the sums, anger rose in their brain because of the unequal suggestions, but when they were told that the sum is decided randomly, no anger related activities were seen in the brain and players acted "rationally". The explanation what Mellers (2001) provides to this behaviour, is that when the first player is offering a too small sum, alarm bells start to ring in our brains. We seem to want to prevent this kind of injustice from happening again in the future and thus we punish the other player to guarantee a more fair division in the future. This is why we behave seemingly irrationally in a short term perspective. However, we actually have a long term gain in mind. This all suggests that our emotions and social intelligence are actually more efficient than what we would think.

Social Context and Rational Decision Making

The social context and social interactions have a strong impact on everything in our life ranging from learning to the moral code we follow. Laland (2001) has investigated learning especially in social settings. Social rationality or social learning means that an animal or a human being learns by observing or interacting with others. However, social learning differs greatly from imitation since we can imitate a lot and still learn nothing. Social learning enables individuals to make fast decisions. If our neighbour is solving a problem well, why should we not try the same as well? For example animals see what the others are eating and because these others are still alive, their

eating choices cannot be bad. The same thing also works well when it comes to mating and choosing a mating couple. Gigerenzer (2001) mentions that in our modern world the media works pretty much in the role of the others. It tells what kinds of people are more appropriate "to mate with". We see what the popular ones look like and we then try to achieve the same either by changing ourselves to be a bit more "appropriate" or by choosing similar partners what the media suggests.

Social environment affects us in other ways too. People tend to do less when they are working in a group or in a team than what they would do alone. This phenomenon is called social loafing (Williams et al. 1981, cited in Sadrieh 2001). Zajonc (1965, cited in Mellers 2001), on the other hand, has found out that social context is highly arousing. This means that we make easy tasks better but we fail with more difficult ones. The group brings us comfort but also expectations. March (1994, cited in Mellers 2001) notice that doctors, professors, secretaries etc. tended to adapt heuristics for decision as part of their identities. These social norms free them from analysing the appropriateness of their behaviour. It makes their life easier.

The great contribution of social context is that it keeps us on the straight and narrow. People do not deceive others as often as they could since shame and guilt are present. We have very powerful social constrains and norms. A leading high-tech company Gore has also discovered the power of social context. The management has found out that the ideal size of an organization is less than 150 employees. When the size is below this, the employees are able to be in connection with everybody. So if for example marketing managers think that certain type of development would be beneficial for the product at hand, they can walk directly to the engineers and give them their opinion. In these kinds of organizations workers have to meet the peer pressure which is a much more powerful way to deal things than to use a vast hierarchy and middle management that makes things formal and destroys the innovative environment (Gladwell 2002).

When we step forward from social contexts into the world of emotions, we start to find interesting things. Fessler (2001) among others describes how emotions, especially pride and shame, have a strong impact on self-esteem. Shameful events lower one's self-esteem whereas success boosts it. The crucial thing with low self-esteem is that it leads to conservative behaviour. People with low self-esteem try to avoid situations where they may be humiliated. Paradoxically, at the same time, when these people encounter a shameful situation, they react without considering the risk of becoming humiliated because they try to avoid being seen to fail in a social setting again. In general, young people tend to take more risks, since their place in the social hierarchy is still open. Behind all these powerful emotions lies a neurotransmitter called serotonin. From an evolutionary point of view, our social behaviour has developed on top of foraging process, where low amount of serotonin produced risk tolerating behaviour which again made us commit to reckless decisions when hunting or collecting food (Fessler 2001).

Young people take more risks, since their place in hierarchy is still unclear.

In general, emotions work to parse the world into decision categories. They help to prioritize and constrain our options. Emotions signal us whether something is good for us or not, that is, they help to escape from bad situations and move into good ones. Emotions also influence decision making by affecting the relative salience or weight of costs versus benefits (Gigerenzer 2001).

Systems Intelligence

Goleman (1998) says that a leader needs three qualities in order to be excellent in his job. Two of them are included in emotional intelligence. The first one is a composition of ambition, self-confidence and commitment. The second, for one, comprises empathy, influencing and social skills. The third quality is however completely different and it is based on knowledge and know-how. The best leaders are great in strategic planning. They also acquire information from different sources and are able to form a good overall picture, where details do not confuse the big picture. This is where systems intelligence introduced by Hämäläinen and Saarinen (2004) comes into the picture. Systems intelligence also relates to emotional and social intelligence. The key difference is though that the context is now different. We do not cover only social systems and social interactions but we take all kinds of systems and ways to influence into account as well. The key thing is to see the whole picture, all the separate key factors and influences and feedback connections between them. In social intelligence the key factors are always human beings but in systems intelligence the environment, the system, is also a key factor. TABLE 1 summarizes the key differences between these three intelligences as I see them.

In general, systems intelligence finds the big system more important than the pieces that form it. This does not mean that the individual is without a role in the system, on the contrary. A great example comes from Gladwell's book "The tipping point: How little things can make a big difference" (2002). Gladwell shows that little things which at first seem to be without any influence can, as a matter of fact, create a huge snowball effect. This is what happened with the crime rate in New York City. In the beginning of 1990s, there were a great amount of violence and crimes. But then something happened. It was like an anti-crime virus that spread. The violence just broke down and how the police did this was by cleaning the graffiti off. The theory behind this phenomenon is also known as "broken windows"-theory among criminologists. It suggests that crime is the inevitable result of disorder. If a window is broken and left unrepaired, people passing by will assume that nobody really cares and this will cause more broken windows. The system which is the broken windows area starts to affect to the individuals in it. A systems intelligent move is to repair the windows and thus change the system. When the streets are clean, people start to assume again that there are caring people around and are not tempted to behave irresponsibly.

In this broken window example emotional intelligence or social intelligence would not have been sufficient to solve the problem. If these intelligences were used this would have needed a direct contact between the police and the criminals. Such an approach could have worked in a long run but it would have needed a lot more effort. The systems intelligent approach is thus able to change the system of the environment in New York. This tiny input of repairing broken windows immediately strikes gold and suddenly the whole system is changed. In this environment the criminals start to behave in a new way since the system is pushing people towards it. In brief, the individuals alter the system but the system also alters individuals.

TABLE 1. The key elements in emotional, social, and systems intelligence. The table of emotional and social intelligence, presented by Daniel Goleman (2006), is extended with systems intelligence.

Emotional intelligence	*Social intelligence*	**Systems intelligence**
Self-awareness	***Social awareness***	**Systems awareness**
Acknowledging one's own emotions [1]	*Primal empathy, empathic accuracy, listening, social cognition*	Seeing systems, feedback connections, critical factors, one's own role
Self-management	***Social facility (or Relationship management)***	**Systemic facility**
Managing one's own emotions to produce a positive outcome [1]	*Synchrony, self-presentation, influence, concern*	Initiations, action, intervention, emergence, positivity, influencing, feedback, acting, sustaining

Conclusion

It is important to understand how to manage our own emotions, to be emotionally intelligent. It is more the emotional intelligence that defines whether we are going to succeed in our life than the IQ that we have. We are extremely social species, which is an excellent thing since it has enabled us to develop into such a high level by evolution. This reflects the value of social intelligence in addition to emotional intelligence. Every day we interact with a lot of people: friends, family, colleagues, bosses, children etc. In collaborating with these people, we use social intelligence. Relationships make our life both more comfortable and easier.

But in our lives and relationships we sometimes encounter complex situations where we need more general skills than social intelligence. It is here where systems intelligence has a possibility to complement emotional and social intelligence. A positive attitude towards the systemic possibilities will help to find hidden connections and inputs that can be of significance for the problem solution. Systems can be often changed with little interventions. Identification of such will be a rewarding challenge for us.

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CHAPTER 10

On the Systems Intelligence of Forgiveness

Laila Seppä

It is impossible to forgive whoever has done us harm if that harm has lowered us. We have to think that it has not lowered us, but has revealed our true level.
Simone Weil, 1947.

I am a Bishop in the Church of God. I am fifty-four years old. I am a Nobel laureate. Many would say I was reasonably responsible. In the land of my birth I cannot vote.
Desmond Tutu, 1985.

Systems Intelligence is understood as intelligent behaviour in the context of complex systems involving interaction and feedback. In chaotic situations the concept of Systems Intelligence offers a new approach to understand and interpret the ongoing situation and interact with it. It is a key form of human involvement with the environment and its social structures. People are enriched in various, sometimes seemingly small ways, and this will pay back in unexpected ways and may bring along huge changes. Forgiveness is one such enriching element, which has enormous power and impact on individuals and entire societies. The methods of the great leaders of forgiveness and nonviolence have many similarities with the Systems Intelligence framework.

Introduction

When we look back at the history of totalitarian regimes, we see their rudeness and injustice, but when a person is inside such a horrible system he or she is seldom able to see its inhumanities[1]. This kind of environment can provoke irrational violence, in absurd proportions as South-African journalist Rian Malan describes in his autobiographical novel (1989). Totalitarian governments aim to make people function as marionettes. Extreme examples are concentration camps in Nazi Germany, gulags in Siberia or North Korean terrorists shooting down a commercial flight (Ten Boom 1971, Kim 1993, Glover 1999). And yet, even in these cases, forgiveness is possible.

[1] To find more about totalitarianism and evil see for instance writings by Hannah Arendt, Simone Weil and Victor E. Frankl.

Miraculously, even when confronted with extreme oppression, there are those very special individuals who do not submit to it. They have the vision of something better and the willpower to go against the current, which often demands courage. Usually they have to work inside the system, but fortunately they are strong enough to resist. They are able to keep their minds and ideals clear, and often, oppression sharpens their vision, the way Martin Luther King (1963) so tremendously manifested in his speech "I Have a Dream". As Coretta Scott King (1969) later recalled, she felt that the words poured from somewhere above through Martin to the audience and they all felt a transformation.

Systems intelligence deals with the structures and ideas human agents use in order to conduct their lives successfully (Saarinen and Hämäläinen 2004). Systems intelligence does this by challenging our thinking and making us more conscious about the consequences of our actions. Saarinen (2006) has used a concept of "systems intelligence looking glass", which help to notice systems intelligence in most surprising situations. Systems intelligence is present when people use common sense, manage the whole, pay attention to important details, think with their heart and soul and use all their resources. It is a philosophy of life (Hämäläinen and Saarinen 2006).

In this article I explore the relationship between systems intelligence and forgiveness, one of the important virtues. I discuss some aspects of forgiveness: what forgiveness is and when it is needed. I link dignity and hope with forgiveness. I also study the leaders of the nonviolence ideology and link their work with forgiveness and humanity. As a case study I discuss the complex situation of South African post apartheid era. I show that the methods of the great leaders of forgiveness and nonviolence have many points of contact with systems intelligence.

"Everyone has the right to life, liberty and security… No one shall be subjected to torture or to cruel, inhuman or degrading treatment…
All are equal before the law and are entitled without discrimination to equal protection of the law… "

Universal Declaration of Human Rights, 1948

The South-African Miracle

In many aspects the era of South-African apartheid[2] regime was very controversial from the standpoint of international politics. During the cold war Soviet Union supported South African blacks and United States supported apartheid regime. However, what always annoyed me were the conflicting morals of Soviet Union and United States. Many of the policies of apartheid were exactly what Soviet Union practiced on its own people – no freedom of speech, but banning orders and internal exiles, detentions without trial and restrictions on travel and housing. Any resistance was met with violence or imprisonment. Besides, most of the victims of the apartheid regime were devoted Christians, while Soviet Union was anti-religious. Of course South African apartheid regime regarded itself as a Christian and God fearing nation, but it was not so. They even banned the old hymn "God Bless Africa". What kind of a regime does that? And United States, which is proud of being the "Land of the Free", would not allow that freedom to other Nations.

Archbishop Desmond Tutu (1994, p. 98) highlighted this paradox in his speech in 1985:

[2] The Afrikaans word apartheid means apartness, separateness. It was the official policy of South Africa from 1948 till about 1991 but it was practiced already in the beginning of the 20th century when Gandhi lived in South Africa. All races were prevented from interaction with each other. The non-whites were stripped off most of the civil and human rights.

> Many Western countries received their independence only after a violent and bloody struggle. The West has lauded to the skies the resistance movement during Second World War… And yet when it comes to black liberation, the West wakes up and suddenly finds it has become pacifist. They say South Africa is a bulwark against Communism. But injustice and oppression are surely the best breeding grounds for communism. The West is giving free enterprise and capitalism very bad names as the allies of that vicious system of apartheid.

He continued his speech by pointing out that their country was on the verge of catastrophe. Only a miracle or the intervention of the West could prevent Armageddon. But the miracle did happen, with a little help from the West. Consequently a more conciliatory man de Klerk was nominated as president. He gradually guided South Africa away from apartheid. "[On February 1990 an] old man walked out of jail. He was past seventy-one years old. More than half his life had been stolen from him by a succession of apartheid government, but he was at last free. For the first time in two generations, South African newspapers published his photograph …" Wooten (2004, p. 51) recalls Mandela's release.

Eventually on April 1994 South-Africans had their first general election day ever. It could have turned into a very bloody day; armed packs with AK-47 rifles and other weapons could have easily caused devastation. But they did not. It turned out to be a wonderful day of reconciliation and sharing. It was like a spiritual event, a religious experience as Tutu (1994, p. 4) describes:

> People of all races were standing in the same queues, perhaps for the very first time in their lives. Professionals, domestic workers, cleaners and their madams – all were standing in those lines that were snaking their way slowly to the polling booth. And what should have been a disaster turned out to be a blessing in disguise … Those long hours helped us South Africans to find one another. People shared newspapers, sandwiches, umbrellas, and the scales began to fall from their eyes. South Africans found fellow South Africans … they found a fellow human being.

How was that wonder possible, after dark decades of injustice and violence? My solemn belief is that the example Nelson Mandela and his fellow prisoners showed was vital to the birth of this modern day wonder. He refused to revenge in choosing forgiveness. The chalk quarries of Robben Island deteriorated his eyesight and everything was done to break his spirit and to fill him with hate and anger (Tutu 1999). But quite contrary to expectations, out came a noble man.

Human agents can influence entire systems.

One of the key ideas of systems intelligence is that human agents can influence entire systems (Saarinen and Hämäläinen 2004). The question is: What makes the difference in the hearts of people? First a seemingly marginal thing catches fire and causes an avalanche of consequences. Furthermore, as structure creates behaviour and behaviour in turn creates structure, forgiveness and hope spreads reconciliation in the environment like a domino effect. South African editor Malala (2004) tells in his article how his old mother felt about Mandela in 1995: "Mandela has made us people. He has given us dignity we did not have under apartheid." Egan (2000) puts it felicitously:

> Consolidation also requires reconciliation, something Mandela understands but Lenin never did. The Soviet Union has been relegated to the dust heaps of history, as Trotsky once said of the Czars, but modern South Africa seems likely to endure.

Systems intelligence is based on a principle of humbleness and optimism for change, which acknowledges that one's perspective of others might be drastically mistaken (Hämäläinen and Saarinen 2006). Beliefs regarding structures produce behaviour and people's behaviour often reflects their best guesses of rational behaviour. They can get caught in systems that serve

nobody's interest and feel helpless regarding their possibilities of changing the system, in this case apartheid (Saarinen and Hämäläinen 2004). They can even conceal their real thoughts because they are part of the system of holding back, which means that many of the core beliefs of people do not show up in their action (Hämäläinen and Saarinen 2006). People can feel insecure and as heretics and dissidents are despised by the system they are too frightened to speak up (Tutu 1999, Nouwen 2005, Varto 2005).

Mandela has made us people. He has given us dignity we did not have under apartheid.

The change begins when people start to re-think their relationship with the environment and its structures. Even a small change in one's behaviour might be a significant change for the better in the eyes of others (Saarinen and Hämäläinen 2004). Tutu (1999) notes how many South African whites were taught to believe that blacks are animals (literally). They had also mixed the concepts of "legally right" and "morally right". The new South Africa was a huge change for them as well. A breathtaking moment of reconciliation was Mandela's former prison guard among the invited guests in his presidential inauguration. As Carpenter (1998) formulates: "Ever since his release from prison, Mandela has given the whole world a demonstration of forgiveness and his attitude can be applied by each one of us."

Forgiveness as a Virtue

Human nature has tendency to retaliate or seek retribution after being insulted or victimized. Nearly all cultures have codified revenge so that it can be taken out of the hands of individuals and placed in the hands of a third party, e.g. the society (McCullough and Witvliet 2002). The work of Truth and Reconciliation Committee[3] (TRC) had obviously such an intention. Beginning was not easy; first there were some pitfalls and distrust. Not all South-Africans were enthusiastic about TRC either (Tutu 1999, Robinson 2006). But eventually it became a success.

Forgiveness may be defined according to its properties as a response, a personality disposition or a characteristic of social units. As a personality disposition, forgiveness may be understood as a propensity to forgive others across a wide variety of interpersonal circumstances. In this sense, people can be scaled along a forgiving—unforgiving continuum. Some social structures are characterized by a high degree of forgiveness (e.g. marriages, families), whereas other social structures are characterized by less forgiveness (McCullough and Witvliet 2002). It is crucial to remember that forgiveness and reconciliation happen most frequently not between friends or those who like one another. Forgiveness and reconciliation are needed precisely because people detest one another. The good part is that enemies are potential allies, friends and colleagues (Tutu 1999, p. 226). And that is not a mere utopia (Tutu 2004, p. 8):

> In 1989 they were ready to kill to maintain apartheid and to keep the beaches just for the whites. And just a few years later there we were a nation that had elected as president Nelson Mandela. This man who languished in jail for twenty-seven years, vilified as a terrorist, and who eventually became one of the moral leaders of the world.

Holloway (2002, p. 66) asks what really happens in the act of forgiving. And what does it mean to the parties involved in the conflict. Forgiveness is needed in bringing some kind of order and rationality to the chaos people have created with their own behaviour. The act and its

[3] TRC was a mechanism to deal with the crimes committed during apartheid. Under certain conditions (e.g. timeline) the perpetrators were allowed to seek amnesty, providing they told all about their crimes. Desmond Tutu was nominated the chairman of TRC by Mandela.

consequences cannot be undone, but confession may change the psychological reaction of the victim and interrupt the expected sequence of revenge. According to the Christian tradition, nobody and nothing is beyond the forgiveness of God (Nouwen 1992, Tutu 1999, Tutu 2004, Nouwen 2005). Forgiveness is also encouraged in the Bible[4]: "And be kind to one another, compassionate, forgiving one another just as God has forgiven you."

McCullough and Witvliet (2002) note that *seeking* and *receiving* forgiveness have been largely ignored by research. How do seeking and receiving forgiveness relate to confession and moral emotions such as guilt and shame? Interestingly, the process of TRC seems to give some answers. Perhaps apologies and expressions of remorse allow the victim to distinguish the personality of the transgressor from his or hers negative behaviour. This facilitates a more favourable relationship and reduces negative thoughts. McCullough and Witvliet (2002) conclude that all the world's great religions have commended forgiveness as:

(1) A response with redemptive consequences for transgressors and their victims.

(2) A human virtue worth cultivating.

(3) A form of social capital that helps social units such as marriages and communities to operate more harmoniously.

Virtues are systems intelligent (Saarinen and Hämäläinen 2004). They point beyond a person's immediate benefit and egoistic concerns by contributing the whole. They produce a better community, a better system to live in. Park and Peterson (2003) have developed the Values in Action (VIA) Classification of character strengths. They define forgiveness or mercy as forgiving those who have done wrong, giving people a second chance, not being vengeful. Forgiveness in itself is not a motivation; it is a complex of changes in one's motivations. Especially rumination of past events appears to hinder forgiveness. Emotionally stable people are less prone to ruminate in negative life events (Goleman 1995). Surprisingly though, it seems that religious and spiritual people are no more forgiving than those who are less religious and spiritual (McCullough 2001). Obviously, ability to forgive has something to do with the person's character, a person either has "character" or not.

Forgiving the Evil

To forgive does not mean that you have to forget. It is not hypocrisy and turning your blind eye to the wrong. True reconciliation exposes the awfulness, the abuse, the pain, the truth (Tutu 1999). It means telling what happened, talking about it. Trying to forget by sweeping the past under the carpet means you get trapped with your past. A much better way is to express your hurt: "I will carry the memory of what you have done with me. I will not forget but I refuse to let what you have done stand between us. I refuse to allow it to create a permanent barrier between us. I still want you in my life." (Carpenter 1998).

The key to forgiveness is understanding.

Corrie ten Boom's older sister who perished in the concentration camp asked her sister to tell everybody about what had happened, to make sure that it is not forgotten (1972). It is important that next time nobody can say: they did not know. Forgiving also involves trying to understand the perpetrators, to have empathy, not to judge but to realize the pressures and influences that might have caused their deeds (Tutu 1999, Nouwen 2005). Dith

[4] Ef 4:32

Pran (1997, p. 232), a survivor of Cambodia's killing fields says that he can forgive the ordinary soldiers. They were uneducated and poor and had no means to object their orders:

> I am not saying what the soldiers did was right and I'm not offering them excuses, but at least I understand why they did what they did. I think the key to forgiveness is understanding. I just will never understand why the Khmer Rouge top leaders did what they did. What was the purpose? Where was their humanity? They had the option to stop killing. … We need to learn to separate the true culprits from the pawns, the evil masterminds from the brainwashed. We cannot label everyone the same. There is a world of difference between the leadership of the Khmer Rouge and the individuals who followed their orders.

During TRC when listening to the horrendous testimonies Tutu (1999, p. 110) realized: "There is an awful depth of depravity to which we can all sink; we do possess an extraordinary capacity of evil." And this applies to all of us. Every one of us has a huge capacity for evil. As the Bible[5] says: "For there is no distinction, since all have sinned and continue to fall short of God's glory. "

Asking for forgiveness and being forgiven also means taking responsibility of your actions.

Tragically those who oppose the evil sometimes become brutalized and descend to the same level as those they were opposing (Tutu 1999). The society has filled them with self-hate and has destroyed their dignity. They have become part of the evil. Systems can make people act in an undesirable way and as people act this way, it is causing the system of undesirable behaviour to regenerate itself (Saarinen and Hämäläinen 2004). Carpenter (1998) explains: "That's why St. Paul said that we do not wrestle only with flesh and blood but with principalities and powers.[6] Paul is referring to social structures like sexism and racism that envelop us and the hurtful social decisions which involve us by virtue of the fact that we are alive in these times and places."

The Jewish have a special day for forgiving, Jom Kippur, when the Jewry throw their sins away. However, the tone of forgiving is different than among the Christians. Prager (1997, p. 226) explains:

> Jewish view of forgiveness is that a person who hurts another person must ask forgiveness from his victim and that only the victim can forgive him. God Himself does not forgive a person who has sinned against a human being unless that human being has been forgiven by his victim. Therefore, people can never forgive murder, since the one person who can forgive is gone, forever.

Forgiving someone who has killed your loved one is one of the hardest things you can ever do (Tutu 1999, Robinson 2006). Unfortunately, the above concept means that there would forever be an obstacle between the perpetrator and the victim (and their families), with no way out and no brighter tomorrow, no hope (Tutu 1999, p. 225). I wonder what role this unforgiveness has in the modern day situation in Israel and the surrounding Arab states. Archbishop Tutu (1999, p. 51) points out one very important fact: Asking for forgiveness and being forgiven also means taking responsibility of your actions. In order to acknowledge that you are being forgiven you have to admit and confess that you have done something that requires forgiveness (Carpenter 1998). You have to swallow your pride. However this humility has an additional bonus: "as we are liberated

[5] Rom 3:22–23

[6] Ef 6:12

from our own fear, our presence automatically liberates others".[7] In the systems intelligent sense, here the system of holding back collapses, courage conquers fear, gratefulness rules over ungratefulness and hope prevails (Hämäläinen and Saarinen 2006).

Of course, the toils of South Africa are far from over. Statistics[8] report quite a shocking story: homicide rate is the second highest in the world (after Colombia) and the mortality rate among young adults is alarmingly high, the latter mainly due to HIV. Journalist Wooten (2004) surveys the cultural catastrophe that has led to this horrible situation. As the apartheid regime had separated men into the mines and the mills and expelled women and children into the poor Bantustans it had also destroyed the strong tribal traditions of marriage and family ties. One can only speculate how enormously more difficult the situation would be if the transition period had been more violent. Tutu (2004) reminds us that just because there is more to be done, we should not forget the miracles that have taken place in our lifetime. Had Mandela not shown forgiveness and acted systems intelligently, the situation could be much worse.

Time Was Ripe

So how is it that this fine example of national renewal took place in South Africa when it did? Tutu (1999) refers to the words of the Bible: "In the fullness of time"[9]. Little earlier would have been too early; little later would have been too late. The iron curtain had fallen as the Berlin Wall was torn down in 1989. The world was on the verge of globalization and IT-revolution. South Africa had a new president. The change starts when the time is ripe and the system is ready, when the right button of people's internal system is touched (Hämäläinen and Saarinen 2005, p. 43). Tutu (2004, p. 3) calls this the phenomenon of transfiguration. The principle of transfiguration is at work when something utterly unlikely happens. He believes that nothing, no one and no situation is untransfigurable.

Gladwell (2000) suggests that ideas and messages spread just like viruses do. He calls such contagious ideas "social epidemics". I am convinced that this was the mechanism in South Africa, too. First there are only hints, nothing seems to happen and suddenly everything is changing. Hämäläinen and Saarinen (2006) note in their paper on systems intelligence that what people experience as opportunity for action results from a small but significant change somewhere in the system. It might first emerge in something marginal, and seem like a small thing, yet it might amount to the restructuring of the entire system.

One important antecessor and forerunner of the "social epidemic" of nonviolence was Mahatma Gandhi, who spent several years in his adulthood in South Africa. He had never experienced in England or India such humiliations and insults he was forced to face in South Africa (Gandhi et al. 2001). The suffering he confronted there started his development to the great man we know him. He just could not sit and do nothing. Park and Peterson (2003) name this bravery/valour character as one of the character strengths in their VIA Classification. Another strength mentioned is fairness/equity, also expressed by Gandhi: He believed that even the adversaries are good people and can be reasoned in discourse (Gandhi et al. 2001).

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[7] The words by Nelson Mandela, quoted in Luthans et al. (2004).

[8] "Report-03-09-05: Adult mortality (age 15–64) based on death notification data in South Africa: 1997–2004" on website http://www.statssa.gov.za/

[9] Galatians 4:4

Mandela writes in his autobiography (1994) how fighting against the injustices in the prisons was part of the campaign against apartheid. That was also the way they were able to keep their dignity. In "Robben Island University" – as his prison is sometimes called – Mandela studied Gandhi's ideas and writings among other readings. Mandela and other older ANC prisoners also educated the young ignorant hooligans entering the prison. This all had its effect in the chain of reflections.

The first black archbishop in South Africa, Desmond Tutu was one hugely important link in the chain. He talked and preached against apartheid for decades. He refused to rest on his laurels and lead a comfortable life in his priory. He sent letters to government leaders (1994); he participated in marches and rallies. Wooten (2004, p. 76) describes one such rally in 1990: "In Cape Town a white neo-nazi rally went unmolested by police while Bishop Tutu, the Nobel Peace laureate, and other clergymen were arrested for staging a counter demonstration."

Tutu preached on funerals. He used every opportunity to speak to the world leaders about his cause. This physically small man was like a barking dog on apartheids heels, like a nagging conscience. When one reads his Nobel Lecture (Tutu 1984), one can only admire his courage. Tutu resonated with the system of humanity in the spirit of Jesus' words[10]: "Love your neighbour as yourself." On the other hand, as Tutu (2004, pp. 13–14) reminds us: You can't force love, because "[l]ove is something that must be given freely … [We] are free to choose to love or hate, to be kind or to be cruel … To be human is to be a morally responsible creature … "

So how can a human being act intelligently and magnificently – with love – in situations, in systems where a veil of uncertainty is present? This is one of the key questions of the systems intelligence approach (Hämäläinen and Saarinen 2006). The answer is that human beings do possess systemic intelligence; people have access to the realm of flourishment. People are intelligent creatures and positive reciprocity works! As for Tutu, I find he possesses every character strength listed by Park and Peterson (2003). Hope and optimism were already present in Steve Biko's funeral in 1976 (Tutu 1994, p. 21):

> Our cause, the cause of justice and liberation, must triumph because it is moral and just and right. Many who support the present unjust system in this country know in their hearts that they are upholding a system that is evil and unjust and oppressive, and which is utterly abhorrent and displeasing to God. There is no doubt whatsoever that freedom is coming. Yes, it may be a costly struggle still. The darkest hour, they say, is before the dawn.

Ubuntu

Tutu (1999) refers to the concept of ubuntu as one of the main factors why TRC process was possible in the South African society. Ubuntu means "a person is a person through other human beings", "our humanity is intertwined" and "I participate, therefore I am". It means that one is diminished when others are humiliated, tortured or oppressed. Ubuntu also means that even the supporters of apartheid were victims of the system. In the process of dehumanizing another human being the perpetrator is inevitably dehumanized as well. Tutu (1994, p. 256) explains: "We are all wounded people, traumatized, all of us, by the evil of apartheid. We all need healing …" Both collective (ubuntu) and individualistic (traditional western) cultural values are present in the South African society. Luthans et al. (2004) draw a vivid scenario of the future for organizations where these cultural differences are nurtured and understood properly and combined with hope.

[10] Mark 12:31

At first it seems that the concept of ubuntu has no parallel with the western individualistic tradition. However, I found the following meditation by John Donne (1624) to be exactly what ubuntu is all about:

> No man is an island, entire of itself; every man is a piece of the continent, a part of the main; if a clod be washed away by the sea, Europe is the less … any man's death diminishes me, because I am involved in mankind…

Systems intelligence aims at changing the system through individuals. It is about making a difference by setting the system in motion; by creating a resonance in human hearts and wills (Hämäläinen and Saarinen 2005, pp. 30, 53). People are existential creatures that thrive on meaning. They flourish when they can sense they are being respected; they long to feel connected with something meaningful (Hämäläinen and Saarinen 2006). A systems intelligent concept "Miracle of the Commons" means one resonates with a system that tells one can contribute (Hämäläinen and Saarinen 2005, p. 16). This comes very close to the concept of ubuntu. Miracle of the Commons increases one's sense of empowerment as a result of being part of the inspiringly changing system…having participated!

A person is a person through other human beings.

Another systems intelligence idea has also close connection with ubuntu. "Sharing away the Burden" takes place when people are enriched and empowered in various small, perhaps seemingly insignificant ways. This will pay back in unexpected ways (Hämäläinen and Saarinen 2005, p. 14). An outsider can easily pass victims' testimonies in front of TRC as mere testimonies. However, for the victims and their families they were much, much more (Tutu 1999). They were the indication that they matter, that their life story is important and somebody is finally listening to them. They found relief and experienced healing through the process of telling their story. The acceptance and the acknowledgement had healing power. And they realized that the stories of other people are their own stories as well. And they became part of ubuntu through their shared stories.

This miraculous transfiguration had an effect on the perpetrators, too. Those who were in power in the days of apartheid now wanted to confess their deeds. A heavy load dropped off their shoulders as they told how they had tortured and killed people and burned their bodies and buried them. Asking for forgiveness eases the feeling of isolation and seclusion and gives new trust and courage (Nouwen 2005). And as one bereaved relative said: "We do want to forgive but we don't know whom to forgive." Now they knew (Tutu 1999). This all comes close to the psychological question asked by McCullough and Witvliet (2002): "What are the effects of feeling truly forgiven?"

Becoming a Great Leader

How are great leaders and men and women of peace and forgiving made? Rao (2004) noticed that several leaders who chose nonviolence had surprisingly similar backgrounds. They had simple and modest homes; loving and strict parents and their families had good connections with the surrounding community. The leaders-to-be were urged on to have a better-than-average education. Furthermore, their education did not stop when they got a degree, they continued their training throughout their lives. Imprisonment usually gave them good chance to study further and develop and cultivate their ideas and thinking. As youngsters, all of them had contacts with nonviolent atmosphere and role models (King 1969, Mandela 1994, Gandhi et al. 2001, Rao 2004).

Nelson Mandela was raised in the province of Transkei to be the personal adviser of a local king. He received an education to be a lawyer and he also practiced law. As a part of their divide and rule system the authorities were willing to allow traditional leaders visit Mandela while he was in jail (Mandela 1994). Desmond Tutu was the son of a well-educated schoolmaster in the rural area. Later the family moved to Johannesburg. Interestingly, Mandela and another great leader, Mahatma Gandhi, were lawyers while two other, Tutu and Martin Luther King, were men of God. Both vocations deal with the deepest needs of people; love and justice. With all these leaders, nonviolence was linked with their sense of morality and their value system based on love and humanity. King and Gandhi were religious which strengthened their nonviolence ideology. According to Rao (2004), Mandela's reasons are not religion-related but more practical, a strategy. However, my opinion is that as he received most of his education at missionary schools and institutions, no doubt, it affected his thinking.

The Christian resistance is nonviolent because the peace they are reaching for is not from this world (Nouwen 2005). It is not reached by taking slaves, not by showing one's power but by love, willingness and turning the other cheek. The peace-bringing resistance does not divide the world into friends and enemies, but believes that everyone is a Child of God. Nonviolent leaders are thought to be naïve and even traitors. Those who have the power often regard nonviolent resistance dangerous in the spirit of the slogan[11] "you are either with us or against us."

A great leader is also willing to take risks and do things that are not very popular at the moment.

A leader is somebody who significantly affects the thoughts, feelings and behaviour of a significant number of individuals (Gardner and Laskin 1995). A leader can be a direct or indirect leader but either way; he or she has to have a story to tell and should embody that story in his or her own life. The rarest subtype of a leader is the visionary leader, who actually creates a new story, one not known to most individuals before. Gardner and Laskin (1995) name Jesus, Buddha, Mohammed and Gandhi as such leaders. I want to add to that list a few names more: Martin Luther King, Desmond Tutu, and Nelson Mandela.

To be a great leader you do not have to be macho although current culture seems to admire strength and cynicism. Nouwen (1992) notes that our modern world is constantly comparing everything and everybody, it is giving points and scores and calculating whether something is worth doing. The leader I am describing here is something different; a leader of hearts. Tutu[12] refers to Jesus when he describes an ideal leader:

> The real, the authentic leader shows the attribute of leadership in a kind of paradoxical way, almost an oxymoron. The leader is a servant. So leadership is not having your own way. It's not for self-aggrandizement. But oddly, it is for service. It is for sake of the led. It is a proper altruism.

Tutu continues that we ultimately recognize goodness. Suffering surely is one of the components that make a leader competent. He refers to Mandela and his readiness to forgive those who treated him so badly. Holloway (2002, p. 88) visited Robben Island Museum and was stunned to see how barren and cold Mandela's cell was and realizing the enormity of his graciousness. Forgiveness flowing from those conditions is almost impossible to understand, it seems insanity

[11] Used by many leaders, one of the latest being George W. Bush on the war against terrorism.

[12] An interview in 2004 by Academy of Achievement: http://www.achievement.org/autodoc/page/tut0int-1/ (accessed 20 January 2007).

draped in grace. Normally such a place produces aggressive avengers but somehow, a miraculous transfiguration took place.

Collins (2001) describes a Level 5 Leader, who is a paradoxical combination of personal humility and professional will and who acts with quiet calm determination. Kallasvuo, President and CEO of Nokia says (2007):

> Having humility does not mean that you are quiet or that you lack the courage to say what you think. Courage and humility are more complementary than contradictory. People who have been humbled by being down and out can have more courage when things get tough. They've been there already, and they understand that things are not always easy. But having humility does mean that you put your own contribution in perspective.

A great leader is also willing to take risks and do things that are not very popular at the moment. Mahatma Gandhi (Gandhi et al. 2001) experienced that, too, as well as so many modern day organizational leaders do almost daily basis. In systems intelligence framework there is an interesting idea of "you never know what tomorrow brings", which means that it is good to be open to new things, to have a curious mind (Saarinen 2006). Something that is underrated today can be the most important idea tomorrow, like microloans (Hämäläinen and Saarinen 2007, p. 29). This is how many inventions are made.

Finding Your Own Path

I already showed education to be an important factor in becoming a great leader. Time and space are also essential in the process of finding your way (Rao 2004). Gandhi, King and Mandela each had space to develop their ideas, whether it was in university or abroad or in jail. Space can be a personal space or interpersonal space where one can meet other people and learn from them. One can grow to see the others' perspective and learn to respect them. Space can be physical space like a cell or non-physical space like prayer or meditation. Tutu also had time and space for his thoughts, as a priest he was able to retire to solitude and prayer. Prayer brings spiritual peace, and spiritual peace brings you to confess your own responsibilities regarding the environment and its structures (Nouwen 2005).

"The calling to speak is often a vocation of agony, but we must speak."
King, 1967

Gardner and Laskin (1995) remind us that the audience is not a blank slate, waiting for the first story. Rather, the audience is equipped with many stories that have been told and retold over and over again. Thus a leader must compete with the previous stories, and if the new story is to be a success, it has to outweigh all the other stories in some way. King realized that leadership is entirely about the character, as other great leaders like Churchill and Lincoln had realized before him (Phillips 1998). King was skillful in telling his story, he was compassionate, and he cared for people. So was Tutu. They knew that all the people are Children of God and that made their message especially touching: "Now is the time to lift our nation from the quicksands of racial injustice to the solid rock of brotherhood. Now is the time to make justice a reality for all of God's children" (King 1963).

In the beginning of his career Mahatma Gandhi was a shy man, to whom public speaking was extremely difficult, almost impossible (Gandhi et al. 2001). One of the paradoxes of leadership is that you do not have to be a daring extrovert to be brave. Phillips (1998, p. 98) notes: "Simply being up there on stage makes an individual appear more courageous than others who are unwilling to take the risk." King (1967) said in one of his great speeches: "And some of us who have already begun to break the silence of the night have found that the calling to speak is often a

vocation of agony, but we must speak. We must speak with all the humility that is appropriate to our limited vision, but we must speak."

Kallasvuo (2007) tells about a decision he made early in his career:

> I made the decision that this is the life I am going to lead. I'm serving the company, and I will give it my all. When you have made that decision, you grow as a person. It gives you the courage to speak up when everyone in a room says 'this is the case', and you don't agree. It gives you strength to resist the safe conformity of benchmarking and instead try to think differently.

As Varto, a leading phenomenologist in Finland says in his deliberation on Simone Weil (2005), it is important always to be critical, because it makes us test all the ideas, also those ideas "everybody" is agreeing with. Hardly ever "everybody" has it right but quite often totally wrong. "Everybody" is following those who shout the loudest. This also means that a thoughtful and conscious person has to tell bad is bad and make good look good, to prevent at least somebody from getting lost. This means we have to speak up, however hard it might be.

Kotter (2007) discusses important factors that cause a transformation process to fail or to succeed. One of the success factors is having a clear vision and communicating it successfully. A good vision goes beyond the numbers and says something that helps clarify the direction in which the organization needs to move. If the vision is too complicated or blurry it is not very useful. I find the idea of Rainbow Nation that has become the symbol of South Africa exactly what Kotter is talking about. The term was coined by Desmond Tutu to describe the post-1994 era[13]. The slogan "Rainbow Nation – One country, many peoples" has been successfully used to describe the new multicultural South Africa.

Songs and pictures help in communicating the vision. Martin Luther King encouraged the use of Negro spirituals and songs like "We shall overcome" and "Go down Moses" as part of their campaign (Phillips 1998, p. 98). The same applies to South Africa. Luthans et al. (2004) quote Mandela: "The curious beauty of African music is that it uplifts even as it tells a sad tale. You may be poor, you may have only a ramshackle house, you may have lost your job, but that song gives you hope." Paul Simon and his Graceland brought South Africa to the general awareness the same way Joan Baez and other Woodstock era artists did to the civil rights movement.

So the God seyeth: go down, Moses
Way down in Egypt land
Tell all pharaoes to
Let my people go!

So Moses went to Egypt land.
Let my people go!
He made all pharaoes understand.
Let my people go!

Yes the Lord said go down, Moses
Way down in Egypt land
Tell all pharaoes to
Let my people go!

Thus spoke the Lord, bold Moses said:
Let my people go! *(Trad.)*

[13] http://en.wikipedia.org/wiki/Rainbow_nation

Conclusion

Think for a moment, what we could achieve if we conducted our lives like Mandela or Corrie ten Boom, or Jesus! Forgiveness in itself creates goodness. When you deep in your heart decide to forgive or ask for forgiveness, progress begins. And it does not have to be easy, like Corrie ten Boom (1971), a concentration camp survivor tells us. She had great difficulties forgiving a concentration camp guard in the late 1940's but finally she decided that she *must* forgive (because that is what she had been teaching!). When she forced herself to reach out and shake hands with her oppressor a miracle happened, a transfiguration such as Tutu (2004) described. She suddenly sensed warmth towards her former jailor and all her resentment was gone.

We have many days for celebration, like St Valentine's Day, or Mothers' Day or Thanks Giving Day. What if we had a universal Day of Forgiving! We would post beautiful cards saying, "Forgive me" and "I forgive You". Why is it so much easier to ruminate in your bad feelings than it is to forgive your trespassers and take a positive and respectful attitude on life? When we wrestle with flesh and blood, forgiveness is not easy but it is discernible. It's when we move beyond the interpersonal relationship that we lose sight of the power of forgiveness (Carpenter 1998). Tutu (1999, p. 228) hopes that the world leaders and the parties of conflicts would begin to make symbolic gestures of peace and would change the way they speak about their enemies and began talking to them instead. Consequently, the behaviour is bound to change, too. A Miracle of the Commons would happen. This would bring love and consolidation between human beings and entire nations (Nouwen 2005). Who will take the first step?

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CHAPTER 11

Reasons of Systemic Collapse in Enron

Matti Rantanen

This article studies the moral development at Enron from the perspective of its long-term CEO and chairman Ken Lay. I focus on some critical decisions in the early years of Enron and speculate why Lay chose in favour of non-systems intelligent solutions in leading morale. According to the outlook developed it is plausible to think that immoral behaviour at Enron stemmed not so much from Lay's immoral character but from his Christian values. Neglecting opportunities to change his value structure Lay avoided tough decisions that marked loss for others. Consequently, unable to make decisions objectively based on systemic rather than individual motives, he lost his opportunity in creating coherent corporate values promoting moral integrity. If the suggested causality is true, it underlines the importance of conscious moral leadership as an everyday discipline.

Introduction

This article discusses the story of Enron, the infamous American energy company that December 2, 2001 filed the largest bankruptcy case in US history, totalling losses around 66 billion US dollars,[1] forcing 4,000 unemployed,[2] and bringing down Arthur Andersen, [3] its auditing company. For many of the "bad" and publicly convicted Enron executives it has been the worst nightmare come true, a personal travesty. Cliff Baxter, an Enron executive, has committed suicide and Ken Lay, after being found guilty of conspiracy and fraud, died of heart attack. We might ask, why did these people choose to risk so much? Did they not consider personal responsibility? Did they not consider the possibility of prosecution and consequences of public hate? Did they not consider the pain and anguish their relatives and family would have to bear?

From a systems analytic perspective the case of Enron is intriguing. It provokes us to ask what made people behave the way they did? What was it in Enron that made some of the worst in human nature prosper over the good, and why did nobody intervene until it was too late?

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[1] http://www.geocities.com/ritholtz/writing/fiasco.html

[2] http://money.cnn.com/2006/05/25/news/newsmakers/enron_verdict/index.htm

[3] June 15, 2002 Arthur Andersen was convicted of obstruction of justice in the Enron case, resulting in loss of its licenses and right to audit public companies.

