From Manufacture to Mindfacture

A Relational Viable Systems Theory

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From Manufacture to Mindfacture:

A Relational Viable Systems Theory

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Chapter 9

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Foreword

This is a book for those who think about business in order to design business and then to do business. This Think-Design-Do and then think again cycle is neglected in most organizational theory and practice. We all surely sense both that the old frameworks and assumptions of industrial capitalism just do not work in terms of creating value. We also have notions of the direction businesses must take: moving away from hierarchies, focusing on relationships, building intellectual capital, and moving to networked ecomplexes of partnerships. We recognize that the customer determines value in a growing space of choices, many of them enabled, driven, or even created by the Internet. It's apparent that effective growth rests on harnessing information and knowledge.

Our problem, as a society, as an economy, and in our organizations that can mobilize for thriving in a time in which "change" increasingly is seen as threat and loss, is illustrated by the above paragraph. It points to why *From Manufacture to Mindfacture: A Relational Viable Systems Theory* is needed and makes a distinctive contribution to thinking, designing, and doing. The paragraph is blather. It says absolutely nothing, but uses the right words to say it.

Take any one of the key words and answer the simple question "What exactly is this?" as applied to knowledge, value, information, relationships, customer, or capital. Decision makers, executives, policymakers, their advisers, investors, theorists, and practitioners everywhere are trying sincerely and skillfully to apply answers that in almost every instance are reification, trivialization, repackaging, and well, just words. Similarly, consider the core term for the direction that business navigators see as the new "true North": knowledge. What is it? Well, it's facts. No it's not. Tacit learning? No. It's what Google does, isn't it? It's our human capital? The Internet? Big Data? Collaboration? OK, let's go back and reread *Who Moved My Cheese* and *Built to Last*. We don't have time to debate this stuff. We want to go Blue Ocean and get customer-centric.

It's pretty alarming that *Who Moved My Cheese* and its ilk are bestsellers. They are easy to read and offer quick answers, so we don't have to think much. Plus, we don't even have to pose the tough questions like "What is knowledge?" Whatever it is, we can't even define this key asset and capital so that it can be included in basic financial documents, including the balance sheet, and measured in planning and decision making. As for value, the very purpose of an enterprise and increasingly the suffix to strategic priorities (customer value, economic value added, and shareholder value most especially), the concepts, measures, and their applications and impacts just don't make sense. The established financial metrics of ROI, "earnings," distort the gap between the accounting value of a business and its tenability and sustainability. They don't incorporate *any* of the new dynamics of growth: knowledge, information, innovation, customer relationships, and most of all, value.

From Manufacture to Mindfacture: A Relational Viable Systems Theory is way above the have model/methodology/ theory/cheese-tray level of discussion. But it's far more practical. It is focused on design. It starts with tough thinking: tough in the sense of digging deep into the questions. This offers a rich a resonant investigation that fuses systems thinking in its widest sense: philosophy, management, and history. It centers on the fundamental nature of human exchanges that we loosely call relationships and introduces some powerful formulations of organizations as built up through creation of meanings, of interpretations that create "realities," and of ourselves as observers, not just actors. We shape the relational networks we are part of; they are not things or structures or business models. They are a dynamic interplay of many forces that we must be observers of, not just reactors to.

Effective design requires liberating ourselves from the inherited interpretations, either/or dualities, and invalid or misleading measures of value that are increasingly acknowledged as an outmoded form of capitalism. In that way, we can make the distinctions we sense about knowledge, value, customer, and so on as enablers of the designs for the new style of organization we must create to be forward-moving, not resigned or ineffective tinkerers trying to keep the old ship afloat on a new ocean and shifting climate.

This stated simply is to take things back to blather; it is very, very hard to find the words that embody the ideas and meanings we need for effective use of organizations to create value. This book moves ideas forward to design and action by rigorously engaging the reader in a grounded investigation. Some of the language it uses is unfamiliar to well-educated and thoughtful decision makers, an indication

less of its being academic or abstract than of a disconnect between the many disciplines that are directly relevant to organizations and organizing and the "applied" fields of management, cognitive sciences, and financial engineering. Terms like *autopoeisis*, *heterarchy*, *relational exchange*, *semiosis*, and *co-autonomy* are not used in *From Manufacture to Mindfacture: A Relational Viable Systems Theory* as jargon or "terms" but as part of a discourse where new understandings reveal and call into being new designs.