History knows many similar incidents where a system takes over, where people in disdain look in retrospect, saying, how could something like that have happened? In this respect Enron is no different; it is a testament to human nature, of the frail nature of human morale. At the same time it is a case about the system, about the social, and the affect that the system has on the individual.

My objective here is to suggest some reasons why immoral and irrational behaviour came to be in Enron. I focus on Ken Lay's leadership and speculate why he chose in favour of decisions that were non-systems intelligent in terms of the company's long-term moral development. But rather than assuming immoral behaviour at Enron having roots in the immoral character of the leader, I develop an outlook that attributes some of the problems in moral development to Lay's emotional life. I discuss the possibility of a conflict between his Christian values and those required in moral leadership and suggest how this conflict, when repressed, may have undermined his moral integrity and motivated immoral behaviour in his followers.

The article is structured as three stories that focus on the early years of Ken Lay's leadership in Enron. I have intentionally left the later years unexamined and concentrate on how the moral decline in Enron may have started. The narrative structure of the inquiry is hoped to take the reader into Enron – into Lay's world – and help see situations from the inside, in order to appreciate the conflicting demands (or tensions) on values leaders have to respond to. Here the article is similar to the Systems Stories of Oshry (1999).

Having created a morally downwards driven system in Enron need not imply Ken Lay having lacked moral motivation. There may have been more systemic reasons.

The three Systems Stories and their analysis are followed by a section on causality and morale at Enron. This part draws some analogy to the work of Senge (1990), who has identified causal patterns typical to organizations. But here I discuss causality primarily from the viewpoint of the individual and illustrate how Lay's leadership may have motivated undesirable patterns of causality in the overall organization and how his values might have been ultimately responsible.

Story I: Values and Experience Compromising Decision-Making

Ken Lay was the man that created Enron. He was the son of a Baptist preacher, spoke openly about corporate values and was openly religious. "Everyone knows that I have a very strict code of personal conduct that I live by", he once told an interviewer for a religious magazine *The Doors*. "This code is based on Christian values" (McLean and Elkind 2003, p. 3). He was also a hard man not to like. He built a reservoir of goodwill among those that worked for him, and made a point by serving drinks for subordinates along for the ride on Enron's flagship jet. He remembered names, listened earnestly, and seemed to care about what others thought (McLean and Elkind 2003, p. 3). In terms of conventional *virtue ethics* he resembled a good man.

But in addition to being a man of virtues Lay was intelligent – both analytically and socially. He earned a Ph.D. in economics, during the Vietnam War worked at the Pentagon, and in 1972, thanks to influence of his professor, joined the Nixon White House as undersecretary of energy. Lay was only 30 years old at the time. It was the year of the Arab oil embargo, electric brownouts were common and the country suffered shortage in natural gas – a spectacular moment in history to be working on energy policy. But Lay was more a businessman than politician at heart and soon quit realizing the opportunities policy changes were about to bring to the industry. He rose fast through the ranks and eventually in 1984 was hired to head Houston Natural Gas. The following year the company merged with InterNorth and was named Enron.

What helped Lay's fast ascent was probably the combination of systems thinking and respect for others. As an economist of Washington experience he understood how the market was about to change. But his vision alone was not power. What made Lay powerful was his ability to build an extensive network of relationships over the years. And it was his way to treat people that made him so good at it. He respected others by listening to them, he treated others as he would have treated himself and did favours without asking anything directly in return.[4] Indeed, it seems that at least in the early years Lay genuinely believed in Christian values, acted altruistic and represented age-old virtues of good life that are supposed to bring good to the whole system.[5] So, why did the virtues not take seed in Enron? And why did something so bad get created instead?

A decisive weakness

Indeed, despite the good virtues – or due to them – Ken Lay did have a decisive weakness. Although he was generally strong on interpersonal skills, especially in soothing conflicts, he avoided tough decisions that were certain to make people mad (McLean and Elkind 2003, p. 3). He would rather throw money at a problem or let the subordinates work out the conflict themselves.

This problem is particularly clear in the case of the emerging markets where both Enron consultant John Wing and head of Enron Development Rebecca Mark were continuously competing for the same deals during the mid-90s. Instead of drawing clear boundaries Lay created complex arrangements that confused people. When the board fired John Wing in 1991, Lay offered his former star dealmaker a lucrative consulting contract to keep him onboard. Although the contract did make financial sense in isolation, overall it confused and held back development at Enron.

This illustrates an important point. Altruistic behaviour is not the same as systems intelligent behaviour. Clearly, Lay was constantly drawn in conflict with his beliefs when confronted with situations that required drawing a line and letting go of something in favour of something else. Lay did not seem to internalize that letting go had value in simplifying the system, that what was left could in fact be greater than what previously was. Lay seemed to think only about the part of the system that was being let go of, not the whole. This thinking represents transactional leadership (Burns 1978) where letting something go only makes sense if the part let go cannot deliver more than it asks. This of course is a simplistic view on systems. In reality, cutting a "bad branch", although productive, may improve performance overall.

Roots of the weakness

It is most interesting to consider the reasons for Lay's line of systems thinking. In order to understand it we have to pay a visit to his past, looking at experiences that could have invoked the skewed outlook on systems logic. I start by discussing Lay's divorce from his first wife Judie in 1981. At the time Ken was 39 and about to become president of Transco, a Texan natural gas company. Judie was his high-school sweetheart, but Ken had fallen in love with Linda, his secretary, a divorced mother of three, whom he quickly married just one month after the divorce became finalized. Although after the divorce Ken established a "remarkably cordial relationship"

[4] An example of not asking favors in return is Lay's Transco in 1984 offering to act as white knight, repelling a takeover attempt over Houston Natural Gas.

[5] Aristotle, Nicomachean Ethics, Book I Chapter 2 (Aristotle 1996, pp. 3–4).

with Judie – a further testament to Ken Lay's ability to smooth over any conflicts – the divorce itself was anything but smooth (McLean and Elkind 2003, p. 7).

It was in late April 1981 that Ken Lay filed for divorce, requesting custody of his two children. Judie responded in court papers that Ken was unfit to have custody. A few weeks later she suffered what doctors called a "psychotic episode" resulting from "manic-depressive illness." The psychiatrists treating Judie concluded that the episode was triggered by the couple's impending divorce. As one psychiatrist later testified in deposition: "The divorce or the thought of a divorce hit her very hard. 'It was like dying,' as she put it." (McLean and Elkind 2003, pp. 7–8)

This appears as a very traumatic experience also for Ken Lay. It is likely that Judie's unexpected condition triggered a sense of insecurity in him. His thinking had missed something important. As he was preparing to let go of Judie in exchange for Linda he had unexpectedly come in conflict with himself – his Christian values. By divorcing Judie he may have realized having inflicted harm on someone who had responded to his values – returned his love, return of love being the systemic response for his altruistic behaviour of giving love. So, what seemed at first a rational choice between two alternatives brought to surface a deep conflict with his decision-making and value structure. He could have internalized on an unconscious level the dual nature of altruism as follows: What made possible for him to bond so closely with others also avoided them from being separated of him. In other words, there was no undoing of "social contracts" for the missionary of Christian values! Building of social was the imperative, not the pruning. What was once built was meant to be.

Had Lay admitted sadness and taken a reflective retreat he could have questioned the appropriateness of his values in this new world of his where "letting go" was becoming as important as "holding on."

It is important here to understand that the logic that derives from such deep Christian values most likely has limitations to applicability. In Lay's case it worked well for winning other peoples' trust and fellowship critical for his climb to the top, but worked against him once there. The burning question is, could Lay have learnt to overcome his disposition toward making hard decisions that marked loss for someone. Saarinen and Hämäläinen (2004, p. 18) assume that critical to such circumstances is "thinking about thinking, a meta-level capability fundamental to man as a self-corrective system". According to Goleman (1995) human emotions have a critical role to play in managing self-corrective action.

Emotions and self-corrective action

In 1981, at the time of the divorce trial, what possibly took place in Lay's mind was a denial of own emotions. The three-minute hearing, leaving directly for the airport from court after setting the divorce and remarrying within a month are behaviours supporting the tuning-out of emotions such as sadness that bring into the mind's focus what has been lost and what there is to learn. In short, Lay, no matter for what reasons, seemed to neglect the opportunity to learn by taking a "reflective retreat from the life's busy pursuits" by admitting sadness (Goleman 1995, p. 70). Had he taken this retreat, slowed down and reflected upon what he had lost, he could have learnt to master his mind and question the appropriateness of his values in this new world of his where "letting go" was becoming as important as "holding on."

Story II: Deceiving the Self and the System

The post merger years were hard on Enron. The company was under crushing debt and to honour its loan agreements it needed to report earnings at least 1.2 times interest each quarter. As the company struggled making profit altogether profits exceeding earnings requirements on one quarter were little use if falling behind on the next. In addition Wall Street awarded for steady earnings. McLean and Elkind (2003, pp. 18–19) suggest it was for these reasons Enron committed to profit shifting deals, moving excess profit from one quarter to the next through entities operating outside the Enron books. One of the business units that did profit shifting was Enron Oil.

Enron Oil was unlike Enron's other businesses. It was not capital intensive like the infrastructure projects and it was highly profitable, at least in 1986 when Enron overall was loosing money. But Enron Oil was also isolated, operating close to Wall Street, distant from Enron headquarters in Houston, Texas. It was probably the combination of profit shifting responsibility and isolation that made Enron Oil ripe for abuse. A critical instrument in this were the double books maintained by Enron Oil. This arrangement allowed Enron Oil awarding its traders for the profit shifting deals while keeping the details hidden from the rest of the company. The concealment of true financial activity also made proper auditing and risk management impossible.

"…I have complete confidence in your business judgment and your ability and your personal integrity. Please keep making us millions…"

Although in early 1987 Enron senior executives were onto the true nature of activity in Enron Oil, they were terrified of the effects their sanctions could have on the business. A fax sent by Enron's number two executive to Enron Oil's head Louis Borget after an Arthur Andersen investigation illustrates this particularly well. It said, "…I have complete confidence in your business judgment and your ability and your personal integrity. Please keep making us millions…" (McLean and Elkind 2003, p. 20). Later at a board meeting when the conduct of the traders was called upon for discussion Lay openly said the traders made too much money to be let go of (McLean and Elkind 2003, p. 21).

However, the house of cards eventually collapsed in October 1987. Louis Borget disclosed Enron Oil trading losses amounting to well over $1 billion, risking bankruptcy for the entire company. Though positions could finally be closed at a much smaller loss, Enron was forced to take an $85 million after-tax charge to its earnings that year. The loss upset banks and investors. In response Enron pressed charges against Borget and the traders; meanwhile the executives appeared shocked at what had happened. At an all-employee meeting Ken Lay told he had been blindsided by Borget. "If anyone could say that I knew, let them stand up", he said (McLean and Elkind 2003, p. 23). In reality Lay had approved it all. In a mid-August 1987 board he had even approved to increase Borget's trading limits by 50 percent.

Potential for miscommunication in values

Looking at the scandal from the outside it appears that Ken Lay chose to shortchange profit for values, turning the blind eye to fraud in exchange for money Enron desperate needed. This view represents transactional leadership (Burns 1978) where the leader bargains with extrinsic motivators, such as money, in exchange for favours and work done. The problem with this genre of leadership is its low regard for intrinsic motivation, such as pride in work. In the case of Enron Oil as the management did not commit to managing intrinsic motivations they left them defined by the employees. Interpreting the communication with Enron executives Borget along with his traders sought to define their own structures for motivation the Enron management seemed to

support. Had the communication been more in nature of transformational leadership (Burns 1978) that seeks transformation by managing the motivational structure, the outcome could have been altogether different.

We should however develop this view on leadership further by examining the causes for the behaviours that appear here as transactional. To the outside (especially if we think in transactional terms ourselves) the communication among Lay and the traders may *seem* like a transaction, and even in Lay's words it *was*, but what drove Lay to pursue the transaction in the first place could have been his disposition to "hold on." And considering the likely roots of this disposition it is most troubling to notice how Lay's Christian values might have worked against him by supporting the traders in applying their own, less moral motivational structures.

Although Lay seemed to practice transactional leadership, it was his disposition to "hold on" that motivated the transactions, not his outlook on leadership.

It would thus be somewhat incorrect to say Lay motivated by transactions although on the surface the communication between Lay and the traders assumed such nature. It is here important to understand that dispositions for behaviour, especially if unconscious, can be deceiving and that the problem of morale can be attributed to miscommunication. Considering the communication Lay could have assumed his Christian values non-compromised by the situation whereas the traders may have only observed the transactional values. The traders could equally have assumed their cover exposed and interpreted lack of sanctioning as approval of immoral conduct, whereas Lay might have assumed the traders taking self-corrective action.

Overall, the miscommunication in values, if we were to interpret it as such, is related to the "masking" problem where on the surface a dispositional attribution looks true, but is accompanied by competing or complementing ones that may be masked by the first one (Doris 2002, p. 16). For example shyness may mask friendliness, and depending on the nature of the circumstances this may leave an undesired impression. In similar fashion it is possible the communication between Lay and the Enron Oil traders invoked an undesired impression by masking the true values.

Reactive moral leadership

Enron Oil having failed let's examine where the system was headed and assess Lay's role and influence on the moral development of the organization. I will begin by considering Burns (1978, p. 36) on conflict and consciousness:

> … only the followers themselves can ultimately define their own true needs. And they do so only when they have been exposed to the competing diagnoses, claims, and values of would-be leaders, only when the followers can make an informed choice among competing "prescriptions," only when – in the political arena at least – followers have had opportunity to perceive, evaluate, and finally experience alternatives offered by those professing to be their "true" representatives. Ultimately the moral legitimacy of transformational leadership, and to the lesser degree transactional leadership, is grounded in *conscious choice among real alternatives.*

Burns argues that people are not always aware of their true needs, and awareness emerges through conflict that the leaders need to properly facilitate. His argument is congruent with Freudian theory on the development of morale through the resolution of Oedipal conflicts and instruction (Burns 1978, p. 35). But whereas Burns argues for conscious leadership the case of

Enron Oil demonstrates very clearly how leaders are inadvertently caught up in situations in which the followers are exposed to "prescriptions" that were never intended by their leaders. Put differently, Freudian theory on conflict resolution argues for the importance of conscious moral leadership whereas Enron demonstrates the emergent nature of demands imposed *on* leadership that significantly narrow down the leader's alternatives.

My argument here is that the Enron Oil scandal worked much like a "prescription" that made employees of Enron conscious of their own good moral values by demonstrating the connection between immorality and disaster. Conversely, given the evidence it would have been illogical for them to choose in favour of the immoral as its outcome was now in clear conflict with their need to succeed. The scandal thus forged and hardened the good values of the system (similar to development of Freud's superego), although the act of offering alternatives was not a conscious act of leadership in the sense of Burns.

In protecting the moral integrity of Enron Lay discredited critics such as Muckleroy and the auditors by demanding their allegiance in a secret.

Although the developments in value structure were good news for the system, they were bad news for Lay as they drew him in conflict with his past involvement and Enron's developing good values. In addition, he was further confronted by demands from the outside (from institutions such as banks, investors, regulatory authorities, the IRS and the SEC) that were now congruent with the value demands from inside of Enron. This limited Lay's alternatives further and ushered Lay into a "discrepant role" (Goffman 1959, p. 141) in which he was persuaded to downplay his past involvement in order to respond to the demands for good values. However, such concealment of "destructive information" risked disgrace in front of those that knew about the conflict with the past and the future.

Systems consequences of Lay's response

By choosing to give a performance at the all-employee meeting that denied personal responsibility for the Enron Oil scandal Lay created two groups in his audience: those that interpreted his performance as the truth and those interpreting it as a lie. Of course those that had been closely involved in Enron Oil and had access to "backstage" information saw the disturbed coherence in Lay's performance and were inclined to interpret the performance as a lie. The lie was arguably given to conceal evidence of a lower moral ground practiced by the executives than now demanded by the employees. The lie therefore was given to protect what Goffman calls a "dark secret" that contains "facts about a team which it knows and conceals and which are incompatible with the image of self that the team attempts to maintain before its audience" (Goffman 1959, pp. 141–142). However, in saving face Lay created further change.

For people such as the auditors and self-motivated critical thinkers who had in vein tried to intervene in Enron Oil Lay's secret was a "free secret", one that if disclosed would not discredit their own image (Goffman 1959, p. 143). But as often is with free secrets, it was presented in a way that persuaded these groups to entrust it. For example Mike Muckleroy who had on several occasions pushed Lay to see the risks in Enron Oil was furious on hearing these demands (McLean and Elkind 2003, p. 23). Clearly, with his behaviour Lay discredited critics such as Muckleroy and the auditors by demanding their allegiance in a secret that ultimately contradicted with their original righteous motivations. Lay thus fundamentally undermined motivation for further constructive critique and organizational learning from their part.

But Lay's performance could be argued having other consequences as well. Those entrusted to the secret were now caught up in a reality of double standards where on one hand they knew truth

was no longer objective and on the other they needed to preserve the sense that it still was. Such a state of mind in which multiple conflicting thoughts or realities are held true at the same time is extremely stressful for the individual and is known in psychology as *cognitive dissonance.* In a classical experiment Festinger and Carlsmith (1959) discovered that some subjects sought to offload part of the tension arriving from conflicting thoughts through disregard for their private opinion. In this respect, Lay's demands for maintaining the conflicting truths may have caused lack of freethinking for those entrusted to the secret.

A systems intelligent intervention

Overall, although taking place in the 1980s, I consider the Enron Oil scandal critical for Enron. The company had been brought to the brink of bankruptcy and these early incidents were conspicuously similar to events unfolding later leading to final collapse in 2001. We should thus ask, why the management did not learn and create appropriate change? The problem, I argue, was the management's reactive role in moral leadership. They were constantly reacting to demands of the system, not consciously leading it. In addition, as we realize, the management created situations in which it contradicted itself, discrediting themselves and undermining faith in their moral responsibility.

Had Lay admitted responsibility and advocated for one objective truth he would have made useless the complexity now motivating immoral behavior and holding back further honesty.

I will now inspect opportunity for change in Enron, exploring how the management could have broken out of this reactive loop and assumed leadership of morale. I will discuss this through the looking glass of Systems Intelligence, a discipline marked by optimism for change (Saarinen and Hämäläinen 2004, pp. 22–31). The instrument for change is the systems intervention, an action, performance, or behaviour that succeeds in harnessing the demands of the system with human alertness for detail. Fundamental to such interventions is appreciating that small things matter as much as the whole. History knows many incidents where a seemingly minor event starts a cascade of events propagating through entire systems, resulting in permanent change.[6] Lay's performance in front of the all-employee meeting had such potential. The question is, what should the intervention have been and what was holding it back?

Instead of creating more complexity and hard to manage feedback systems Lay could have sought to simplify the system, giving it a fresh start. Had Lay admitted responsibility and advocated for one objective truth he would have made useless the complexity now motivating immoral behaviour and holding back further honesty. This intervention would have nevertheless made Lay vulnerable, throwing his and his allies' faith in the hands of the system. But honesty is a very positive mechanism for it insists forgiveness (see further Seppä 2007 on forgiveness). Had the Enron system not forgiven,[7] it would have committed self-deception, making useless any further attempts to divert to righteousness. I will now examine why such a systems intelligent response

[6] Consider for example the incident of Ms Rosa Parks refusing to give her seat to a white man on the Montgomery city bus in 1955. Given the seemingly minor nature of the incident, it however sparked a cascade of events, reaching epic proportions, influencing the civil rights movement in the US.

[7] It should be remembered that forgiveness is many times coupled with sanctioning. It is done in order to promote moral development by assuring that those that do not regret do not make the system of forgiveness useless. Thus it is fair to assume Lay nevertheless sanctioned although forgiven.

proved so difficult for Lay. The discussion that follows shows how important the self-system is in systems intelligent behaviour.

Systems of holding back

If we accept the earlier argument for miscommunication of values taking place between Lay and the traders, it is quite possible that Lay did in fact not feel responsible for the immoral conduct in Enron Oil. If this is the case, it is logical to assume Lay trying to distance himself from the scandal. Would not it have been non-systems intelligent in itself for Lay to take blame for something not responsible for? In other words, from where Lay was standing the performance he gave at the all-employee meeting was not necessarily a lie but his subjective truth. The distinction between these two interpretations is both important and troubling; in one Lay is the victim, in the other he is the oppressor. As we now realize, fostering a performance of truth could have been far more challenging than we are inclined to understand as it may have demanded Lay contradicting his own beliefs.

Another system holding Lay back from committing to systems intelligent change could have been his unconscious. The Enron Oil scandal quite realistically risked disgrace for Lay. Such primal fear may have been interpreted by Lay's unconscious as an attack on his self-esteem. In such circumstances the self-system works to ward off threat by applying different types of schemas that hamper objective thinking (Goleman 1997). It is worthwhile noticing that Lay's Christian values may have made matters worse as the claims being made concerned morale, claims a religious man might not take lightly. Lay's mind could thus have been particularly weak under the circumstances. He may have experienced what Sullivan (1953, p. 160) refers to as "uncanny emotions," feelings of such severe anxiety that practically prohibit any clear understanding of the immediate situation. It is thus no wonder Lay's opportunity for systems interventions never realized as his mind may have been preoccupied with protecting the self-system.

A religious man like Lay might not have taken the moral accusations lightly. In response he might have over-performed in denying responsibility for the Enron Oil scandal.

Story III: A Critical Intervention Fails and Immorality Takes Seed

Somewhat a paradox, the trouble with Enron Oil marked the rise of Rich Kinder as the company's number two executive. He was a practical man that did not avoid hard decisions like Lay did. He understood what Lay's indecisiveness was doing: Backbiting had become part of Enron culture, and since executives felt they could always get Lay to reverse a management decision, it had become impossible for the company to act decisively (McLean and Elkind 2003, p. 26).

Change for better – and worse – got eventually under way at mythical meeting in 1988 during which Rich Kinder declared "Enough of this!" The company's problems were like alligators he growled. "There are alligators in the swamp", he said. "We are going to get in that fucking swamp, and we're going to kick out all the fucking alligators, one by one, and we are going to kill them, one by one" (McLean and Elkind 2003, p. 26). And Kinder delivered his promise: He made tough decisions that changed the climate; he cut down debt and paired costs relieving pressure.

Rich Kinder's influence on values

Although Kinder was the leader Enron desperately needed in bringing order to chaos he was also the one to pioneer the boundaries of morale. He worked to reduce complexity, which Lay's

indecisiveness had motivated, but at the same time he created complexity of a moral nature by installing questionable accounting practices. In this respect Kinder was never motivated by values in the sense Lay was. He was rather driven by financial objectives. For him it was the end, not the means that mattered. Lay on the other hand was a more complex character caught in the middle of conflict between his Christian values and financial objectives.

Although Kinder was the leader Enron desperately needed in bringing order to chaos he was also the one to pioneer the boundaries of morale.

Although questionable, the accounting tricks Enron pulled during these early years were not illegal (McLean and Elkind 2003, p. 92). They did however push people's morale into the gray zone. Possibly realizing this Lay chose not to promote Kinder as CEO, something the two had agreed taking place in 1996. But Lay's intervention was problematic. Considering Kinder's influence on morale at Enron it would have made more sense letting him go as early on as 1987 when he clearly stood in support of the profit shifting deals in Enron Oil (McLean and Elkind 2003, p. 21). Alternatively, Lay could have kept him onboard to "control the damage". Now, instead, Lay seemed to compromise between two plausible alternatives. At first look it seems the only advantage in delaying the decision until 1996 was in not having to take personal responsibility.

A systems intervention and the complex dynamics of moral behaviour

I will now examine from a systems analytic perspective how intelligent Lay's systems intervention really was. I will also explore more in depth Lay's rationale in his fight against the immoral and discuss possible roots for his strategy. The objective is to try to uncover how his mind might have been mislead into thinking certain strategies as more effective than they really were. I begin by discussing the systems dynamics of moral behaviour.

Aristotle (1996, p. 38) writes in chapter four of Book Two of Nicomachean Ethics: "a man becomes just by doing just action and temperate by doing temperate actions". In other words, moral virtue as a habit of right action is formed by acting rightly. Fundamental to this formation is the human mind's urge to explain behaviour and justify it in retrospect. And this mechanism works just as well for immoral as it does for moral behaviour. Moreover, in examining immoral behaviour the mind looks for reasons for having acted immoral, and if it succeeds, it may adopt these reasons as justified causes for further immoral behaviour.

The two leaders focused on different parts of the Enron value system: While Lay promoted the good Kinder controlled the bad. With Kinder gone bad growth was let loose.

In social systems this mechanism is further influenced by the examples set by others. In other words, people look for reasons in other's behaviour, and adopt the behaviours if applicable and justifiable. For this reason minor immoral action may be deceivingly dangerous. Under favourable, or rather, unfortunate conditions immoral action may invoke a cascade where more and more people become influenced by an ever-expanding network of individuals realizing rationale in the immoral. In this respect, mechanisms of immoral action are no different to contagious disease (Watts 2003), diffusion of innovations (Rogers 2003) or cultural change (Gladwell 2000).

Now let's look at what went wrong in Lay's systems intervention. Once Kinder left Enron the controls maintaining the delicate balance between the moral and immoral changed. Lay's attention to details was nowhere near that of Kinder, and in the absence of decisive and regular management of the immoral (such as rules limiting accounting tricks, supervision and

intervention) the immoral behaviours were let loose. However, the logic in Lay's system intervention may not have been as flawed as we are inclined to think. The strategy Lay apparently applied sought change by promoting the "good" moral values, whereas Kinder's strategy was practically about control of the immoral. In other words, the two leaders focused on different parts of the value system.

This difference in strategy is perfectly congruent with the earlier view developed on the two leaders' positions regarding values. If we accept Lay as altruistic it is also logical to assume his strategy regarding corporate values reflecting altruism. However, in a system where the processes of immoral behaviour had already taken seed Lay's altruistic strategy that sought to lift the good instead of suppressing the bad was arguably insufficient. Had Lay assumed a different strategy, shown decisiveness in pruning of bad growth, and taken everyday management responsibility seriously the intervention may have worked out. The inadequate attention to the execution of the intervention seems to speak for lack of understanding on dynamics of immoral behaviour. I will now turn my attention to understanding why Lay might have fallen for such thinking.

Possible roots of Lay's intervention: Fighting bad with good

Considering Lay's Baptist upbringing it is possible that he had internalized a strategy of virtues for fighting back the immoral, in other words, fighting back by forgiving and showing a good example. It is in the Christian tradition that man should display courage in front of evil and fight it off with good.[8] Also Christianity externalizes the man's right to judge to God, insisting the first and foremost task of man being the promotion of good.[9] Therefore it is plausible to assume that someone religious like Lay may have steered away from condemnation and sanctioning. However, it should be remembered that Christianity, as any religion, essentially teaches microbehaviour for the masses, and the lessons from religion are never applicable universally to all life situations. Especially in circumstances of escalated immoral development – such as the phase in Enron following Kinder's departure – sanctioning and condemnation may be necessary to properly control immoral growth.

Although the escalated moral decline in Enron called for direct intervention in the immoral, Lay's idea of fighting bad with good may have held him back from such response.

We realize that Lay's thinking may have been biased in selection of strategies in the fight against immoral, compromising his ability to lead through conflict. In Lay's defence we should also remember that virtue should be undisputed. It could be argued that the whole idea of virtue is that their power is universal. Therefore, it is somewhat unreasonable to judge Lay for not having complemented altruism with sanctioning if it essentially would have contradicted with the idea of the virtue. Also, we should remember that for a devoted Christian like Lay religious values are most likely deeply rooted and somewhat unconscious. Therefore, the inspection of their appropriateness might be difficult. We could in fact argue that part of the power of religion arises from the very fact that the mind leaves some fundaments unexamined

[8] Rom 12:21: "Be not overcome of evil, but overcome evil with good." Consider also the epic poem Psychomachia (Contest of the Soul) written by Prudentius in the 6th century insisting the seven good virtues (chastity, abstinence, liberality, diligence, patience, kindness, and humility) being powerful enough to fight even the seven deadly sins (lust, gluttony, greed, sloth, wrath, jealousy, and pride).

[9] Rom 12:19: "Avenge not yourselves, beloved, but give place unto the wrath of God: for it is written, Vengeance belongeth unto me; I will recompense, saith the Lord."

and undisputed. However, the Enron case seems to demonstrate that this can have very negative effects as well.

Causality and Morale in the Enron System

According to Senge (1990) fundamental for learning organizations is becoming aware of the causal pattern for events in the system. The risk according to Senge is that unless an organization is aware of its causality it becomes a prisoner of its own system. To effectively manage is thus to think about the system of events and responses and ask whether the system is creating appropriate behaviour as a whole. But as expected, the task is far from trivial. The Enron case only too elaborately demonstrates the many things that can go wrong.

We will now look at the causal patterns in Enron based on the three Systems Stories and discuss how aware the prime decision maker Ken Lay must have been of the Enron system. We will then proceed to discussing the question of morale. As we know, morality and causality are connected; for it is difficult to hold someone responsible who does not see the (systems) consequences of their actions or is otherwise incapable to properly regulate their own action (in the system).

Causality in Enron

The causality pattern created based on the three Systems Stories is illustrated in FIGURE 1. It is composed of three interconnected systems: The Enron system of secrecy and bad growth, Lay's system of forgiveness and Lay's system of condemnation. I have drawn three conditions that regulate and couple the three systems. These conditions are Lay's values that drive the systems of forgiveness and condemnation, and the feedback mechanisms between the Enron system and Lay's systems of forgiveness and condemnation.

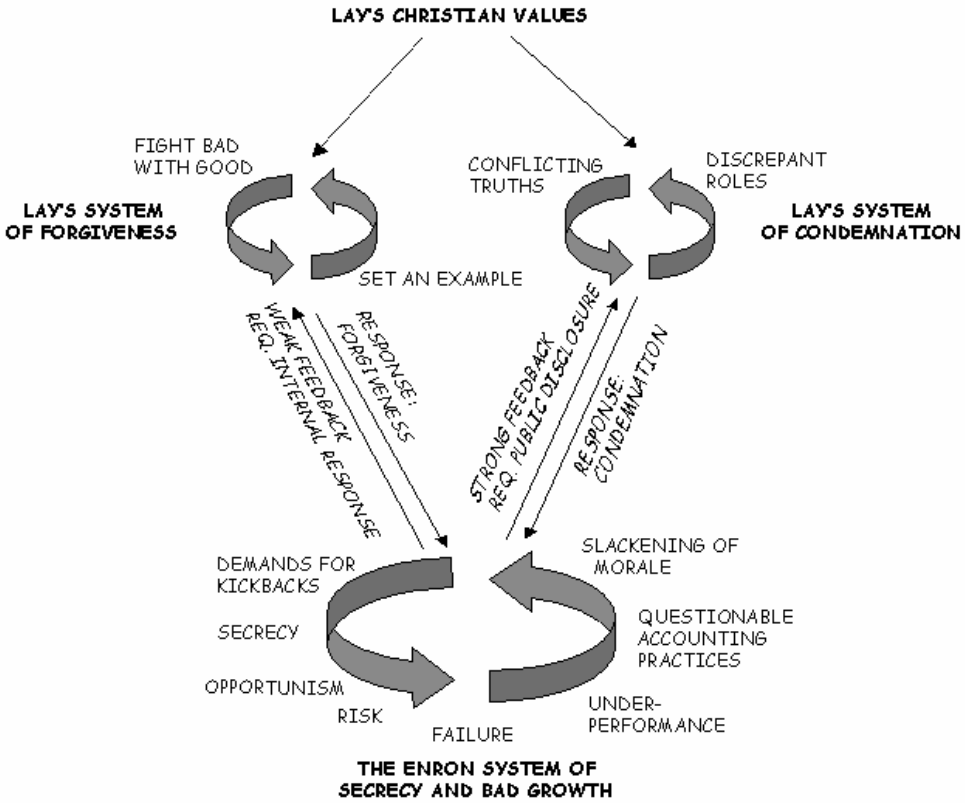

FIGURE 1. The Enron system of feedback and response.

Let's start by examining the Enron system of secrecy and bad growth. Its starting condition is the financial underperformance, which motivates accounting tricks, legal at first, although in the gray zone, illegal later on. The use of questionable accounting practices slackens morale, and in the case of Enron Oil and later under Jeff Skilling's leadership employees demand kickbacks for their questionable methods. Kickbacks, then, especially if not legitimate (consider the double books of Enron Oil), motivate secrecy and opportunism. Secrecy, opportunism and kickbacks in turn promote an atmosphere of risk as kickbacks become installed as prime motivation and internal auditing and risk management are avoided through secrecy. This results in failure as employees take more and more unaccounted, uncontrolled and self-motivated risk.

Depending on the nature of feedback from the Enron system Lay either responds by forgiving or condemning (see FIGURE 1 for the two feedback systems). When there is no need for immediate action – and for Lay there rarely is – Lay is inclined to "hold on" and let things continue as they were, signaling acceptance or forgiveness. Lay's primary leadership style could thus be summarized as *laissez-faire*[10] where only the most adverse situations call for management intervention (see strong feedback requiring public disclosure in FIGURE 1). Notice here how the laissez-faire leadership style is psychologically motivated, driven by the Christian mind's urge to "hold on" and fight bad with good example.

Lay's two response systems have the following effect on the Enron system of secrecy and bad growth: Forgiveness and good example demonstrate the model behaviours, whereas condemnation prunes bad growth and sets an example on undesired behaviour. Thus the system of forgiveness and good example when combined with appropriate measures of sanctioning (condemnation) seems to create a functional strategy. However, Lay assumes a reactive role in the pruning of bad growth. Consequently, what is taking place is the emergence of situations in which Lay's forgiveness and condemnation conflict in the eyes of others. He appears to condemn those whose actions he earlier forgave. And to make matters worse he seems to deny responsibility by being untruthful about his own involvement.

In response to this conflict, those interpreting Lay as inconsistent in managing the system and untruthful of his own involvement are inclined to act on their beliefs. For example, the auditors and critical thinkers lose motivation in their moral task while the scam artists are motivated by both Lay's untruthfulness and inconsistency in creating systems to protect themselves from sanctioning. Also, the conflicting truths and the demands made to maintain it cause stress, motivate repression of feelings and thought, and possibly create loss of sentiment and critical thinking among those entrusted to the secrets. Such subjective interpretation of Lay's response may have fed Enron's vicious circle of secrecy and bad growth. In leading systems Lay's thinking therefore seemed to miss a note on causality and subjectivity.

The challenge of moral leadership

As we realize the problem with Enron was not necessarily so much an ethical one, but one concerned with systems feedback and response. I think Burns (1978, p. 46) provides one of the best perspectives to take us forward:

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[10] Leadership can be characterized in terms of group involvement in decision-making. White and Lipitt (1960) performed a classical study on three scenarios regarding decision-making: autocracy, democracy, and laissez-faire. Whereas in autocracy the leader assumed all responsibility, in laissez-faire the group was given total freedom, the leader merely assisting. Results of the experiment indicated democracy being most satisfying for group members, laissez-faire being let down by behaviours such as irresponsibility, uncertainty and conflict.

> The great bulk of leadership activity consists of the day-to-day interaction of the leader and followers… But the ultimate test of moral leadership is its capacity to transcend the claims of the multiplicity of everyday wants and needs and expectations, to respond to the higher levels of moral development, and to relate leadership behaviour – its roles, choices, style, commitments – to a set of reasoned, relatively explicit, conscious values.

Burns recognizes that what ultimately counts in moral leadership is the ability of leaders to respond coherently to the (conflicting and sometimes seemingly minor) everyday demands that have consequences on the moral development of the enterprise. Burns also insists that leaders have to be very explicit in translating these demands into values recognized by their followers. If we consider Enron, we can say Lay having failed in both. He failed in responding to the claims of his followers in a way that would promote coherence. Instead, his leadership created conflict in which, worst of all, he was challenged personally. And it was in these circumstances that he undermined his chances of developing "a set of reasoned, relatively explicit, conscious values".

According to Doris (2002, p. 133) the "powers of reflection" and "powers of self-control" can be assumed requisite for responsibility. In leading systems Lay was apparently compromised in both. He did not seem to understand the complex nature of feedback and response in the Enron system. And it was his lack of self-control – his disposition to "hold on" – that created that very system he failed to understand. Also, the discrepancy in values between him and some of his more "practical" and less moral executives undoubtedly contributed to the overall problem. It is somewhat ironic even to understand that a less righteous leader might have been better for Enron. With less chance for miscommunication and self-deception the immoral behaviour might have stayed within "proper" limits. Now, however, Lay's inadequate powers of self-control and reflection combined with potential miscommunication may have inspired a morally downwards driven system.

Conclusions

From a systems perspective the article brings into focus the problem of holistic thinking. Considering Lay's leadership, it is rather clear that Lay did not think holistically, but made decisions locally. This was particularly evident in his tendency to "hold on" when "letting go" was more appropriate for the overall moral development of the system. However, although we can assume Lay lacking in systems thinking, the roots of the problem I argue were located in his value structure rather than his conscious mind. I suggest that what may have caused Lay to surrender his systems thinking were his Christian values that had fared him well during his climb to the top and are widely recognized as a source of good in systems. This leads me to making the following conclusion.

Moral leadership seems primarily a *conscious* task in which the leader needs to consider the emerging situations and decide on a response that best caters toward overall moral development. Unconscious strategies – such as Lay's dispositions to behaviour originating from his religious values – may hold back the leader from such conscious thinking. Consequently, systems thinking may become replaced with behaviour that does not necessarily promote coherence in overall moral values. Therefore, in order for leaders to develop their moral leadership they need to learn to identify mental models that are holding them back from systems thinking. For example for Lay it would have been necessary to realize how his local interest in the well being of his followers was creating chaos overall. In this respect, it seems important for leaders to actively develop strategies that identify values and experience that keep them from committing to systemic objectives.

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CHAPTER 12

Systems Intelligence and New Value Creation

Anssi Tuulenmäki

This article draws connections between Systems Intelligence and New Value Creation suggesting that the two have a lot in common. By using variety of examples I will show how these perspectives can benefit from each other. Much of human interactions are strongly affected by commercial systems, which gives rise to new value creation in the sense discussed in this article. In order to create more enriching and meaningful lives, I suggest we need both systems intelligence and new value creation brilliance.

Introduction

In this article, my intention is to draw connections between two concepts that are not typically discussed together: new value creation (NVC) and systems intelligence (SI). I will show that NVC would clearly benefit from ideas developed in the SI movement. Also, certain concepts in NVC would help in developing SI thinking further. I will first take a short look at the differences and similarities of the two concepts. Then I will present a few examples how new customer value could be created and how these mechanisms of new value creation could help in systems intelligence.

Key Concepts and Scope of the Article

Following the definitions provided by the editors of this book, systems intelligence is "intelligent behaviour in the context of complex systems involving interaction and feedback." (Hämäläinen and Saarinen 2007, p. 3). Here, the main goal is human, as opposed to only economic, which is often the case with New Value Creation, for instance. System intelligence is an innate capability which people will utilize in any case. The question is how productively or how often or how intentionally they use it. SI is like a mandate, a positive option one could take if willing to reach the upscale option of a system. If the option is not fully taken, one does not necessarily act "stupidly." Very often, such behaviour is "normal." That is the option of taking the system as given and adapting to it, in the mode of a reactive object rather than as a (pro)active subject.

New Value Creation (NVC), in turn, is first and foremost business driven mindset used in the context of private, profit-generating companies. Let us start with the first word in the concept, i.e.

"new." Here, I do not want to go to the deep philosophical discussion about what is new and newness. Rather, in this occasion, "new" means that the new value that is created, in the form of New Value Offering (WIN), is perceived as new and valuable by somebody, even though the parts or building blocks from which the offering is put together might exist already before the new value creation started.

Let us jump to the next word. The word "value" has been used several thousands years (Ramirez 1999, p. 50). Value found the modern notion of exchange value during the 13th century and the proposition that utility is subjectively assessed arose in the 18th century (ibid.). In their review, Payne and Holt (2001) found nine streams of research on (customer) value, namely:

- Consumer values (realizing that new value offering must fit in to the customers' values) and consumer value (value-in-use and possession value). Values are not discussed in this article.
- Augmented product concept and flower of service concept. The very idea of New Value Offering (WIN) is affected by the idea of augmented product concept. Competition is not just between and value creation is not just about the factory outputs, rather, it is about what is added on top of the factory outputs; financing, services, guarantees, dealing with exceptions etc.
- Customer Satisfaction and Service Quality: customers must be satisfied with what they get and quality measurement tools are one way to measure that satisfaction. These concepts will not be explicitly discussed in this occasion.
- Value Chain thinking and other ways to conceptualize how value creation is organized. In new value creation, systems and processes are basic building blocks that companies are utilizing when setting up new Value Configurations for customers (Stabell and Fjeldstad 1998). In literature, these configurations have various names depending on value creation logic; Value Chains (Porter 1985), Value Shops and Value Networks (Stabell and Fjeldstad 1998), Value Constellations (Normann and Ramirez 1993), Value Co-production (Ramirez 1999), and Co-creation Experiences (Prahalad and Ramaswamy 2000, 2003, 2004). From this articles' perspective, the way value creation is organized provides one possible source for new value.
- Creating and delivering superior customer value: discussion which links customer value to the organizational profitability, performance, and competitive advantage. These issues are somewhat out of the scope of this article.
- Customer's value to the firm, i.e., value of the customer is an output of, rather than an input to, value creation: gives rise to the concept of Customer Lifetime Value. In this article, I am more interested of creating value for the customer than capturing that value.
- Customer-perceived Value: this is the very core of this article. This concept was developed when scholars realized that value could be best understood as a perceived relationship between utility and price (money + efforts). In more general terms, value is the relation between benefit and sacrifice (Mazumbar 1993; East 1997; Virtanen et al. 2002) – absolute value does not exist. Be it value-in-use or possession value, the offering is valuable only if someone (an individual, a team, a group, a population, an organization) perceives it as valuable. A house, a car, a piece of art, even the value of a currency, let's say US Dollar, or the value of oil or gold is ultimately determined by how people perceive their value. Further, value is always perceived in relation to something, typically, in relation to other offerings. In addition to the pure economic factors like cost, financial payback, or profitability, value is affected by several other types of advantage: status and prestige aspects (e.g. luxury watches), a decrease in discomfort (e.g. air-conditioning), savings in time and effort (e.g. fast food), convenience (e.g. non-wrinkle shirts), satisfaction (e.g. concerts that you really like), an

immediacy of the reward (e.g. if you are really thirsty you are willing to pay more on beverages) etc. Also, in this perceived relationship between utility and price, "static friction" plays important role. Even if people clearly perceive that a new offering could be valuable for them, they do not necessarily buy or adopt the offering because they have some other systems working on already sufficiently well. The new offering must be significantly better than the existing system before people are willing to adopt the new one. Thus, perceived value is a tricky dimension; it is time-dependent, situation-specific, and by no means unproblematic. When examining environmental issues or the history of the atrocities in Europe alone during the last 100 years, it is evident that what is perceived as value at a given time can lead to severe problems and horrible consequences.

- Customer value and shareholder value, or broader, stakeholder value: discussion about who captures the value. As mentioned above, this article focuses more on value creation than value capture.
- Relationship value: value creation involves both the customer and the service organization and value is created over time during various relationship episodes and the relationship itself can have a major impact on total value received by the customer. While being a very important aspect in business, relationship value is somewhat out of the scope of this article.

Similar to concept of value or customer value, the concept of Value Creation does not have a single, universal meaning. As Lepak et al. (2007) discuss, the concept of value creation is used to refer both to the content (what is value/valuable) and process of value creation (how it is created) and "the process of value creation is often confused or confounded with the process of value capture." More concepts are needed before we can define what the Value Creation is. Value Capture refers to the efforts to capture some of the created value, that is, to make money. Lepak et al. (2007) argue, "Value creation and Value capture should be viewed as distinct processes, since the source that creates a value increment may or may not be able to capture or retain the value in the long run." Value can be captured by the value creating organization and/or its stakeholders including shareholders, employees, and/or by its competitors, and/or by society in general.

Above was argued why it is important to make the distinction between Value Creation and Value Capture. However, Value Creation and Value Capture are focusing on company's i.e. value creator's side but do not wholly describe what is happening in the customers' end. Thus, I introduce another concept called Value Realization, which refers to the amount of created value that is realized from customers' perspective when they are consummating the New Value Offering (WIN). To explain this better, we need to make a distinction between Use Value and Exchange Value. Use Value is perceived by the customer and Exchange Value refers to price that is paid for the perceived Use Value. With the exception of monopoly situations, the price paid by the customer will be *less* than the total monetary value perceived by the customer. "The difference between the customer's valuation of the product, and the price paid is Consumer Surplus (CS)." (Bowman and Ambrosini 2000). Thus, the price the customer is prepared to pay is price + CS. And because customers choose the WIN that will confer on them the largest CS, WINs must be developed so that they deliver more CS than alternatives. CS, in turn, can be increased enhancing the perceived use value of the WIN (and thereby increasing its total monetary value), "whilst keeping the price at the same level, or by keeping the total monetary value constant but reducing the price, or by doing both simultaneously." (Bowman and Ambrosini 2000).

Now, it is time to put the pieces together and to define New Value Creation (NVC). NVC is the term that seemingly is consisted of three sub-processes: New Value Offering Creation (when new value is invented and realized to a New Value Offering), Value Realization (when customers are consummating the offering), and Value Capture (getting money and profits out of value creation efforts). Companies need that captured value to continue their operations and for paying

employees and owners. Thus, in ever-tightening competition between private, profit-generating organizations, NVC is imperative. If a firm cannot create new value for its customers, sooner rather than later, it can not capture value and it will cease to exist. Also, captured value and profit associated with it is the main success measure in business. The general new value creation framework with key concepts is described in FIGURE 1 below.

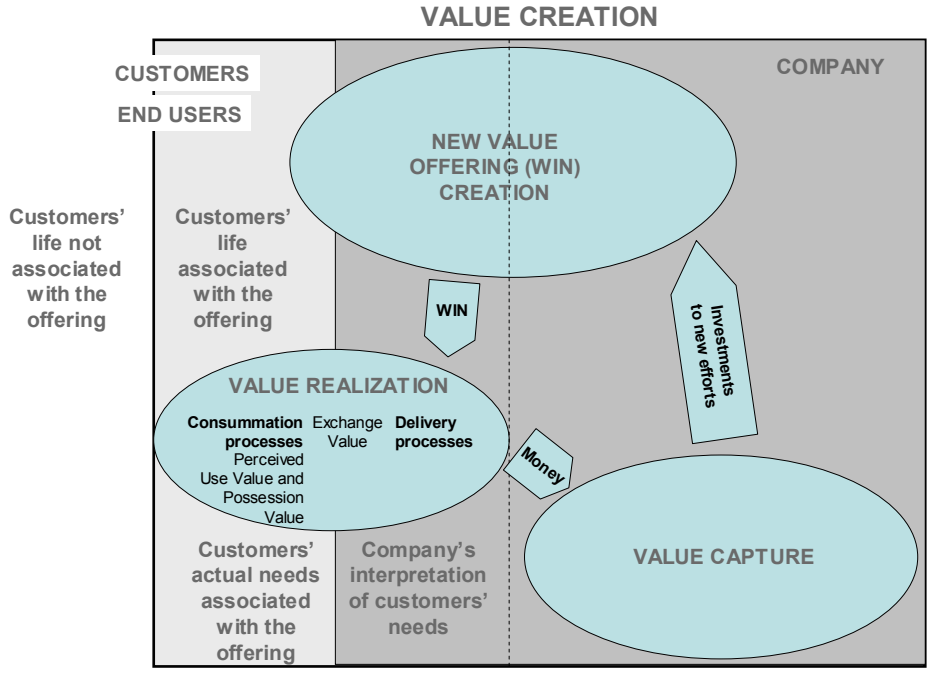

FIGURE 1. The general new value creation framework.

Common Ground in New Value Creation and Systems Intelligence

How could these seemingly distant concepts be linked together? And why bother to search any common ground? My intention is to show that these two concepts share certain fundamental assumptions and that both approaches can greatly benefit from each other.

First, both concepts refer to efforts to improve the existing micro-level conditions. New value creation is so money-driven because we have to earn our living and firms need money to continue their operations. But, if we exclude the NVC's money aspect and imperative to make profits, both concepts are actually very close to each other. This is illustrated in the FIGURE 2 below. In matter of fact, as I will later describe in greater detail, every time money is directly involved in systems intelligence, such activities could be defined to belong to new customer value creation domain. And, every time money is not directly involved in NVC, such initiatives could be defined to belong to the SI domain. For example, airlines offer upscale options of their basic travel system – more space, more personal service, more versatile lunch and entertainment options, quicker check-in etc – but since organizing such upscale options cost something extra, airlines offer those options only for those who are willing to pay more of it. Of course, some facets of human interactions in airline business do not have anything to do with costs or money. Thus, such interactions would be enriched if people only would practice more systems intelligence. But the fact is that quite a many of those human interaction options are strongly limited by up-front choices made by developers of those commercial travelling systems. For example, consider flight attendants who might have 50 passengers for their responsibility and the time window can be 100 minutes to serve them. They operate in a very limited space and they cannot choose what

entertainment options they can provide to customers, or what kind of food or beverages. Further, flight attendants cannot affect customers' travelling experience before or after they are airborne. In short, their options to practice systems intelligence are drastically limited.

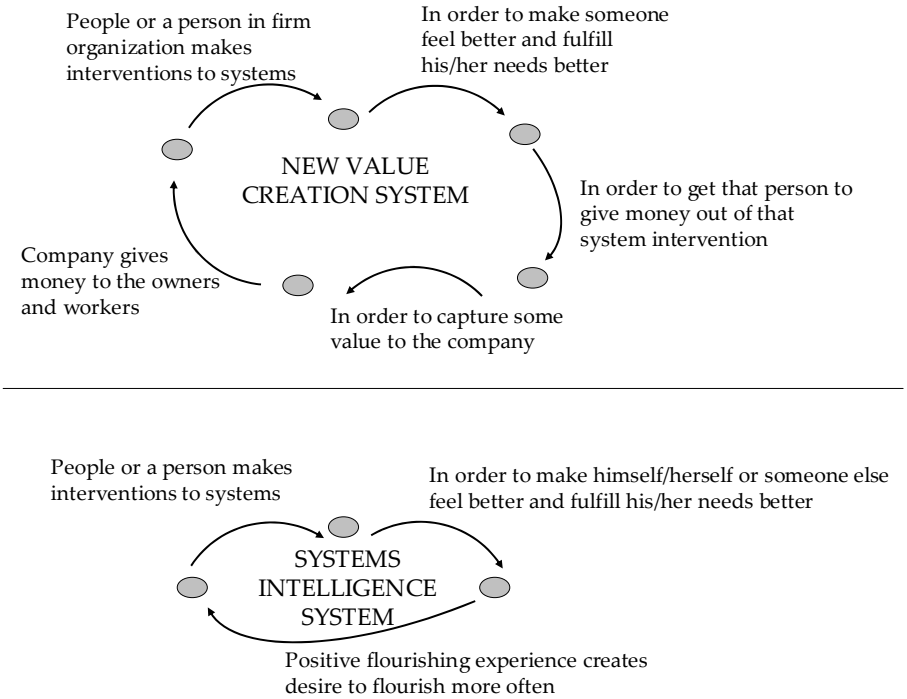

FIGURE 2. NVC system and SI system.

Close to the first point, both NVC and SI imply active, pragmatic approach. New value can be created by not taking the existing systems as given but rather making some changes that affect real-life behaviour and experience. Consider the following example. One day in spring 1994, Jeff Bezos, a 30 year old Wall Street employee, observed that Internet usage was increasing by 2,300 percent a year. Bezos was by no means the only investing-oriented person seeing that piece of information – rather, it was public knowledge that Internet usage was soaring. In a sense, Bezos acted *exactly* according to the investing system he was involved. If best companies in traditional industries have two-digit growth numbers and you see that some evolving new system has four digit growth numbers you *must* invest in the new one. And indeed, Bezos acted, immediately. After short analysis of top mail order businesses, he realized that books were the commodity for which no comprehensive mail order catalogue existed, because any such catalogue would be too big to mail. The catalogue was perfect for the Internet, which could give access to a virtually limitless database and share that with potentially limitless number of people. In the *very next day*, Bezos flew to Los Angeles to attend the American Booksellers' Convention to learn everything he could about the book business.[1] He found that the major book wholesalers had already compiled electronic lists of their inventory. All that was needed was a single location on the Internet where the book-buying public could search the available stock and place orders directly! Bezos and his wife quit their jobs and sacrificed a promising financing careers in New York, picked up a Chevy Blazer (a gift from a relative) to make the drive to Seattle where they would have ready access to the book wholesaler Ingram and to the pool of computer talent Jeff would need for his enterprise. While his wife drove, Jeff typed a business plan. Hey, if the market is growing 2,300 percent a year there is no time to waste! Amazon.com was founded in July 1994 and the website was launched year later for global public. In October 1997, Bezos hand-delivered the company's 1

[1] http://www.wordiq.com/definition/Jeff_Bezos

millionth order to a customer in Japan. Rest is history – less than five years after seeing that growth figure of Internet first time he became a billionaire and one of the richest people in the world. And, from customers' point of view, Amazon creates enormous amounts of new value; buying books has never been easier. There are many system intelligent details in Amazon's offering: one click shopping and peer reviews, for instance.

Similar to NVC, systems intelligence requires an act. It is not enough to understand the existing system – without acting one cannot create new customer value nor can one's behaviour be system intelligent. One can also act system intelligently without rational comprehension of a system. Indeed, in certain systems preferring analysis over action might be the very reason for failure. Real life is the ultimate test for both new value creation and system intelligence; one cannot practice it alone in a drawing board.

Third, both NVC and SI take place in human interaction, in what Hämäläinen and Saarinen call the "in-between". Somebody, quite often with the help of enabling technologies, is creating new value for someone at certain time and place. System intelligence, in turn, is about reaching upscale options of any systems consisting of human interactions.

Fourth, both concepts are highly relative, time-dependent, and situation-sensitive. Someone going for grocery store during lunch break would appreciate different things than someone who needs groceries for his/her family for a weekend. Even the same person on different days will shop differently. Similarly, there might be situations where taking out a cigarette means breaking the ice, but certainly not always. Thus, if there are best practices, they are highly context-specific. In certain situations, in certain contexts, for certain causes, certain tricks, triggers, or acts might be more suitable than others. Referring to the Marshal Mannerheim (Hämäläinen and Saarinen 2007), Commander-in-chief of Finland's Defence Forces during World War Two, he might have noticed that in most cases in a trench context, taking a cigarette out enables soldiers to approach him in natural way. Then, during informal discussion Marshal could strengthen the spirits, maintain the soldier's motivation, observe the feelings in the front line, or give soldiers an opportunity to give direct feedback about the conditions. Similarly, our "toolbox" to create new value or to behave system intelligently can be broader or narrower; we can be better or worse equipped to expose ourselves to systemic opportunities. But in the end, everything comes down to the situation and its unique circumstances.

Fifth, because both concepts are highly relative and situation-specific, there are countless amounts of untried opportunities for both NVC and SI. Indeed, intelligence might not be that much in demand if there would be only few options in most contexts.

TABLE 1. Differences and similarities between the concepts of new customer value creation and systems intelligence.

DIFFERENCES	New value creation	Systems intelligence
Main goal	To make money	To flourish
Success measure	Objective: amount of profit	Subjective experience of flourishment
Role of systems	Raw material for value creation	Ever-present set-up for life
Main actor	Value creating organization	Individual subject
Mode of operating	Imperative, key for survival	Mandate, positive option
Role of analyzing	Mostly planning beforehand and designing key aspects of the offering system and most likely interactions	Mostly doing ad hoc probes and intuitive interventions while being exposed to reciprocal system

SIMILARITIES	New value creation	Systems intelligence
Both concepts are mostly about improving micro-level conditions.		
Active, pragmatic stance towards systems: Systems are to be changed by active subjects.		
Both phenomena fundamentally take place between people, in human interaction. Not inside of a person.		
Both concepts are relative, time-dependent, situation-sensitive; if best practices exists they are highly context-specific.		
Countless amounts of fresh possibilities – most of the opportunities are not tried.		
Ambiguity remains: at best, we can only increase the probability of desired outcome.		

Finally, because the systems and interactions are so complex and there are huge amount of variety among interactions, we can only increase the probability of desired outcome. We cannot guarantee that something happens the way we though it could be. It requires systems intelligence to further react the emerging effects of our first intervention. TABLE 1 summarizes the differences and similarities between these two concepts.

Discovering New Customer Value

In the following I will present few different examples of how new value could be created. My intention here is twofold. First, I would like to provide a picture of what kinds of different sub-systems should be under scrutiny when we are aiming to discover and create new value. By understanding types of sources of new value, we can significantly improve our new value creation efforts. This is particularly important because, I claim, one cannot find rigorous education about new value creation in spite of the fact that is absolutely crucial in business! Business schools are providing education about marketing, logistics, finance, leadership, accounting etc, design schools are focusing on aesthetics and usability, and polytechnic schools have new product and technology development courses, as well as operations and manufacturing courses. The problem is that, in addition that the knowledge is highly scattered, those courses are usually not lectured nor participated with the new value creation mindset. Rather than maintaining the existing disciplines and describing *what* is in it, the emphasis should be more on *how* to change those issues in pursuit of new value creation. Moreover, those issues should be changed in concert with other issues from other disciplines. Taking practice-driven cross-disciplinary jumps are essential because creating new value offerings, in real life, requires

modifications on issues from several domains, not just in manufacturing or marketing domain, for instance.

Second intention in the following is to perceive the new value creation sub-systems in the light of system intelligence. That is, how SI and NVC would benefit from each others.

Improving How Offering Is Used

Think about cutting a cake. The need is obvious and well known. So is the solution – de facto dominant design for a cake cutter has been the same for decades or even centuries. Some cake cutters are more decorated than others, they might be constructed from different materials but the cutting mechanism and the use concept has remained unchanged. Typically, a person slices a piece, puts the cake spoon under the piece, and carries it to the plate where the eating takes place. Use context has also been the same for ages: it is typically a party, a system of its own, in which a guest wants to get a piece of cake. Cutting a cake is like an institution. It has always been done that way. Is there any margin for improvement left? This is often the case in how we perceive systems around us. We take them as given and see no margin for improvement – the upscale options remain hidden. From individual micro perspective, improving the existing offerings and reaching for upscale options in human interactions are somewhat similar phenomena. Both require seeing beyond the first impression.

Maria Kivijärvi, a Finnish student of HAMK University of applied sciences[2], designed a new kind of cake spoon called POC (abbreviation from words "piece of cake"). As an eager cake eater she was not fully satisfied with her cake-cutting experience. She realized that cutting a slice is rather straightforward effort but carrying it is not that easy. Therefore, she developed a solution by which a user is able to both cut a piece of cake *and* instantly and easily carry it to the plate where the eating takes place (see FIGURE 3). What has been invented here is to combine two sequential actions or usage sub-phases (cutting and carrying) into one offering. This is especially powerful way of creating new value if we can improve (or eliminate altogether) activities and sub-phases which require most input from users' side – money, effort, time, tools, knowledge and skills. These kinds of issues typically exclude some customer groups from using the offering. For example, even little kids are able to cut the cake but not to carry the piece of cake to their plates. Interestingly, these kinds of issues are affecting in human interactions also from systems intelligence's point of view. In every system, there are certain aspects or features that exclude some people to participate or to add on. If we could develop our ability to see such aspects instantly, we definitely would have more chances to reach the upscale options in our interactions.

Good Grips[3], as the brand name underlines, sells kitchen utensils with a very detectable handle. Handle is developed so that it is large enough to avoid hand strain and it is oval to keep it from rotating in the hand. It has an over-sized tapered hole so that hanging storage is very easy, even for a shaky hand or dim eye. The material of the handle, Santoprene, offers a warm non-slip handle and it enables making flexible fins that bend to an individual finger grip, giving the user more cushion and control, even when hands are wet and soapy (Govindarajan and Gupta 2001). "Fins" (see FIGURE 3) are very easily detectable and also purposefully created part of the product – consumers would immediately understand why Good Grips is better than traditional kitchen

[2] http://www.hamk.fi/

[3] http://www.goodgrips.com/ and http://www.cdf.org/journal/0201_oxo.php

utensils. Every system contains various types of "fins", i.e. little signals or symbols which set the people's expectation levels and thus cause them behave the way they are.

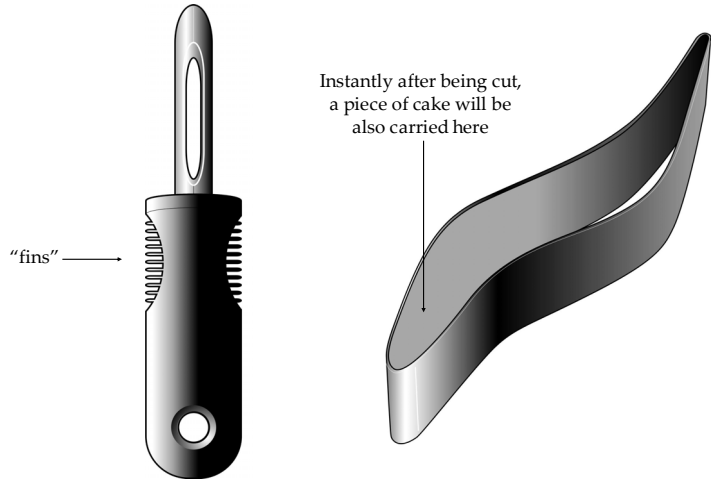

FIGURE 3. GoodGrips's fruit peeler and Maria Kivijärvi's POC

Actually, marketers are using such "fins" purposefully when positioning new offerings in the marketplace. In traditional positioning, we have to decide first in which category we want our offering to belong, that is, to decide its points of parity. For example, an offering which de facto contains a processor, memory, input and output devices, can be positioned to belong to TV, mobile phone, game console, laptop, PDA, camera, tablet etc categories. It is our job to decide in which category we want customers to refer our offering. People do not have any other choice but to compare our offering for something previously experienced. When television was launched mid 1900s it was referred as radio with living pictures because radio was the closest reference point for remotely broadcasted content. Thus, our job is to choose which comparisons favour our offering. This leads to second choice we have to make. After deciding the category and thus points of parity we should decide how we differentiate our offering from other brands and offerings in that category. This positioning process relies heavily on customers' ability to detect the chosen category and its typical features. By doing so, they sort of lock-in their expectations. Do you expect your car to have a fixed place for an umbrella, for instance? Most likely you do not – simply because "car" category does not normally include umbrellas. Car category is only solving certain transportation needs – it should not improve your life in any other ways, right? And, this is essential from systems intelligence's point of view; we are very persistent in maintaining those existing categories exactly as they are.

From Use Phase to the Whole Consummation Chain

With the POC and GoodGrips examples I demonstrated how new customer value can be created by improving how people use offerings. There are millions of examples how various use situations have been changed in order to increase benefits or decrease sacrifice. Usage is a system which happens in certain context when a person wants to do something, e.g. peel a fruit in a kitchen. However, value of offerings is not fully determined by how they are used. There are lots of things happening before and after someone is using our offering. And, quite often those issues actually determine the value.

Before going any further, it is time to make a distinction between consuming and consummating. As Richard Normann (2001) in his fantastic book explains, *Latin language has two words for*

"consume." They and their meanings remain in the English… Consume according to dictionary means "destroy, use up, waste." Consummate means "complete, perfect" (as verbs). It is the "use up" meaning that has come to dominate how we think about consumption and consumers." In this article, customers are not destroying the value that someone is offering. Rather, value is created and realized only if customer is using the offering. In kitchen utensils, for example, customer is not destroying the value of a fruit peeler. Rather, value is being co-created when customer uses the offering. This consummation perspective is even more evident when you consider service businesses like airline. The customer is not destroying the value of a travelling system but co-creating the value with other passengers, taxis, airplanes, airports etc.

To illustrate the broader new value arena we are discussing now, we can sketch a generic consummation chain for an offering, i.e. linked sets of activities customers engage in to meet their needs (see FIGURE 4). First, people have to become aware that they need something. Then they start searching information about possible solutions. After choosing one of the offerings they order or purchase or agree to sign up. Then they have to finance, contract and pay before they receive a product or enjoy the first service encounter. Normally there are various installing efforts before the actual use begins with storing, moving, using and cleaning. Or, in the case of a service, if a customer is satisfied with the first encounter, he or she typically has several other encounters which involve some efforts. Then, before final disposal or contract renewal there might be all kinds of services needed, repairs etc. We all are consumers (at least you are consummating this book!) and we know that most of the generic phases mentioned above have several sub-phases. For example, information search phase might involve driving, walking, reading, surfing in the Internet, discussing, making phone calls, visiting stores, trying out the offering in limited basis etc. There are lots of things happening during the course of whole consummation chain – it is not just the use phase that determines the value, it is clearly the whole experience that matters. From this perspective it is weird how much efforts companies are putting into traditional new product development (NPD), which focuses on only improving the product and its use phase. Instead, we should use the word "New Value Offering Development" to manifest our quest to find and create value in all of its forms. FIGURE 4 represents typical consummation chain of a manufactured product.

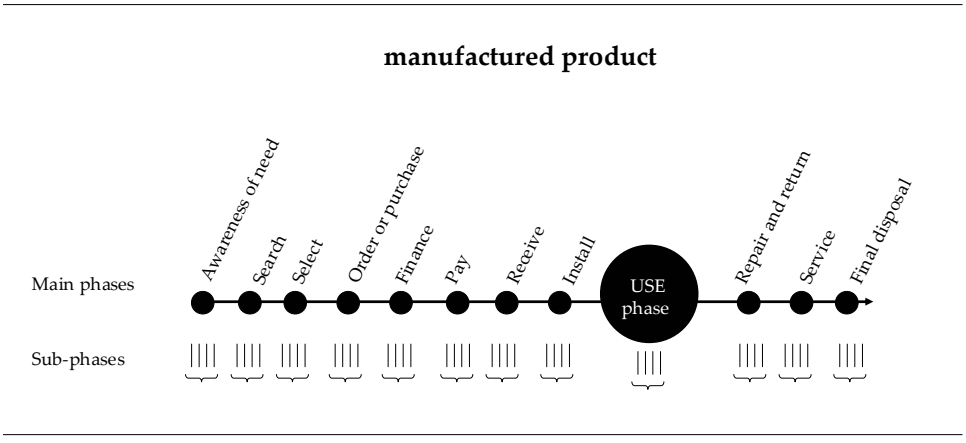

FIGURE 4. Generic consummation chain (modified from McGrath and MacMillan 2005).

McGrath and MacMillan (2005; MacMillan and McGrath 1997) have identified several "Market Busting" moves (as they call strategic moves that drive exceptional market growth) that involve changing the consummation chain. One of such moves is monopolizing a trigger event. A trigger is an event that causes customer to proceed to the next phase of the consummation chain. For example, Finnish-based Kone Corporation is monopolizing trigger event by monitoring elevators

remotely to prevent problems before they develop, getting early warnings of events that might trigger a maintenance call. Triggers make the world go around. Every system has its own triggers. Marshal Mannerheim's cigar was a trigger that moved private soldiers from formal hierarchical system to informal chatting system. From business perspective: if you can be the first to know that a trigger event has occurred, or if your firm is the first in line or first in mind when the triggering event occurs, or, if can you create triggers that favour your firm or offering, you are most likely in very profitable position.

To Whom Are We Creating Value?

In the previous chapters we focused first on improving the use phase and then the whole consummation chain. However, we took for granted whose consummation process we were improving, to whom we were creating value. It is time to broaden our view by making another big conceptual leap which enables us to see the world around us differently. Let us begin by elaborating the concept of user.

Faulkner (2000) identified many different kinds of users. *Direct users* use the system themselves in order to carry out their duties. *Indirect users* are ones who ask other people to use the system on their behalf. *Remote users* do not directly use the system themselves but nevertheless they are dependant on it upon output. *Support users* are a part of the administration and technical team, which supports the work of other people. Every type of user is in different position of a system, and has a different relationship towards the system, and thus has different needs and determinants of what is valuable for them. Further, there are three kinds of users when looked from the point of view of their expertise: *Novice users* have little or no experience of the system that they are using. *Intermediate users* use the system occasionally or use it for periods of time and may perhaps have a break in using it during several months of time. *Expert users* know everything there is to know about the system.

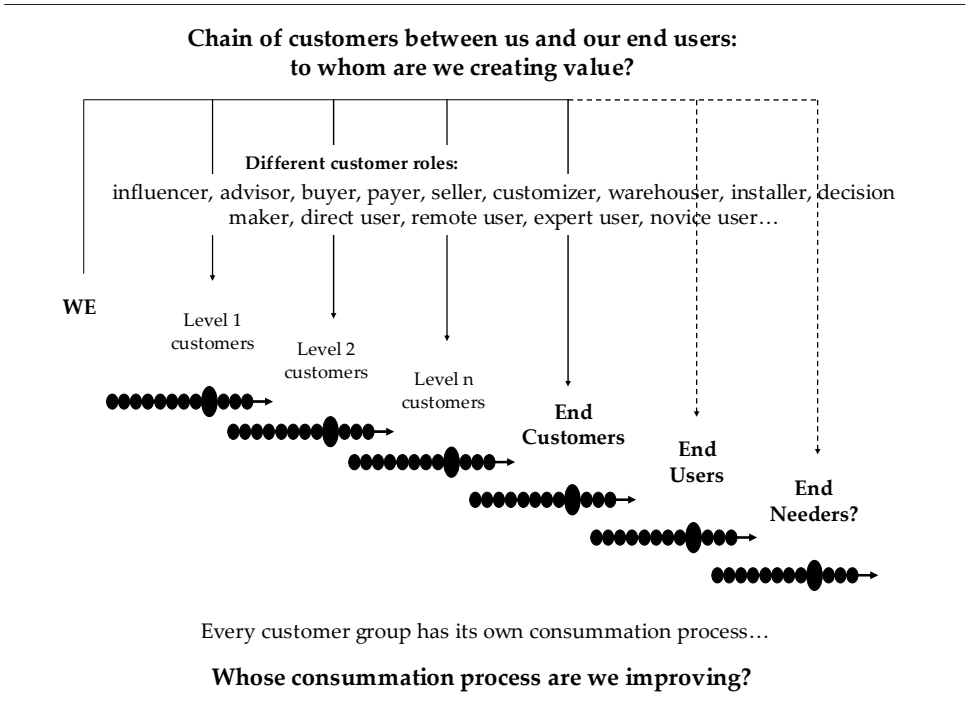

FIGURE 5. Different kinds of customers – to whom are we creating value?

Users might be, but not necessarily are, customers. In addition to the fact that there are always very many different kinds of users there are also many different kinds of customers. So, who is the customer? Typically there is not just end customers, rather, between us and the end customer is a whole chain of customers. Our customers have their own customers, who, in turn, might have their own customers. And so on. Do you know who they are and what they need, to whom *they* want to create value? Do you know what their consummation process is? One of the key choices in value creation is to determine which customer level we want to focus on, to whom we want to create value. The most typical customers to focus on are the customer level closest to our own business (first level) and the end customer level. Those are the customers we easily perceive as being "our" customers. It is very common that the whole industry focuses on to the same type of a customer, be it the purchaser (as in the office equipment industry), the user (as in the clothing industry), or the influencer (as in the pharmaceutical industry). So, the whole industry is dancing according to the same system. Understanding our first level customers and end customers is essential, but really new opportunities are often found from taking closer looks to the other customer groups.

Ensto case illustrates customer concept nicely. Ensto[4] is a family-owned company, founded in 1958 in Porvoo Finland, offering equipment and solutions for electricity. Between Ensto and its end customers (e.g. families living in houses) are various wholesalers, retailers, electricians and so on. That is, there are many possible customers to target at. With the help of Finnish design consultancy called Desigence[5], Ensto decided to offer sockets that especially eased electricians' work. The rationale in this choice was the insight that customers in other levels – wholesalers and retailers – do not actually touch the socket; their demands are related to price and reliable supply. End customers need foremost electricity and safety; second level need is that the socket fits in to the interior. Traditionally, the more neutral and invisible the socket is the better. Taking those factors as given, the most important decision maker in the whole chain of customers is the electrician who, in turn, demands sockets from retailers and wholesalers. The electrician is an important opinion leader also towards do-it-yourself sector, because the electrician is a kind of authority in questions related to electricity and they opinions are carefully listened. At worst, the electrician refuses to install certain sockets. So, with the help of Desigence, a new socket was designed. The result was smaller, easier and faster to install, cheaper to assemble and manufacture with fewer parts involved. Faster installing directly created value to electricians and reinforced the customer relationship with Ensto. Also, since wholesaling prices were not affected, Ensto was able to capture more value and win market share by selling the cheaper-to-manufacture sockets.

So, every customer group has their own unique system of systems affecting them. They have their own use contexts, priorities, restrictions and roles. Therefore, there are endless opportunities to create new value by re-inventing to whom we are creating the value.

Linking Usage Event to Other Events in Customer's Life

It is time to make a jump from our own offering and its consummation process to broader system called life. Consider cars. There are millions of innovations improving how car is used – more comfortable seats, improved safety, increased performance, fuel efficiency etc. Indeed, cars have improved vastly during last 100+ years in use dimension. Recently, Rolls Royce introduced a car,

[4] http://www.ensto.com/

[5] http://www.desigence.fi/

namely Phantom, which contains full-size, pop-up umbrellas in each of the rear doors. When arriving in your destination effortlessly and silently like a phantom, what would be more convenient than having an umbrella right beside you when it rains…? I think all cars should have this option as a standard! I do not need all that horsepower and high tech *inside* the car – I do not use most of the potential of that technology anyway – I want a low tech umbrella neatly packaged when I go out. This is an example of how new value can be created by thinking what happens after our offering is being used. Most of my life is happening outside of a car anyway, why car manufacturers are not considering that more often? It does not need to be an Englishman to realize that it rains every now and then – so, let us provide umbrellas. Why does it need to be a luxury car to provide such option, it should not be that expensive to design it, right? Car manufacturers are focusing on developing cars and umbrella manufacturers are focusing on umbrellas, that is the way the system goes. But life goes on within and through those systems, so should value creation and systems intelligence.

So, the new value invention in Rolls Royce case is to build links to customers' life that is happening around the car, between the individual use events. While the umbrella was an example of considering what might happen right after the car is being used, a heated cup holder (of 2007 Chrysler Sebring Touring and Limited models) is an example of taking account what happens in customers' life right before she sits in a car.

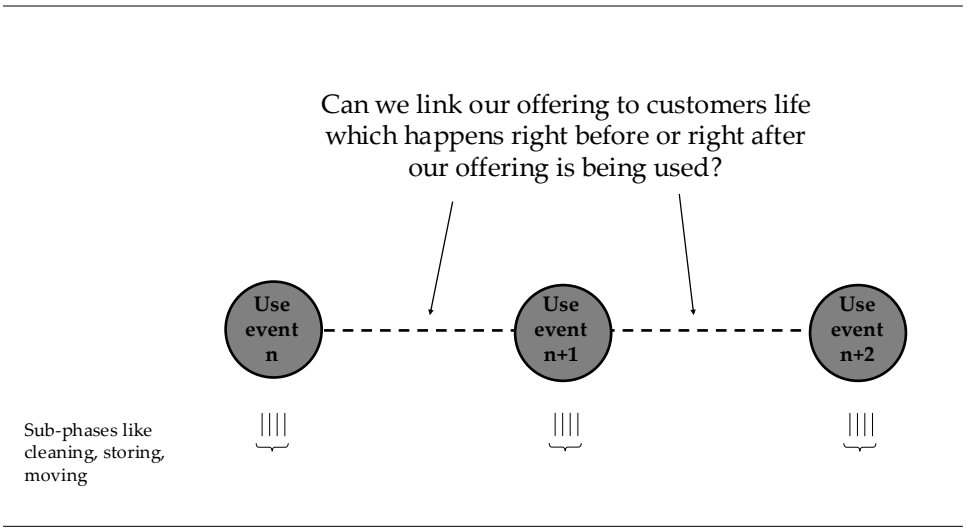

FIGURE 6. Linking offering's use system to customers' life

We should not limit our toolbox of new value creation only to our "own" offering system. For example, it is not so straightforward to go to the cinema if you happened to have little kids. The value of a movie experience is greatly determined by *complementing* offerings – someone should take care of children while adults are watching the movie, they must find a parking place for their car or know how they reach the cinema by using other transportation, how much time and effort they must devote to get the tickets etc. There are always many other things affecting the perceived utility and sacrifice than just our own core offering. We have a name for those issues: it is called life. Thus, offerings are not used in a vacuum; in most cases, other offerings and indeed life affects their value. Thus, we can find countless amounts of new value possibilities by considering what happens in customers' life before and after our offering is being used. Somehow, as businesspeople developing new offerings, we easily forget that "life" perspective and focus only on our own offering and its details. But it is not so strange that business people forget the life aspect if we consider that we human beings quite often forget the upscale options of systems in our own life!

Let us go back again to the Marshal Mannerheim's cigar example. While walking in a trench someone in Marshal's position could have focused only on maintaining the formal hierarchy and perceiving individual soldiers as inhuman parts of the big machine. It requires systems intelligence to realize that soldiers also have life outside of that frontline system and the life before and after that particular moment actually gives meaning and leverage to the whole situation. Thus, important aspect in systems intelligence is to fully get absorbed in the situation in hand while simultaneously being aware of the existence of larger systems. Sometimes, a brief local moment can give meaning to macro systems but perhaps more often, the meaning of a moment and value of the local experience is determined by larger systems. And the main argument of this article is that quite often those larger systems are commercial systems. Being sensitive how systems intertwine is important in systems intelligence and in new value creation.

Discovering New Customer Value by Analyzing Other Existing Offerings

In previous chapters our perspective was to analyze consummation process and its phases, i.e. how people use our offering and whether we could improve that. We also realized that because there are several different kinds of customers there are also many kinds of consummation processes. We even linked our offering to customers' life before and after they used our offering. Now, we broaden our view again by taking a look what is happening customers' life when they are not using our offerings at all. The closest systems to look for are other competing and substituting offerings. What kinds of consummation chains there are? Can we learn what is valuable for customers from there?

First, let us define the terms. *Competing* offerings have the same purpose, similar functions, and similar forms. For example, Finnair and Lufthansa are competing against each other in Helsinki–Frankfurt route. *Substitutes* have different forms but offer the same functionality. For example, leasing cars, rented cars and privately owned cars are substitutes. *Alternatives* have different functions and forms but the same purpose. For example, busses, bicycles, and taxis are different alternatives for getting from here to close there. Subway, McDonald's and Pizza Hut can be treated like competitors since they all are involved in fast-food business. Further, they can be treated both like substitutes and alternatives. It only depends how you define the business you are in. It is important to realize that market and industry boundaries are first and foremost just mental constructions – they often exist only in your head. Or, they exist in the heads of the people who think similarly. What really matters is what consumers are thinking and whether you can do something about that. If we want to reach upscale options of a system or if we want to create new value we should be able to signal that the system is changed.

The existence of Strategic Groups within an industry is quite well documented (see e.g. a review by McGee and Thomas 1986). Strategic group term refers to a group of companies within an industry that pursue a similar strategy. "*It is supply-side concept insofar as it defines structures within industries, but is in all its essentials a behavior or conduct concept fitting neatly between the supply idea of an industry and the demand idea of a market*" (McGee and Thomas 1986, p. 158). From customer's perspective, offerings of an industry typically form a rough hierarchical order built on two dimensions, price and performance. That is, each jump in price tends to bring a corresponding jump in some dimension of performance. Most companies focus on improving their competitive position within, and only within, a strategic group. However, truly new value and new market space can be found in holes between the groups, by combining elements from different groups into a new offering. In order to do so, new value creators must understand what factors determine buyers' decisions to trade up or down from one group to another (Kim and Maubourgne 1999, p. 86). For example, some customers are willing to pay more for a car that has more power and speed or luxury or less inner noise. However, improvement in those key

dimensions always requires a corresponding increase in price. All car manufactures seem to think that silence, for instance, is such a feature that is improved only in higher priced cars; no one is offering a silent and cheap car. I am sure there would be thousands of customers willing to buy such a car. Toyota has already realized a similar idea in the luxury car market, when its Lexus brand created new value by offering the quality of the high-end Mercedes, BMW and Jaguar at a price closer to the lower-end Cadillac and Lincoln. In 1960s, Ralph Lauren was able to create "high fashion with no fashion" concept which built on the advantages of the two strategic groups that dominated the high-end clothing – designer haute couture and the higher volume, but lower-priced classical lines of Burberry's, Brooks Brothers and the like. Polo Ralph Lauren has been very successful because its "*designer name, the elegance of its stores, and the luxury of its materials capture what most customers value in haute couture, its updated classical look and price capture the best of classical lines*" (Kim and Maubourgne 1999, p. 87).

From new value creation's point of view, it is always exciting opportunity if you are first to realize that everybody else is behaving according to a certain system, like according to strategic groups logic. That is, people are not obliged to behave the way they are behaving but that the system generates predictable behaviour. Thus, in some systems, the most important aspect of the system is that you are the first to realize that there *is* a system in action.

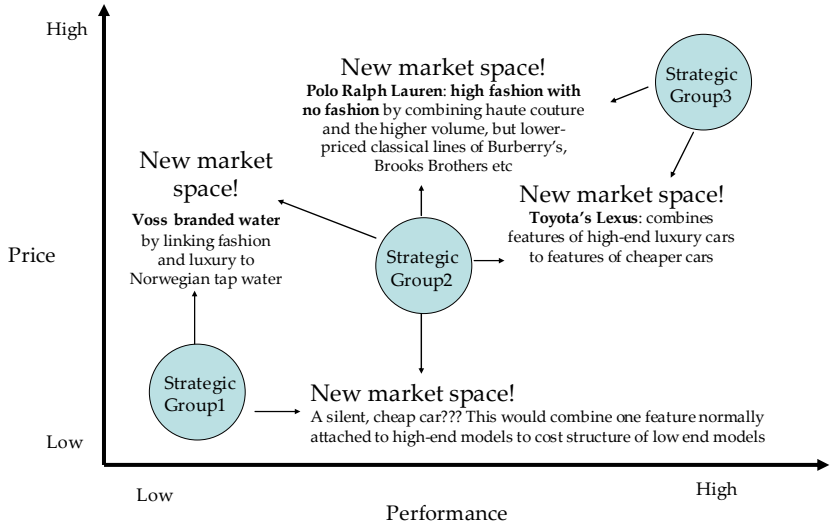

FIGURE 7. New value and new market space can be found between strategic groups.

As we saw already above, creating new value to the customer does not mean that you have to offer more than previously in all of the dimensions. Quite contrary, offering less in some dimension than existing products and services often creates value. This is one of the main triggers in Clayton Christensen's famous disruptive technology concept (Christensen 1997, 1998, 2001; Christensen et al. 2001), as well as Kim and Maubourgne's (2005) Value Innovation perspective.

Intrinsic Value and Positional Value

The idea of Intrinsic and Positional value is taken from Normann (2001). Typically we focus on developing our offerings intrinsic value. For example, cars have intrinsic value as vehicles that can be used when one is willing to go from here to there. Bus stops have intrinsic value in fulfilling their purpose as bus stops in public transportation system. Houses have intrinsic value as homes. Almost all efforts in business life focus on improving that intrinsic value. All car

manufacturers, for instance, focus on improving cars' intrinsic value by making the looks and driving the car as tempting and as comfortable as possible. However, often our offering has, or could have, other value than intrinsic value, namely *Positional Value* or *Situational Value*. Positional value refers to situations when existing assets, offerings, processes, and systems are valuable in totally different value systems. Think about a parked car, for instance. When the car is parked it is not creating any value for the owner of the car. Actually, when a car is parked for a few hours in downtown are, it is creating negative value because of parking fees, requirement for space in already crowded cities and so on. Could you imagine any situation, from somebody else's perspective, in which a parked car could provide value? For instance, given the fact that in every city there are thousands of parked cars occupying roadsides and fronts of every building, cars could be used

- as information signs showing cardinal points or directions to the nearest subways, stations or sightseeing for people looking for such information
- as traffic controllers or road blocks
- as light or electricity providers since cars have power source already
- as a counterweight for some efforts
- as safety cameras in suburban or city areas
- as lockers because they usually have a lot of locked, dry, and safe space in trunk
- as vending machines from which other customers could buy soft drinks by using mobile phones and the like
- as refrigerators for groceries ordered from Internet shops
- as mailboxes (if your car would be parked in the same place in front of your house)

From current car-systems' perspective, those ideas might sound unrealistic and far-fetched. But if such dimensions would be put in the new cars' specification, they will be easily realized. We have developed nuclear bombs, designing a car with a vending machine option would not be that difficult, right? Would it be nice to come back to your parked car and find that the machine has actually earned some money for you? Or done some useful services for somebody else? I agree, it is totally different car concept than the existing paradigm. But being different does not mean it is impossible. I use my car less than two hours a day – rest of the time it is doing nothing valuable for anybody. Why not? It is true that it is nobody's responsibility to think and develop such inter-industry offerings. Everybody is focusing only on their customers and developing intrinsic value of their own offering. However, there are endless possibilities for developing new value offerings based on Positional Value. Let us take a look at a few realized examples.

JCDecaux invented the "street furniture" concept in 1964, in which the company offers to provide a city with bus stops for free over a twenty-year period, and to maintain them perfectly well. The idea is that perfectly well maintained bus stops are attractive as advertising space for other business companies. That barter idea has carried the firm so that its market value is 4,4 billion euros, its turnover in 2005 was 1,7 billion euros, profit 200 million euros, and the firm has 7900 employees. All that value was created by re-thinking the existing system and detecting the possibility for positional value. Thus, the new value offering was developed by combining elements that were originally developed for something else. So, we have endless amounts of enriching opportunities by just recombining the pieces of existing systems.

Let us take yet another example. A French grocery store developed an idea of having different sizes of shopping baskets depending on customers' marital status. Especially, the grocery store offered special baskets for singles. So, if you are a single and if you want that others can see your

status just take the basket and go for… shopping. Knowing who is a single in a grocery store might be valuable information for other singles. There are lots of people in grocery stores, but traditionally customers create value only for the shopkeeper, not for each other. In "real life," people are very important for each others – why a grocery store would be different? Why grocery stores' upscale potential for our life is limited to finding new fat-free yoghurts?

Conclusion

With the discussion above I showed examples of benefits of thinking new value creation (NVC) from systems intelligence's (SI) point of view and vice versa. SI emphasizes human aspects of interactions and is always searching for enriching upscale options of systems. It is this "enriching life" aspect that is often missing in NVC and in business life in general. However, SI thinking could be also turbocharged by taking account a fact that big part of our daily life is strongly affected by commercial systems developed by business people from their point of view. Business life should not be any different than "normal" life. But the fact remains that the upscale human options are strongly limited by up-front choices made by developers of transportation, housing, shopping, working, energy production, and travelling systems, just to name a few. By combining SI and NCVC perspectives we would create revolutionary innovative and enriching new options for everyone's daily life. By any standard, world is not ready. Quite contrary, world is increasingly full of challenges and opportunities just waiting to be solved. That is our job and we can have a wonderful life while doing so. Let's make it real.