The practicality of the book needs to be emphasized. It is intellectual, scholarly, analytic, theory-rich, and epistemological. It's easy to view this style of work as interesting or abstract. What on earth does Cartesian duality have to do with our company? Oh, if you only knew . . . . Lurking in the background of just about every aspect of human interaction is some largely unanswered question from philosophy. The field has addressed the same issues for two thousand years; that's because they really matter. They get different answers at different times that are all hard to understand. That's because they are very tough questions. In practice, not theory, for example, the dualism postulated in the 17th century by René Descartes shows up in just about every area of "management." It has shaped many of the basic ways Western society sees the world, where "world" comes tightly assumed and predetermined and doesn't quite seem accurate anymore. Why? It's difficult to explain. So read this book.

A final comment in this Foreword is a personal one. I have worked with Kenneth Massey for 30 years. He has an outstanding record in all the links in the business Think/Design/Do chain. Several of the innovations he created during his work as Director of CEMEX's business process center, which are described in the book, have been heralded in works by many leading management scholars. The ideas really do work. His colleague, Leonardo Lavanderos, has a rich background in research and practice. Together, they are highly respected in their understanding, development, and application of a systems perspective that derives via the great Hans von Foerster, who worked as partner and often leader with the figures who shaped the new disciplines of cybernetics, biology, neurolinguistics, and artificial intelligence.

The two authors live and work in Chile, which has been the nursery for some of the truly great thinkers of the past 40 years. Francisco Varela and Humberto Maturana are not names familiar in intellectual discourse relevant to organizations. They should be. Their concepts of autopoeisis and the nature of cognitive feedback mechanisms in living organisms has been foundational to neurobiology. Such think-

ers perfuse the style and content of this book. It is bold, complex, and demanding for its readers. It doesn't finesse the tough questions by simplistic answers, and it doesn't evade the tough answers by neglecting the questions. It gives back what you put into it: thought, insight, depth of analysis, and imagination.

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August 2014

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Preface

RELATIONAL NETWORKS

Claiming that the world has changed today is redundant. The feeling of change is something we experience every day in different forms and domains. This ongoing change that comes aboard to accelerate our decision making still is as evident as we might expect in the creation of wealth in organizations. We refer to wealth creation in the sense of intangibles, specifically when we call *knowledge* to the fore as a basis for explaining the production of wealth.

Adam Smith was the first to present a systemic view of how wealth historically has been produced, summarized as the difference between economic value produced by hand labor less economic value paid. Capital, as such, becomes important in the industrial age in which production lines become mechanized and specialized machines acquired (assets). Although managed by skilled laborers, the machines are still viewed as providing the most value, since they are seen as *asset investments*, while skilled laborers continue to be seen as a cost—an accounting *liability*—opening the space for so-called "scientific management."

Management Accounting attempts to account for how value is created but gets lost in human coordination and diverse intangibles, including knowledge, skills, and competencies, while aptitudes play greater roles in the creation of wealth. The word *capital* then begins to shift meaning, referring not only to financial instruments but to individual and group capabilities. The fact that these capabilities are being referred to as *intellectual capital* demonstrates the degree to which enterprise thinking continues to confuse *hands* with *minds*. Most companies insist that their "knowledge workers" sign over to their employers all rights to their intellectual property at the same time as Googles, Apples, and Microsofts spring seemingly out of nowhere to challenge their existence as they just can't seem to "get" what it is that is going on. But then again, accounting has no way to make visible to managers and business owners the cost of opportunities lost to their own cognitive blindness, especially around intellectual capital. So, today, we run into visions of one kind or another aimed at re-organizing organizations around knowledge, often under the contradic-

tory banner of that term. Somewhere in this discourse, the properties of creativity, flexibility, and so many others continue to be reified as "capital" and humanity gets lost again in the world of work: a naive trap, especially for this day and age.