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CHAPTER 13

A Development on Systems Reflective Aesthetic Fluency

Nina Tallberg

A new concept of systems reflective aesthetic fluency (SRAF) is introduced. It embodies intense energy, cognitively creating resonance and vivid experience between self and the environment. It is not visual. Systems reflective aesthetic fluency attends to overcome systemic beliefs and images, striving toward an optimal aesthetic experience. Mind, body and space become all liquid within each other, floating joyously and intelligently around in and between systems releasing the self in a sensitive and creative manner. It gives a sense of systemic belonging, positivism and happiness, time expanding, losing its meaning.

Introduction

From the beginning of the 1990s sensuousness and organizational aesthetics found their way into organizational research (e.g. Taylor and Hansen 2005). It is indeed known that sensuous information and knowledge are inseparable and therefore worth a closer look. Still it seems as thought there lays a contradiction between feeling and thinking, artistic and academic (ibid.).

Lately attention on aesthetics has apparently bloomed up. The focus on processing experiences studying perceivers' cognitive processing fluency and behaviour according to given stimuli has emerged in many new approaches. The studies vary all from more technical complex responsive processes introduced by Ralph D. Stacey (2001) to more artistic aesthetic pleasure underlining fluent processing experience (e.g. Reber et al. 2004; Jacobsen et al. 2006). Summing up some of the latest studies connecting them with positive psychology, systems reflective aesthetic fluency became creatively the outcome.

Systems Reflecting

A responsive environment embodies intense energy and liberates the mind to flow freely within space. The experience becomes an aesthetic experience in the sense that mind and time seem to expand loosing themselves totally in the moment at hand. Aesthetics strives towards mental purity and resonance between self and the environment. It is a highly invisible relation between

two subjects aiming to be an easy accessible cognitive resonating fluent state. The process operates indirectly constantly adjusting self to the system reflecting between one's identity and impact of the system. If the energy is wrapped up in self and not in the system around, the mind can simply not reach an ultimate flow (Csikszentmihalyi 1990). Fluency of the mind becomes aesthetized through sensuous correspondence and embodiment of experience and is therefore something worth achieving. Bogart writes (2001, pp. 62–63):

> An authentic work of art embodies intense energy. It demands to respond. You can either avoid it, shut it out, or meet it and tussle. It contains attractive and complicated energy fields and a logic all its own. It does not create desire or movement in the receiver, rather it engenders what James Joyce labeled 'aesthetic arrest'. You are stopped in your tracks. You cannot easily walk by it and go on with your life. You find yourself in *relation* to something that you cannot readily dismiss.

Still it seems as though this rarely happens. The intense energy seems to be caught within systemic beliefs and 'mimetic behaviour' (Leach 2006), mere images, hidden deep under misleading interaction rituals taking place between self and the system. Mimetic behaviour generally makes people feel safe and helps them achieve a meaning for their existence. The feeling of alienation, frustration, discomfort and helplessness is a result of lost connectivity and mental dissatisfaction. In this sense self has become, in Foucault's terms, 'a prisoner' in his or her own xeroxised and fragmented environment.

Yet this fractal and overstimulating environment is empty. The mind has become anaesthetized forming in Leach (1999) terms an "aesthetic cocoon", a "womblike sensory…semipermeable membrane" around itself to escape and bare the reality. This way, in Freudian terms, the metropolitan type protects herself from overstimulating impulses of the system in order to survive. This fear of losing control becomes a paradox of control (Csikszentmihalyi 1990; Senge 1999; Thompson 2004). The closed transaction, between human and environment, threatens to become an illusion of our own definition of self.

In this sense the system seems to be ruled by laws producing "art for art's sake". The liberating intention therefore seeks to tune the system. Get the system to flow (Csikszentmihalyi 1990). It seeks to embody the whole spectrum of one's senses in order to brake through unconscious habits and barriers in the mind opening up systems towards optimal experiences, good life and happiness – *summum bonum*.

A responsive environment embodies intense energy cognitively engaging the self fluently within the system.

Referring to my own research studies connecting flow (Csikszentmihalyi 1990) and architecture are hard to find, somewhat surprising. In my view these two creative processes are almost identical when it comes to the urge of achieving happiness, love and optimal experience, although it is guided by intrapersonal achievements or achievements reaching organizational or social welfare and well-being. This is an attempt to explore this relation.

Aesthetics and Systems Intelligence

I propose systems reflective aesthetic fluency refers to *patterns relating* self with the system. It is a cognition based on a subject—subject relation. Aesthetics does not represent the outdated subjective/objective way of saying "beauty is in the eye of the beholder" or "de gustibus non est disputandum" (taste cannot be debated). Again, it is not visual. "To aestheticize an object is to anaesthetize it and strip it of its unpleasant association" (Leach 1999, p. 15). Aesthetics therefore represents a relation based on mental purity and resonance between self and the system,

liberating the mind to fly freely and uninhibited. The attained fluency becomes aesthetisized through sensuous reciprocity and embodiment of experiences, reinforcing the optimal aesthetic experience. From my viewpoint and from the interactionist perspective modern philosophical analyses propose quoting Reber et al. (2004):

> Beauty is grounded in the processing experiences of the perceiver that emerge from the interaction of stimulus properties and perceivers' cognitive and affective processes…The aesthetic experience is a function of the perceiver's processing dynamics: The more fluently the perceiver can process an object, the more positive is his or her aesthetic response.

Though I would like to propose the object to be changed and treated as a subject and also to be seen as a structure within a larger system. The object or the structure itself does not produce any behaviour in the sense of releasing energy of self within the system. "The geometrical structure of a visual design can never, by itself allow us to predict the effect it will have on the beholder" (Gombrich 1984, p. 117). The cognitive associations resonating between self and one's experience at the mental state of the ongoing system is not formed by the object or its mere outlooks representing the subjective adaptation with the system. It is the impact of the reflections taken place between self and a subject forming a resonating system. In my propose systems reflective aesthetic fluency is created through sensing life between and in the system losing the sense of self as a social actor within the given system. A genuine dynamic relation only appears when emotions and feelings relate bodily, naturally aviating, with the ongoing process of thought and action (Stacey 2001, pp. 197–198). Self can take the role of a system, but conversely it is impossible.

Based on the notion above aesthetic value is defined referring to Folkman (1997) by the amount of *positive value* infused in the processing of patterns between these relations and interactions. Positive value infused within ordinary daily events and activities result in finding positive meaning, thereby increasing positive emotions. Judgment of beauty again is defined by sensory, emotional, and intellectual complexity – a systemic introspective cognition based on the subject—subject relation. More specifically these patterns of relating can also be seen as self-reflective patterns, dialogues, between the 'I' (the knower) and the 'me' (the known), represented by Mead (1934).

These patterns form a nonlinear multidimensional dynamic relation. In an affect system "emotions are multicomponent systems that simultaneously alter patterns of thinking, behavior, subjective experience, verbal and nonverbal communication, and physiological activity … Such multicomponent systems are dynamic: They change over time as the various components within the affect system mutually influence one another" (Fredrickson and Losada 2005). Stenros describes an affect system between the experiencer and the built environment as follows (2005, p. 55): "At its finest, an experience stage can be an ethically aesthetic experience which improves the quality of the experiencer's everyday life by enriching it."

When positivity rules, the upscale aspects of life are eminent and the system flies and we fly with the system.

Systems Intelligence (SI), launched by Hämäläinen and Saarinen (2004), is a key competence of human intelligence and action in systems that may even be complex. Systems Intelligence is a competence, which can be improved by learning, involving interaction and feedback. The concept of Systems Intelligence "is a key form of human behavioural, life-orientational and context-adaptive and situationally creative intelligence" (Hämäläinen and Saarinen 2007b, p. 40). It is "a higher level of cognitive capacity, a form of intelligence" (ibid.).

Systems Thinking (e.g. Flood 1999; Senge 1990) provides Systems Intelligence various possibilities of modelling environmental constructs. Seldom, if ever though, does Systems Thinking change people's behaviour, beliefs or adjustment according to "what they believe is the system" (Hämäläinen and Saarinen 2007b, p. 44). "Learning together is important – but acting together for flourishment even more so" (ibid., p. 47). Therefore in my opinion Systems Thinking cannot create Systems Intelligence or fails in its attempt, but Systems Intelligence can create Systems Thinking. Hence Systems Thinking, among Emotional Intelligence (see Goleman 1996), Interaction Rituals (see Collins 2004), Emotional Energy (see Collins 2004), and Multiple Intelligences (see Gardner 1983), is a tool for Systems Intelligence.

The perspective on systems reflective aesthetic fluency tangles the holistic approach of Systems Intelligence. It concentrates on the system as a whole, lifting self and the system to a higher level of understanding the behaviour of parts forming the system. This ultimate goal of existence in Aristotelian terms could be seen as a desire for creating "aesthetics for aesthetics sake". Systems intelligently aesthetics strives towards the possibility of losing self-deceptive holding-back biases that disable systems from embodying the intensive affective energy hindering flourishing interaction between self and the environment. "When positivity rules, the upscale aspects of life are eminent and *the system flies and we fly with the system*" (Hämäläinen and Saarinen 2007b, p. 44).

Flow and Environment

The origins of the flow concept (Csikszentmihalyi 1990) go back to 1960s to studies of the creative process. It emerged from research trying to understand the phenomenon of the artist who, in the moment of creativity, persists single-mindedly, disregards hunger, fatigue and discomfort – yet rapidly looses interest in the artistic creation once it has been completed. This phenomenon of intrinsically motivated, *autotelic* activity (auto=self, telos=goal), achieves optimal experience and is exposed in same way across different kinds of activity irrespective of age, gender or culture. The most obviously this phenomenon appears e.g. in professions of surgery and athletics. Mind and body becomes one and energy flows.

Attention toward activity practiced plays a key role in entering and staying in flow (ibid.). Enough control of psychic energy, focused attention, is required to even enter the state. Flow requires a balance between one's action capabilities (skills) and action opportunities (challenges). The balance is an unstable condition (ibid.). If not established, one gets either bored or anxious and therefore needs to adjust his or her skills and/or challenges in order to re-enter flow (ibid.). In my opinion here is a clear link to the broaden-and-build theory of positive emotions introduced by Fredrickson (1998) and further to the nonlinear dynamic systems perspective introduced by Fredrickson and Losada (2005).

The subjective state of flow is described as following (Nakamura and Csikszentmihalyi 2002, p. 90):

- Clear proximal goals and immediate feedback about progress that is being made
- Perceived challenge, or opportunities for action, that stretch (neither overmatching nor underutilizing) existing skills; a sense that one is engaging challenges at a level appropriate to one's capacities
- Intense and focused concentration on what one is doing in the present moment
- Merging of action and awareness
- Loss of reflective self-consciousness (i.e., loss of awareness of oneself as a social actor)

- A sense that one can control one's actions; that is, a sense that one can in principle deal with the situation because one knows how to respond to whatever happens next
- Distortion of temporal experience (typically, a sense that time has passed faster than normal)
- Experience of the activity as intrinsically rewarding, such that often the end goal is just an excuse for the process

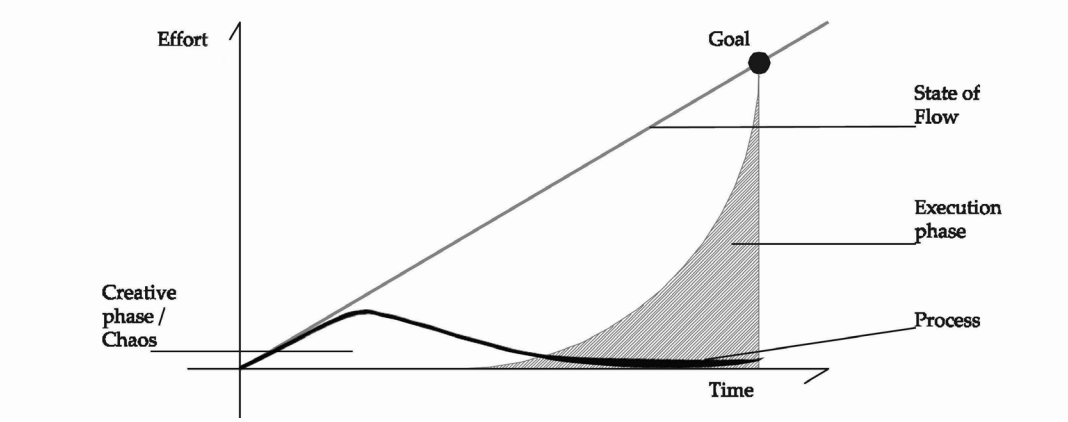

FIGURE 1. The state of flow.

The state of flow in itself, as depicted in FIGURE 1, is only a condition reaching a temporal end goal whereas self in state of flow aims to reach further. Flow is therefore not only a desirable creative goal, but a goal for any system striving towards flourishment, considering the every-day-life of human beings. Because flow, as I understand it, aims to reflect the meaning of life, flow desires not only to be a single event, but to gather all events to a holistic experience. It reaches a fluent continuous process emerging from itself. The process become a string of pearls, an integral over time, which in a broader sense means that efficiency and effect is the product of each pearl.

Imagining these pearls as constructs or 'objects' in space, we all of a sudden have a spatial arrangement. A built system, a city or a courtyard, or if so, people (often seen as objects) in space or products of a company. All inanimate. This spatial discourse is a transitional stage where time appears nonlinear. The duration between objects can be seen as a dynamic system where interactive speed and nonlinear belief of time turns out to be the most important variables.

The time spent between the pearls can be demonstrated e.g. through walking the bridges of Venice or moving between people in space. The mind works more or less unconsciously before hitting an 'object', becoming conscious of self in the system. This unconscious state can be seen as self-organizing processes, dynamic polyphonical systems where discourse and multiplicity only provide specialty. Systems intelligently striving toward uniqueness.

This uniqueness parallels the idea of narcissism argued by Leach (2006). In Freudian terms narcissism means "a potential engagement with the *other*, even though the *other* may in fact be the *self*" (ibid., p. 124) leaving the potential in the other unseen. Narcissism can although be viewed in positive illumination, seen as a form of rebirth through the myth of Narcissus, where death and sacrifice appears in the symbol of a flower. This rebirth, or recreation, is a creative process, where self repeatedly creates herself through her work reinforcing her narcissistic engagement of achieving flow and meaning of life through repeated acts.

The concept of team, group flow, gives utterly a broader insight into the concept. If a single pearl is threatened, all pearls are threatened and the process chain starts reinforcing negatively itself. The threats may be conscious or unconscious, mostly unconscious. The mere images of beliefs and biases result in an undesirable and unaesthetic act – an inflexible lifeless state. Mimicking oneself to the system losing one's identity results in depersonalization even thought "it is necessary to absorb visual material within a psychic framework, and to invest it with symbolic significance in order to identify with it (ibid., p. 80). Still "mimicry is not required to explain how mental contents move from one individual to another because no such movement takes place" (Stacey 2001, p. 196).

From my viewpoint mimicry is therefore not a parallel to the act repeated in the sense of content further reflecting one's systemic behaviour and/or adjustment. Contrary to the assumption above the discourse of a complex system, providing systems reflective aesthetic fluency, is not determined or ruled by a randomly reckless uncontrolled phenomena or experience. Instead it is a highly active intelligent process underlining constant movement, change and repetitiveness. This can be demonstrated as the experiencer being the focal point in FIGURE 2 (Stenros 2005, p. 55), moving around in space sensing and reflecting the system. Knowledge and meaning is driven, not from its context or surroundings, but from the interaction itself. The aesthetic experience is therefore determined by aesthetic value and judgment of beauty presented before.

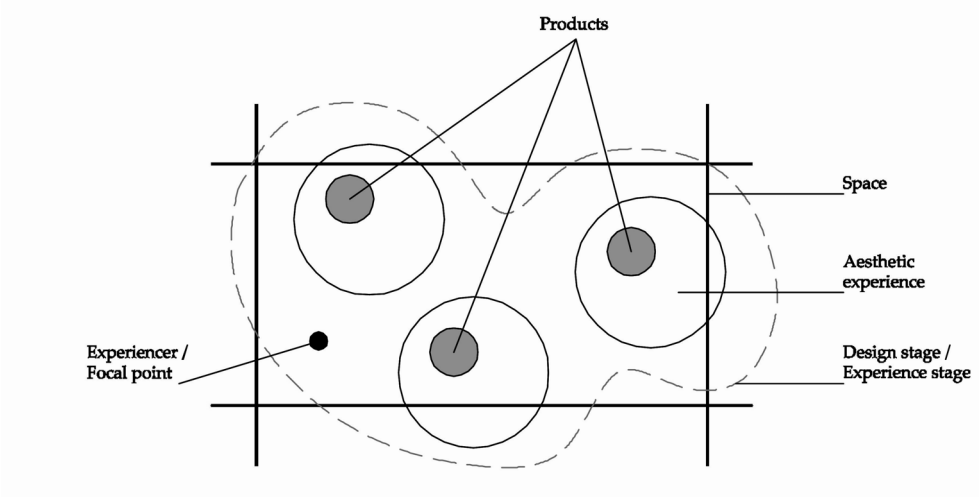

FIGURE 2. On the design stage.

Systems Reflective Aesthetic Fluency

Seeing the process as a repeated exposure or a gesture with variable content each time highest beauty is attained by 'uniformity in variety,' or 'simplicity in complexity' (see e.g. Dickie 1997, Reber et al. 2004). Fluency begins when complexity is reflected in an accessible and a conceptualized way. Referring to Gombrich (1984) Reber et al. (2004) write, "When processing is expected to be difficult, yet turns out to be easy, it creates a particularly strong experience of aesthetic pleasure." Hence aesthetic pleasure and judgment of beauty prefer complexity and symmetry (Jacobsen et al. 2006; Reber et al. 2004). Symmetrical patterns conclude less information, which makes them pleasing and easy to process (Reber et al. 2004). Therefore they facilitate fluent stimulus processing, yet consisting of complex constructs. Still complexity is considered more beautiful (Jacobsen et al. 2006).

Systems reflective aesthetic fluency is therefore based on a highly controlled active state of reflection and fluency where skills and challenges match. In the words of Gombrich (1984) it

could be described as an optimal balance between monotonicity and confusion. Here memory plays a vital role in remembering healthy patterns once learned. Self thereby cognitively controls and reflects the flow of sensory input from the system. Meaning is therefore driven from the aesthetic response where order is the source of fluency and complexity offers the form of perception of sensing order and finding meaning through daily events, activities and continuity. These daily events and activities can be seen as prototypical experiences emerging from often or repeatedly exposed stimuli experiences (Reber et al. 2004). The key here lies in the ability of sensing small deviations from regularities. "Having to save our attention for the appearance of novelty we gamble on continuation wherever the monitor receives no message to the contrary" (Gombrich 1984, p. 108). Deviations therefore yield the information we seek to give input for systemic flow.

As I would like to emphasize referring to earlier studies and my own experience, high fluency is considered to be positively remarked and elicit positive affect from the progress being made, broadening self in a creative manner (Csikszentmihalyi 1990; Fredrickson et al. 2005; Reber et al. 2004). This broadening naturally infuses one's perception of aesthetic value and experience. In my proposition systems reflective aesthetic fluency is therefore determined by following continuing self-reinforcing dynamic interaction chains regarding:

- Emotional energy (EE)[1] fluency
- Systemic flow
- Loss of time and self-awareness
- Embodiment of experience
- Equilibrium between skills and challenges
- High motivation and activity
- Good memory traits of past experiences
- Positivism and happiness
- Centred affective processing, repetition and feedback
- (Enough) symmetry in complexity

These aspects are fundamental, forming the new concept of *systems reflective aesthetic fluency (SRAF)* introduced here. Similarly to flow the concept relies on the ability of losing self-consciousness engaging actively and consciously self within the system. This could be described as the ability of consciously become unconscious of the conscious, releasing self in a creative act. This way the development of mind takes place and identity is formed. Identity requires the ability of separating from and connecting to the system. The spectator is both "screen" and "projector" – like the performer who becomes his own audience (Leach 2006). This mirror stage is also linked to previous memories, which through reflection and repetition strengthens one's process of identification in a ritualistic manner. "The 'I' both calls out the 'me' and responds to it" (Mead 1934), providing self with the ability to consciously adjust oneself to the ongoing system. This reflection between self and a healthy dynamic system results in a bodily resonance connecting the two linking their actions in order to go on together, without any forcing interaction or change of beliefs or behaviour.

[1] See Collins 2004, Chapter 3, pp. 102–140.

From symbolic interactionist perspective sacrifice and threat mentioned earlier, works self-reinforcing in framing one's identity. As Leach (2006) argues *sacrifice* is a social act. It is a performance where shadows haunt and kill the soul, a creative death in other words. The subject of sacrifice is treated as a thing, a victim. Sacrifice animates the object to become a subject and controversially the subject is liberated seeking intimacy with that object. Symbolically the sacrificed becomes a part of one's own sacrifice. By giving oneself up to death the aesthetic experience transcend religiously into paradise and love.

Similarly if the transaction is a dead end, the response and thereby identity never takes its form. Goal orientated self, the 'I', becomes the focal point of 'me', attaining systems reflective aesthetic fluency. Teleonomy of self is formed by a set of goals freely chosen by the actor, connecting identity, action and system. In transformative view teleology further refers to memory underlined continuous and transformative potential reconstruction and renewal. This means memories here are fluctuating patterns, seldom appearing identically if recalled (Stacey 2001, p. 201).

Systems reflective aesthetic fluency requires consciously becoming unconscious of the conscious.

As in flow reaching higher levels of skills and challenge, by becoming consciously unconscious of the conscious enough symmetric repetition is required in order to internalize action of chosen goal. Sacrificing oneself to the unknown by active reflection losing self-consciousness, and by symmetrically repeating patterns with variable content and self-reinforcing dynamic interaction chains presented, one can in theory and in practice reach an ultimate state of systems reflective aesthetic fluency. Thereby systems intelligently influencing self and further indirectly influencing the system bringing positivism and happiness as whole, reflecting back.

Processing Fluency

Systems reflective aesthetic fluency may though be hard to achieve. Complex blends linked to cultural activities are hard to escape, once having them, even if one would want to (Fauconnier and Turner 2002, p. 389). They territorialize the mind. Based on several theoretical assumptions innate processing biases facilitating recognition are most fluently processed and therefore preferred. In this sense they can also be seen as cognitive threats hindering self from entering flow. Hence positive psychology only tells us to recognize these threats and liberatingly instead concentrate on the positive aspects creating life. Mead (1934, p. 174) describes:

> It is because of the I that we say that we are never fully aware of what we are, that we surprise ourselves by our own action. It is as we act that we are aware of ourselves. It is in memory that the 'I' is constantly present in experience…The 'I' is the spokesman of the self of the second, or minute , or day ago. As given, it is a 'me', but it is a 'me' which was the 'I' at the earlier time…'I' comes in…as a historical figure.

From this perspective it is easier to understand the 'I' because the 'me' has already formed cognitive simplifications of the former 'I'. The chains of blends have found their explanations representing the memory of the former experience of the 'I' presenting it in a simple and understandable form, giving the experience its support. This can be compared to a content becoming so familiar it even endures modification to be understood (Fauconnier et al. 2004; Reber et al. 2004).

Subjective experience and use of this experience in judgment is therefore related to memory traits of earlier experiences. This assumption is argued by comparing a novice to an expert in a given context (e.g. Purcell 1984; Reber et al. 2004). A novice prefers simple symmetric 'visual' context,

whereas an expert chooses complex asymmetric 'visual' constructs (Reber et al. 2004). Training therefore provides a novice increased knowledge, symmetry, further to process complex stimuli more fluently. In my view paradigms of subject—subject relations emerge as argued by Reber et al. (2004):

(1) experts are more likely than novices to consider aesthetic value, ideas behind the work and norms of "good" and "bad" taste,

(2) experts evaluate simple stimuli more negatively than novices, despite the pleasure they receive from easy processing,

(3) experts may run the risk of acquiring art that they find less enjoyable than expected after the ended engagement of the design process,

(4) increasing familiarity required from the novice.

Furthermore, expectations can be compared to self experiencing a new environment. The mind works fearlessly but doubtfully. As I propose and as Reber et al. (2004) argue: "Fluency associated with processing a certain event is more likely to elicit a subjective experience if the fluency is unexpected in light of the person's processing experience". Novel stimuli are therefore experienced as following (ibid.):

(1) novel stimuli are processed slower than familiar stimuli,

(2) novel stimuli elicit more attentional orientating than familiar stimuli,

(3) novel stimuli have less organized processing dynamics than familiar stimuli.

Though I would like to suggest in terms of systems reflective aesthetic fluency that it does not require unexpected or expressive impulses from the environment to resonate cognitively and bodily. These impulses may even be unwanted and harmful. In my opinion the resonance caused by expressive impulses may not even be real cognitive blends of true information. At least not before the mind becomes confident about the given stimuli, trusting its meaning. The mind does not consider the information as resonating and the response is purely unaesthetic: positive or negative, beautiful or ugly. This results in a pure subject—object relation. The mind goes blank after the first engagement with enthusiasm and the subject-subject relation never emerges. Still expressive structures and systemic impulses of environment can embody intense energy and give an impression of aesthetic arrest. A false illusion in other words.

How far can we go from the content still maintaining its actual meaning? If we present a subject with an incomplete message we can find out how much one can guess through one's knowledge of what is likely in a given context (Gombrich 1984, p. 104). Hence an improvement between skills and challenge is obviously required broadening into a more positive affect of the environment. An autotelic experience is considered to be most pleasurably experienced requiring high skills and high challenge (Csikszentmihalyi 1990; Nakamura and Csikszentmihalyi 2002). Fredrickson et al. sums up (2005):

> Positive affect – by broadening exploratory behavior in the moment – over time builds more accurate cognitive maps of what is good and bad in the environment. This great knowledge becomes a lasting personal resource…Broadening mindsets carry indirect and long-term adaptive value because broadening builds enduring personal resources, like social connections, coping strategies, and environmental knowledge…Positive attitudes – like interest and curiosity – produce more accurate subsequent knowledge than do initially negative attitudes – like boredom and cynicism. Positivity, by prompting approach and exploration, creates experiential learning opportunities that confirm or correct initial expectations.

Similar to Stacey (2001) I would like to emphasize that novelty is the consequence of the history of relating, not built by the uniqueness located in the individual. "It seems that the brains construct biological correlates of experience that are later triggered into reproducing patterns easily transformed by intervening experience and change in current context…reproduced and potentially transformed in the course of future fantasy and imaginative elaboration" (ibid.). This emphasis is supported by systems reflective aesthetic fluency broadening one's history by constant creative acting.

Creativity protects self from boredom and cynicism. Potential novelty operates, both in creative and destructive sense, through imagination and constant misunderstanding. Creativity can therefore be reflected through e.g. paranoia or schizophrenia in its positive meaning. As Leach (2006) argues *paranoia* occurs when the inanimate becomes animate in one's illusions, being a surrealistic primitive stage detached from reality, attacking the loved ones. It is an aggressive conflict between perceptions and memory, conscious and unconscious, external and internal. It is a conflict between self formed by both ego and object, whereas "the only true union is between subject and subject" (ibid., p. 167).

Patterns of Relating

A magical space is like a good old marriage. It animates the whole spectrum of one's senses and emotions. The interaction itself becomes totally embodied and time loses its meaning becoming dynamic within the action. A happy marriage is neither based on false illusions nor lies. It is a productive exchange resulting in positive emotions. Being able to live happily ever after once engaged, requires concentration, learning, devotion, falling in love, repeatedly, despite the complicated systemic structure. It requires amounts of iteratory visits making sure the process of complete devotion to place never loses its magic. As even unnoticed the place becomes sacred. Something you cannot live without. You find yourself hooked within the aesthetic arrest. If the silence is broken the power is gone.

The theory of multiple intelligences (MI) launched by Gardner (1983) consists of eight forms of intelligence: logical/mathematical, verbal/linguistic, bodily/kinaesthetic, visual/spatial, musical/rhythmical, naturalistic, interpersonal and intrapersonal. Together these intelligences form unique profiles of each human being, which means everyone sees and experiences everything uniquely. For a designer this seems quite a task to fulfil.

Therefore I see the concept of multiple intelligences only as a supplement to design, helping people getting in touch with their senses in an even unconscious way. Multiple intelligences is only a tool for the designer to help people overcome their alienation of the negative or otherwise neutral experience of the environment. The aesthetic experience that emerges from duration through spatial arrangements or systems can easily be intensified by looking through the theoretical lens of multiple intelligences.

Seduction is totally opposite to production, but totally a form of creative production.

Not only does it require a great sense of systemic and rational thinking alongside the visual, but for a good environment being produced, also a great capacity of interpersonal and intrapersonal skills. Here lies the power of Systems Intelligence. In my opinion design is not complicated. It is the ability to listen, see, feel, understand and let go of one's own, in order to create something new. Something even bigger. Something meaningful. Life. Happiness. Love. Aesthetics lies in the ability to keep oneself true to Systems Intelligence and actually create (thinking, feeling, doing) what one believes is the meaning of life. "Design can offer a mechanism for engaging with the world that overcomes the

feeling of alienation. In this respect, design can provide a form of connectivity, a mediation between individuals and their environment. Design can contribute to a sense of *belonging*" (Leach 2006, p. 9).

Leach (2006) gives *belonging* a narrative appearance of various layers. It is a ritualistic repetition, a performance on stage based on associations and vivid memories related to space. It is a process of ghostlike memories associated with activities taken place in the past. The meaning itself is driven from the discourse of objects situated in that space, transformed by time and character. It is a reciprocal attachment to a "transitory and fluid discourse of territorialization – in the Deleuzian sense" (ibid., p. 183).

Comparing to flow where the end goal is just an excuse for the process collectively "seduction is totally opposite to production" (Leach 1999, p. 74), even though the experience might be intrinsically rewarding self. Production here means that the symbolic messages of action and beliefs become transmitted in forms that have unwanted focal meanings (O'Neill, p. 54). In this sense the process of optimization works against systems reflective aesthetic fluency and the sense of systemic belonging remains unreached. The cognitive resonance between self and the system remains unattainable disconnecting self. Seduction and embodiment still left in *melancholia* forming a continuously violating state against self – a living death. Therefore from the perspective of systems reflective aesthetic fluency, seduction is totally a basic form of creative production.

Reflecting Leach (2006) overcoming the disability to love another is only through life itself, represented by love. Love is therefore art with the ability to open up a series of repeated acts transcended from melancholia. An artist's life is lived through pieces of art, constantly jealous of other artists' works and performances. Potential death is a life creating act. *Death* is therefore in many ways paradoxical. It is the opposite of life, but it also gets its pleasure from not achieving its aim. Death is therefore exciting while life is harmonic. It's the art between life and death where the built space of death is formed by complete otherness and the space of life is formed by complete oneness. Death therefore evokes life. In order to flourish, life is required.

Creating Life, Fluency and Flourishment

> Life between buildings is both more relevant and more interesting to look at in the long run than are any combination of colored concrete and staggered building forms. The value of the many large and small possibilities that are attached to the opportunity of being in the same space as and seeing and hearing other people is underlined by a series of observations investigating people's reaction to the presence of other people in…space…it is generally true that people and human activities attract other people. People are attracted to other people. They gather with and move about with others and seek to place themselves near others. New activities begin in the vicinity of events that are already in progress (Gehl 1987, pp. 24–25).

The chain of pearls, or the domino effect, either positive or negative, is ready to be viewed. "Something happens because something happens because something happens" and vice versa "Nothing happens because nothing happens because nothing happens" (Gehl 1987, p. 77). To say it simply, life creates life.

This parallels Leach (2006) who argues that *ecstasy* is a jouissant drive towards death, remembering the power of death evoking life. It is an unconscious pleasurable experience loving oneself, despite the absence of emotional connection between self and other, self unembodied. A symbolic engagement of created misbeliefs and meanings takes its form in an endless process of repetition between self and the divine, underlining surrender and devotion. It is a narcotic like trance engaging oneself without knowing what follows, life being the drug.

Either way it is a highly self-reinforcing process. This means it is a choice between positive and negative. The words of Csikszentmihalyi echo in my head – only those things I agree to attend to shape my mind. In order to create aesthetic flourishment systems reflective aesthetic fluency is required. Systems intelligence aims "to move systems by moving people first" (Hämäläinen and Saarinen 2005). Hence it only requires *something* in order to achieve bigger means costing nothing. Engaging self at a fluent state is something more than only wandering around in that state. Once in personal flow the context or the built environment comes in second shaping your mind and in time measured one second might feel like three. Stacey (2001, p. 217) writes: "if it were true that we had lost the art of dialogue in which creative change is possible, it is difficult to understand how the rapid change we currently experience is occurring."

Systems intelligently the art of creative dialogue is not lost, it is only sidetracked. "It is our search after meaning, our effort after order, which determines the appearance of patterns, rather than the structure described by mathematicians" (Gombrich 1984, p. 147). Proposing direction, referring to the aim of systems reflective aesthetic fluency, if one begins the rest will follow and happiness and love will flow in systems. "If context is what gives a form its meaning, to 'resynthetisize' that form is to give it a different meaning" (Leach 1999, p. 67).

From a creative systems intelligent practitioners' perspective systems reflective aesthetic fluency in my proposition demands iteration and focusing. The imagination of unseen possibilities is the basis in order to create something new, but even more so the real key is the ability of letting go. Sensitivity and open-mindedness are required to help one engage in an active and affective manner with one's environment. Simplicity in complexity gives rise to endure asymmetry and expressive stimuli. It is essential to remember meeting these and systems in general with exploratory and positive behaviour, weather it concerns confronting subjects, content or context. Self-reinforcing patterns of behaviour gives confidence both to self and the system, increasing mutual learning and meaning for both self and the landscape one operates in. Repeated confrontations of novel stimuli results in achieving expertise aiming further. System dynamics is therefore the challenge and driving force in several aspects.

The ability of letting go is the key in order to create novelty and life.

From the practitioners' perspective detection and elimination of intrinsic processing biases fastens fluency and response time improving healthy sense of control over intentions. The permission has to be given in order to release the potential energy and creativity hidden in self. It is the capability of activating the fundamental competence and expertise we already possess and to connect more lively celebrating the positivism in us (Hämäläinen and Saarinen 2007a). Positive experiences increase mutual positivism, fluency and flourishment of systems.

Quality of an aesthetic experience underlines the amount of positivism and happiness taking place. Openness, freespace and freeform are required between self and the system to ease the access. The relation has to be attractive. Activities have to have the appearance of the aesthetic arrest in truthful manners to intensify complete devotion and action of ongoing activity. The optimal aesthetic experience is reached when systems reflective aesthetic fluency and flourishment are gained.

Systems Thinking provides us the ability to recognize, feel and think of the systemic unfolds, still becoming unperformed. Acting out becomes the real individual challenge. Performativity may be the key question in order to reach systems intelligently systems reflective aesthetic fluency. The subject—subject connection is therefore easiest to train by learning to keep the system open, keeping the other at a short distance, acting slow resonating at same level face-to-face or parallel orientated. Remembering systems dynamics helps one maintain flexible and ready to interact

creatively within every occurring situation obligatory, non-obligatory or unexpected and investing fearlessly the psychic energy within the action present thereby rising to a new level motivated to learn even more. Intrapersonal system reflective aesthetic fluency is hereby secured broadening narratively and systematically towards new horizons.

Conclusion

The modern age has turned into a dynamic age. Systems intelligently an age striving towards systems reflective aesthetic fluency connecting thinking and feeling, artistic and academic. The term aesthetics has lost its ancient meaning of representing only subjective value and judgment of objective beauty. The object has transformed and become a subject itself regarding its own patterns and interactive behaviour represented by the 'me', influencing the whole. The systems intelligent perspective requires keeping oneself true to acting out in the manner of systems reflective aesthetic fluency thereby gaining flourishment and joyous environment. As Leach (2006, p. 221) interprets:

> There would be an architecture which, through its poetic intent, would force open the subject, broaden it and introduce it to new horizons. It would be an architecture that would innervate, nourish, and have the capacity to transform the subject – an architecture, in Kristeva's terms, not of imprisonment but of free expression, not of melancholia but of love.

A joyous environment embodies intense energy. It is a creative interaction. It overcomes the intrinsic cognitive biases of reduced beliefs, images and false actions of the ongoing system resulting in resonance and vivid emotions between self and the environment. It provides the system positivism required for systems reflective aesthetic fluency to take place. A systems intelligent aesthetic performance creates life and attunes the system with positive emotions and synergy resulting in happiness and love. Genuine aesthetic beauty is valued by keeping oneself systems intelligently true to one's aesthetic beliefs of the ongoing system, acting and performing from this perspective even though the system would seem to have its own repulsive dynamics and rules. Spatial arrangements and transitional stages are all dynamic systems which can be transformed over and within time. Interactively. Patiently.

An optimal aesthetic experience is reached when systems reflective aesthetic fluency and flourishment is gained.

Learning from the landscape in order to resolve fears provides us a systems intelligent interpretation changing towards the dynamics of systems reflective aesthetic fluency introduced here. It only requires that something in order to gain efficiency and effect as results. Therefore I propose to hold on to aesthetics for aesthetics sake. In Søren Kierkegaard terms systems reflecting between either/or:

> If I were to wish for anything I should not wish for wealth and power, but for the passionate sense of what can be, for the eye, which, ever young and ardent, sees the possible. Pleasure disappoints, possibility never. And what wine is so sparkling, what so fragrant, what so intoxicating as possibility?

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CHAPTER 14

Is Anybody Home?

Anne Tervo

This essay considers the healing potential of Architecture through the gentle but persistent power of Systems Intelligence. The premises for this deliberation come from the mundane life of a dweller and her encounters in space. Home is seen as the interpreter of a person's inner world and as a potential catalyst for a change into a more humane and dignified life. Furthermore the process of building has been examined in relation to the act of dwelling. The purpose has been to emphasize the meaning of multiple layers of both material and immaterial life, created by the inhabitant through her being in a place. This relates architecture to the overlapping disciplines examining the meaning of place through all our senses and social connections. The essence of a home is seen to be comprised mainly of life enriched by unpredictable changes.

Introduction

The presumption that in Architecture, meaningful places contain more than can be captured by conventional means of architectural representation based on sight is brought up in this text. The ever growing amount of visual impulses in our environment has achieved an overwhelming victory in the field of Architecture as a growing tendency among the goals of creating built environment. As Pallasmaa points out, "modernist design at large has housed the intelligence and eye, but it has left the body and the other senses, as well as our memories, imagination and dreams, homeless."(Pallasmaa 2005, p. 19) As opposed to the oversaturation of images, this essay is about sensitive places, built in the realm of longing for humanity, and their novel appearances with the help of architecture, as seen from the perspective of Systems Intelligence.

None of the grandiose places of the world are as true a stage for the following deliberations as the home, since there if anywhere it is possible to be in contact with one's own vulnerable humanity. As a common platform, we all have a relationship to a home. For many of us it is one of the most intimate and cherished realm of our life. Yet home contains countless connotations as well as combinations of altered social situations unveiling its complex nature. Examined from the perspective of Systems Intelligence, home reveals its inherent potential as the interpreter of this pulsating and organic concept.

The Prism of Architecture

In this essay, the synergistic relationship between Architecture and Systems Intelligence is examined through the concept of home. Architecture and especially the home has been considered a multifaceted concept, comprised not only of space, but of social relationships, behavioural motivations, feelings and dreams. Central to this way of thinking is a willingness to embrace the subjective experience related to the home. The active role of the subject is fundamental, its meaning further accentuated by the nurturing force of the home. "If we desire architecture to have an emancipating or healing role, instead of reinforcing the erosion of existential meaning, we must reflect on the multitude of secret ways in which the art of Architecture is tied to the cultural and mental reality of its time." (Pallasmaa 2005, p. 34).

Architecture and especially the home have been considered a multifaceted concept, comprised not only of space, but of social relationships, behavioural motivations, feelings and dreams.

The written works of the architects Juhani Pallasmaa, Christopher Alexander and Stewart Brand examine the primary resources in creating a meaningful environment. Each of them approaches the subject of matter in their own way, but they share the common denominator of the meaning of action, participation and the weight of a lived life, concepts that have opened up my own thinking. Representing a fairly traditional section of architecture, they operate with the tools created for an archaic interpretation of dignified life. Their decade's long works are freshly published. "Encounters" (2005) by Pallasmaa is a collection of essays written during the past 25 years. Alexander's "The Nature of Order" (2002) is a series of four books, wherein are collected his thoughts on the structure of life gathered over the last thirty years. The second book of this series, "The Process of Creating Life" has been inspiring when writing this essay. In "How Buildings Learn: What Happens After They're Built" (1995), Brand studies Architecture in relation to the inevitable change in time, shedding light on the affection lavished on aged and used places. In addition, the origins of some of the tendencies of present-day Architecture, such as implementations of pervasive computing and especially situated design based on the same sensitive foundation as the work of the aforementioned architects, have made their contribution to the text in hand by opening new perspectives.

The architect Malcolm McCullough's ideas about the rising possibilities that Architecture is facing in the field of interaction design are presented in his book "Digital Ground" (2004). These ideas have been exceptionally influential, functioning as a welcoming connector between the ageless values of Architecture and its contemporary manifestations. Instead of exposing Architecture to the power of continuous change coming from outside its field, McCullough builds delicately on its tradition while refusing the vision of anytime-anyplace created by information technology. (McCullough 2004) Valuing "the power of context", a term established by Malcolm Gladwell (2002), McCullough ends up defining the current direction of the planning of spaces in relation to social context:

> "The usability of well-made traditional places now appears as a rich basis for design of context-aware technology. Whether it is organizational, social, or domestic, space awaits rediscovery for its richness of social framing." (McCullough 2004, p. 174)

The adorable book titled "House as a Mirror of Self, Exploring the Deeper Meaning of Home" (1995) by Clare Cooper Marcus has given me the courage and faith to deliberate the significance of the home as a tool to get closer to ourselves. "A core theme of this book and the stories within it is the notion that we are all – throughout our lives – striving toward a state of wholeness, of being wholly ourselves. Whether we are conscious of it or not, every relationship, event, mishap or

good fortune in our lives can be perceived as a "teaching", guiding us towards being more and more fully who we are." (Cooper Marcus 1995, p. 8)

Attachment in Architecture

When designers within the architectural and sociological professions have sought ways to produce meaningful and habitable environments, collaboration between inhabitants and designers has often seemed the appropriate way to develop generative interaction. However, at some point the end-product became detached from the original admirable goals. In the blooming spring of technological building innovations, we began to see proposals for new kinds of ways to approach the problematic of the specific place, quite often by designers coming from outside of the realm of Architecture. These designs roughly consisted of mere cubic meters in the form of mobile containers. Furthermore we learned that among us we have nomads who want to live with such instability. Likewise, airy and open loft-like spaces became homes worth pursuing. Manifesting liberation, tolerance and transparency, the open plan ended up stripping the spatial distribution of the rooms and new apartments became often valued by the amount of space they contain. "More space in domestic buildings is equated with freedom" (Brand 1995, p. 23). The alienation easily experienced in contemporary housing was enhanced and further delivered as a minimalist lifestyle, lacking in content, and finally becoming an established norm.

The alienation easily experienced in contemporary housing was enhanced and further delivered as a minimalist lifestyle, lacking in content, and finally becoming an established norm.

In relation to the topics discussed above it is tempting to observe the mobile boom in architecture that drifted away from actual problems of its own time, such as disaster relief inhabitation or providing shelter for the homeless. Instead it borrowed ingredients from the work environment and attacked one of housing design's most valuable possessions, its permanence, while simultaneously artfully ridding itself of the *genius loci.* It is a pity, since we learn to inhabit a place on its own terms and are able to rethink and slow down the relationship between time and desire through the solid framework of the place.

According to Pallasmaa "our age has lost the awareness that the act of building inevitably involves a metaphysical message, a reflection of a view of the world and man's relationship to the world. Buildings and other human acts are not dictated by purely practical needs – they always constitute a dialogue with the world and contribute to forming the relationship of the individual ego or the collective identity of a cultural community to time and the world." (Pallasmaa 1980, p. 41) From this viewpoint an intervention that could reveal what is already there seems to be desirable. In the words of Hämäläinen and Saarinen (2006, p. 20) this can be found in the moment: "when the system is shaken, the latent beliefs might trigger a revolution, spreading like an epidemic. Given a small but critical change in the system, deeply held aspirations might suddenly leverage, adding exponentially to the momentum."

It is encouraging to think that, despite all the architectural evolution spurred on by the progress of technology, human participation has retained the capability for solving many of the complicated and awkward social situations that often seem as much a part of a building as its physical elements. Aiming at ones "flourishment" (Hämäläinen and Saarinen 2006, p. 18) from the point of believing that it already exists, waiting to break out, creates a mental place in a nest of Systems Intelligence. Being able to remove oneself from the typically mundane argumentation on the built environment is one of the rewards for contemplating the union of Systems Intelligence and Architecture. Aiming at a richness of experiences with the help of more or less unexpected

situations comes close to enhancing the effect that qualitative aspects of the environment have on our behaviour. Sadly these are easily overshadowed by the precise quantitative aspects that are nevertheless often secondary when pursuing an environment that supports the inner growth of a person and hence the quality of life.

Feelings as Interpreters

> "People tend to suppress that which they cannot express." (Tuan 1995/1977, p. 7)

There exist numerous places, in our daily surroundings, where every one of us can feel alienated in a way similar to the loneliness experienced in a crowd. A kind of suitability test for spaces could be accomplished relatively simply and empirically by trying to figure out where we feel naturally comfortable or, on the other hand, what are the places in which it is fairly easy to feel poor, lonely or incomplete. But there is often something in the moment which can make it all better and quite often it is an impulse coming from another person. No matter how great the surroundings are, they are easily forgotten when the companion is even lovelier. Maybe you can picture yourself in some disastrous holiday destination frosted with all that an average tourist would need in order to get away from mundane daily tasks, and sense the humour in the air when you see the astonishment in you ally's face. It appears perhaps as a limit of built environment that its qualities are apparently so easily overshadowed by human contact. The moulding power of Architecture holds within itself the capability to facilitate or hinder human encounters in a space.

No matter how great the surroundings are, they are easily forgotten when the companion is even lovelier.

If we accept as a starting point that in some situations our feelings and intuitions tell us something about reality, then reinvesting trust in our sensitivity and instincts made vulnerable by the overestimation of accurate definition could become our goal. Instead of describing built environment with measurable dimensions, we could start to intentionally enhance our vocabulary of emotions. In this context it is not enough that something "looks great" and "sounds fantastic". Instead we want to approach the essence of a place with devotion by insisting on tangible sensation.

Working from the perspective of Systems Intelligence, which "takes the idea of people's internal and movable world utterly seriously", we grow up understanding that "unlike many forms of rationalism and objectivism, we do not fear the subjective or the emotional, the experiential or the phenomenological – indeed we embrace them. Therein lays the source of emergence." (Hämäläinen and Saarinen 2006, p. 43–44) Strongly based on supporting the feelings of a person as a steady truth that should not be violated, Alexander has interpreted a feeling "as real and as definite as the fact of the sun coming over the horizon tomorrow morning" (Kohn 2002). Alexander's ever valid question remains: "why do we think of it [feeling] as something vague and evanescent, when actually it is so real?" (Kohn 2002)

The Processes of Architecture

The value-set of the built environment is known to vary according to the stage. On one hand there are the people with their scattered hopes, often lacking the vocabulary to dream big, and on the other, the professionals of the environment with few tools for stepping out of the flood of rules dictated by the limitations of reality. Hence in the profession of Architecture it is quite common to confront a client with the one-time possibility of having a home that fulfils their tacit dreams, yet

never managing to raise the conversation above the level of simplifying practicalities. Instead of this, we could try to lead the dialogue to a higher level and, at an early phase of the design task, find ways to keep the conversation abstract enough in order not to exclude more elusive possibilities.

In this respect the holistic way of examining life through work as an architect, represented by Alexander, has been refreshing. The comprehensive theory of the process of building that Alexander has created has a connection to the theory of Systems Intelligence, through the ability to enhance the power of an unfolding situation as something that changes the whole dynamic of the process. Relying on the sensitivity of signals and person's ability to react to them in an unexpected yet appropriate manner reveals the essence of both concepts.

The foundation of Alexander's thinking is laid in the interpretation of the order inherent in the environment. He postulates (Alexander 2002a) that all life is structural using as his evidence the patterns of natural phenomena, which he then applies to the built environment. According to him life is comprised of fifteen properties which, when intertwined, create living centres. His way of thinking is about infinite progress, which developed through recognizing the process as the binding factor inside the living thing. This process is related to time and our understanding of ourselves as inseparable parts of the whole: "When the structure is living we feel the echo of our own aliveness in response to it." (Alexander 2005a)

Essentially Alexander does not make the artificial distinction between the theory and the practice of Architecture. The quality of the man-made environment can be traced to the beauty of the process behind it. A prominent feature in Alexander's thinking is his systematic viewpoint through which he observes and explains our built environment, though his methods may sometimes seem laboured. Constant movement over the identified barriers of the discipline of Architecture appears to happen for him without trouble, but in reality he has struggled his way through persistent resistance coming mainly from the academic world. (Kohn 2002)

The dynamic process of unfolding structure is linked to the experience of a place, something that is typically respected in the world of Architecture. These features enhance energy as opposed to stability. An easy, rhythmic movement over gently sloping stairs or a lazy glance into the distance over lower rooftops are examples of ways to experience spatial dynamics. Through the examination of one's actions inside a space our bodily experiences become the means of making sense of the situation. Thus the experiences of architecture "seem to have a verb form rather than being nouns." (Pallasmaa 1994, p. 35)

> "…an architect internalizes a building in his body; movement, balance, distance and scale are felt unconsciously through the body as tension in the muscular system and in the positions of the skeleton and inner organs. As the work interacts with the body of the observer the experience mirrors the bodily sensations of the maker. Consequently, architecture is communication from the body of the architect to the body of inhabitant". (Pallasmaa 1994, p. 36)

With intention comes process if we are to follow Alexander's method of making a house. He is prepared to react tirelessly to the unfolding situations on a building site asking: "what is the most important thing I have to do next, which will have the best effect on the life of the house?" The rest is simple: "Then you do it. I am looking at the front door, and I ask myself how I would

The inner life of the architect and the outcome of his work appear to be balancing between life as a child and as a matured soul.

like to walk from the street to the front door. Then I make the steps in the right place." (Alexander 2002b, p. 129)

In a situation where we do not have the possibility to build gradually over time, one option is to proceed using imagination. Taking into account the laborious process of getting permission to make a certain kind of building, much of the resistance towards Alexander's work can be attributed to his highly idealized operating environment where the architect has the option of instantly reacting to the process of building. This reality enhances the importance of dreaming and imagining as primary motivations for moulding the environment. However, the kind of dreaming suggested is not just any kind of daydreaming, but specifically related to a certain place and the people whose every-day-life it touches; the "life that was to be lived in them". (Rasmussen 1974/1959, p. 157)

The motives behind Alexander's and Pallasmaa's actions are themselves familiar to the profession of Architecture. We all want the environment to become more understandable and suitable for each one of us. Yet we need a way to expose ourselves to the process that weaves itself into the built environment. In this respect the method Alexander is suggesting is a beginning, somewhere to start looking for a solution for the often chaotic conditions of a design task. Somewhat systems intelligently, Alexander argues the undeniable importance of knowing yourself in order to create life in the form of a built environment with the capacity to touch us. It seems like he, through establishing a causal connection between a person and her output, refuses to recognize the dualistic separation of the mind and body. References to one's childhood experiences in a home (Pallasmaa 2005b, Cooper Marcus 1995) support both the intact process of perceiving yourself as well as the intentions behind the places we create. The inner life of the architect and the outcome of his work appear to be balancing between life as a child and as a matured soul.

Aiming for Integrity

"What makes a building come to be loved?"

Seeking a way out of the muteness of contemporary buildings from the past is not a new idea in itself, but the way it is represented by both Alexander and Brand as the beginning of a generative dialogue that accepts past failures while concentrating on doing better next time is worth examining. If Alexander questions the underestimation of feelings, Brand finds a possibly even more effective way of figuring out the importance of a building, through inspecting the mind of a preservationist. His way of getting to the core comes out of the question: "What makes a building come to be loved?" This is to be followed by action: "And they [preservationists] act on what they learn." (Brand 1995, p. 90) He portrays a worldview dictated by the understanding of the passing moment, as opposed to the simplified decision-result leapfrogging that we seem to be constantly exposed to. Constructing becomes more like travelling: no one really knows what awaits us until we get there. Yet for some reason we are tempted to believe that someone does.

When getting to know Alexander's written work, he could easily be called an idealist. Instead of suggesting new ways of building Alexander challenges us with a continuous, self-correcting process of building. In all his efforts he aims at combining our world as one single entity that is constituted from intertwining smaller unities. His world is not made of stable and archived parts, but is constantly influenced by every single movement. It can be fostered, but only by a gentle though persistent focus on the deep structures of life. Much the same can be said about the concept of Systems Intelligence. The critique that Alexander's work gains is often based on this very same fact; for some reason it seems to be hard to accept that there could be a comprehensive explanation about the way life is constructed. I'd seriously like to ask, wouldn't that be lovely?

Getting Old

Affection to ageing buildings is one of the issues raised by Brand. As a builder himself, he has found his own way to rebuild and inhabit "Low Road Buildings" that without his care and need for bettering a place would have had a totally different history. "Age plus adaptivity is what makes a building come to be loved. The building learns from its occupants and they learn from it". He goes on: "Admiration is from a distance and brief, while love is up close and cumulative. New buildings should be judged not just what they are, but what they are capable of becoming. Old buildings should get credit for how they played their options." Brand is being systems intelligent in a very precise meaning of the term. We ought to see the vast amount of possibilities on offer, but cannot help but be shackled by the control of visual impulses. "The conversion will be difficult because it is fundamental. The transition from image architecture to process architecture is a leap from the certainties of controllable things in space to the self-organizing complexities of an endlessly revelling and unravelling skein of relationships over time. Buildings have lives of their own." (Brand 1995, p. 71).

Referring to inevitable change over time, Brand asks: "While all buildings change with time, only some buildings improve. What makes the difference between a building that gets steadily better and one that gets steadily worse?" (Brand 1995, p. 23) We can visualize before our eyes a cavalcade of altered places. Some of them we find delicately realized, others are less successful. Beyond the subjective opinions based on different criteria such as values of elaborate preservation or aesthetic perception there could be a more humane way of estimating the built environment. Is it possible that we just let go the idea of the importance of personal opinion, especially when examining homes, and try to value the heartwarming effort of the person or family in order to better their lives? Instead of strengthening the hypersensitivity of the environment by limiting possibilities from the point of accepted choices, feeling ones need to improve surroundings of every-day life could give rise to a new way of appreciating a person's inner dreams.

We invite new opportunities for social situations as well as lose touch of the old ones. This way we create memories, good or bad, the ones we long for or feel relieved to get rid of.

In this respect, there could be something real behind the thought that the objects or ready-made elements done for no one special signal a silent message that the human touch is replaced by something less meaningful. The resulting modern environment is often monotonous and unlike older towns contains few charming surprises (Norberg-Schultz 1980, pp. 189–190). Somehow we seem to intuitively linger on pieces of art or any artefact in general, sensing their uniqueness. Many ageing houses have, for a reason, an atmosphere of the past that embraces our own collective history, where "we glimpse the world of previous generations" (Brand 1995, p. 90). We can condense the content of an existing place further by focusing on "habits rather than novelties, on people rather than machines, and on the richness of existing places than invention from thin air". (McCullough 2004, p. 24)

Comprising the Home

We shape our environment more or less intentionally and permanently. The most convenient way is by changing the way our home is furnished. We invite new opportunities for social situations as well as lose touch of the old ones. This way we create memories, good or bad, the ones we long for or feel relieved to get rid of. Describing a home as "not merely an object or a building, but a diffuse and complex condition, integrating memories and images, desires and fears, the past and the present" relates it to "a set of rituals, personal rhythms, and routines of everyday

life"(Pallasmaa 1994a, p. 114). The role of the architect has been seen as "a sort of theatrical producer, the man who plans the setting for our lives. Innumerable circumstances are dependent on the way he arranges this setting for us. When his intentions succeed, he is like the perfect host who provides every comfort for his guests so that living with him is a happy experience." (Rasmussen 1974/1959, p. 10) However, the task in hand is demanding since even though it may be argued that the basic needs for all people are the same, there is no universal way of interpreting the mundane, culture-bound life of "ordinary people" and their "natural way of acting". (Rasmussen 1974/1959, p. 10)

Home becomes comprised of the immaterial elements such as "time dimension and continuum, it is a gradual product of the family's and individual's adoption to the world." (Pallasmaa 1994a, p. 115) As a private realm of the inhabitant "the substance home is secreted by the dweller, as it were, within the framework of the dwelling. Home is an expression of the dweller's personality and his unique patterns of life. Consequently, the essence of home is closer to life itself than to the artifact of the house." (Pallasmaa 1994a, p. 114) Cooper Marcus describes the home in a way similar to Pallasmaa when saying that the choices we make in our homes "represent more or less conscious decisions about personal expression, just as our clothes or hairstyle or the kind of car we drive are conscious expressions of our values. What is more intriguing and less well recognized is that we also express the aspects of our unconscious in the home environment, just as we do in dreams". (Cooper Marcus 1995, p. 7) Understanding the connection between ourselves and the environment we create becomes irresistibly fascinating. Consisting of multiple meanings, crisscrossing dreams, experiences lived through in the past and future expectations, home is the part of our world where we can find ourselves.

> "Our obsessively materialist and quasi-rational age has turned buildings into purely instrumental constructions, "machines for living", serving merely the practicalities of life. Architecture's aspiration into a realm of aesthetics only seems to emphasize the understanding of buildings as visually beautified objects of utility. We have almost forgotten that the task of our houses is not only to provide physical shelter and bodily comfort. A house does not solely constitute our "third skin", an externalization of our bodily functions; it is also an externalization of our imagination, memory and conceptual capacities." (Pallasmaa 2000, p. 59)

How can I as an architect encounter the dweller and learn to ask the right questions, at the right time and for the right reasons?

How could these layers of life that are being developed in time and quite often inside us, find their expression in contemporary housing projects? Is it possible to give delicate suggestions about the vast amount of wonderful possibilities that the new inhabitant has when creating a home? How can I as an architect encounter the dweller and learn to ask the right questions, at the right time and for the right reasons? Perhaps it is needed to reconsider the importance of narrative as means of transmitting the intentions and goals of a building project materialized in a specific place. Letting a person know about the fantasies that are being interwoven into a building could serve a valuable purpose. It is no miracle that you can sense the rotation of the day inside a well-designed space, but it is close to one when you can find new ways to express yourself in a home. Different places offer different possibilities and emphasizing this aspect could be a start for enabling fruitful encounters between a client and an architect.

> "Fully to address the dangers of aestheticism, reductive functionalism and either conventional or experimental formalism, architecture must consider seriously the potential of narrative as the structure of human life, a poetic vision realized in space-time. The architect, in a sense, now must also write "script" for his dramas, regardless of whether this

> becomes an explicit or implicit transformation of the "official" building program." (Pérez-Cómez 1994, p. 23)

Alexander's answer, to the questions related to the process of building, is to look more carefully at the prevalent situation as follows: "In a living system what is to be always grows out of what is, supports it, extends its structure smoothly and continuously, elaborates new forms – sometimes starting new form – but without ever violating the structure that exists". He is convinced of the quality of the results emanating from this delicate process: "In Art as in Architecture, our most intelligent and most wonderful creations come about, when we draw them out as extensions and enhancements of what exists already." (Alexander 2005, p. 136) Alexander also writes extensively about topics that architects quite often find irrelevant to their work. These themes are like variations of the unexpected inputs that change the dynamic of a situation, something very familiar to the concept of Systems Intelligence (Hämäläinen and Saarinen 2006). In the Architecture of Alexander these seemingly modest themes like window sills or a vase of flowers are examples of the kinds of elements in our every-day life that can make a difference. But we could just as well be using as examples the passing encounters in our daily life, the meaning of which varies for each person and is difficult to objectively estimate. Feeling the consequences of ones actions in relation to the developing moment can be seen as understanding the same wholeness that is "the object of good architecture is to create integrated wholes". (Rasmussen 1974/1959, p. 32)

Careful examination of our environment without making any distinction between features according to the inherent value of the object feels like an example of inner strength that is constituted of a higher goal. In Alexander's environmental and architectural thinking it is making the value distinctions between places that are more alive than others. This way Alexander strikes the soft inner tissue of many architects and often faces rejection, since what he basically suggests is that all the values based solely on form and function are useless in the search for irresistibly touching and intuitively sensuous life.

Tempting Places

A person's relationship to a home is emotional and delicate in many ways varying according to changing social situations. In the home is reflected the alteration of our personal lives in a very elaborate way (Cooper Marcus 1995). Several writers have also brought up the meaning of one's childhood home that many of us mentally inhabit with increasing intensity and frequency, especially when finding ourselves homeless in brand new places. Expressing the meaning of "emotional attachment" in relation to specific places, Cooper Marcus points out "the frequently overlooked premise: As we change and grow throughout our lives, our psychological development is punctuated not only by meaningful emotional relationships with people, but also close, affective ties with a number of significant physical environments, beginning in childhood". (Cooper Marcus 1995, p. 2) Rejecting one's private realm in a severe personal crisis is just one example of the complex phenomena connecting behavioural sciences and architecture. These ideas are carried further by McCullough:

> "Framing the interplay of embodied behaviours remains the most important function of environment. Building instrumentalizes and civilizes social distance. Architecture consists of built social relations. Its behavioral framing establishes who may see whom and under what protocols." (McCullough 2004, p. 39)

Following the subtle, inquiring, unfolding change happening between the dwellers and a house after they have started to make it their home, patiently, day by day reveals the important rituals of a home. Movement and the act of dwelling become the ways of rooting a person to a place, and

as Rasmussen has pointed out: "If we believe that the object of architecture is to provide a framework for people's lives, then the rooms in our houses, and the relation between them, must be determined by the way we will live in them and move through them" (Rasmussen 1974 [1959], p. 136). Moving from one enclosed space to the other can be seen as a metaphor for moving from one world to the next:

> "Deep architectural images are acts instead of objects. As a consequence of this implied activity, a bodily reaction is an inseparable aspect of the experience of architecture. A meaningful architectural experience is not simply a series of retinal images. The "elements" of architecture are not visual units or gestalt; they are confrontations and encounters. A building is encountered; it is approached, confronted, related to one's body, moved through, and utilized as conditions for other things. Architecture directs scales, and frames actions, perceptions, and thoughts."(Pallasmaa 2000, p. 60)

Enhancing the possibility of a home being renewed, without losing the qualities that are essential for a person in understanding his place in the world, has become a tendency of Architecture that celebrates humanity. Discounting the rising possibilities that Architecture has gained through this development could mean losing the opportunity to renew the profession itself in way that still leans on its deep values since "like most etiquette, architecture exists not out of pompousness, but because it lets life proceed more easily."(McCullough 2004, p. 118)

There is something magical in the places that seduce us into different ways of being.

There is something magical in the places that seduce us into different ways of being. Many of us start to lower our voice when entering a place of worship and you quite seldom meet someone under your blanket who shouts sweet words in to your ear. Magnetic places feel like sitting face to face with a highly charismatic person; within a few minutes one begins to adapt the other person's mood (Gladwell 2004, p. 86) Getting carried away by the atmosphere of a place reveals its potential to influence us and thus to improve the quality of our lives. One might aim to use whatever methods available, be they inherently human and perhaps traditional or born of the innovations of information technology, to enhance the influence of a place and its power to draw one deeper into the fantasy world of Architecture.

When enhancing the experience of a place, the aim is not, however, to create theme-park homes. A great deal of the essence of a home derives from a sustainable, steady rhythm of change, akin to a relaxed heartbeat. "Satisfaction comes not just from meeting expectations, but also from changing them. Predictable formulas do not always produce satisfaction. Thus there is a paradox in the connotation of "experience design". "Few of us want our experience predigested.", writes McCullough (2004, p. 166). On the other hand a home can teach its residents about the world through its permanence. Obviously he often desired flexibility of spaces easily results in a few fairly good options instead of one truly though out solution. Being in a place and sensing it becomes essential and one begins to be guided by the house: "You must dwell in the rooms, feel how they close about you, observe how you are naturally led from one to the other." (Rasmussen 1974/1959, p. 33

It is not surprising that references to theatrical settings are familiar among the literature of Architecture. When home is the stage, all hues become more powerful. Being in some ways the most remote, hidden place imaginable, the home has become both protector and protected. The reason why many of us stop and fall silent in front of destroyed homes and abandoned houses reveals these places' potential to describe some part of us.

> "While a house as a symbol of our place in society has been discussed and researched by social scientists, the house interior and its content as a mirror of our inner psychological self have received less attention." (Cooper Marcus 1995, p. 9)

Perspectives

Balancing between the sensitive content of the ageless values of Architecture and the novel possibilities arising from the intervention of technology has become one of the most difficult, as well as intriguing, tasks of Architecture. In our academic world there seem to be multiple poles that somewhat surprisingly do not feel drawn to each other. In this sense the written work of interdisciplinary fields of Architecture has opened up paths toward a new mental place, from which to look far away to the tops of other heroic mountains. Finding one's place in the middle of Architecture, behavioural science and interaction design, and being further able to use the understanding and knowledge gained from an architectural education, will hopefully start to show its strength and capability. The fear of sharing disappears when losing our core-knowledge based grip and decision-making power is not on the table. As McCullough (2004, p. 12) expresses the need:

> "In all this, process is still not present as something essential, only as something mechanical, In our profession of architecture there is no conception, yet, of process itself as budding, flowering, as an unpredictable, unquenchable unfolding through which the future grows from the present in a way that is dominated by the goodness of the moment."

The hints at the myriad possibilities offered by new technologies are in a way the most whimsical part of this essay. They are a starting point for inquiries into new ways of expressing one's personality as well as a platform for improving the processes and protocols of housing development. Perhaps what they also are is tools, and nothing more. Highly interesting and fascinating ways to coax more and different experiences out of Architecture, but not opposed to its traditions as such, anymore than a laser-cutter is opposed to a hammer.

> "We keep in mind as well the dangers of unrestrained technological enthusiasm. And yet, we feel that it is particularly urgent now that architects address disciplines outside their own, and particularly those concerned with relevant technologies and organizational behaviours. As a generalist discipline concerned with environments and spatial organizations, whose duty is often to work with other specialist disciplines, architecture today looks forward many new opportunities if it can successfully embrace an expanded field of operations. This likewise sets architecture in a privileged position from which to reflect on contemporary society, in that any claim to be critical needs to be deeply informed of that which it seeks to criticise." (Hookway and Perry 2006, p. 77)

New opportunities open up possibilities to look again at the steady foundations of Architecture. In this sense fascinating light installations of James Turrell that create the appearance of whole spaces in total voids has sparked an interest in the meaning of building elements. Especially when they act as creators of concepts such as privacy and stability. Furthermore McCullough invites us to consider "places with senses" (2005, p. 93) that at their simplest mean environments that change according to the users preferences. A shared physical place experiences a metamorphosis with the help of technology and turns for a moment into someone's private place. We can think of these places in different contexts, like shared bathrooms or other facilities that can be used by many people. When we develop these ideas further we run into interesting questions about the meaning of building elements in relation to our understanding of the world. We can ask if is it important that we can physically lean on a wall that releases the temperature of a past moment, or could it be replaced by a dense shadow? Do we respect a place more when we can see the ways it

has been used before us? If you sit long enough, perhaps a lifetime, on the same bench, you leave a steady mark of your life. Is it possible to sense the presence of others in a home after a wonderful evening, and if so, what kind of message is the cork of a bottle found under your table next week?

We confront a world of illusions that may sometimes have value in themselves. The ability to hide as part of the experience of privacy becomes a privilege in an environment where everything is transparent. How can a home support one's right not to share a moment if it has only one staircase and no alternate, mysterious routes to choose from? Would it be possible, when planning a house, to make allowance for and even encourage holding on to the secrets of the dwellers? Can I reinvent the meaning of the secret corridor as a liberator from unnecessary confrontations and if so, where does this ride end? A large part of life is the choosing of what to show and what to hide in ones relationships. Even pretence has a valid and not inevitably sinister place in our social lives.

We confront a world of illusions that may sometimes have value in themselves.

Settling Down

Staying with the themes of emotional ambition may at first appear frustratingly abstract when seen from the point of view of practical architecture. However, one needs concepts that emancipate thinking and have the potential to give rise to new outcomes. The contribution of Systems Intelligence to an architect, when inspected from the point of a design process or the actual building phase, is losing one's inner distrust in the constantly changing conditions. Instead of seeing a change as a sign of instability, it becomes a proof of life. One is consciously influenced by each moment, the best of them turning out to be your muses.

Approaching the concept of home from the perspective of the innumerable sensations it holds turns out to be a task that encourages persistent inquiry. It is the part of architecture and life that my personal interests reside in and the subject I feel most comfortable with, since it is the part of life I can best get a hold of. The meaning of home related to one's growth as a person is exceptionally inspiring.

I fall silent when I think, on this exceptionally warm winter, of the emptiness of my first childhood home without the protection of snow. Never in this house's life has nature given it so little comfort. We used to measure and time the day and its activities according to the amount of snow falling, causing an unforeseen amount of work as well as pleasure.

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CHAPTER 15

Systems Intelligence and Its Relationship to Communication Theories

Rachel Jones and James Corner

This paper discusses a new theory, Systems Intelligence, and discusses its implications for and overlaps with the field of Communication. Given the prime role Communication plays in the field of Leadership, to really understand the latter, one must first come to grips with the former. The nature of Systems Intelligence is discussed, along with its relationship to Systems Thinking and the importance of personal beliefs. Several well known Communication theories are shown to have some theoretical overlap with Systems Intelligence, indicating the potential for research which combines such theories and Systems Intelligence.

Introduction

Picture a relationship between two adults. Consider how we typically envision and discuss relationships. We often talk about each other's state of happiness, needs, and demands. In times of conflict, we might be thinking about each partner's preferred outcomes and feelings. In other words, we typically see relationships as a dichotomy, where the two entities are separate but intertwined, perhaps visualised as a double helix. Yet, is this double helix in itself not an entity? Is there not a third party in partnerships? This third party is the relationship itself, the couple – an entity that is more than just the sum of its parts; an entity that both affects and is affected by its interacting parts. Together, the couple and the individual partners comprise what is known as a system.

Let's extend this even further. If we accept that there are three parties in a couple's relationship – each person and the relationship itself – then we need to accept that communication within the couple is influenced by more than just each person: it is influenced by the system too. When each partner makes a decision, or the partners together make a decision, they need to consider not only what's best for them individually, but also what's best for the relationship. Each partner will have beliefs about and perceptions of the relationship. They are likely to have preconceptions about "where the relationship is going" and what their roles are within the relationship. Hopefully, their views of the relationship, that third party to their interaction, overlap significantly.

This common experience of being in a relationship, and the relative ease with which we can accept that, yes, there is more than just the interaction between two people at work, provides a good illustration of the importance of a new theory, Systems Intelligence. This is a theory which has far-reaching implications for many fields, including leadership. However, many authors agree that managing meaning is the primary role of the leader and that central to managing meaning is communication (Fairhurst and Sarr 1996; Jablin and Putnam 2001). This paper introduces the concept of Systems Intelligence and discusses how its acknowledgement of the universal presence of systems within our lives motivates their consideration relative to several well-known communication theories.

Systems Intelligence

Systems Intelligence is a term coined by the joint research efforts of Raimo Hämäläinen and Esa Saarinen of the Helsinki Systems Analysis Laboratory, and explored in their work *Systems intelligence: Discovering a hidden competence in human action and organisational life* (Hämäläinen and Saarinen 2004). It is a term that combines the concept of intelligence, in multiple forms, with the structure of systems thinking. Hämäläinen is a leading figure in decision making and game theory and Saarinen is a well-known Finnish philosopher. Together they have developed a holistic approach to placing the individual in context with others and the systems that they belong to, and proposing that the individual operates within their context with a greater or lesser degree of intelligence.

Systems Intelligence provides the link between Senge's personal mastery and systems thinking.

Their work is informed by, and seeks to extend, the work of Howard Gardner and others. Gardner proposed in the 1970s the concept of multiple intelligences (Gardner 1993). He challenged the traditional notion of IQ and suggested that intelligence is a far more multi-faceted concept than the ability to score well on mathematical and linguistic problem solving exercises. He rather suggested we could also talk about intelligence in musical, spatial, personal and other fields. This work was further extended more recently by Daniel Goleman who extended and popularized the concept of emotional intelligence (Goleman 1995). Emotional Intelligence refers to a person's ability to perceive, assess, and manage the emotions of one's self, of others, and of groups.

Saarinen and Hämäläinen also draw heavily on the work of Peter Senge, and other practitioners of Systems Thinking. In *The Fifth Discipline*, Senge proposed Systems Thinking as the key discipline in creating learning organizations (Senge 1992). The growing complexity of the world and the interconnectedness of aspects of life, according to Senge, mean we can no longer continue to break apart problems and focus on specific issues. Our tendency to treat things as discrete entities results in a loss of two things: the ability to see the whole and the ability to foresee the consequences that action in one area will have in another. He argues for the need for individuals to change their perception and see themselves as separate from the world to intrinsically be connected to it. Rather than simply react to events, or even look for patterns of behaviour, we should examine the structure that is producing the patterns of behaviour. However, where Systems Thinking focuses on an objective modelling of the wholes and perspectives it conceptualizes, Systems Intelligence has a more personal emphasis.

In fact, Hämäläinen and Saarinen see Systems Intelligence as providing the link between Senge's personal mastery and systems thinking (Hämäläinen and Saarinen 2004). The concept of personal mastery, according to Senge (1992), is a process rather than a product. People with a high level personal mastery are able to reflect on what they want, and where they are relative to what they want; the gap between this vision and reality Senge terms "creative tension" (1992, p. 142) . They

are able to generate and sustain creative tension and thus lifelong generative learning. They focus on the rewards of the journey over the destination. People with a high level of personal mastery are able to combine intuition and rationality; even though they may not be able to explain their decisions they instinctively know when what seems obvious won't work, and when what seems ridiculous will. For Hämäläinen and Saarinen that instinctive ability to see beyond the surface to the deep structure and, furthermore, the individual's ability to take personal responsibility for their actions in the system as they acknowledge their interconnectedness with it, are Systems Intelligence. "Systems Intelligence is Systems Thinking having become an integral part of a person's Personal Mastery" (Hämäläinen and Saarinen 2004, p. 16).

There are several key similarities and differences between Systems Thinking and Systems Intelligence. In terms of similarities, both theories approach people and their environment as interconnected and interdependent. Both see the world as composed of systems and want to examine these as whole entities. Both concede that these whole entities are, however, mental constructs and thus the boundaries of a system are capable of being redrawn. But, Systems Intelligence looks to embrace and drive change rather than to describe and account for it. It is outcome oriented in a way that Systems Thinking is not. "Unlike Systems Thinking, Systems Intelligence is a capacity in the human being that involves instinctual, intuitive, tacit, subconscious and unconscious and inarticulate aspects that cannot be straightforwardly reduced to a full-fledged and transparent cognitive dimension" (Hämäläinen and Saarinen 2004, p. 16). Thus, Senge seeks to teach managers to reframe their problems and, rather than blame an external cause, realise that they and their problems are part of a single system which requires analysis. Conversely, Systems Intelligence considers that some people have an intuitive ability to operate effectively in systems and that these people are able to instigate systemic change. Systems intelligent individuals are able to acknowledge the invisible parts of a system, are adaptive and sensitive to changes in their behaviour, are capable of understanding changes in the structures of the system and are then able to revise their behaviour accordingly (Hämäläinen and Saarinen 2004).

While Systems Thinking is largely a quite technical academic theory, Systems Intelligence places the individual firmly within the system and firmly within real life. It looks for a pragmatic approach to interaction from within the system, examining how the individual responds to feedback in a manner that promotes successful interaction and modification of behaviour. To continue with the example of a relationship, it looks at how each member of "the couple" negotiates their own needs, each other's needs and the needs of the relationship and how each person modifies their behaviour to achieve these.

The Nature of Systems

Let us begin our exploration of Systems Intelligence by considering the term system. What is a system according to Systems Intelligence? One of the core beliefs of SI theory is that while people perceive of themselves as separate individuals existing independently, they are in fact part of a series of complex systems. They are part to a whole, and the whole is more important than the parts. For SI, a system is built as much by the interconnectedness of its individual elements as the individual elements themselves. The system also has the power to generate, and to generate beyond what its elements can produce. The system has its own emergent features, which cannot be reduced merely to the features of its individual elements. However, though the system has primacy over its components, those components can influence the nature of the system. This is one of the core concepts and areas of applicability for Systems Intelligence, and, we suggest, for the field of communication. Examples of systems that we operate within include from the micro to the macro, from our family to our workplace, society and to the global economy (Hämäläinen

and Saarinen 2004). Systems may be as concrete as an organization or traffic, or may be as abstract as parenthood and friendship.

Having established what a system is, what then are the effects of belonging to the systems of our lives? For Hämäläinen and Saarinen, the effects are primarily seen in behaviour. There are three basic tenets underlying a system: structure produces behaviour; beliefs regarding structures produce behaviour; and beliefs regarding the beliefs others have regarding structures produce behaviour.

What does this mean? In effect, our behaviour is influenced, largely unconsciously, by the structure we operate within, our own view of that structure and what we perceive others to believe. For example, in the workplace we might communicate with our superior based on the culture of our organisation, our own view of our place within the organisational hierarchy, and what we believe the expectations of our supervisor are regarding how we will interact with them. Yet, Hämäläinen and Saarinen state that both the system itself and our perception of the system can be flawed. If our behaviour is a response to flawed perception then we can go on enacting behaviours that we would change if we could see the bigger picture; thus we self-perpetuate the flaws of the system itself. They also point out that there is not necessarily "an external reason for the particulars of a system, yet people in the system can feel helpless regarding their possibilities of changing the system." (Hämäläinen and Saarinen 2004, p. 11). Systems, then, are structures that influence our behaviour, but also our perceptions and values. They are at the core of how we behave and what we believe.

The Importance of Beliefs

Systems Intelligence requires us to call into question our beliefs. We need to recognise that what we believe as fundamental is in fact a reflection of our experiences, and our beliefs "are also influenced by highly idiosyncratic coincidence." (Hämäläinen and Saarinen 2004, p. 17). Our beliefs reflect particular incidents in our lives. Not only do we accept that our beliefs are at the core of us, we also project this onto others, assuming that we know what other people believe, an assumption of shared values. For example, we may presume that because our colleague is the same colour, age and works in the same organisation as us they will share our belief that fraud is morally wrong. Yet what real basis do we have to make that assumption? Or, we may believe that monogamy is a given in relationships and not even consider that our partner does not share that belief.

Another important point is that "one's beliefs might seem unchangeable and yet they can be subject to massive redefinition in an instant" (Hämäläinen and Saarinen 2004, p. 18). The death of a friend, the discovery of a betrayal by a loved one, involvement in an accident – all these can result in the restructuring of our beliefs and the adoption of new behaviours. Because Systems Intelligence involves people, it always involves beliefs. Hämäläinen and Saarinen propose that belief management and belief leadership will become cornerstones of the theory. The Systems Intelligent individual "can manage their own belief systems, the belief systems of others as well as the systems these beliefs systems together constitute, better than those low in System Intelligence" (Hämäläinen and Saarinen 2004, p. 18). They point out three critical dimensions of Systems Intelligence:

(1) Thinking (believing) about one's own thinking (and believing), and realising the opportunities therein.

(2) Thinking (believing) about what others are thinking (and believing), and realising the opportunities therein.

(3) Thinking (believing) about the interaction systems, rituals, social habits and their chains, and realising the opportunities of influencing those systems. (Hämäläinen and Saarinen 2004, p. 18)

The ability to reflect on one's own behaviour and reframe beliefs is key to high Systems Intelligence, as the more typical tendency is to adhere rigidly to a particular perspective (Hämäläinen and Saarinen 2004). We cannot limit ourselves to questioning our own beliefs and practices, however. We must also view the world through the perspective of others, a concept SI shares with Emotional Intelligence.

The Individual, the Other, and the System

"Systems thinking starts when a person looks at the world through the eyes of another person," according to West C. Churchman, one of the founders of Systems Thinking (1968). "Exploring the views of others is one way to grasp features of the system in a given situation, and to understand one's own input into the system," according to Hämäläinen and Saarinen (2004, p. 20). To explore the viewpoint of others, we might employ some of the standard techniques of interpersonal communication: active listening, reading body language, using dialogue, using Senge's inquiry mode. Yet, these techniques are not enough, according to Systems Intelligence. Let's take relationship counselling as an example. We might reflect upon our own behaviours. We might learn to see through the eyes of our partner. But as we have already considered, we are not always directed to view the relationship itself as an entity or a system. We and our partners are only parts of the whole, and the whole is greater than both of us. SI argues for the need to place interactions in their greater context. Each partner's beliefs and perceptions about "the relationship" are as important their ability to reflect on each other's behaviour. However, in typical "bipolar subject—object thinking, the person either perceives him or herself to be a subject that acts upon an external system, seeking to cause an impact, or else the environment as a subject acts upon him/her as an object." (Hämäläinen and Saarinen 2004, p. 21). This immediately restricts behavioural options. Instead, a holistic viewpoint needs to be adopted – a recognition that one is a part of the system both affected by and able to affect the wider structure, and interconnected with others in the structure.

The ability to see oneself as a part of a system means an awareness of how one's behaviour (and change in one's behaviour) impacts on others; how feedback on one's behaviour is received from others; and the impact of the current system on everybody. It also means recognition of one's own and others' current behaviour and the patterns behind those. There is also an aspirational component, in that the Systems Intelligent individual can envision the state they would like to share with others, and further extend that to envision the ideal that we are likely to share (Hämäläinen and Saarinen 2004).

Changing the System

An underlying premise of Systems Intelligence is that individuals can have an effect on the system. They can not only have the effect of perpetuating the system, but can also, by a small change in behaviour, alter the system in profound ways. In order to do this purposefully, the individual needs to be Systems Intelligent. They need to be aware of the existence of the system and its structure. They need to understand the impact the system has on the individuals comprising it. They need to be aware of their own place in the system and they need to have the ability to see with another's eyes. Systems Intelligence avoids conceptualising human behaviour as linear cause and effect reactions and viewing individuals as separate units rather than parts of

the same whole. Instead, it invites us to view the world and our place in it as part of a series of connections and interrelations.

Systems Intelligence is themed around "know how" rather than "know that". It is not a body of knowledge that can be imparted to individuals to make them better people; it needs to be put into practice. We can learn about Systems Intelligence without becoming Systems Intelligent. Yet it is a challenge for personal learning, in that it encourages us to embrace and drive change, not for its own sake, but with the goal of improvement in quality of life. SI has a philosophical underpinning in that it assumes the Systems Intelligent person thinks beyond the boundaries of their own ego. The person who is willing to act systems intelligently is attempting to improve the system, not just for their own benefit, but for the benefit of all parts of the system and for the good of the system itself (Hämäläinen and Saarinen 2004). A good analogy here is the green consumer, who changes their purchasing behaviour to planet friendly products in the belief that they are "making a difference" to the future health of the planet. A highly systems intelligent green consumer will take this even further – they will look at exactly which companies they are buying from and analyse if their products are truly green or if it is just a marketing ploy. They may also campaign to change the labelling of products, thus bringing about a change in the system as a whole. Or, to revisit our couple, they might choose to spend a day together rather than apart, even if they both have attractive alternative activities, recognising that the relationship itself needs nurturing.

To return to the underpinning concept of belief, a crucial component of SI is the recognition that beliefs can be changed. As Hämäläinen and Saarinen say, "They can be changed dramatically, massively, instantaneously and with incremental input."(2004, p. 23). A change in belief can dramatically change the structure of the system. A small intervention can have enormous leverage in the system itself; for example, here in New Zealand one bicycle accident, resulting in a brain damaged son, led to a mother's campaign that changed bike helmet laws. Yet just as a positive change in belief can impact the system, erroneous beliefs can uphold the system. If individuals within a system have an incorrect perception of what others believe, the chances of cooperation are limited. Systems Intelligence, then, asks us to be humble, to admit we may be wrong in our perceptions and assumptions about others' beliefs. Correspondingly, a small change in our own behaviour may lead others to reassess what they believe about us. If all agents in the system are willing to readjust their beliefs there is a "possibility of a cumulative enrichment and improvement" (Hämäläinen and Saarinen 2004, p. 23). This strong relationship between beliefs and behaviour is well explained in the Theory of Reasoned Action (Fishbein and Ajzen 1975), which shows the relationship between beliefs, attitudes, intentions and behaviour.

If intervention from within the system, through such things as flexibility of belief structure and behavioural change, is one way of changing it, what are other ways? There can also be intervention external to the system – perhaps a natural disaster, a death, a new technology. Change can also come from altering the nature of the relationship. For example, a collegial relationship that got off on the wrong foot, that is then altered, is likely to affect the dynamics of the entire staff. System change can also be planned and deliberate. It might also arise through communication with other members of the system, who collectively agree to an alteration. What is clear is that a fairly small alteration can have a tremendous leverage on the system.

Unfortunately, the opportunity for leverage often goes unnoticed. We see ourselves as mere cogs in the wheel – rather than think of ourselves as "contributing agents of an interactive system" we feel we lack influence, and are limited by others and the over-riding system (Hämäläinen and Saarinen 2004, p. 27). We fail to see how this mode of thinking itself contributes to the system's oppression of the individual. By believing we cannot a make difference we create our own reality. In bad relationships, we feel as though we are trapped in patterns of behaviour. Yet if the

feedback loop was one of possibility of change and growth of the individual and the system, the possibilities for improvement become endless.

However, most human systems push "people down rather than up as individuals and as group members" (Hämäläinen and Saarinen 2004, p. 27). We tend to focus on how we are treated within the system, rather than how we treat others. We may feel repressed and insignificant within the system. For example, if we feel our effort is unrecognised at work we are less inclined to praise the efforts of others (I got no recognition, why should they?) and we may also punish the system (I am not going to work as hard now as I receive no reward). The Systems Intelligent individual would look at ways to alter the system or their own behaviour within it, rather than just repeatedly react to this imperfect system. We also tend to assume from people's behaviours that that is what they are more generally. If someone is loud and rude in our workplace, we assume they are loud and rude everywhere. In fact, that may just be their pattern of behaviour solely within that particular system. Finally, it is difficult to be the lone wolf. If the organizational culture encourages negativity, it is hard to maintain a positive attitude in the face of repetitive misery. "A key conviction of…Systems Intelligence Theory is that all human systems have a tendency to slide towards the negative, unless a conscious and creative effort is launched to counterbalance the tendency" (Hämäläinen and Saarinen 2004, p. 28).