We urgently need relational epistemological bases as a way to explain the changes that have occurred over the last decades, most of them with a damaging effect on human structures, particularly in those organizations that are wont to succumb to the generation of wealth every time they have to take possession of something as spirit-like as knowledge. We assert, and will develop the theme in this book, that the widespread disease in the 21st century organizations is *schizodemia*, already insinuated by von Foerster at an earlier date. The ability to change means the deconstruction of hierarchies (as already outdated and inaccurate forms in the domain of operations) and replacing them with plastic and flexible forms such as heterarchies. When it comes to process improvement, heterarchies are, from our perspective, the right kind of structures. This has been a strong trend since the '90s, showing up in concepts such as process reengineering, total quality management, team-based organization, and time-based competencies, among others. We could summarize each of these ideas aimed at improving a particular type of process; however, given the assumptions from which they operate, the result is often an optimization of short value chains, underestimating the process as a whole.

It should be kept in mind that these "process focused" tools and methodologies usually found their way into hierarchical organizations at a moment in which product quality was still a major differentiator and production and operations managers could see the advantages in visualizing their areas as a whole, at least for the sake of the processes for which they were directly responsible. These efforts, consequently, optimized only certain processes—often short chain—and ignored larger ones, especially *business processes*, which integrate a large number of other processes. The improvements often targeted limited stakeholder concerns, assumed or explicit, or, in many cases, organizational or structural priorities handed down from planning exercises, or assumed through the inherited common sense about the factors underlying functional or operational success. These are changes at the level of the message (variations) but not at the level of the code (transformations).

The notion that emerges from these distinctions is based on the relationship function/process, which has generated a disjointed and reductionist way of looking at the constitutive process or processes. One effect of the above is the generation of communication gaps among the operating units involved in the work. It shows up in the day-to-day that people who work in one part of the organization know little about what goes on in other parts of the organization, or really don't care as long they do what they are paid to do. In short, the overall process is affected from beginning to end by the generation of a high level of variability throughout.

Another mistaken notion that has permeated the engineering approach to processes reflects the failure to distinguish between material, information, and business processes. Information processes are composed of bits and bytes. They enter into sub-processes as *inputs* where they are modified in some way, bits and bytes added, subtracted, or re-arranged: turned into *outputs*, which, in turn, are inputs for other sub-processes or processes. The same happens with material processes, except that the inputs are raw materials to which value is added as inputs are converted into outputs and moved along through the value chain. Business processes, however, are of a different breed. They consist in networks of semiosis (promises and commitments) among internal and external stakeholders to take action or make decisions in specific timeframes to eliminate agreed upon concerns. Most organization processes are of this type and material and information processes that do not operate in alignment with this context produce high levels of variability and waste.

A change of approach involves looking at the organization as a network of relationships that are synchronized to view the business as a process. If an organization is understood as a set of relational networks, its viability shows up by decreasing matter/energy variability, a by-product of the quality in which the processes are managed that constitute the business as such. This involves taking into account the axes of organizational tenability and sustainability.

From our perspective, we define processes as a coordinated and configured *Relational Dynamic*: in other words, relationships, established among the people in the network, are coordinated in such a way that they create a form that is interchangeable with other networks. Given the above definition, the *Strategic Intelligence Process* (SIP) aims to anticipate the production of singularities within the overall process. Singularities are gaps or breaks in the communication that turn into the presence or absence of those elements with the capacity to produce loss of speed, flexibility, integration, and innovation in the overall process. Therefore, SIP has as its objective to establish—through simulations of scenarios—the where and the when these kinds of events can be produced so as to introduce corrective practices into relational networks.

Designing organizational sustainability strategies means assessing the relational *coherence* and *congruence* in decision-making processes in order to reduce the variability of the overall process, which directly impacts production costs and increases productivity. The magnitude of the impact can be surprising. When the concept of six degrees of separation began to be looked at seriously, the general public was astounded that two unknown persons situated in different parts of the globe are only six steps away from each other if we see the globe as a network. In a business, even a large one, the degrees of separation are much fewer. When these contact points are networked so as to produce coherence and congruence, a huge amount of invisible waste is removed, wastes that are invisible until removed, their

presence appreciated by their absence. The cost of these wastes impacts directly the bottom line, so their removal can often double or triple net profits.