What emerges is what Hämäläinen and Saarinen call the *System of Holding Back in Return*. It is a slightly more sophisticated manifestation of "I have the right not to be nice to you since you have not yet been nice to me". Consider the partner who thinks, 'if you speak to me like that I'm going to stop talking to you'. This negative spiral is about a duality – my needs are not being met so I am not going to meet yours – rather than a system, where the needs of the couple would be taken into account. Even when the majority of people dislike the prevailing system, they simply adjust to it and adopt its characteristics because they believe it cannot be changed. A Systems Intelligent person recognises the pattern and recognises their ability to influence it.

Systems Intelligence and Communication Theories

Communication is the process which builds the systems we live in and the process by which change is effected. It is the process through which we interact with others in the system and the system itself. It is therefore central to Systems Intelligence. Conversely, Systems Intelligence also appears to be central to communication. Communication does not take place in a system vacuum. Communication on all levels occurs within systems. On an interpersonal level we have the systems of our friendships, relationships and families that we operate within. At an organizational level, we have the departments within the organization, the organization itself, the industry, the society and so on. In the mass media, we have the systems of the media organizations, the culture, the country. Systems, as defined by Systems Intelligence, encompass all types of communication.

How, then, can we introduce Systems Intelligence to communication theory? One way is by considering ontology and epistemology. Systems Intelligence theory combines the objective and interpretive approach to research. It has the behavioural scientist's desire to describe human conduct as occurring because of forces outside of human awareness, but has the interpretivist's belief in attributing behaviour to conscious intent, allowing for the individual's decision to respond differently if desired (Griffin 2000). Systems Intelligence in relation to communication theory seems particularly relevant to the interpretive approaches. There is congruity with the socio-cultural approach to communication, which posits that reality is produced, maintained, repaired and transformed through the process of communication. SI also allows for the individual to effect and affect the systems they inhabit. The critical approach to communication seeks to

stimulate more demanding ethical conduct and reflective social action. This resembles the idea of the good life and the loss of ego-driven action inherent in SI. Finally, the phenomenological approach to communication theorises that authentic human relationships are possible through dialogue only when both parties' agenda is to understand what it is like to be the other (Griffin 2000). So too, SI relies on the SI individual to be able to see with another's eyes.

There are also several communication theories which touch on key aspects of Systems Intelligence. The Interactional View of communication, as discussed by Paul Watzlawick and the Palo Alto group (Watzlawick et al. 1967; Watzlawick et al. 1974; Watzlawick 1978), looks at the family as a system and at how the behaviour of one family member can only be understood by examining the communication patterns of all the members. Watzlawick et al. (1967) discuss how family members are involved in tacit collusion to maintain the status quo, much as SI refers to people adopting the behaviour of the system. From organizational communication theory, the Information Systems approach (Weick 1969, 1995) emphasises interconnectedness and acknowledges the role of feedback in the double interact. It also promotes action over inaction, as does SI. The Cultural approach to organizations which Michael Pacanowsky (Pacanowsky and O'Donnell-Trujillo 1983) developed from Clifford Geertz' ethnographic work recognises the role of the system in viewing the organization as being a culture rather than having a culture. Its symbolic interpretation of stories within an organization puts a similar emphasis on perception, values and beliefs as SI. It is a descriptive theory, however, and does not really seek to influence and change. Intercultural communication theory also has some kinship with Systems Intelligence. Clearly cultures are systems; therefore, studying intercultural communication involves studying how people from different systems interact. Most of intercultural communication, such as Anxiety/Uncertainty Management Theory (Gudykunst 1988), focuses on encounters between cultural in-groups and strangers – Systems Intelligence casts a wider net, looking also at how people within the culture or system interact.

Yet another communication theory, the Coordinated Management of Meaning (CMM) theory proposed by W. Barnett Pearce and Vernon Cronen (1980), also has some strong ties to SI. They discuss the "Cosmopolitan Communicator" who has remarkable similarities to the Systems Intelligent individual. The cosmopolitan communicator is someone who views their own life as part of something greater, and wants to intelligently join in the world so as to enrich it. These people are consistently socially eloquent and able to speak comfortably with people of different backgrounds, values and beliefs. Yet Pearce seems to regard these people as occasional freaks of nature, rare entities due to the fact they need "the wisdom of a sage, the patience of a saint, and the skills of a therapist" (1989, p. 198). Nevertheless, this theory overlaps significantly with Systems Intelligence in some areas. Both recognise the practitioners involvement in what they study (we cannot be outside the system looking in); both have as a goal of theory the gaining of wisdom on how to act; both recognise the social world is made, not found, and there are plural truths (Pearce 1994). CMM, however, never really articulates the power of beliefs in the same way that SI does. It also does not recognise the system the persons-in-conversation are in as impacting on the communication, though it does acknowledge the context of the speech act and the influence the communicators have on each other.

At an organisational level, Stanley Deetz' Critical theory also has parallels with SI (Deetz 1982). Critical theory views large corporations as dominant forces in society – more powerful even than the church, state, or family in the ability they have to influence people's lives. Deetz (1982, 1992, 1995) looks at managerial control and how communication within organisations is used to perpetuate corporate decision-making processes that exclude the voices of the people affected by those decisions, namely workers, customers and shareholders. He posits that most workers have the choice between loyalty or leaving, and that often when they choose loyalty they are in fact

buying into a system that exploits and oppresses them. He argues that the force of an organizational practice is strongest when people do not think about it, but just unquestioningly accept that is the way things are done (Deetz 1995). Systems Intelligence agrees with much of Deetz' description of the organisation as a system. It too notes that systems pervade our lives without us being consciously aware of it, and that we often adopt beliefs and behaviours that do not challenge the system within which we operate. However, while Deetz' (1995) solution to managerialism is to create a more democratic organisation that allows all stakeholders to participate in decision making and changes the behaviour of managers, SI allows the possibility of a systems intelligent person being aware of their surrounds and instigating change for the greater good. SI, in other words, does not accept that all workers (or other stakeholders) are equally oppressed by a dominant structure. It avoids the danger of stereotyping people's capacity to behave freely because of their prescribed role in the system. It gives hope for the individual as instigator of change.

Thinking back to our couple's relationship example, much of interpersonal communication theory is not informed by systems thinking. Rather the focus is on the individual as a separate entity. The individual is asked to reflect on their own behaviour, consider the feedback of others, and adapt accordingly. Yet rarely is the individual encouraged to see themselves and others as part of a larger system which is effecting and affecting the behaviour of both. Systems Intelligence challenges us to place communication, all communication, in the context of a system. It encourages us to view the individual as part of a system in a constant loop of feedback with other members of the system and the system itself. We are also challenged to consider that the behaviour of the individual can alter the system. At the risk of sounding flippant, communication theory does not systematically acknowledge the role of systems in communication. This, I suggest, is an area rich for research.

Conclusion

Clearly, there is a place for considering Systems Intelligence research in the field of communication. We cannot deny that communication takes place within the context of systems – our relationships, our families, our workplaces, our clubs, our teams and so on. There is a need to extend our study of communication beyond the participants, to take into account the system or systems encompassing and influencing them, and which they in turn are influencing. Furthermore, Systems Intelligence is applicable in the areas of organizational communication and mass media. It also needs exploring in relationship to leadership, an area where communication theory has been thoroughly applied. Furthermore, there is opportunity to explore Systems Intelligence and Maoridom where there is a clear overlap in the Maori concept of whanau and a greater system, where behaviour of the individual reflects on and affects the system as a whole. We might also look at migrants and international students. A myriad of possible research questions naturally arise. Are the students who adapt quickly to their new environs systems intelligent? When we help migrants to settle are we educating them in the workings of the new system as well as the new language? Are we doing this explicitly or implicitly? Are people who are competent intercultural communicators also systems intelligent, as in being able to communicate effectively they have unconsciously adapted to multiple new systems?

The concept of Systems Intelligence offers an exciting new approach to communication theory and will lend itself to practical application. The intricacies of communication theories can also enrich the new theory of Systems Intelligence. It only needs some pioneering researchers to take up the challenge of exploring overlap between the fields. Once such links are well understood, then leaders of tomorrow will be armed with a powerful tool in creating meaning in their organizations.

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CHAPTER 16

Emergence of Cooperation and Systems Intelligence

Otto Pulkkinen

Change of human systems for the better is often the result of cooperation. Many Systems Intelligent actions have the effect of uncovering the hidden potential for cooperation in a human context. An understanding of the nature and conditions for the emergence of cooperation therefore provides a useful background for the discipline of Systems Intelligence. Forms of cooperation can emerge in repeated interactions even between self-regarding parties with simple behavioural strategies, but both everyday experience and laboratory experiments indicate that humans have cooperative tendencies that cannot be explained with the model of material self-interest. A large portion of people seem to have intrinsic, non-material, social preferences that can be modelled as strong reciprocity. Interactions in heterogeneous groups with strong reciprocators and selfish individuals can result in systems with tipping points, where small changes of belief structures can lead to the actualization of hidden potential for cooperation. The heterogeneity has also important implications for the sustainability of collective action.

Introduction

Saarinen and Hämäläinen (2004) illustrate the Systems Intelligence embedded in the human capacity to change the hostile and seemingly immobile systems around us by the incident that was instrumental in shaping the civil rights movement in the U.S. in the fifties:

> When Rosa Parks refused to give her seat to a white man in a Montgomery city bus in 1955, most people had not heard of Rosa Parks, considered the bus system a technical matter, did not perceive the city of Montgomery as particularly significant, and would have considered irrelevant the question of a particular bus seat on a particular bus leg. But as Rosa Parks was arrested, the marginal incident snowballed, creating an avalanche that eventually reached epic proportions. Change was going to reshape the entire system of race distinction in the most powerful country of the world.

While Rosa Parks could not foresee the eventually huge consequences of her simple act, she certainly could predict the immediate cost for herself: she was arrested, taken to jail, and was later fined for disorderly conduct. Why did she, nevertheless, decide to stop tolerating the

discrimination and face the punishment? Recalling the event later, Parks told "when that white driver stepped back toward us, when he waved his hand and ordered us up and out of our seats, I felt a determination cover my body like a quilt on a winter night" [1]. Clearly, her response was instinctive, emotional and deeply human.

Also the resulting systemic effects, including the bus boycott that followed were dependent on the individual decisions of thousands of people acting at the cost of a huge personal inconvenience. All these people were in effect making simultaneous, independent decisions to act for the larger common good despite the price they had to pay. Why did this kind of spontaneous cooperation emerge so quickly and effortlessly?

It is clear from everyday experience that people often benefit from acting together and sharing the results of the cooperation. In these cases the value of the results of the cooperation for the group is greater than the cost for each individual, but a purely self-regardingly rational human being would nevertheless be better off shirking the cost of cooperation and just benefiting from the results (for example still using the buses during the boycott and letting others to take care of changing the system). However, if everybody followed this logic, the cooperation would collapse. Therefore it seems that when this kind of group cooperation is sustained, it involves an altruistic element (willingness to accept a personal cost for the common good) (Gintis 2003a).

The fact that altruistic behaviour is apparently common among non-related people is, however, puzzling from the evolutionary point of view. Why is the propensity to cooperate even at a personal cost not wiped out from the human gene pool in an environment where individual genes fight for selective survival (Dawkins 1976)? This is the central problem to be explained by the research of cooperation. It is called by Gintis (2003a) the puzzle of prosociality.

Understanding the distinctively human aptitude for cooperation may also have huge practical consequences in the environments most of us live and work in. In particular, Ghoshal (2005) has strongly pointed out the effect of the models of human behaviour employed in academic research and education on the management practices of organizations. According to Ghoshal, prominence of the purely self-interested and rational *Homo Economicus* rooted in the models in neoclassical economics and now widely spread as the standard of human behaviour in economics textbooks has created a self-fulfilling prophecy. The "ideology-based gloomy vision" of human nature as well as the role and goals of firms is perpetuated in the education of business leaders and research with the result that greedy and opportunistic behaviour is seen as natural and appropriate. This mental model has, according to Ghoshal, in turn played its part in some recent cases of corporate misbehaviour.

On the other hand, an interest in reversing the circle of gloomy predictions and outcomes seems to grow within different academic disciplines (Ghoshal 2005). The study of positive psychology (Seligman 2002) and positive organisational scholarship (Cameron, Dutton and Quinn 2003) are welcomed by Ghoshal as the first steps in the direction of a more balanced science of management. In this context the study of the foundations of human cooperation summarized in this article can prove extremely fruitful. Also, some related, prominent research initiatives focusing on the role of trust in social dilemmas have been reported in (Ostrom and Walker 2003).

Cases such as that of Rosa Parks and the civil rights movement are definitely interesting as large-scale examples of the effects of Systems Intelligence in action. On the other hand, Systems Intelligence is also heavily involved in less noticeable, everyday settings. The examples of

[1] http://en.wikipedia.org/wiki/Rosa_Parks (accessed 17 January 2007).

Hämäläinen and Saarinen (2006) of the small systems of workplace and marriage depict instances of what could be called micro-cooperation: positive emergent phenomena in systems with relatively few participants. In micro-cooperation the stakes are often not high; contributions to common well-being can take the form of small gestures like smile, handshaking, rose-buying or taking an inquiring and encouraging attitude towards a presentation given by a colleague. Correspondingly, the ordinary systems of holding back often result from the breakdown of this subtle low-level cooperation. The fact that the stakes are often small (i.e. the immediate individual costs and benefits are often barely discernible) could perhaps explain the ease with which the cooperation opportunities are often overlooked and their systemic effects underestimated.

The background provided by the study of models and origins of human cooperation can contribute to the theory and practice of Systems Intelligence in two different ways. First, the understanding and recognition of the cooperative capacity as a fundamental human quality can help to form and foster mental models supporting Systems Intelligent action. Second, studying the evolutionary background of cooperation may help in the more theoretical endeavour of understanding the natural, ecological aspects of Systems Intelligence.

Iterated Prisoner's Dilemma and the Emergence of Cooperation

The first widely influential scientific explanation for the emergence of cooperation is closely related to the work of Robert Axelrod (1984). This provides experimental evidence and a description for the spontaneous emergence of cooperation in many kinds of evolutionary processes, whether natural, cultural or artificial. Although the case for human cooperation is much richer (as will be seen below), Axelrod's results introduce many of the basic concepts and conditions relevant also in systemic human interactions.

The prisoner's dilemma, PD in short, is one of the most famous and widely known concepts of game theory. It was invented in the early 50's by Merrill Flood and Melvin Dresher and soon formalized by Albert W. Tucker (Poundstone 1993, p. 8). The basic structure of the game is shown in TABLE 1 below in the normal form (Axelrod 1984, p. 8)[2].

The prisoner's dilemma (so named because of the story Tucker used in framing it) has been used extensively in research and literature because of its simplicity and capacity to capture the structure of many basic real-life encounters. The dilemma manifests itself in the fact that, assuming the players are rational and their only purpose is to maximize their own benefit[3], the only so-called Nash equilibrium (combination of strategies such that a player can not improve her payoff regardless of what the opponent chooses) is mutual defection[4]. The mutual defection, however, leaves both players worse off than mutual cooperation would. The "temptation" of a larger win and "fear" of getting nothing leave a self-regardingly rational player no real choice.

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[2] In normal form a game is represented as a matrix showing the payoffs related to the combinations of the players' choices, i.e. strategies in the game. The payoff of the row player (player A here) is shown first. Therefore, for example, if player A chooses to defect and player B cooperates, A's payoff is 5 and B's 0. Note also that the dilemma is defined by the mutual relations of the payoffs, not the exact figures used in this example.

[3] In other words: the players behave according to the Homo Economicus model of traditional economics.

[4] To see this, consider the individual symmetric viewpoints of each player: if the opponent cooperates, my best choice is to defect and get the temptation payoff. If she defects, I have to do the same to avoid the sucker's payoff.

But when the same players will meet each other in a successive series of PD games, things get more interesting. In suitable circumstances repeated encounters may create a situation where mutual cooperation can emerge even between self-regarding players. This is the famous iterated PD studied in detail by Axelrod (1984). Axelrod organized a tournament for computer programs playing the repeated PD with the intention of gaining insight into the best strategies. The tournament consisted of matches of 200 successive PD rounds between two participants. Each program (implementation of a particular strategy) was to play a match against each participant (including itself) and, in addition, against a strategy making a random choice in every round. Axelrod received contributions from scientists in different fields, mostly related to game theory and the PD.

TABLE 1. The basic structure of the prisoner's dilemma.

		Player B	
		Cooperate	**Defect**
Player A	**Cooperate**	R=3, R=3 Reward for mutual cooperation	S=0, T=5 Sucker's payoff and temptation to defect
	Defect	T=5, S=0 Temptation to defect and sucker's payoff	P=1, P=1 Punishment for mutual defection

It is straightforward to show that in such a tournament no single strategy is optimal regardless of the opponents (Axelrod 1984, p. 15). The results of the tournament do not, either, prove anything conclusive, but provide some key insights into the properties of a good iterated PD strategy. The tournament was won by a strategy submitted by Anatol Rapoport from the University of Toronto called TIT FOR TAT (TFT for short). TFT was the simplest of the entrants in the tournament and is defined by two simple rules: 1) cooperate in the first round of the iterated PD, and 2) in the subsequent rounds imitate the opponent's last choice. Slightly baffled from the success of this almost trivial strategy among the much more sophisticated creations of game theory experts, Axelrod reported and analysed the results of the tournament in detail, published the report and announced a new tournament with basically the same rules. This time the number of submissions was much larger, Rapoport re-submitted TFT, and TFT won gain.

With these rather unexpected results Axelrod studied the emergence of cooperation further. These studies included the simulation of the evolutionary stability of the different strategies by hundreds of rounds of the computer-based iterated PD where the number of players with each strategy depends on their success in the previous rounds. TFT dominated also the evolutionary simulation in the sense that the population of TFT-playing program agents grew faster than that for any other strategy in every round of the simulation (Axelrod 1984, pp. 48–54). Axelrod defined the property of collective stability in the context of the evolutionary game: a strategy s is collectively stable if no other strategy can invade a population consisting of s-playing agents. He also showed that TFT is collectively stable if and only if the value of potential future payoffs related to the payoffs of the current round (the discount factor w) is larger than a minimum value which is a function of the four payoff parameters T, R, P, and S (Axelrod 1984, p. 59)[5]. This relates

[5] The discount factor is related to the probability of the game ending after the current round (which, in other words, has to be small enough for cooperation to be stable).

directly to the lasting value of Axelrod's contribution: in these specific conditions he was able to explain the plausibility of spontaneously emerging cooperation in the living nature, including humans.

Axelrod's Advice

Axelrod cooperated with biologist William D. Hamilton to extend the analysis of the evolutionary properties of TFT to very simple biological systems without human understanding and foresight (Axelrod 1984, pp. 88–105). But, being a political scientist by education, he was also interested in the practical implications of his results in the context of human social systems.

Axelrod highlights four properties of TFT as the basis of its success: the strategy is nice, provocable, forgiving and clear. Niceness means that in an encounter for another strategy, TFT is never the one to defect first. Provocability refers to the immediate retaliation after a defection by the opponent and discourages others from taking advantage of the cooperative tendencies. Forgiveness, i.e. the fact that TFT is ready to cooperate immediately when an opponent is, helps to restore the cooperation after mutual defection. Finally, the clarity and simplicity of the strategy enables others to recognize and understand it. This elicits long-term cooperation as others see and believe that TFT is ready to cooperate but can not be exploited.

Based on these insights Axelrod formulates recommendations for actors in real-life situations resembling the iterated PD (Axelrod 1984, pp. 109–123). Their relevance for the study of Systems Intelligence is that they provide a lesson in the basic laws of inducing cooperation. Although most human situations actually seem to be considerably richer in terms of motives for cooperation, Axelrod's maxims contain elements that are a part of successful cooperative strategies also in more complex systems involving repeated interactions.

(1) Do not be envious.

People and organizations involved in an iterated PD-type situation often confuse it with a zero-sum game, where the gains of one player equal the losses of the other. Companies in supply relationships, nations in trade arguments, and students in lab tests get involved in costly spirals of mutual retaliative defection because they erroneously assume that they have to do better than the other player in a particular two-party game in order to flourish. The iterated PD, however, is not a zero-sum game. Instead of the payoff of the other player, the correct reference for comparison is the best possible overall success of one's own. This is illustrated by the fact that while TFT clearly won both Axelrod's tournaments, it can never do better that its opponent in an individual game (because it is never the first to defect and never defects more often that the opponent).

(2) Do not be the first to defect.

Keeping in mind the qualifications related to the discount factor, being nice (not defecting) proved to be the distinctive feature of successful strategies in Axelrod's computer tournaments. He points out that the value of this property was underestimated by surprisingly many game theory experts. Strategies trying out sophisticated methods of exploiting others were repeatedly caught in mutual defection in cases where cooperation would have been possible. On the other hand, large part of the success of nice rules (including TFT) was their ability to initiate success together.

(3) Reciprocate both defection and cooperation.

Quick reciprocation of both cooperative and defecting actions has a central role in establishing cooperative behaviour in a group. Consider a population consisting entirely of the purely

defecting strategies called ALL D. When a single actor with a different strategy is interacting with the population, it is never cooperated with and therefore can never flourish and invade the population. In other words, ALL D is always collectively stable. But the population can be invaded by a small group of cooperative strategies in circumstances where the benefits from their mutual cooperation can outweigh the occasional exploitation by a defecting ALL D. It turns out that the invading capability of a cooperative strategy is related to its capability to distinguish between ALL D (in order to minimize the exploitation) and itself (in order to benefit from cooperation). The strategies that are optimal in this sense are called by Axelrod (1984, p. 66) maximally discriminating. TFT has this property because of its reciprocity, i.e. because it will immediately cooperate with a copy of itself and never be exploited by ALL D after the initial round.

Thus the two-way reciprocity of a TFT-like strategy enables actors using it to establish cooperation in an adverse environment. On the other hand, once a nice, collectively stable strategy like TFT has established itself, it can not be invaded by ALL D even in groups[6] (Axelrod 1984, p. 67).

(4) Do not be too clever.

Unlike in a zero-sum game (such as chess), the other player in an iterated PD must not be regarded as someone who is out to defeat you. As you gain most by building a pattern of lasting cooperation, you must be aware that the other is watching you for sings of your intentions to cooperate and your own actions are likely to be echoed back. Therefore it pays off to be easily readable. TFT is very good in this respect: once the simple behavioural pattern is understood by the other player, it becomes clear that cooperation is the best option she has as long as it is reasonably probable that there will be a next round.

The Limits of Reciprocal Altruism

Axelrod's results together with some parallel research (e.g. Trivers 1971, Fudenberg and Maskin 1986) on cooperation provide a powerful explanation for human cooperation in small and stable groups. This model is often called reciprocal altruism[7] (Fehr and Fischbacher 2003). Reciprocal altruism is commonly held as a fundamental description of the importance of long-term relationships for the emergence of cooperation. There is unambiguous experimental evidence that people are more likely to cooperate in two-person interactions when future interactions are more probable (Andreoni and Miller 1993; Gächter and Falk 2002).

However, there's clearly much more to human cooperation than the bilateral reciprocal altruism of stable groups. In particular, it has been shown that the success of TFT-like strategies is very limited when the interactions take place between several individuals instead of just two. In an iterated n-person PD the only conditionally cooperative, evolutionarily stable strategy allows cooperation only if all other players cooperated in the previous round. Therefore the basin of attraction for emergent cooperation is very small, because the existence of a small number of non-cooperative participants suffices to prevent it (Boyd and Richerson 1988; Fehr and Fischbacher 2003).

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[6] And for a nice strategy to be collectively stable, it must be provoked by (i.e., reciprocate) the very first defection of the opponent (Axelrod 1984, p. 62).

[7] The term altruism is used because cooperation in a PD-type situation involves giving up an immediate personal gain for longer term mutual benefit.

Also, the limitation related to the likelihood of future interactions appears to be a serious one. In Axelrod's second computer tournament the discount factor w was set so that the median length of the games would be 200 rounds (Axelrod 1984, p. 42). But throughout the evolutionary history, humans have probably almost always had the option of stopping to interact with nonrelated individuals and getting away with a defection. This removes a key condition for the emergence of cooperation purely through reciprocal altruism.

Finally, and perhaps most relevantly, reciprocally altruistic cooperation is based entirely on the expectation of future gains. However, there is plenty of evidence from both everyday life and a large amount of laboratory experiments that humans actually cooperate and behave altruistically without any material incentives (Fehr and Fischbacher 2003). It has even been proposed that this non-materially motivated altruism is an illusion created by the fact that the cooperative capabilities of humans have evolved in environments supporting reciprocal altruism and we tend to systematically overestimate the future gains in current real-life interactions. However, this does not seem probable in the light of a large body of evidence from experiments where these effects have been systematically ruled out. Also, it seems that humans actually have very well developed cheating detection capabilities, which suggests that we are fine-tuned to an environment with short-lived interactions (Fehr and Fischbacher 2003).

Reputation-Seeking and Indirect Reciprocity

An important step in understanding the emergence of human cooperation is the introduction of the concept of reputation. Reputation-based models of cooperation relax the condition of stable long-term interactions required for reciprocal altruism. The possibility to acquire a reputation for being cooperative can both help an individual to receive cooperation even in short-term interactions with others and provide an incentive for cooperation.

Indirect reciprocity (Alexander 1987; Nowak and Sigmund 1998; Milinski et al. 2002) is a model of cooperation based on reputations. In an indirectly reciprocal social system, cooperation is directed towards individuals seen as valuable to the community. Help is provided to recipients that are likely to help others (which often means having a visible history of helping others). Therefore it also pays to advertise one's cooperative capacities. In particular, Nowak and Sigmund (1998) showed that in a simplified computer simulation model of indirect reciprocity, the emergence of cooperation depends, besides the frequency of interactions, the availability and reliability of information about the cooperative tendencies of others.

Living in this kind of systems requires sophisticated skills for the assessment of the status of others and for the analysis, planning and anticipation of social situations. These requirements may well have been a major force in the evolutionary shaping of our language and intelligence (Nowak and Sigmund 1998), contributing also to the development of Systems Intelligence. It is tempting to think that micro-reputations (almost unnoticeable beliefs regarding to the nuanced behaviour and attitudes of others) could develop and influence micro-cooperative situations.

Cooperation in the Laboratory: The Ultimatum Game

Another two-player game, the ultimatum game, has probably recently inherited the position of the prisoner's dilemma as the most widely used game-theoretic research tool. In an experimental ultimatum game a sum of money (say 10 €) is given to be divided by two players under conditions of anonymity (Gintis et al. 2005b). The task of one of the players, called a proposer, is to offer any portion of the total sum to the second player, called a responder. The responder

(again anonymously) can choose whether to accept the offer. If she accepts, the sum is divided as proposed. Otherwise both players receive nothing.

Since the game is played only once and the players do not know the identities of each other, a responder interested only in her personal material payoff will accept any positive offer since the alternative is to get nothing. A similarly self-regarding proposer will propose the minimum possible amount allowed by the rules (say 1 €), which, according to a standard equilibrium analysis, will be accepted[8].

The experimental ultimatum game has been replicated in laboratory tests numerous times under varying conditions and sums of money. What actually happens is that a very small minority of the players behave in the self-regarding manner predicted by the equilibrium analysis. What we see instead is a form of cooperation emerging between the proposers and the responders. The proposers generally offer substantial portions of the money (50% of the total is generally the modal offer), and proposals below 30% of the total are frequently rejected. There is a great deal of individual variability in the results, with about quarter of test subjects behaving in a self-regarding manner. On average, however, the results are very similar in all the studies (Gintis et al. 2005b).

The results of the ultimatum game experiments therefore challenge to the traditional explanations of economic behaviour. They indicate a need for more sophisticated analysis and models of human preferences in cooperative situations.

The Public Goods Games and Group Cooperation

As discussed above, the explanatory power of reciprocal altruism also falls short when we are seeking an explanation for the emergence of group cooperation. A precise illustration of the nature of this shortcoming is given in laboratory settings by numerous reported examples of experimental games called public goods games.

A typical public goods game has several rounds, ten for example (Gintis et al. 2005b). The test subjects are fully explained all the rules and aspects of the game. In each round of the game, a test subject is grouped with several (for example, three) others. Strict anonymity is maintained. Each player is then given a set of point (for example, twenty) that can be changed to real money at the end of the game session. At the start of the round, each player places a fraction of her points to a common account and keeps the rest in her private account. The game administrator then tells each player how many points have been contributed to the common account and adds to each private account some portion of it (for example, 40%). So, if a player contributes in the first round all her 20 points, this will cost her 12 points but create a total benefit of 24 points (8 x 3) for the other players in the group. If everybody in the group did this, each player would have 32 (8 x 4) points after the first round.

It is easy to see that the only Nash equilibrium of the public goods game is a combination of strategies where each player contributes zero points in every round. Despite the fact that cooperation allows everybody to gain, a self-regarding player can always maximize her payoff by

[8] In game-theoretical terms, this is the only subgame perfect equilibrium of the game. A subgame perfect equilibrium is a strategy set representing a Nash equilibrium of every subgame (i.e. a game that consists of all the moves made by the players after a given point in the game) of the original game. Therefore it is a stricter equilibrium definition than the Nash equilibrium.

contributing nothing[9]. But in reality, cooperation again emerges. Only a small fraction of players conform to the self-regarding model. Most players begin by contributing about half of their endowment to the public account; then the level of contributions decays over the rounds and in the final rounds most players are behaving in a self-regarding way (Dawes and Thaler 1988).

When questioned about their motives for decreasing their contribution, people typically bring up retaliation towards free-riders (Andreoni 1995). There is also direct experimental evidence supporting the interpretation that when subjects are allowed to "punish" noncontributors in a public goods game, they are willing to do it at a cost to themselves. For instance, Ostrom, Walker, and Gardner (1992) report a study, where subjects played a 25-round public goods game. Players could impose additional costs (fines) on others by paying a fee. If the players behave self-regardingly, no player ever pays the fee, nobody is ever fined for defecting and nobody contributes to the common pool. However, a significant amount of punishing actually took place.

Most of the original experimental ultimatum and public goods game studies were conducted in the U.S or Western Europe and using local students as test subjects. To find out whether the results reflect a universal human behavioural trait or are related to the culture of western university students, a group of researchers undertook a large cross-cultural study of behaviour in the ultimatum and public goods games (Henrich et al. 2001). Test subjects were recruited in 15 small-scale societies with a wide variety of economic and cultural conditions. The central finding of the study was that the self-regarding actor model is not supported by the results in any of the societies. In addition, there was a substantial amount of behavioural variation between the groups. The differences of economic organization and market integration within the cultures correlated strongly with the strength of cooperative tendencies in the games. In general, the game behaviour was consistent with economic patterns of the everyday life in the societies in question. Thus, the tendency for cooperative behaviour in the ultimatum and public goods game seems to be universally human, with the local culture influencing the detailed forms of the cooperative interactions.

Social Preferences: Fairness, Inequity Aversion and Strong Reciprocity

The evidence gathered during last years from the experimental ultimatum and public goods games presents a strong challenge to the model of humans as self-regarding payoff-maximizers that is often referred to as Homo Economicus. It clearly seems that besides material motivations, people are directed in their behaviour by other types of goals, often called social preferences (Fehr and Fischbacher 2005). Both in the experimental research laboratory and in everyday life, people simply seem to care about the well-being of others in a way that has been inaccessible for economics research.

Many researchers have started to include social preferences in theoretical models of human behaviour and to use the models in the analysis of organizational and economic phenomena (Gintis et al. 2005a). It is fundamental for the resulting models that (in contrast to earlier mainstream economics research) cooperative motives are not modelled as means to some other goals, but as ends in themselves (arguments in an individual's preference function). A variety of so-called prosocial emotions, including empathy, shame and guilt bias individual behavioural choices towards prosocial directions (Gintis 2003a). In Gintis' words: internalized prosocial norms are constitutive of the self. In fact, some recent research (Rilling et al. 2002) indicates that social

[9] This can be seen by backward induction: in the last round zero contribution clearly gives maximal payoff, when this happens the same holds for the previous round etc.

cooperation has a clearly identifiable neural basis. An interesting question for the research of Systems Intelligence would be whether similar, identifiable connections to neural activity could be found for Systems Intelligent behaviour.

Among the theoretical models developed for non-selfish behaviour are reciprocal fairness (Rabin 2001) that explicitly models different types of fairness motives in a game-theoretic framework, and inequity aversion (Fehr and Schmidt 1999, Bolton and Ockenfels 2000). A central point in Rabin's work is that in a prisoner's dilemma-type game people are actually willing to cooperate if they believe that the opponent will do the same. This leads to mutual cooperation being another equilibrium (besides mutual defection) and makes the individual's beliefs of each other crucial for the outcome of the interaction. Fehr and Schmidt develop a simpler and more easily analyzable model based on the notion that a fair share of people are inequity-averse, i.e. they value an equitable division of payoffs in itself. This leads to altruistic cooperation increasing the other's payoffs towards an equitable level. The other side of the inequity aversion model is envy – the strive to increase one's own payoffs until the equitable level is reached.

Both in the experimental research laboratory and in everyday life, people simply seem to care about the well-being of others in a way that has been inaccessible for economics research.

However, the seemingly by far the most significant model for social preferences and their role in the emergence of cooperation is that of strong reciprocity (Fehr and Fischbacher 2003; Gintis et al. 2005a). Quoting Gintis et al. (2005b):

> Strong reciprocity is a predisposition to cooperate with others, and to punish (at personal cost, if necessary) those who violate the norms of cooperation, even when it is implausible to expect that these costs will be recovered at a later date.

In particular, strong reciprocity is a model that is compatible with the observed behaviour in the ultimatum and public goods games. For the people involved in the experimental ultimatum games, the 50–50 outcome represents a fair split of the money. Responders reject proposals below 40% as a form of altruistic punishment for a non-fair behaviour. Proposers offer 50% because they are predisposed to being fair and cooperating, or at least 40% because they understand that non-fair proposals get rejected even in an anonymous one-shot game. This is supported also by the interesting result that if the offer in an ultimatum game is generated by a computer instead of a human, low offers are very rarely rejected (Blount 1995).

The decisive action of Rosa Parks discussed above can also be interpreted in terms of strong reciprocity. She felt strongly that the system that required her to stand up and move away from the seat in the bus was violating the norms of humanity and no longer working for the common good. With an instinctive, subjective certainty backed by strong prosocial emotions, she just stopped cooperating (and that way "punished" the violators of the universal norms) despite her understanding of the eventual personal cost.

On of the reasons for the influence of models of reciprocal altruism is that they provide a very clear explanation of the evolutionary mechanics of the cooperative behaviour. The apparent paradoxicality of the theories of social preferences in general and strong reciprocity in particular is related to the fact that such a straightforward evolutionary explanation is not available (Fehr

and Fischbacher 2003)[10]. Some recent work proposes models based on cultural group selection (Boyd et al. 2005) or gene-culture coevolution (Gintis 2003b) as solutions to this puzzle. They are based on the idea that cultural norms supporting cooperation are sustained by altruistic punishment. If a sufficient number of altruistic (strongly reciprocal) punishers exist, cooperators gain an advantage over defectors who get punished. When cooperation is widely established, the cost incurred by altruistic punishers is very small, because actual punishment does not take place. Instead, the common belief in the reputation of the punishers is sufficient to sustain the cooperation (Fehr and Fischbacher 2003).

Heterogeneous Interactions, Equilibria and Tipping Points

Standard neoclassical economic theory mostly starts from the assumption that people have homogeneous (rational and self-regarding) preferences. The resulting models describe well some aspects of group-level economic behaviour, particularly those in competitive markets. However, as seen above, some experimental results can not be explained in this framework. It appears that a more plausible theoretical foundation involves more heterogeneity in human motivations, in particular the existence of a considerable portion of people having social preferences. It seems that many phenomena related to quick and large changes in human systems are generated by the interactions of people with different outlooks and involve also the effects of interaction structure, reputations and beliefs about others.

As a simple example of how subtle changes in the design of the structure of interactions can change the equilibrium of a system of people with heterogeneous preferences, consider a prisoner's dilemma played by a player behaving in a self-regarding manner and a strongly reciprocating player (Fehr and Fischbacher 2005). Assume also that the types of the players are common knowledge (everybody involved knows it and also knows that the others know). If the game is simultaneous (i.e. both players announce their moves without knowing the move of the other), the unique equilibrium of the game is still mutual defection (because the strong reciprocator knows the other player will defect and does the same). But if the game is sequential (the players move one after another) with the self-regarding player moving first, the first player, knowing the reciprocal behaviour of the second, effectively chooses between the outcomes (defect, defect) and (cooperate, cooperate). Being rational, she selects the latter, which therefore is the unique equilibrium.

One important insight to the effects of heterogeneity is related to the observed breakdown of cooperation in repeated public goods games (Fiscbacher et al. 2001; Fehr and Fischbacher 2003). Despite the fact a large number of strong reciprocators are involved, they cannot prevent the decay in contributions in the circumstances in question. Results derived within the analytical models for heterogeneous populations including strong reciprocity (Gintis 2003a) and inequity aversion (Fehr and Schmidt 1999) show that with fairly general assumptions, a minority of selfish individuals suffices to make the absence of cooperation the only equilibrium. An implication of this is that even if no cooperation can be observed in a social system, it is not possible to infer the absence of altruistic individuals. The strong reciprocators just withhold their cooperation if they believe that the others are not contributing. On the other hand, if they start to believe that others around them are likely to cooperate, they will respond by contributing in kind and creating a strengthening wave of cooperation. For the long-term maintenance of cooperation in a group setting, it is therefore vitally important to sustain the mutual belief in the cooperative outcome.

[10] An illustration of the phenomena of evolutionary instability is the breakdown of the cooperation described in the previous paragraph.

More generally, the heterogeneity of preferences leads to models of group behaviour where, instead of the single, gloomy equilibrium of universal defection, multiple equilibria exist (Gintis 2003a, Fehr and Schmidt 1999), including those of universal cooperation and mixed cooperation and defection. An interesting feature of the models with multiple equilibria is that they predict the existence of tipping points: critical combinations of system parameters such that a small change may cause a very large overall effect (for example, the emergence of universal cooperation). The tipping point effects describe the situations where small cooperative (of defecting) actions can change the nature of a system.

This is, then, what could have happened in the small revolution initiated by the action of Rosa Parks. The visibility (strengthened and highlighted by the Systems Intelligent actions of the community leaders) of her case, together with her reputation as a respectable and morally developed individual, induced some followers to cooperate regardless of the immediate personal cost. As the word was spreading, the common belief in the cooperative protest strengthened further and attracted others, even those with weaker cooperative propensities, to join. Finally even the minority of self-regarding individuals in the community probably saw that participating in the protest made sense in order to not be regarded as a free-rider.

Social and Organizational Implications

A considerable part of contemporary management and policy analysis is based on the earlier widely accepted assumption that all individuals pursue materially selfish goals. The theoretically predicted outcome in many types of collective-action situations is zero or very low level contributions to common good by the individuals. Consequently, the only perceived tools to overcome these Pareto inefficient equilibria are centrally designed and implemented, positive and negative material incentives. Centralized management or the state are viewed as substitutes for the shortcomings of individual behaviour and the presumed failure of community (Ostrom 2005).

However, as seen above, a large part of people in any setting are in fact likely to have intrinsic motivations for social behaviour that can be modelled as strong reciprocity. In addition, the proportions of different types of individuals are likely to change over time as the result of self-selection into different situations and changes in preferences. The resulting heterogeneity transforms many social cooperative dilemmas into different types of games with several equilibria. In particular, the interactions of strong reciprocators and rational egoists (self-regarding individuals) result in situations where it is not possible to rely exclusively on the intrinsic motivations of the participants, especially if cooperation needs to be sustained over time. In these cases the intrinsic motivation can be backed up by institutions that can enable the motivated individuals to solve collective-action problems while protecting them from free-riders (Ostrom 2005).

The institutional rules crafted in many robust, self-organized common-property regimes are compatible with the general conditions for the sustainability of cooperation as well as reciprocity (Ostrom 2000). They tend to increase the probability of long-term, repeated interactions among the participants. Furthermore, appropriation rights tend to be designed so that the actions of an individual are visible to others and thus a reputation in the community will be built quickly.

From the viewpoint of sustained cooperation, especially important are the phenomena of crowding out and crowding in (Ostrom 2005). Institutional systems can crowd out (i.e. diminish or drive out of existence) behaviours based on intrinsic motivations when individuals feel that their self-determination or self-esteem has been hurt by their design. Crowding in is possible when the systems support the individuals. In particular (Frey and Jegen 2001):

- External interventions crowd out intrinsic motivation when they are perceived as controlling.
- External interventions crowd in intrinsic motivation if they are perceived as supportive; in this case individuals feel that they are given more freedom to act and their self-determination is enlarged.

Conclusions

Human cooperation takes many different forms and depends on diverse motivations and environmental factors. The reciprocal altruism represented by the TFT strategy in Axelrod's computer tournaments gives the simplest explanation for spontaneously emerging cooperation. Although the explanation seems simplistic in the face of the full richness of human social systems, it is encouraging because it shows how cooperation can in suitable circumstances emerge even in the most hostile and seemingly inhuman environments. Axelrod (1984, pp. 73–87) describes as an extreme example the "live-and-let-live" system that spontaneously and against the leaders' explicit orders emerged between the enemies in the World War I trench warfare.

Encouraging advice based on Axelrod's results can be given to an individual wishing to foster cooperation even if the system around her seems unresponsive and intriguing. With some qualifications, it pays to be nice and forgiving, i.e. ready for cooperation from the beginning and quick to let bygones be bygones. Being quick to reciprocate and making your behaviour clear and credible for everybody helps to sustain a cooperative environment. The key qualification is that interactions between the same parties need to be continued for a fairly long time for all this to work.

Possibility for long-term repeated interactions is in general very beneficial for the emergence of human cooperation. Regardless of the intrinsic motivations of the interacting people, it is very useful to try to increase both the frequency of communication between them and the duration of the period during which it happens. A team in a business organization is more likely to cooperate efficiently towards a common objective if internal meetings and discussions are frequent and lively and the team stays together for a long time.

However, both in normal life and laboratory experiments many people seem to contribute to common goals for the sake of their intrinsic social values, often in cases when it is totally unrealistic to expect any personal gain in return. Similarly, some people are willing to punish or discipline others at their own cost when the others are seen to violate common norms. When social systems are formed by people with differing levels of these predispositions, they may have several cooperative equilibria. Specifically, altruism can be hidden in the sense that although everybody is acting selfishly, a small change in the beliefs of the individuals regarding others may enable the emergence of cooperation. On the other hand, a small portion of selfish participants typically suffices to make the cooperation difficult to sustain by intrinsic motivation alone over longer periods. In these cases, a carefully designed regime may help. In particular, many successful decentralized regimes rely on making sure the participants interact repeatedly and that their actions are visible to everybody. This makes reputation formation easier; reputations, on the other hand provide an extra incentive for co-operation.

Systems Intelligence believes in and relies on human cooperation, both on large (as in human rights movements) and small (as in marriage or work environment) scales. In practice, the sudden dynamics of social tipping points are often enabled and large-scale cooperation empowered by Systems Intelligent behaviour.

Systems Intelligence is seen to be an instinctive, natural and evolved human capability (Saarinen and Hämäläinen 2004). Therefore the research on systems of actual human cooperation and human properties such as strong reciprocity contribute also to the understanding of the roots and application of Systems Intelligence. The recent results described above, highlighting the previously theoretically underappreciated richness of human cooperative behaviour support the claims for Systems Intelligence as a fundamental social capability. Specifically, understanding the evolution of cooperation in human societies can also increase the understanding of the evolution of Systems Intelligence. Ultimately, this could even lead to an understanding of the neural basis of Systems Intelligent behaviour.

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CHAPTER 17

Systems Intelligence as Opportunity Appreciation

Ilkka Leppänen

"Opportunity is missed by most people because it is dressed in overalls and looks like work." – Thomas A. Edison

Options thinking, an opportunity evaluation framework founded on financial options theory, appreciates similar aspects in human decision making that systems intelligence celebrates. A key insight from the distortions in human thinking, that systems intelligence has highlighted, is that often humans make decisions not based on valuable long-term opportunity creation, but rather on hesitation and myopic behaviour. Humans tend to predict 'cash-flows', good feeling, social status, and so on; arguably, decisions based on predicting such outcomes are biased towards familiar alternatives with satisfying outcomes. Options theory is used in this essay to argue why opportunities are more valuable than is traditionally understood.

Introduction

All man-made decisions are functions of some purposes that derive from either inner goals or are influenced by the outer environment, and often both. Humans tend to predict "cash-flows", good feeling, social status, and so on. Arguably, decisions based on predicting such outcomes are biased towards familiar alternatives with satisfying outcomes. Action, perceptions and beliefs produce systems, and often the systems that individuals co-construct for themselves do not encourage reaching good or satisfying behaviour. Hämäläinen and Saarinen (2006) and Saarinen and Hämäläinen (2004) have given importance to the concept of a *systemic world* around the human actor in studying human action and phenomena in social structures. Designating their paradigm *systems intelligence*, they push forward the idea of a human being that can act intelligently and productively in his natural environment, by understanding different systemic interdependencies and connectivities between himself and other agents in the system. Systems intelligence is mainly determined by outcome-driven action and the cause of that action, this very nature of systems is not only the determinant of our actions, but also the main determinant of cause in our actions. This produces interest towards the decision making processes that humans use, as part of their everyday action or as part of some larger entities, organizations that collectively conduct value-maximizing and/or risk-minimizing decisions. Studying the way that

humans reason and take decisions is on the top of the list for a scholar who aims to reveal why humans act as they do.

The problem that all agents overcome in decision making is the evaluation of alternatives that produce desirable outcomes. There are numerous methods that decision makers use in the evaluation process, and often these methods are determined by the nature of the decision alternatives, and by the information that is available of them. An individual can, for example, use only their intuition and *a priori* knowledge to decide which route to take for travelling from *A* to *B*. A firm can use astonishing amounts of effort to select whether to invest in production facility *C* or *D*. The field of operations research in general, and decision analysis in particular, has concentrated on assisting the decision maker to make better decisions (see e.g. Keeney and Raiffa 1976, Clemen 1996). Of course, most of the decisions we make everyday are conducted without any kind of formal analysis – the human being is a decision making machine by nature. If our natural decisions were not good and ideal for the present circumstances, our species would have very likely become extinct.

The human being is a decision making machine by nature.

There are several 'cognitive rules of thumb', or heuristics, that humans use when analysing the decision alternatives they see. This is especially true in mental modelling, when one must assess probabilities for uncertain events, as Tversky and Kahneman (1974) point out. Mental modelling is important, since according to utility theory, decisions are made by evaluating future events based on probabilities that are assessed on them (Clemen 1996). One cognitive constraint is that a vast array of alternatives is *not* seen, i.e. remains largely invisible for the decision maker, thus undermining the possibilities of an individual to influence his decisions. Whatever is the reason for this, the concept of *visibility of the decision alternatives* ties us to a certain interpretation of the world around the decision maker. The world is composed of systemic structures that are either visible or non-visible, visibility considered in the sense of 'seeing', 'experiencing', and 'acknowledging' the environment of the systemic actor. Non-visibility, or simply unawareness, of decision alternatives causes humans to make bad or poor decisions. It goes without saying, then, that visibility of different possible courses of action largely determines decision making.

This essay is about the relationships of options thinking to systems intelligence, that both acknowledge that opportunities are valuable. In the following paragraphs I will explore why thinking in terms of options is valuable, and why it especially suits to everyday decision making that humans conduct. The options thinking approach to decision making is very intuitive and simple. Many choices are simply regarded as options that carry a value that is not self-evident with the traditional attitude of discounting future values to the present and selecting the best among them. The traditional methods do not account for the opportunities that the inherent variability in different decision alternatives carry within them. Thus options thinking can be seen as both an art and a science – 'art' or everyday skill in the attitude part, the appreciative inquiry that the decision maker takes when critically thinking about ones thinking towards future opportunities, and science in the valuation part, the analytic explanation of the value that variability and flexibility bring

Choices That Individuals Make

Human decision making as a descriptive theory would best be explained by observing the behaviour of the decision maker. Systems sciences give us understanding about what is causing deviations and distortions from intelligent behaviour. Systems intelligence gives a promise of what ideal behaviour is like: a systems intelligent individual is capable of mentally abstracting

away of his beliefs about the structure of the system that affects him, gaining a "heightened awareness" from the present systems, that enables him to act intelligently (Hämäläinen and Saarinen 2006, p. 17). Beliefs about the structure of the system are by some authors understood as mental models that "determine what we see" (Senge et al. 1994, p. 235). Perception of choices that are available are dependent on the individual's beliefs about them. We can thus understand systems intelligent action as a sort of benchmark, an ideal, that one should strive for to gain that heightened awareness of the situation and produce better outcomes in everyday action.

A systems intelligent agent perceives he is part of a system or systems, that are generative frames within which experience of life takes place, but maintains the sensitive ability to think and act rationally[1] without having to take an outsider's view. The agent knows by intuition, or at least trusts that he knows enough, what local action produces which global outcomes. The concept of systems intelligence is versatile in the sense that it can be used not only as a descriptive theory, but also as a prescriptive theory of human decision making, i.e. used for observing the possible biases of the complex decision making environment, and suggesting alternative courses of action that might produce better outcomes. Then, choices for decisions should be under the spotlight.

The notion that some alternatives are non-visible is rather trivial, but important nonetheless. The literature on decision making emphasizes the role of options generation in a phase in decision support. It is quite obvious that sometimes an individual simply cannot see the 'goodness' or 'appropriateness' of some of his decision alternatives. If one is free to choose his actions, one can do almost anything all the time, but only a certain amount of alternatives are *feasible*, i.e. are possible solutions for their decision making problem. When straddling a bridge, for example, you can either crawl, walk, or run. You cannot fly unless you have a flying device nor if you cannot come up with an idea of having a flying device in the first place; thus, your feasible alternatives are those that are possible solutions, but those alternatives that you cannot choose remain infeasible. From the feasible alternatives, even fewer of them are desirable, i.e. optimize the objective. In the bridge example it is most satisfying to walk over it since it does not take too long (compared to crawling) and it does not require special effort, as is the case in running.

Another example, now from the feasible but invisible alternative space, would be that of selecting a career as a teenager: one may not be able to see himself as an architect, for example, although going to an architect school would be a perfectly feasible decision alternative. The system that appears for the decision making teenager invisible hides some crucial information, such as the high pleasure that the work of an architect could bring. This system is a product of the decision maker's beliefs and assumptions, or mental models, about different career alternatives. This discussion brings us back to the concept of the systemic world. There are certainly many infeasible alternatives in the invisible alternative space, but are there also feasible alternatives that the average decision maker does not see?

I begin discussing decision making in this essay from the viewpoint of corporations, institutions in which economic stakes are high and decisions far more formal and professional than in everyday life. This exploration gives us a needful analogue to human intuitive, myopic behaviour and a motivation to suggest another way to confront future uncertainties and contingencies that are present whether the decision maker is a corporation or an individual. My presumption is that institutional decision making is for the most part analogous to individual decision making.

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[1] It is not a straightforward task to define what rationality is. In common language, it means the same as *logical*, *reasonable*, or *sound*, but in decision sciences rationality is defined by a set of assumptions related to individual choice behavior. In this essay, being rational simply means being sound, as opposed to being 'irrational' or 'stupid'.

How Decisions Are Made in Corporations

One method of evaluating the worthiness of an investment that a business organization makes is to see how much some material benefit it will produce. The dynamics of an investment come to the picture when the time dimension is taken into account. Then, one must understand that the benefit does not immediately follow the investment. A common way to evaluate whether an investment is worthwhile to take is to determine how soon it will pay itself back. However, the payback period thinking does not account for the time value of money: a dollar now is more valuable than a dollar tomorrow, since one can invest that dollar now and make extra profit, yielding more than a dollar tomorrow. In corporate capital budgeting the awareness of the time value of money is important, since investments are strategic by nature, and often also contingent on future courses of action. Discounted cash flow analysis (DCF), based on the net present value rule, forms the basis for the *neoclassical theory of investment* (Dixit and Pindyck 1994). The discounted cash flow method is also widely accepted as a best practice not only by scholars of corporate finance, but also by practitioners in industrial organizations. Luenberger points out that the net present value criterion (that uses the DCF method) is "generally regarded as the single best measure of an investment's merit" (1998, p. 25).

Despite the power and popularity of the DCF method, it is weak in evaluating *opportunities* in the environment of the firm. Very valuable opportunities, such as investments in costly medicines, are understood to contain enormous uncertainties, and are thus valued very risky. The DCF method tends to over-rationalize issues such as opportunities that especially new ventures confront and depend on. The weaknesses in over-rationalization are not only that opportunities are driven away, but also that the possible benefits of risk-seeking behaviour are seen too narrowly or are not seen at all.

Benefits from risk-seeking behavior are seen too narrowly.

Opportunities are valuable in the sense that they bring flexibility into the operations of the firm; if a firm already holds the opportunity to invest in a factory by owning a site for it, then it does not have to wait until the last moment for the opportunity to realize and go by unexploited. New ventures may invest in opportunities when they explore novel fields of scientific applications by research and product development. These investments do not yield value as such, but they are valuable since they contain the opportunity for something of greater value, such as killer applications in the near future. When one firm pushes these killer applications to the markets, they gain a leading edge and confront competition only if the competitors themselves have developed similar opportunities, or if they are fast to imitate. According to Luehrman, firms typically value opportunities formally only at the point when they mature and the investment decision can no longer be deferred (1997, p. 136); this behaviour suggests that firms mostly rely on DCF based methods that take a negative stand on opportunities.

Value of Options

Understanding investment science is beneficial for studying everyday human decision making too, since there exist analogies between them. Both firms and individuals confront not only strategic long-term benefiting investment opportunities, but also smaller, everyday situations where it is useful to understand the logic of value creation, or in the human and more general case, *utility* creation. Often firms as well as human beings tend to get rid of future uncertainty that is mostly constructed by the variability in the future positions. As has been acknowledged in the Nobel prize winning work of Fisher Black and Myron Scholes (1973), influenced also by Robert Merton and Stewart Myers, the variability in the investment alternative is valuable. There is a positive correlation between investment's volatility and return. What Black and Scholes did in

their work was that they showed analytically why variability is indeed valuable and should not be discounted away.

A financial option is a right but not an obligation to exercise a transaction, selling or buying, for a financial asset in a marketplace. Consider a situation in which you hold the right to buy an asset at a predetermined price q at a predetermined date t. The actual price of the asset is thus p_t, so that the value of the option is nonnegative if and only if $q > p_t$, and zero otherwise (here transaction costs are assumed negligible). There is a certain probability by which this inequality will hold true, that is characteristic of the nature of the asset – shares for high tech firms are more volatile than government bonds. The future value of the option is thus contingent on the variability of the underlying asset at the date in which the option can be exercised.

Now consider that the underlying asset is not a financial asset but a right to gain a control right for some real asset, such as a factory. This right is called a real option, and it could stand for an ownership contract of a vacant lot and a right to hire a construction workforce for some pre-determined cost, for example. Consider that a firm can first acquire a right to build a factory (acquire a vacant lot), and then some time later exercise that right (build the factory on the lot). Consider that without the factory a firm can make a profit P, and with the factory, a profit Q. There is an opportunity to fulfil a market need with a product from this factory at some time in the future. The price of a European call option, that the real option represents, is determined by knowing the prices of first stage and second stage expenditures, the net present value of an underlying asset, risk-free interest and time to expiration. In this example these variables are the price of the site contract, the price of building the factory, net present value of profit B, risk-free interest of government obligations (for example), and the time it takes for a competitor to fulfil the market opportunity. Logically, this option is worthwhile executing if its value exceeds that of not executing the option.

Traditional methods would only look at the total costs, the cost of buying the ownership contract for the lot and the cost of building a factory on it, thus neglecting the option-like nature of the situation. With real options thinking, managers can extend their judgement for possibilities that need not be executed if things go wrong. If a competitor filled the market opportunity first, the factory need not be built and the option would not be exercised. The pertinent part of this judgement is a positive attitude towards possibilities that are contingent on the variability of alternatives, the unfolding and uncertain future.

From Options Analysis to Options Thinking

Economic theory provides us with a readily applicable framework of option-like instruments that give the decision maker a possibility to value different investment alternatives. When the future is highly uncertain, it simply pays to have a broad range of options open. In options valuation flexibility is rewarded, whereas in the neoclassical methods, flexibility is given a risk measure that is penalized in the valuation to the present.

Amram and Kulatikala (1999) note that real options are not merely a way of modelling and analyzing opportunities, but more so a way of thinking. They propose that real options thinking has three components that the manager, or, in general, a decision maker, might appreciate:

(1) *Options are contingent decisions*, that allow the decision maker to first see how events will unfold, and then make the decision

(2) *Real options are aligned with financial options*, that provide a financial market conceptual framework and concepts to value complex payoffs

(3) *Investment can be designed to fit the option framework*, so that not only can the firm take onto account of e.g. the uncertainty, but also to benefit from the uncertainty in the best possible way

Options methods also allow the construction of multiple scenarios in a tree-like manner. This scenario building allows also judgment of periods in which a firm has to incur losses in order to benefit in the future. Therefore, options valuation is naturally employed in such instances as venture financing or research and development projects.

Flexibility in decisions is given high value in real options research. Dias and Ryals (2002) agree with earlier developers of real options theory that flexibility matters, in their case in brand management. Geppert and Roessler (2001) also credit the worthiness of flexibility, in product line engineering. In effect, flexibility gives a chance to exploit variability of the decision alternative that indeed adds value for the option. With the financial options sketching of the decision situation, this flexibility can prove to be even more worthwhile than it on first sight may seem to be.

Luehrman (1998) claims that options thinking can provide an active style of managing opportunities and strategies for business executives. He gives an example of a tomato gardener, who manages a garden of tomatoes in an unpredictable climate. A tomato garden produces tomatoes during the summer season period. A gardener thus needs to pick the tomatoes just at the right time for sale, but this right time is contingent on the environment, most notably on the climate. There naturally are all kinds of tomatoes on a given time in the garden, those that are ripe and less ripe, thus needing decisions that either go to a category "pick now" or "pick never". Luehrman describes how a passive gardener would manage their tomatoes: visit the garden only at the last day of the season and pick those that are ripe ("pick now" category) and throw away the rotten tomatoes ("pick never"). Another gardener, active only on weekends, visits the tomatoes weekly and picks those that are ripe and does not let squirrels eat them. Fully active gardeners maximize their revenue from the crop, try their best not letting squirrels eat any of the tomatoes or not letting any go rotten.

A tomato garden can be seen as a portfolio of options. Luehrman defines two metrics for option valuation: value per cost (if smaller than 1, cost is more than value, if greater, vice versa) and volatility (how much change can occur before the decision must be made). These metrics are illustrated in option space, FIGURE 1.

In the top of the option space one has the possibility of exercising the option *now or never*. In the tomato garden, this situation occurs either because we are at the end of the season, or because there is no uncertainty in the garden conditions (no squirrels, no bad crops infecting good crops). If the tomatoes are in this condition, and ripe, they should be picked for sale. If value per cost is near zero, and volatility near zero, the tomatoes are bad and the option to pick them is not exercised. If the value per cost is over one and volatility higher, there is a possibility that the tomatoes either get worse or better, so there are much more options for the gardener to do for the tomatoes: pick now, pick tomorrow, or the day after that, etc. The tomatoes are picked "maybe now or probably later". Thus, a harvesting decision that an active gardener makes for tomatoes is contingent on the tomatoes' condition and the uncertainty of the crop that time brings; more time, more possibilities for the tomato gardener to grow a good tomato. Being aware of contingencies between uncertainty and time allows you to think in real options terms, and thus, as the FIGURE 1 depicts, gives more value to your options. Being aware of your valuable options makes you a better gardener.

Being aware of your options makes you a better gardener.

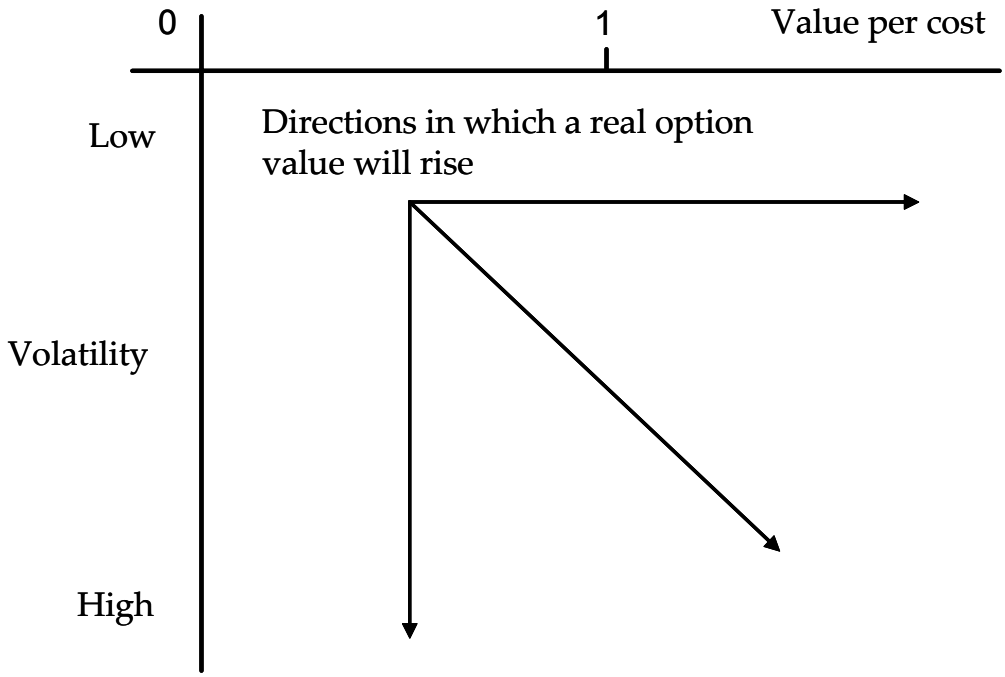

FIGURE 1. Options space, adopted from Luehrman (1998); the value of a real option will be highest when both the value per cost relationship is over unity and volatility is high.

Systems Intelligence: Thinking about Life-Oriented Options

Many aspects in human decisions and actions point towards risk-minimizing, opportunity-destroying behaviour. This statement is confirmed by the several contradictions that exist in the current strands between the fields of economics and psychology. Economists and psychologists have not arrived to an agreement how the real made decisions in the psychological sense are 'rational' in the economical sense. Individuals are apt to discount their future alternatives to the present, and think this logic is 'rational'. Even if one thinks that he makes non-myopic decisions, his logic may be poor since flexibility, contingencies, rights and obligations may not be intuitive concepts, visible at the time of the decision. Often, one can hear that an investment is profitable since it pays itself back fast. When one must select from several investment alternatives, the payback period method is biased, since it does not take the time value of money or other inputs into account. The popularity of payback period method may be due to the fact that the human being is risk-averse, and sees uncertainty in the far future less desirable than uncertainty in the near future. Another explanation might be that people prefer 'liquidity', or degrees of freedom in their lives, since again, uncertainty is not often given value.

Situations where one has rights that are not obligations are ubiquitous in everyday life of humans. Consider, for example, the following situations (adopted from Amram and Kulatikala 1999, pp. 10–11).

- It may be worthwhile to wait until the future reveals itself; of course, usually there is a cost to waiting, but the trade-off between waiting for more information and taking action now may be significant. With a neoclassical investment attitude, one may only consider the situation to be 'invest now or do not invest at all'. One considers it valuable to wait for investing in e.g. when one decides to 'sleep it over', acknowledging that it is not good to make the decision now if there is a possibility to postpone making it. When future information is appreciated, a *waiting-to-invest option* is acquired, and patience is considered valuable.

- Follow-on actions that derive from the actions we take now are valuable: investing in a learning opportunity is an example of such an action that gives one the future possibility to be ready to grasp the opportunity. Folk wisdom such as 'reading is always worthwhile' are examples of such logic, which is the case of a *growth option*. Often it appears to be worthwhile to invest attention into possibilities that the environment offers.
- Flexibility towards different scenarios is often rewarded. If one is uncertain about his near future, it may be worthwhile to create flexibility through 'alternate emplacements', opportunities that are realizable if things go wrong with the initial planning. Firms often hire people with multiple and versatile skills and who could be used also in other tasks than on jobs that their core skills require, or people with a proven capability to learn new skills fast so they could be used in new opportunities; this is an example of an attitude towards future uncertainties that acknowledges the value of these alternate emplacements.
- When considering whether or not to enter into new situations, a person may calculate the costs of failure due to external causes. If a married couple has entered into a phase where they begin considering a break-up, it is valuable to understand that often the cost of investing a little more effort into the relationship even if the break-up seems very probable is not great since one has an *exit option*, the possibility to call it off if they are not successful in their tryout. One then recognizes the fact that regret about trying again is acceptable.
- By staging investments, one can learn about the environment and gain better information from it. One can thus use a *learning option* that teaches the decision maker how to structure the resource usage for better success. *Action research* (see Reason and Bradbury 2004) also reflects the learning attitude and in part applies options thinking.

What systems intelligence basically claims is that one possesses the mental capability to choose their actions in such a way that productivity in their lives is attained by acting in a way that is not always apparent from their mental representation of the system at hand. Systems intelligence takes the position that action must follow now, from the acknowledgement of systemic effects of one's actions. Often individuals just have to rely on themselves and their capability to act. Sound confidence on the action mechanisms is often enough to produce good outcomes that satisfy the actor's objectives. Hesitation in the face of complex interaction mechanisms[2] may produce strong and delayed negative outcomes through amplifications and nonlinearities of the systemic environment.

Choices affect behaviour, and behaviour affects systems. If the superpowers during the cold-war era would have chosen otherwise, not to engage into arms race against each other, the world would probably look much different now. If you, the reader, would not have chosen to get up from the bed this morning, your own 'system of the day' would look much different. Choice behaviour of an individual is affected by his mental capabilities and his mental representations that the environment produces. There is clearly interconnectedness between the one's choices and one's presently active environment. Intelligent decisions that aim for the best outcomes may be significant determinants that shape the environment and also the decision making conditions. Options thinking provides a way of reflecting one's thinking about the uncertainties in one's environment.

[2] Hesitation can be pragmatically articulated as *lamenting of complexity*, the expression of helplessness when confronting situations that appear complex. It must be noted that, often the human misjudges the nature of complexity in their environment – the engine of an automobile may be termed complex in natural language although in reality it is simple and interrelationships between its parts are well-defined.

Prescriptions

What could be the prescription that studies in systems intelligence could give for the everyday decision maker? I strongly believe that the novel perspective that options thinking gives, provides us reasons to believe in alternative, sometimes irrational-appearing moves. Consider the following example.

> Peter, a twenty-something engineering student, is considering ways to spend his evening. He has a free ticket to a ball, but he also knows that an interesting TV-program is on air tonight. Therefore, he is to decide on two conflicting options: whether to stay at home all night (H) or go to the ball (B).
>
> As an economically rational decision maker, Peter implicitly discounts in his mind the utility of going to the ball. He knows that Lisa will probably be there, and in his wild imaginations he assigns another probability that he and Lisa will get out of the ball as a couple and live happily ever after. On the other hand, Peter considers a complementary event, that neither Lisa or any other interesting girl is present, and thus he has to spend the whole night at the ball all by himself or leave early; Peter is not a very optimistic person by nature, so he considers that the probability of finding Lisa is small and the probability of leaving early or empty-handed is high (although with the first intuition, Peter considered Lisa's appearance at the ball very likely). What comes to the other decision, staying home for the night, he considers it fairly valuable since he does not want to miss the newest episode of "Lost". Peter stays home for the night, since he sees the present value of option H more valuable than that of option B. A decision tree for Peter's decision is shown in FIGURE 2.

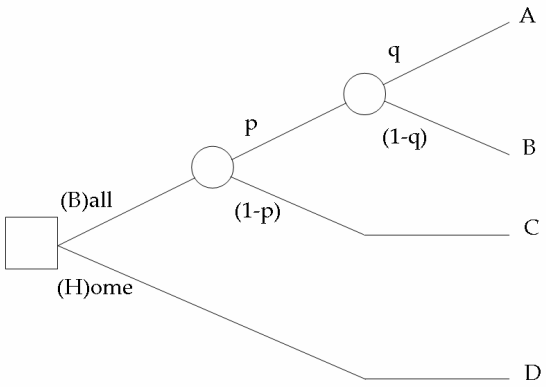

FIGURE 2. Peter's decision tree.

> If Peter was a systems intelligent options thinker, he would consider the ticket to the ball as a right but not an obligation. Let's consider the possibility that Peter went to the ball but left early since Lisa didn't arrive. He lost 60 minutes from his evening as a transaction cost (and first 10 minutes of "Lost"), and the value of the option B proved to be zero. On the other case, if Lisa came to the ball and they fell for each other, the value of B proved to be enormous. Now, the true value of the option B lies in the set $[0 - c, \eta - c]$, where c denotes the transaction cost (a two-way bus ticket, for example) and η an enormous value. The opportunity costs in both options are the missed utilities of the conflicting option.

In life, the cost of exercising opportunities is often very small. The system-determining decision variable in the preceding example is the transaction cost of exercising the opportunity. The agent has already acquired a right to take an action, so either taking or *not* taking the action is virtually cost-free. The transaction cost, the cost that follows from taking the transaction from exercising the right is often smaller than people think. In the case described, the exercising incurs a small

cost, for example a bus ticket, and an opportunity cost of not doing something else. But, in the face of the possible gains that exercising the option could produce, these 'costs' are materially very insignificant, and for the most part matter on a psychological level. A demand is in place for critical reassessment of psychological costs.

The environment, understood as a system that generates some outcomes of action-decisions and hides some, is not only affected by one person's action, but also by the actions between several people. We organize our actions in different forms, cooperate and defect, aim for joint gains or zero-sum exploitation of another's resources, et cetera. One purpose of rationality studies in economics and philosophy has always been to understand just why humans cooperate, when it may be seemingly more worthwhile for one individual alone to defect when others are willing to cooperate. If kin relationships between individuals, and emotions towards others, are excluded from the study of rationality, it very well may seem like the human being is not rational at all when considering such an achievement as the welfare state.

Cooperative action contains vast amounts of potential that could be released by minimal interventions and exploitation of options. Consider negotiations, for example. Negotiating parties can aim at common benefits but still try to keep their preference information private within themselves to the hilt. The dilemma is often that it would benefit both parties if they could somehow settle to a cooperative outcome, but since it can be lucrative for the other party to *defect* while the other cooperates, neither suggests cooperation. This leads to interaction where the parties only take minor steps towards cooperative outcomes and may soon end up in a solution that is not the best for either of them, while the best option that would benefit both remains unexploited. A review of finding jointly improving directions in multiple-party negotiations is given by Ehtamo and Hämäläinen (2001).

What if the negotiating parties, instead of marginal iterative steps, could find rights that are not obligations in the negotiation arena? Communication and the actual interaction in negotiation, after all, play a major role.[3] Hostile attitude of party *A* towards party *B* may make *B* believe that *A* is more apt to defect any suggestion that *A* provides for the cooperative aim. Most people acting in the role of *B* would answer this behaviour with hostility, thus leading into a 'spiral of revenge' where cooperation could only be dreamt of. But what if *A* started the negotiation with a smile and warm friendliness, and some brief small talk questions about *B*'s family?

Small choices, such as a smile or a handshake, matter.

The outcome of a negotiation is essentially dependent on the appearance of the negotiating setting, i.e. a negotiating system. And as we already know, the appearance of the negotiating system is dependent on choices, the behaviour that the negotiating parties address towards each other. Thus choices, even small ones such as a smile and firmness of handshake, matter. Time, or non-simultaneity of actions, matters too. After handshake comes a brief period of small talk before entering into the subject. If the handshake of *A* is non-eloquent, *B* might think that *A* is not motivated enough for the situation, and behaves accordingly, by skipping the warm small-talk, for example. By this action, *B* incurs a gesture of non-friendliness to *A*, and *A* gives a proper response; thus, the system of holding back in return is in place (as in Saarinen and Hämäläinen 2004). Myopic reactivity towards each other's actions takes over and longer-term gains are easily forgotten. Often it would be best to just 'keep cool'.

[3] The significance of communication settings in negotiations are acknowledged by most negotiation theorists, such as Raiffa (2002).

What is often dismissed in choice behaviour is the path-dependency of choices (see e.g. David 2001). How a choice is made at time *t* is dependent of choices made at previous times. With path-dependency it is also easy to explain such phenomena as the system of holding back. Path-dependency also gives us a motivation to explain the worthiness of options thinking in human-human choice behaviour; biases that choice behaviour often reflect, such as the system of holding back, appear as manifestations of path dependency.

Consider the simple act of positive attitude towards the other party in a negotiation setting. You always have a right to choose to act positively, e.g. shake hands with a smile and greet with warmth (even if this is not expected from you), regardless of the environmental factors, such as the 'mental atmosphere' of the situation. But only with thinking these acts in terms of options, one can appreciate their connection with the *possible* outcomes of all the decisions, the macrostructure that emerges from decisions on the micro scale.

Conclusions

The human mind is bounded when it comes to rational, utility-maximizing decisions. Knowing this, a scholar has to define what is meant by rationality, when rational judgement refers to individuals making good decisions. The relationship between rationality and optimality can lead to circular reasoning. Defining what good decisions are and how individuals naturally judge them is one way to approach the definition of rationality, and that has been the framework in this essay. Overall, the term rationality carries within itself possibilities for academic debates and different definitions, since it is not an absolute term, a physical constant, but dependent on so many assumptions. This relativity of the term rationality reveals the fallacy that one succumbs into when defining what it is – what is the point of defining something that in the end strongly depends on other assumptions?

The only sure thing in life is that nothing is sure. We are sure that human decision making takes place all the time all around us, but we are not sure about the rules that govern this action. We are sure that humans make choices, but we are not sure why some choices are more valued than others. The system that develops around the action hides its rules, and hinders our ability to see what *kind* of action and which choices would produce what kind of outcomes. There is no mathematical formula for optimal behaviour, since our minds are cognitively bounded to process such formulas. But, the human race still exists, and over thousands of years has done pretty well – there must be something in our minds that solve all the problems we face every day with our horribly bounded rationality! This essay has concentrated on approaching problems in the face of uncertainty and inherent dynamics of the system. Option analysis from investment science has been employed as an insightful method to appreciate the cognitively invisible alternatives that our mental models in place disable us to see.

One conclusion from exploring the options thinking method in everyday human decision making is that often traditional 'folk wisdom' is right. Just consider how old is the wisdom that the waiting-to-invest, or patience, option resembles. Patience is good, haste in front of uncertainty bad, just like our great grandfathers have taught us. This conclusion resembles a wider area of applicability that admitting of a behaviour-based intelligence that considers systems in a natural way gives. From the systems intelligence perspective, one can appreciate and even celebrate phenomena in human action that will otherwise go unnoticed.

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CHAPTER 18

Systems Thinking in Complex Responsive Processes and Systems Intelligence

Jukka Luoma

Systems Intelligence attempts to combine the holistic orientation of systems approaches to an appreciation of the everyday subtleties which continually mould the systems we are a part of. George H. Mead's theory of the emergence of individuals and social organizations holds that neither individuals nor organizations are stored anywhere but that both are continuously being formed by each other. The theory of Complex Responsive Processes, developed by Ralph D. Stacey and his associates, drawing from Mead's ideas, provides a process perspective on individuals and organizations as a challenge to the systemic perspective. The theory of complex responsive processes points to the incondensably complex nature of reality and, consequently, to the innate limitations of systemic descriptions. In this essay, some limitations of systemic conceptualizations are highlighted and the above theories are explored as a contribution to a systems approach which combines holistic thinking with intelligent participation in complex wholes.

Introduction

Systems Intelligence is a perspective on human action, on personal and organizational life, that combines engineering thinking with human sensitivity. Engineering thinking refers to a problem-solving-oriented mindset combined with an appreciation to the importance of the big picture. The human sensitivity perspective refers to the "tradition of sensing, experiencing and sharing the subtleties of one's environment" (Hämäläinen and Saarinen 2007, p. 6). The above perspectives combined, systems intelligence seeks for the positive systemic effects of taking subjective aspirations and emotions utterly seriously. (Saarinen and Hämäläinen 2004; Hämäläinen and Saarinen 2006)

The systems thinking movement and, in particular, the work of Senge (1990; Senge et al. 1994) has been influential to the development of systems intelligence. In general, systems thinking is an umbrella term for various approaches to acknowledge the complex and feedback-intensive nature of human issues. The rising of systems thinking dates back to mid 20th century including pioneers such as von Bertalanffy (1956) and Churchman (1968, 1979). Right from the early days of systems thinking, it has evolved in various traditions and has become a popular and diverse field, ranging from "hard" approaches, such as System Dynamics, see e.g. Forrester (1958) and Sterman (2000,

2002) to "soft" approaches such as Soft Systems Methodology, see e.g. Checkland (2000, 2001). The more recently emerged field of critical systems thinking aims to remain critical of hard *and* soft systems approaches and to appreciate the strength of each in a pluralistic manner, see e.g. Jackson (1991, 2003, 2007) and Midgley (1996, 2000). Peter Senge has introduced systems thinking to the general managerial audience with his book *The Fifth Discipline* (1990). A brief introduction to the development of systems thinking over the decades is provided in Barton et al. (2004). A more thorough review is provided in Midgley (2003).

An observation one readily makes about the vast systems thinking literature, and the related operational research literature, is that the field keeps undergoing rich theoretical and practical discourse, see e.g. recent viewpoints expressed in the *Journal of the Operational Research Society* (Mingers 2007, Morril 2007, Robinson 2007) and Ackoff's (2007) research note in the journal *Systems Research and Behavioral Science*. In some sense the systems intelligence approach is an attempt to incorporate systems ideas, already expressed in the literature, into environments we are a part of. It parallels with "soft" approaches in the sense that the word "system" is not seen merely as a description of the world but rather as a method of inquiry or as a conceptual appreciation of systemic effects. The tendency to conjoin multiple theoretical and methodological perspectives parallels with critical systems approaches. It is also possible to see systems intelligence as a perspective *on* systems thinking, since – according to the principal investigators – it considers systems *thinking* as secondary and the systemic *perspective* as fundamental (Hämäläinen and Saarinen 2006). The argument stems from the acknowledgement that our environment and actions within are systemic, regardless whether we take it into account or not. Thus, the goal is to incorporate the systemic perspective to the emergence of problems and their solutions, and not just to tackle issues perceived as problems with systems thinking. In this sense, systems intelligence has similarities with Midgley's (2000) practice of systemic intervention.

Systems intelligence "focuses on what people do right and could improve upon in systemic settings", as opposed to merely identifying and accordingly avoiding pitfalls.

In their recent article in the *SOL Reflections* journal, Hämäläinen and Saarinen (2006) argue that systems intelligence is more than systems thinking as the latter is traditionally understood. They claim that there easily is an "objectifying bias" in systems thinking and that systems intelligence attempts to avoid this. Another goal is the avoidance of being narrowed down to focus on systemic effects that produce negative outcomes. Systems intelligence "focuses on *what people do right and could improve upon in systemic settings*", as opposed to merely identifying and accordingly avoiding pitfalls (Hämäläinen and Saarinen 2006, p. 18).

Similar biases have been pointed by other authors too. The starting point for the theory of *complex responsive processes* of relating (Stacey et al. 2000, Stacey 2001, 2003a, 2003b, Griffin 2002) is somewhat similar to that of systems intelligence. The theory provides a process perspective on human action in general and organizational life in particular. The perspective is conceptually different from the systemic perspective since it does not consider individuals and organizations as systems but as self-organizing processes of relating.

In this essay, I will discuss the ideas of Stacey and his associates about systems thinking. I will also review Mead's (1934) theory of individuals and social organizations as it highlights the intimate interdependence of individuals and the emergent nature of social organizations, or social systems. In Mead's model, social organizations are perpetually constructed rather than being "out there" or in the participants' minds. The theory of complex responsive processes links Mead's theory with concepts related to contemporary organization theory. I will present the complex responsive processes perspective and its in connections with the systems intelligence perspective.

Both perspectives emphasize the importance of local micro-interactions and day-to-day activities in which individuals are *constantly* constructing their environment while the environment, at the same time, influences them.

Notes on Systems Thinking

Ralph D. Stacey and his colleagues (Stacey et al. 2000, Stacey 2000, 2001, 2003a, 2003b, Griffin 2002) see that there are two potentially problematic underlying assumptions in systems thinking.

(1) Individuals have a capability to choose their goals and actions by stepping outside a system they are a part of. In other words, an individual's behaviour is determined by her intentions that she chooses without the influence of others. Her thinking and behaviour is not constrained by her environment. Stacey (2001) refers to this causal framework as the "rationalist teleology".

(2) It is meaningful to discuss social institutions as systems where the systemic structures lie – or they are thought of "as if" they laid – "outside" the interaction they produce. In other words, an individual is a victim of her mental models which determine how she reacts to her environment. Stacey (2001) refers to this causal framework as the "formative teleology".

In terms of these assumptions, it is problematic to distinguish between subjects, which choose actions that shape the structures of a system, and objects, whose behaviour is governed by the structures of a system. The first assumption holds that individuals are free to choose whether they conform to systemic structures or if they change those structures. The latter assumption, on the other hand, holds that individuals are objects to the systems they are a part of – the structures determine how they behave. Thus, the above assumptions are in contradiction with each other. According to Stacey (2001), this conflict is relaxed in systems thinking by assuming that individuals are *both* subject to influence of a system *and* free from it. Stacey (2001) and Griffin (2002) refer to this as the "both…and" structure inherent in systems thinking in which the rationalist and formative cause are kept apart, although it is not clear how this distinction should be made or how the distinction is formed to begin with. In parallel, Midgley (2000), a researcher in systems thinking, refers to this problem as the subject/object dualism that, he claims, several systems thinking traditions fail to dodge.

Some proponents of systems thinking (e.g. Senge et al. 1994; Sterman 2002) see identification and/or modelling systemic structures as integral parts of systems thinking. These systemic structures are understood as if they produced the behaviour a system generates. Yet, the apparent behaviour of a system reflects only a fraction of the subjectively held aspirations, since most of individuals' aspirations do not show up in their apparent behaviours. No systemic description of a social system can capture the richness of subjective experience and thus fails to capture how change could emerge from within shifts in subjective experience. In systems intelligence, human systems are seen as generative frames within which subjects perceive their lives taking place. The word system refers to the context within which outcomes emerge. Generativity refers to the common subjective experience that systems seemingly having a life of their own, that is, subjects perceive systems to enable and constrain individual behaviours. In this sense, systems intelligence embraces what could be called a phenomenological view of the word system. According to Hämäläinen and Saarinen (2006) one of the key differences between many systems thinking traditions and systems intelligence is SI's "refusal to take the outsider's view". This "refusal" stems from the recognition that no process of identification can generate a comprehensive systemic description. Hämäläinen and Saarinen (2006) suggest that the systems intelligence approach attempts to avoid such narrowing "bias for cognitive rationality and external viewpoint". In their words,

> Systems thinking highlights a domain of objects it believes is neglected – systems. But systems remain objects nonetheless, entities to be identified and reflected from the outside. (Hämäläinen and Saarinen 2006, pp. 17–18)

Griffin (2002) sees that one of the strengths of Senge's five disciplines and, in particular, systems thinking, is that it provides a thinking tool by which one can make sense of what is happening around and to oneself. It emphasizes the fact that there is more to understanding organizational phenomena than autonomously chosen intentions and actions of individuals. But again, it is autonomous individuals who choose either to conform to the systemic structures or to "step outside" them for reflection from the outside. The potential trap of the externalist persists.

We often feel powerless in producing a lasting change. Human interaction expresses remarkable repetitivity, although it is problematic to point to any identifiable mechanisms that would force this. Systems, in this sense, *seemingly* have a life of their own. Systems thinking can be thought of as a method of inquiry which considers human interaction "as if" it was produced by systemic structures. In this sense, it is a tool for making sense of change and of obstacles to change. Similarly, Hämäläinen and Saarinen (2006) see the idea of a "system that rules" (formative cause) as a metaphor for the constraints that subjects (consciously or unconsciously) perceive to be posed on them. However, systems intelligence recognizes that identifying and modelling the "forces", which seem to be producing behaviour, sets the primary focus on what has emerged from human interaction. Such thinking, while helpful in understanding the underlying causes of observed events, runs the risk of losing sight of what is continually emerging from interaction, or what is continually being experienced. Furthermore, as it is important to understand what a system generates, it is equally important to understand what a system does not generate. Accordingly, systems intelligence attempts to recognize this by refocusing attention to the actual emergence of systems. The perspective emphasizes what systems *do not* generate and what they *could* generate to complement thinking about what systems currently do generate. What systems do not but could generate often reflect the cognitively non-transparent aspects of human systems, that systems intelligence considers essential.

Human beings manage to get things done rather intelligently, although the mess within which such intelligence manifests itself, does not seem to fit into any rational conceptualization.

A note about Stacey's and his colleagues' critique on systems thinking is in place. As Stacey (2001) also recognizes, systems thinking is not just one unified theory. It is rather an umbrella term for a variety "methods, tools, and principles, all looking at the interrelatedness of forces" (Senge et al. 1994, p. 89). Systems are "perceived whole[s] whose elements continually affect each other" (ibid., p. 90) where no "single right answer" (ibid., p. 91) to the question, what the system is, ever exists. C. West Churchman (1979), one of the pioneers of systems thinking, acknowledged that the reality of a system, in general, is neither "out there" nor is it solely in the mind of an individual pondering what the system is. They are rather contexts within which some outcomes are experienced and within which individuals strive to influence what those emerging outcomes are. Thus, the above critique is to be thought to concern only a narrow interpretation of systems thinking since no one theory of systems thinking exists[1]. One should also note the important work of Midgley (2000) who has discussed similar problems in systems thinking that Stacey and his associates have raised.

[1] For an extensive graphical illustration of streams of systemic thought, see http://www.edu365.cat/aulanet/comsoc/comentaris/Knowlege%20Network.pdf and http://www.iigss.net/gPICT.jpg (accessed 12 March 2007).

Stacey's and his colleagues' critique is relevant because it points to how the "systems language" is conceptually limited to discussing human interaction in terms of entities, systems' boundaries and so on. The language is limited in its capability to explain how entities and systems originally have emerged. Reality is far richer than any systemic description of it. It is to be noted that while systems, its "components" and their interconnections, are identified, action is already taking place. While we can, to some extent, inquire what a system seems to be, it is already continually being constructed. Churchman (1979, pp. 45–53), for example, emphasizes that striving for "greater and greater precision" of systemic descriptions helps only to some extent, because "what's really happening in the human world…is totally different from the rational approach…the reality cannot be conceptualized, approximated, or measured". It seems paradoxical, that human beings manage to get things done rather intelligently, although the mess, within which such intelligence manifests itself, does not seem to fit into any rational conceptualization. It seems that Stacey's and his colleagues critique on systems thinking stems from the recognition of the importance of paying attention to the direct experience within perceived wholes and not limiting oneself to merely observing and re-designing those wholes.

Who we are as individuals is not simply located in us, but also around us, in our relationships with others and in our experience of those relationships.

Mead on the Emergence of the "Individual" and the "Social"

George H. Mead[2] (1934), one of the pioneers of social psychology, described the human mind and social organizations in terms of symbolic interaction. The perspective of symbolic interaction discards the notion of mind and social organizations as entities to be identified. Instead, they are actions of the human *body* directed towards oneself and others. In abstract sense, the individual and social organizations emerge from the self-organizing processes of symbolic interaction. Individuals and social organizations are different aspects of on going processes of symbolic interaction and, consequently, systemic descriptions of social organizations may have a reality only in an abstract sense. For a more comprehensive explanation of Mead's theory, see for example Stacey (2001) or Griffin (2002).

Mead described symbolic interaction consisting of *gesturing* and *responding*. A gesture is a symbol in the sense that it points to a meaning which becomes apparent in the response that it calls forth. Together the gesture and its response constitute a social act and its meaning is "constructed" for both. Social acts are not in isolation of each other, since each gesture is a response to some previous gesture and so on. The gesture–response model describes communication as actions of human bodies, that is, facial expressions, postures, vocal gestures and so on. This is depicted in FIGURE 1.

[2] Mead's work is accessible online at http://spartan.ac.brocku.ca/~lward/Mead/ (accessed 19 March 2007).

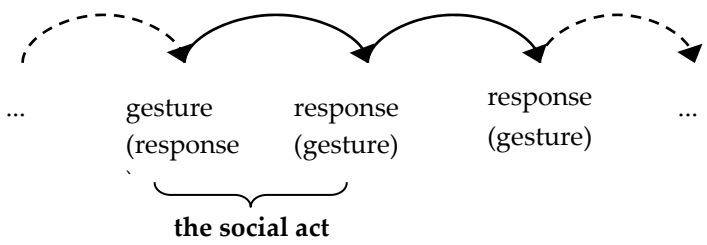

FIGURE 1. Social acts constitute a conversation of gestures.

The gesture–response model is different from the sender–receiver model, which Stacey (2001) describes to be the common abstract framework of describing social interaction. Systems thinking, according to him, embraces the sender–receiver model. In the sender–receiver model an individual translates an idea in one's head to some language and then transmits this message to the receiver who, in turn, decodes the message in her head to grasp what the sender was trying to send. The gesture–response model does not require translating anything. It does not make any assumptions about the "inner worlds" of individuals. In social interaction, a bodily gesture simply calls forth a response in the other. The gesture–response model thereby draws a messier and more subtle notion of individuals than the notion of individuals as "processors of information", implied by the sender–receiver model.

Mead's idea was that the human mind, or consciousness, is a process – actions of the human body – rather than an entity or a "thing". It is a process that is a part of and similar to social interaction. It leans on the idea that humans have a capability to call forth in one self a similar response as it does in the other. While making a gesture to another, the gesturer calls forth a similar response in oneself. This makes it possible for the individual to intuit something about the possible meaning of the social act. Mead referred to this as a "significant symbol". This ability is at the core of Mead's explanation of how humans "know" what they are doing. This "knowing" takes the form of experiencing similar feelings to those of the other. Of course, these evoked feelings may be milder or turn out dissimilar to those of the other and, therefore, "knowing" in social relationships always implies uncertainty. This is depicted in FIGURE 2.

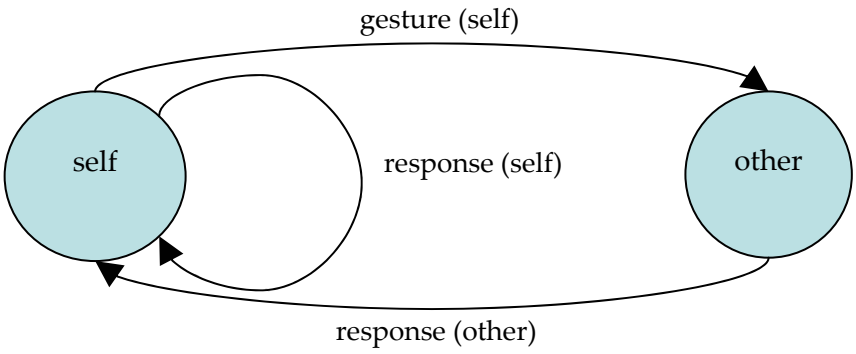

FIGURE 2. Calling a similar response in oneself as in the other.

Here, the human mind takes a form of conversation of gestures in which an individual makes gestures to oneself which call forth responses in oneself. Stacey (2001) and Griffin (2002) refer to this communication with oneself as "private role play", as opposed to "public interaction". This private role play is the basis of one taking an attitude of the other, i.e. another individual or of the generalized other, i.e. a group or an organization. By taking an attitude of the generalized other,

one becomes an object to oneself. Thus, the "self" is a social construct by definition. It emerges from social experience. Note how his explanation does not imply storing any mental contents in individual minds. It simply describes the mind as a continuous process of gesturing and responding where the individual is both the gesturer and the responder.

Systemic structures have reality only insofar they are expressed in local situations.

In the silent conversation of gestures, where one makes gestures that call forth responses in oneself, one is able to reflect on the behaviour of oneself by taking the attitude of the (generalized) other. One is able to form expectations of others' expectations of one's behaviour. Individual "communication strategies" then are formed by these expectations. They reflect past experience because conversations of gestures carried in one's own mind are affected by social experience. The attitude of the generalized other is not given, but evolves over time. It evolves because individuals respond to what they perceive to be the generalized other at a given context. This is formed by past experience and as an individual is engaged in social interaction, she – together with others – form each other's past experience that affects their private role play and, furthermore, future social experience. In this sense, the histories of groups, or organizations, and individuals are intimately intertwined.

Mead's explanation of the emergence of individuals and organizations is radically social. Individuals and social organizations form each other and the absence of the other would deny the existence of the other. This is not to say, that human beings would not exist without other's presence, but that the "individual" would take an entirely different form. The social forming of the individual is essential to the explanation of the emergence of complex cooperative endeavours. Complex, conscious cooperation is possible because individuals are able to abstract away from social experience to take the attitude of the other, take the attitude of the other taking the attitude of the other, and so on. It seems striking that our ability to *abstract away* in this way is closely related to our ability to *tune in* to others by calling forth similar responses in ourselves as in others, as depicted in FIGURE 2.

From the perspective of the gesture–response model, the mind is to be thought of as a process rather than some mental apparatus which determines how an individual adapts to her environment. Mead's explanation of the human mind describes the human mind and social interaction as similar processes which closely interrelate with each other. Such explanation is, in Stacey's (2000, p. 349) words, paradoxical

> …in that it is at the same time between individuals but experienced in their individual bodies. Mind is also paradoxical in another sense: it is formed by the social/the group at the same time as it is forming the social/the group.

Related to this paradoxical nature of the human mind, Mead (1934, p. 329) noted that "Anything that as a whole is more than the mere form of its parts has a nature that belongs to it that is not to be found in the elements out of which it is made." Systems thinking acknowledges that the way individuals behave as participants in a particular group is different from how they would behave if that group did not "exist". Or, in words often used in systems thinking literature, the behaviour of a system is more than sum of its parts. Mead's theory points further to an acknowledgement that it is not only that individuals constitute groups, but that groups mould individuals. Who we are as individuals is not simply located *in us*, but also *around us*, in our relationships with others and in our experience of those relationships. It is not only, that individuals are interdependent when it comes to making some long-reaching decisions. The interdependence that Mead suggests is much more intimate. Individuals both co-adapt and co-evolve, that is, they "construct" themselves, each other and their environment.

However, as Griffin (2002, p. 160) also makes a note of, this does not imply a "radical denial of the individual". While providing a social understanding of individuals, individuals are considered to remain responsible for their actions, since it is individuals who "have the freedom to choose their next acts" (ibid.). While social systems are perceived as being generative and "out there", these emergent behaviours are indeed expressed in local situations by individuals that have been formed by their social experience. It is this mutual influence between the individual and the social that we as individuals cannot escape.

The Complex Responsive Processes Perspective

Stacey and his colleagues (2000, Stacey 2000, 2001, 2003a, 2003b, Griffin 2002) use Mead's conceptual framework in making sense of phenomena emerging in organizational settings. They give rise to the problem of making a distinction between an individual and the social. They do not consider individuals as autonomous of their environment, that is, they cannot form goals and action plans without *at the same time* being influenced by their environment. Following Mead, the theory of complex responsive processes theory describes individual and organizational identities as self-organizing processes of relating expressing little variation. The theory discards the notion of a system and embraces a process view of individuals and organizations. In contrast to what they refer to as the rationalist and formative causes of human action they depict a causal framework to which they refer to as *transformative teleology*.

> Complex responsive processes of relating are temporal processes of interaction between human bodies in the medium of symbols [in Mead's sense] patterning themselves as themes in communicative action. These themes are continuously reproducing and potentially transforming themselves in the process of bodily interaction itself. (Griffin 2002, p. 169)

There is an ever-present lurking opportunity for the transformation of undesirable behavioral patterns for the better.

From the complex responsive processes perspective, transformation of communicative interaction is enabled by the past. Individuals express spontaneity which is constrained and enabled by their past experience. There exists no external cause for the reproduction or transformation of communicative interaction other than the bodily interaction itself. Change does not result from re-designing systemic structures or mental models but from novel responses of individuals. Individual and organizational identities are understood in terms of perpetually constructed themes of communicative interaction. Transformation of these identities are to be understood as transformation in the themes of communicative interaction, that is, private role playing and public interaction taking place in individuals' minds and between individuals. For other elaborations of the theory, see for example Stacey (2001, p. 172), Griffin (2002, pp. 168–174) or Stacey (2003b).

Insights from the Theory of Complex Responsive Processes

An important starting point for the complex responsive processes perspective is that by observing merely "the obvious" themes of communicative interaction one is not able to make sense of what is happening in an organization. Obvious themes are those that reflect the formal, conscious and legitimate aspects of organizational behaviour, e.g., proclaimed visions, strategies, plans, procedures, hierarchically defined roles of employees, and so on. On the one hand, these are not adequate for making sense of organizational behaviour, and on the other, while focusing on these themes one loses sight of how they emerge from non-transparent themes that reflect the informal and/or unconscious aspects of communicative interaction.

The complex responsive processes perspective acknowledges the *context-dependent* and *local* nature of human action. Human relating is context-dependent, because the way individuals perceive their environment affects how they respond to it. An individual's perception of an environment is affected by her past social experience. Yet, there is more to understanding how people behave than their personal characteristics. The perceived environment in which interaction takes place impacts how individuals see their roles within, that is how they perceive the generalized other, which affects how they respond to that environment. How individuals respond to their environment, in turn, affects how the environment is perceived. As contexts are formed in this way, they become unique. The complex responsive processes perspective considers this uniqueness to be essential.

Human interaction is inherently and inevitably local. This is because, values, ideologies and strategies, and so on, are not stored anywhere but perpetually constructed in the public interaction and silent conversations of individuals. In Griffin's (2002, p. 170) words

> Whatever the global themes one might want to articulate for an organization or a society, they have reality only insofar they are expressed in local situations in the living present.

Or, systemic *structures* have reality only insofar they are expressed in local situations. Thereby, leaders are not in control of their organizations in the traditional meaning of control. Surely they can draw visions, make plans and re-design organizational structures, but what happens then, that is how these plans come to realize in lower levels of the organization, is beyond their control. To an extent, they are beyond the reach of control systems, incentive mechanisms and formal contracts. The perspective emphasizes, that instead of making more plans and designing better systems and procedures in order to making things better, one should pay particular attention to the "specific, unique situations in which people are already creating and obstructing new meaning…" (Stacey 2001, p. 230) The perspective emphasizes this because what Stacey et al. (2000, p. 4) have found striking is

> …the complete lack of discussion of how they [managers] get things done day-by-day activity of organizing. If asked, they make few remarks about personal connections, unexpected encounters, bending rules and lobbying for support. However, they seem embarrassed about having "got things done" in this way, generally giving the impression that they do not really know how they "got things done"

The authors continue by questioning ways of managerial thinking, that they find common, as follows.

> Why do managers think they ought to be able to design control systems…so as to be in control of what happens in their organization? Just as important, why do they keep finding that they are not nearly as much "in control" as they believe they should be? Even more important, what then they are actually doing to "get things done, anyway"? Then why do they repeat the same search for improved procedures and systems every year, ignoring the failure to find them in any previous year? Why do they continue, each year, not to ask how they "got things, anyway"? (ibid.)

The novelty of the complex responsive processes perspective is in taking seriously the question, "how things get done, anyway?" It calls forth thinking and discussing about one's everyday actions and local interactions to complement planning and designing. It sees leadership as a process of *participation* as opposed to a leader as a *designer*, *teacher* or *steward*, as suggested by Senge (1990). It is about drawing attention to what Shotter (1993) refers to as the conversational "hurly burly", since it is this "hurly burly" that our lives essentially constitute of. This perspective is similar to that of systems intelligence's:

> For the mind-set of a "master of everyday", what works comes first; understanding why it works comes second. (Hämäläinen and Saarinen 2006, p. 19)

Hämäläinen and Saarinen continue,

> Such was our starting point. We were saying: Let's allow *the system working* to guide us; let's focus primarily on the actual emergence of a human system instead of focusing of our cognitive maps of that emergence. (ibid., their emphasis)

Both perspectives, in this way, take a step away from what both Stacey and his colleagues and Hämäläinen and Saarinen (2006) refer to as systems thinking. One particularly interesting move of the complex responsive processes perspective away from systems thinking, is its explanation of the emergence of constancy, or reproduction of behavioural patterns, and novelty, or transformation of behavioural patterns.

On the Emergence of Constancy and Novelty

In terms of systemic descriptions, constancy can be considered to result from relatively stable systemic structures that govern the system's behaviour. Change results from an individual designing and implementing an intervention that shapes these structures. In this sense, transformation of behavioural patterns is thought more fundamental than the reproduction of them. The complex responsive processes perspective, on the other hand, considers both reproduction and transformation as fundamental. They are both inherent properties of themes of communicative interaction. In Stacey's (2001, p. 135) words,

Organizational change is to be understood in similar terms to that how the organization came to "exist" in the first place.

> history has patterned the private role playing of each individual in particular ways that enact, that is selectively enable and constrain, what individual responds to both privatively and publicly. That history establishes what aspects of the gesturing of the other will be striking, will call forth, or evoke, a response and what kind of response it will evoke…And when they are not strangers, the history of their own personal relating to each other, and the histories of the groups they are a part of, also become relevant.

The history of individuals and groups is thus both enabling and constraining change of those individuals and groups. In similar, but systemic, terms,

> many of the core beliefs of the people around us do not show up in their actions. People have adjusted to *what they believe is the system* (Hämäläinen and Saarinen 2006, p. 21, their emphasis).

Both the complex responsive processes perspective and systems intelligence draw a far more optimistic picture of systems and their transformation than, for example, Senge (1990). Systems intelligence considers that systems may change due to a small but significant change in one's behaviour. An act symbolizing a glimpse of hope, for instance, might cause the latent beliefs of individuals to surface. Systems can change "dramatically, massively, and instantaneously" (Hämäläinen and Saarinen 2006, p. 21). It is the path-dependency of behavioural patterns, which both constrains and enables change, even massive change. From a systems thinking perspective, change looks like a lot of work. It requires "identifying" the current system, designing an intervention that changes the system and the implementing that intervention. Neither the complex responsive processes perspective nor systems intelligence denies that change can require a considerable amount of work. What both perspectives emphasize, however, is that change has

less to do with the identify-design-implement cycle and more to do with something more subtle. Indeed, systems intelligence emphasizes that things could, virtually all the time, be different in most situations. Or as Mead (1934, p. 215) wrote,

> As a man adjusts himself to a certain environment he becomes a different individual; but in becoming a different individual he has affected the community in which he lives. It may be a slight effect, but in so far as he has adjusted himself, the adjustments have changed the type of the environment to which he can respond and the world is accordingly a different world. There is always a mutual relationship of the individual and the community in which the individual lives.

Or as Griffin (2002, p. 158) put it,

> Change in societies, cultures and organizations will usually come about gradually: no one individual can reorganize the whole society, but each is continually affecting society by his/her own attitude because he/she does take up the attitude of the group and responds to it, and that response can change the attitude of the group.

It would seem that where undesirable behavioural patterns are reproduced over and over again, there is an ever-present lurking opportunity for the transformation of those behavioural patterns for the better. The "mechanism" for this type of change is a "by-product" of all human interaction. This reflects the concept of a "hidden potential" in social systems, highlighted by Saarinen and Hämäläinen (2004).

The Theory of Complex Responsive Processes and Systems Intelligence

What is intriguing about the complex responsive processes perspective is that while discarding the notion of individuals and social organizations as systems that have some pre-existing reality, it retains both the notion of an individual and social organizations which affect individuals. It does not consider one being superior to the other since each forms the other. Groups (or organizations) and their characteristics begin to form immediately as individuals enter the scene while, *at the same time*, the scene starts forming the individuals involved. Since organizational identities are formed by interaction of individuals, organizations do not exist outside that interaction. Organizational change is to be understood in similar terms to that how the organization came to "exist" in the first place. The perspective is in effect systemic in the sense that it recognizes the mutual and simultaneous influence of the processes of the mind and social interaction, although Stacey and his associates do not conceptualize their perspective as such. Indeed, they have recognized that the (responsive) processes in which individuals and social organizations come into "being" are systemic. The complex responsive processes perspective emphasizes, however, that neither individuals nor social organizations are to be thought as ever complete or moving towards a knowable future. Rather, both are constantly unfolding in an unpredictable manner as individual identities are "perpetually under construction" and social organizations are "continual processes of iteration" in which these wholes are perpetually constructing themselves (Stacey et al. 2000, p. 32).

Similarly, systems intelligence sees systems as constructs and thus relative to the point of view. Systems intelligence highlights the role of the strong dependence of the assumptions held by individuals of systems they are a part of. On the negative side, such characteristic of human systems can be seen to drive systems towards repetitive and undesirable behavioural patterns. These systems are perpetually evolving wholes which are only seemingly fixed, yet they potentially give rise to illusions of command and fixedness (Hämäläinen and Saarinen, 2006, 2007). But – on the positive side – the downwards-driving system cannot persist if individual

assumptions regarding the system do not persist. The potential pitfall of the systems thinking approach is in the risk of remaining captive of seemingly fixed aspects of human systems. Systems intelligence perspective aims to appreciate the leverage within this sensitivity-to-beliefs property of human systems.

Both perspectives aim to refocus attention from identifying and controlling systems to actively participating in them. Stacey and his colleagues are cautious in drawing any prescriptions from their perspective. In fact, Stacey (2000) stresses that he prefers to discuss the "implications" of the perspective rather than to talk about the "applications" or "prescriptions" of it. No wonder, because the perspective itself emphasizes the uniqueness of human relating and, consequently, the dangers of narrowing one's thinking down to simplistic universals and some grand picture of organizational life. Accordingly, Stacey (2000, p. 412) argues that the main implication of the complex responsive processes perspective is in its goal to refocus attention to what people in organizations "are already, and always have been, doing". The "whole" of interest should be one's own, direct experience of "relating and managing in relationship with others". Midgley (2000) sees a need for a similar, but systemic, perspective. In his practice of systemic intervention observation is not seen value-neutral and prior to but value-full and part of intervention. One cannot observe without being influenced by contexts that one is, or has been, a part of, thus making it impossible to be "value-neural". Furthermore, if one is to observe and experience a whole, one needs to be a part of such a whole, thus making observation a part of any intervention in a social context. Midgley's (ibid.) perspective emphasizes the importance of such systemic nature of intervention.

Systems intelligence perspective takes a similar standpoint. On the other hand, systems intelligence seeks to connect this perspective to an action-oriented and systemic perspective, which is the "engineering thinking" perspective. The perspective highlights solutions and opportunities rather than problems and potential pitfalls. According to Stacey (2000, p. 9), when "people focus their attention differently, they are highly likely to take different kinds of actions." While refocusing attention surely has impact on what actions individuals take, one might add that refocusing attention to actually taking different kinds of actions has even bigger impact on whether different actions eventually are taken. From this action-oriented point-of-view, systems intelligence attempts to go further from refocusing attention to how "things get done, anyway" to *striving* to "get things done, anyway". Furthermore, it is conceptually oriented towards unexpected surfacing of hidden potential rather than towards unwanted surprise.

Due to the fact that our lives take place in "messes" rather than clean and identifiable systems, there is a need for holistic thinking about these messes, or systems. Furthermore, due to the messy nature of human systems, what the system is can never be fully grasped. Yet, we must, and, indeed, we always have been, acting within these messes. What the complex responsive processes perspective and the systems intelligence perspective both point to, is that within such innate uncertainty, we can act intelligently, by focusing on what we already are, and always have been doing. Such form of intelligence is not merely implementation of intelligent interventions every now and then, but also intelligent participation in the environments we already are a part of. It is this intelligence-operating-from-within-a-mess that is of interest to systems intelligence.

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EPILOGUE

The Way Forward with Systems Intelligence

Raimo P. Hämäläinen and Esa Saarinen

Human instrumental reason and rational abilities are a power platform to control and to command, to direct and to regulate complex systemic wholes. Our human intellectual endowment and skills for converting ideas to productivity amount to a stunning success story.

That success story of instrumental reason, scientific method and of rationalism is however jeopardized by the cumulative effects they are creating for the world as a living organism. Instrumental reason has created techniques and technologies that are superbly efficient in increasing productivity, efficiency and well-being in separate segments of life. Taken together, they create a clear and present danger – a system of destruction – for living on planet earth.

The mindset of sustainably developing mankind will have features of Systems Thinking incorporated to its base.

Systems Thinking, as an outgrowth of the scientific orientation, objective modelling and rationalism, has in various forms made major contributions to what could be called the science of the wholes. Systems Thinking movement has developed powerful methods to represent and model the functioning of wholes and has provided instruments to conduct rational and scientifically sound analysis and discourse of such wholes. Philosophically, the movement has called for the necessity to develop the ethics of the whole and modes of being in the world that build on interdependency, relatedness and connectivity, as opposed to fragmentarism, separatism and isolationism. As Midgley (2003) observes in the introduction to the four-volume collection of key articles on Systems Thinking, "from the early days of systems thinking, its advocates have been concerned with *making a difference* in the world". Eager to make sense of complexity and hidden impact structures, Systems Thinking has searched mental models that would reach beyond the pitfalls of reductionism and linear cause-and-effect thinking. Whatever the details of the mindset of sustainably developing mankind, it will have features of Systems Thinking incorporated to its base.

Here Peter Senge's *The Fifth Discipline* (1990) is a breakthrough. Building on the systems dynamics (Forrester 1961 and subsequent works) but writing in a widely accessible, energizing mode with an emphasis on the "mental models" of individuals as well as their "personal mastery", Senge extended the scope of Systems Thinking to an unprecedented scale. With "the most popular book that has ever been written on systems thinking" (Jackson 2000, p. 147), Senge brought holism and

the theme of interdependency to the forefront of organizational concerns and to the focus of relatedness-intense applied thinking. Systems Thinking became a resonant force way beyond the borders of the scientifically oriented academic systems community. In subsequent works and also via the Society of Organizational Learning of which he is the founding chairperson, Senge has made a powerful plead for "collaborating for systemic change" in order to face the sustainability challenge (Senge et al. 2007).

While recognizing Systems Thinking as "the Fifth Discipline" (along with Mental Models, Personal Mastery, Team Learning and Shared Vision), necessary for "a learning organization" and consequently for the sustainable organization of living on earth, we feel Senge's insights could be pushed further still.

Our starting point, with Senge's work as a chief inspiration, started with the conviction that the human innate systems capabilities and endowments are far wider than had been recognized. It started to dwell on us that the whole of the Systems Thinking movement had operated with an unnecessarily narrow concept of the human systems *intelligence*.

Our systems endowment, the human systems intelligence we possess as human beings, was far more than ability to think about and know about systems, we felt. The systems endowment is not only about explicit, knowledge-like and propositional, symbol-intensive and analytic capabilities with systems, notwithstanding the merits of such a quintessentially human acumen. In addition to it, there is a systems endowment in us as part of our heideggerian "*being-in-the-world*" as "*acting-in-the-world*". To be human is to be systemic. The epistemic, rational, and objectifying dimensions of our cognitive acumen are only part of the human systems story.

To our knowledge the concept of *Systems Intelligence* – intelligence within systems as the context of a situated and unfolding life – is original with us.

Systems Intelligence, we suggested in 2004, is intelligent behaviour in the context of complex systems involving interaction and feedback. A subject acting with Systems Intelligence engages successfully and productively with the holistic feedback mechanisms of her environment. She perceives herself as part of a whole, the influence of the whole upon herself as well as her own influence upon the whole. By observing her own interdependence in the feedback intensive environment, she is able to act intelligently.

In this conceptualization, the focus that we believe is new is the emphasis of systems and action. We focus upon systems and action *at the same time*. Systems are considered as emerging and as taking place in a living presence. In a paradigmatic case, the systems that humans are intelligent in and with, are not "thing-like". Systems action is considered with respect to wholes while those wholes are still unfolding.

Thus the primary point is not to describe, explain or scientifically represent systems as they have already emerged. The idea is to approach systems as something *we live with* in a locality and context that is taking place in "the present moment" (Stern 2004) and on an axis of time that is unfolding.

Systems Intelligence is therefore more about intelligent action than about the intelligent explanation or modelling of such action. It is about the holistic and complex portfolio of sensitive, sentient and alertness-capable creatures that are able to operate here-and-now, rather than an account of their epistemically well-taken forms of world-relatedness vis-à-vis systems. It celebrates intelligence that gets it right in actual practical life by whatever ways it takes. It does not prioritize – much less idolize – the forms of intelligence the past 200 years of scientific and

industrial success has elicited to the status of the correct, adequate and "best" ways to think. Systems Intelligence celebrates human intelligence that is capable of demonstrating its worth in a living now. It does not dismiss pragmatic accomplishments and ingenuity of the everyday even if the emerging forms of success might seem strange, unexplainable, unpredictable or insignificant from the point of view of the accepted scientific paradigm.

Systems Intelligence is more about intelligent action than about the intelligent explanation of such action.

Clearly a mother is in some sense intelligent with her infant – with the baby as an idiosyncratic emerging system on the way to growth. Clearly strangers meeting demonstrate some intelligence if within a few seconds, a common ground is already established and constructed out of what seems like nothing. And clearly there is intelligence involved, if interaction with others is all you need in order to learn the enormously complex systems of a language.

Such intelligence as part of moment-to-moment human aliveness will connect with analytic and propositional knowledge where such is available. Some of the relevant systems are out there to be depicted, modelled, analysed and represented. Some others are not. Much of the time in actual practical life, objective propositional knowledge is either severely restricted or not available. Systems Intelligence reaches out to a productive interplay with systems irrespective of the epistemic status of those systems. This is because much of the time, life will not wait, and action will have to be instituted in spite of ignorance, unclarity, or lack of crucial facts. The specifics of the situation and uniqueness of the systemic set-up might render hitherto useful abstractions, algorithms, and principles useless. Struggling to make the best of whatever is available, the Systems Intelligent actor will rely on an interplay with the systems environment with her full human connectivity capabilities and relatedness-reservoirs. She is called to play her human hand and construct her actions in the presence of transient and fleeting, vaguely-defined and unnamed emergent systems. And the point is, it is such systems *with which we live most of our lives most of the time*.

It is good to know what a system is, preferably as identified in scientific and mathematically accurate terms. Many systems submit to such a treatment. Some do not. Some systems with which we conduct our lives are too transient, idiosyncratic and forward-coming to allow us the luxury of them being neatly conceptualized or perceived as objects. A system in the mode of becoming, contingent on what people might do next and on what the specific features of the given situation might turn out to be, there might be no telling exactly what the system is. And yet people can act intelligently with respect to and within such systems. This is Systems Intelligence.

The Context of Systems Intelligence Research

The Systems Intelligence approach links with several groundbreaking trends in the current multifaceted, multidisciplinary and increasingly intertwined research arena.

One research line highly relevant for us is emerging from "the unfolding story of 'the social brain'" (Brothers 1997) and the cognitive and neuroscientific investigation into the social aspects of the human mind (Lieberman 2007). What this research shows by solid scientific methods is that the human brain is more closely tuned to its environment and to other people than the Cartesian picture of an isolated mind and the philosophy of individualism have suggested.

The second line of research is one that is emerging from infant research and from what Daniel Stern (1985) calls "The interpersonal world of the infant". These investigations point to modes of

relatedness, connectivity, and mutuality that take place on a nonverbal, subsymbolic, and affective level. Bringing to the focus themes such as "mutual influence", "attunement", "the moment of meeting", and "the present moment" (Beebe et al. 2003; Daniel Stern 1985, 2004), the infant research sheds light on what we have approached from the Systems Intelligence perspective as the human "in-between". Particularly relevant and promising is the possibility to approach the nonverbal aspects of Systems Intelligence from this perspective. Emphasis on the nonverbal dimension marks a key point in Systems Intelligence approach and an extension beyond traditional Systems Thinking.

Closely related with this is the line of research on adult treatment and psychotherapy. Investigations into the patient/therapist relationship and its qualitative and processual features has brought forward a number of concepts of intersubjectivity that are relevant from our point of view – concepts such as "implicit relational knowing" (Lyons-Ruth et al. 1998), "resonance" (Knoblauch 2000), "moving and being moved" (La Barre 2001), "intersubjective consciousness" (Stern 2004). Particularly closely related is the work of Beatrice Beebe and collaborators on "dyadic systems view". Stressing that "the origin of mind is dyadic and dialogic and that, further, adult intersubjectivity is built on infant intersubjectivity", Beebe et al. point out that "Intersubjectivity has no single, coherent meaning either in psychoanalysis or in infant research." As a result, they "recommend adoption of the concept of *forms of intersubjectivity*" (Beebe et al. 2003, p. 746). It is research into such "forms of intersubjectivity" – drawing from both adult treatment and infant research – that promises to yield deeper understanding of notions such as "systems comprehension", "systems perception", "systems reading", "systems attunement", "feel for the system", and "systems instinct", which are all critical from the point of view of Systems Intelligence. Research into Systems Intelligence is going to gain insight from the studies of the interpersonal preverbal and implicit as well as the verbal and explicit aspects of the human relatedness to be conducted in infant research and therapy. At the same time, the Systems Intelligence perspective can contribute to both those domains through its strengthened systems perspective and the emphasis of action as taking place via systems.

Another related line of research focuses upon the implicit aspects of the human experience (Donnel Stern 1997; Daniel N. Stern 2004; Boston Change Process Study Group 2002; Beebe et al. 2003; Beebe and Lachmann 2002; Preston 2007). Research into "implicit knowing", "unformulated experience" and "embodied knowing" links also with the intersubjective dimensions of experience. Particularly relevant and groundbreaking is the "post-Cartesian psychoanalytic psychology" of Stolorow, Atwood, and Orange (2002 and other works). Their work on "contextualist sensibility" (Orange et al. 1997) and more generally on what they call the "intersubjective systems view", emerging from therapeutic background and concerns, hits very much to the core of what we approach as Systems Intelligence. All this points to the finely-tuned aspects of the human interrelatedness and to the crucial question as to "how relationships interact to shape who we are" (Siegel 1999). Comprehending the interplay and living within influence-generating systems together with their contextualist underpinnings is vital for the understanding of Systems Intelligence.

In addition to these five different research traditions relevant for Systems Intelligence, the sixth explores themes such as "alertness", "sensemaking", "improvisation" (Weick 1995, 1998, 2006; Schwandt 2005; Maitlis and Lawrence 2007) and "mindfulness" (Langer 1989, 1995; Langer and Moldoveanu 2000). This research calls attention to modes of staying tuned to a changing situation in its context-bound and transient specifics. Systems Intelligence, in its emphasis on the present moment, on action and on opportunities often takes the form of alertness and improvisation making use of the human sensemaking and mindfulness capabilities. The Systems Intelligence perspective welcomes the insights of the sensemaking school on "a central theme in both

organizing and sensemaking" regarding how "people organize to make sense of equivocal inputs and enact this sense back into the world to make that world more orderly" (Weick et al. 2005, p. 410). Likewise, we welcome the emphasis of the mindfulness approach on "sensitivity to the novel and, therefore, unexpected (i.e. nonalgorithmic)" considered to be "one of the key components of mindfulness" (Langer and Moldoveanu 2000, p. 4).

For the seventh, the burgeoning interest in the "microfoundations" of the human condition is highly relevant from the point of Systems Intelligence. The relevant research here includes the work of Randall Collins (2004) with his account of "emotional energy" as the key concept of social phenomena and of "interaction ritual chains" as well as the research by Marcial Losada and his associates on the microbehavioural aspects of peak performing teams (Losada 1999; Losada and Heaphy 2004; Fredrickson and Losada 2005). Furthermore, and very much to the core of some of the thematizations of Systems Intelligence, the groundbreaking work of John Gottman on marital relationship success is of primary importance (Gottman 1993, 1999; Gottman et al. 2002; Gottman et al. 2006). With its emphasis on human possibilities and upon the idea of creating much with little, Systems Intelligence links closely with these studies on the microfoundations of the human condition.

Eight, the enormously important emerging field of "positive psychology" (Seligman and Csikszentmihalyi 2000; Snyder and Lopez 2002, 2007; Lyubomirsky et al. 2005) and "positive organizational scholarship" (Cameron et al. 2003) and more generally what could be called the science of the positive, is the natural context for Systems Intelligence. Likewise, the multidisciplinary field of "action research" (Reason and Bradbury 2001), together with its emphasis on "participative inquiry and practice" presents major openings for and parallels with the Systems Intelligence perspective.

Systems Intelligence can also be a property of a group of people or an organization. Such an application for the concept is indeed in growing demand in the highly interconnected and interdependent global society. Here fruitful openings are provided by the work on "collective intelligence". Reflecting breakthroughs on the internet and the modes of acting natural in that collective arena, research on collective intelligence has recently gained momentum. Several different definitions of collective intelligence have been proposed in this diverse and stimulating field of research. For an example of early thoughts on the concept see Lévy (1997). More recent efforts include "the Handbook of Collective Intelligence"[1] which is a web-site hosted by the MIT Center for Collective Intelligence[2]. We see systems intelligence to be a critical basic element in a collectively intelligent body or organization. We look forward to research on systems intelligent organizations. Work on the diverse forms of collective and other network-based interconnected modes of intelligence is likely to provide major steps forward in our understanding of the systems intelligent endowment of us as human subjects and as interconnected agents.

Dialogue, conflict resolution, negotiation, and facilitation research are yet other fields that link closely with the Systems Intelligence approach (Moffitt and Bordone 2005; Isaacs 1999; Schuman 2005; Slotte 2006). Like coaching and pedagogy, pragmatically motivated areas of relatedness-in-action provide a natural field of application for the Systems Intelligence perspective.

Yet the key concept for us is that of a system. An outgrowth of the Systems Thinking movement, the holistic emphasis is one of the driving forces of Systems Intelligence. Systems Intelligence

[1] http://www.eu.socialtext.net/mit-cci-hci/ (accessed 4 June 2007).

[2] http://cci.mit.edu/ (accessed 4 June 2007).

joins forces with the call for "Creative Holism" which Michael C. Jackson brought forcefully to focus with his recent authoritative book on Systems Thinking (Jackson 2003). The Systems Intelligence approach is a creative, holistic, and integrative enterprise with strong constructivistic (Berger and Luckmann 1966; Gergen 1999; Shotter 1993) and vitalistic, "feeling-in-touch-with-life" overtones (Alexander 2002 and subsequent works).

From Representing Systems to Living with Them

The Systems Intelligence approach is not a substitute of Systems Thinking but an amendment to it.

There is nothing wrong with developing formally sound, mathematically expressed systems representations. Indeed, such representations are desperately needed for the benefit of sustainability studies among others. And yet *more* is needed. When all the systems diagrams for the world's food-chains, environmental impact-chains and climate-effecting causal loops are there for all to ponder, there will be the question – *what are we to do?* This question Systems Intelligence does not want to lose sight of. It concerns itself with intelligent human action within complex environments with an emergent nature and in the presence of uncertainty.

We find the concept of a "system" to be highly intuitive. It is a chief asset. The communicative possibilities of the key word have not been made full use of, however, as indeed pointed out by Russell L. Ackoff recently in his outspoken article entitled "Why Few Organizations Adopt Systems Thinking" (2006). We believe the error in the systems movement Ackoff highlights reflects an undue bias that the Systems Intelligence approach seeks to counterbalance. The undue bias stems from the fact that paradigmatically the Systems Thinking movement has approached systems from the primary perspective of objectivistic scientific discourse and as objects of study – as opposed to part of the human experience and the human condition.

Stephen Toulmin, in *Cosmopolis* (1990) and *Return to Reason* (2001), has analyzed powerfully the dominance of "formal rationalism" as part of the outlook of the modern. The domain of human reason, and of human intellect, is wider than that of "formal rationalism", Toulmin however argues. We endorse this view, and point out to key aspects of Systems Intelligence that call for human sensibilities, capabilities to act through inarticulate implicit knowing, adaptability-on-the-fly, opportunity-mindfulness, attunement to others' aspirations, and improvisation skills. The emphasis is upon the features of the human endowment that constitute our abilities to act within systemic wholes in an intelligent manner even when the systems are not adequately graspable with the instruments of formal rationalism and when the subject/system interface might involve nonalgorithmic features.

In the human world, wherever there is a system, there is the possibility to do something about that system.

A system is a whole with a structure and with relationships that connect parts of that whole with other parts, often giving rise to properties not reducible to those of the parts. There is a generative, productive, even coercive dimension to a system, typically seemingly at the expense of individual parts within the system. Yet subjects often do have a say – if they are human.

In the human world, wherever there is a system, there is the possibility to do something about that system. Maybe you can re-interpret the system, maybe you can help to reconstruct the system, maybe you can introduce a surprise opening and bring about a slight variation that plants a seed. Maybe that intervention, seemingly small and inconsequential, still happens to open the

door, hits the right button not only in yourself but perhaps in a number of others who secretly share your dream of a jump forward. You implement a small change and maybe you shake the system. Maybe a butterfly effect is on the way within the walls of an established order.

Consider the collapse of the Soviet Union. "None of us predicted these events, and all of us could explain why they were inevitable" (as Timothy Garton Ash in his 1997 Tanner lectures quotes an American scholar as saying). Systems Intelligence wants to be there when something happens, as opposed to joining the rationalizing concept-artists that afterwards come to analyze whatever is left.

One reason for our enthusiasm for the Systems Intelligence concept is due to the leaning-forward aspect that is part and parcel of it. Instead of getting taken aback because of uncertainty, instead of becoming mesmerized when facing the complexities of a system, the call of Systems Intelligence is a soft but confident battle-cry for action.

That call for action comes with the optimism of a subject who believes she can improve her actions on the fly, think on her feet, and adjust her reactions creatively to whatever might turn up. The system might be dense and perhaps impenetrable in epistemic terms. It might be on its way towards me from the future with all the uncertainties and transient idiosyncrasies that necessarily accompany the next moment. But I might still feel confident to act with the system *no matter what it turns out to be*. The system might now be unfolding as a complex web of interplaying forces with twists and turns nobody can predict. And still I might act, and act intelligently. I might still manage to find a fit with the system there and then, resonate with it, tune in to it, sense it, I might have a feel for it as it is emerging. I might succeed in igniting a wave of similar optimism and attunement in others who in turn might mirror back emotional energy to encourage me further. We might share a significant moment together, we might find a sudden opening to a higher level of acting and being, get uplifted together and mutually inspire one another to resonate and achieve a magnificent common good.

Such is the space of action for a Systems Intelligent agent, with key words shining through – words such as agency, choice, mutual influence, emergence, future, the living presence, the human in-between, resonance, inspiration, improvisation, creativity-on-the-spot, unpredictability, situation, connectedness, interconnectivity, unfolding whole, social construction, symbols, intervention, change, process, aliveness, spiral upward, local conditions, experience, mindfulness, details, hope, affects, subjectivity, effects.

Quite clearly, behind Systems Intelligence, there is faith in life that point beyond what brute facts alone will depict. There is "flexible optimism" in the sense of Martin Seligman (1990). Indeed, we believe faith in life in that sense is part of the human constitution, just like we believe Systems Intelligence is part of our human endowment as an urge to act with regard to a whole even in the presence of epistemic ignorance regarding that whole.

The Way Forward

There are two chief motivations for our emphasis on Systems Intelligence.

One is that we believe the world will be a better place if more people become mindful of their systemic endowment and start to make more use of what they've got. Indeed we believe more holistically and context-relevantly oriented actions are desperately called for from the point of view of our immediate everyday lives as well as from the point of view of the collective life of mankind in the face of challenges of sustainable development.

Secondly, we believe an adequate intellectual account of the human condition will have to cope with the phenomena of intelligence-as-part-of-our-actions as those actions emerge in the present mode. That will call for investigations of a kind largely neglected by the mainstream of the academia. In spite of promising openings in fields such as those indicated above, *the present moment as the arena of action and shared experience* remains unduly disregarded and neglected intellectually. The Systems Intelligence approach wishes to contribute to the energizing of that vital field of study.

Our efforts on Systems Intelligence at Helsinki University of Technology in the past five years have stemmed from certain unorthodox ideas as to how to conduct a productive higher educational project on a new thematic. One inspiration has been "an open code methodology and pedagogy", suggested by the stunningly successful and systems intelligent project that Linus Torvalds initiated and facilitated and which resulted in the emergence of Linux, the new operating system for computers (Torvalds and Diamond 2001; Raymond 1999).

Thus we have invited and keep on inviting researchers and students with diverse backgrounds to come and explore Systems Intelligence from their own point of view of their own, disciplinary background and experience. Nobody is imposing a One Truth authoritative interpretation and a disciplinary matrix concerning what Systems Intelligence "really" is. There is no secret source code in Systems Intelligence investigations. The concept is sufficiently intuitive, we think, to lead intelligent people to the right direction even in the absence of an externally-imposed disciplinary structure.

In the current volume this approach is demonstrated by a number of writings that from a variety of perspectives approach Systems Intelligence and Systems Intelligent Leadership. We hope the articles will prove inspiring and suggestive for readers and researchers interested to stimulate their thinking and in bringing about more fitting, productive, sustainable, and uplifting actions in the contexts of their practical lives.

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SUBJECT INDEX

LEADERSHIP is a practical art, a complex applicative craft of the facilitation of forward-coming processes that unfold. It is skilfulness of dealing with wholes on the move, and amount to abilities of an individual at the pressures of the living now moment to bring about desired changes even in the presence of relative ignorance.

Our starting point is the conviction that there is holistic, systemic ingenuity to human action and to human leadership action that should be met head-on. This calls for the description, analysis, and conceptualization of actual practices in a mode that takes for granted the intelligence of those practices even when that intelligence cannot be approached with conventional methods or in terms of explicit knowledge or strict objective rationalism. The Systems Intelligence perspective wants to bring back the human element of leadership – categories such as choice, subjectivity, experience and shared experience, instinct, sensitivity, inspiration, emotional energy and association, without dismissing the more traditional categories of control and prediction, analysis and calculation, and objectivity.

We believe this book is a valuable source of insight for practitioners of leadership whether they are managers, business executives, public sector change agents or organization directors, educators, teachers, supervisors, team builders, parents, future-builders or commissioners of power positions large or small, in macro or micro context. Leadership is about people and it is about influence. It is about the future, it is about bringing about change with the resonance of a system. With a deepening self-understanding and alertness to her special condition and pragmatic skilfulness – her Systems Intelligence – the leader will be in a position to do even better something that is already doing well.

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