This text comes as a need to make explicit some concepts and tools we have been using for a number of years in the context of bringing about changes in the structures and processes that support the organization of organizations, assuming many of the epistemological questions proper to the theoretical framework in which we have placed ourselves; nonetheless, as we move forward, many other related conceptual possibilities will become clearer. It is important to understand that this book exhibits an approach to work more than the development of the theory focused on relationships—with all its scope and meanings—because we understand that addressing these concepts merits a text all of its own.

In our content, we have made a distinction between *tenability* and *sustainability*. Some themes, however, involve both concepts, but we prefer to go on using each of them according to the aspects that are being dealt with. Thus, our approach is referenced primarily to what we mean by systemic relational feasibility and the smallest unit of knowledge-organization relationship. On this basis, we will define the concepts associated with processes, especially their aesthetic forms, and analyze the object-based organizational perspectives and their relational counterpart. We will narrate the application of this vision in the here-and-now and the impact that it has brought about in organizations when hierarchies and the *market* begin to dissolve as an explanatory principle, and begin to lose their legitimacy as the sole tautology for generating, as far as creativity is concerned. This is almost certainly the end of industrial Capitalism and the advent of a new economy, and the task for our reader will be to assess whether we are facing a new paradigm of management and organizational design or a newer version of the multiple disjunctions around the knowledge-organization unit.

Today, there is a lot of chatter about the mutation of *industrial* capitalism to *cognitive* capitalism; this is a new form of appropriation and concentration of wealth. The question immediately arises: is something really mutating or will this be just another way to appropriate creativity, as has always happened, although no longer possible to disguise it in light of current forms and styles of thinking?

Knowledge theft (i.e., not paying for it) is not new—ask Tesla—since the paradox that produces the relationship knowledge-value-price has always been self-regulated in the process of capital accumulation. We will show how human contribution to the creation of wealth, whether hands or know-how, has been reified and associated with transactional exchange, first salt (salary) then coins (maybe bitcoins someday). The problem today is that when the wealth investment takes place—this understood as the explicit productive expression of the process of knowing—the relationships within the capitalist system cannot be sustainable since an asymmetric appropriation of the *cognitive* force production is not possible. This is one of the

fundamental problems today in organizations, since the generation of wealth implies a dissociation in the knowledge-value ratio so that the value in use and value, of which merchandise is made, lack meaning for the common man. So purchasing a watch on the street, produced by children somewhere in the world, at a ridiculous price, carries no implications for the purchaser since it allows him or her to join the network of legitimacy. It's not even a ticket for a neoclassical journey.

Our focus does not deal with organizations only as forms, but sounds a warning for the Machiavellian game around organizational production and design within the current global-economic context. Taking this into account, we try to avoid the need for the reader to be a specialist, but have not found a way to avoid that the language employed be of a trans-disciplinary type. We hope that some chapters open up possibilities for decision makers to build bridges and allow them to generate other bridges from the viewpoints of sociology, or to understand the secret of value, getting closer to Cognitive Sciences, and forging an inventive path such as we have done from a number of unexpected domains.

FROM PIECEWORK TO RENSWORK

The final decades of the 20th century have disclosed a forking of the paths in what previously seemed to be a cognitively grounded trail; this process of bifurcation has been christened *change*. This change in path traverses multiple fields of knowledge, epistemology, even aesthetics, and challenges the traditional discourse of organizational decision-making.

As different voices make reference to change, a set of questions arises: Where do these distinctions come from in the first place? Are they emerging as the expression of a process of shared *semiosis*? Has there somehow been a change in those delicate norms bred in the bones of the shadowy hierarchies of the past that contrived somehow to create a sense of certainty about the world in its conceptual and axiological forms of organization? Are the old tautologies still able to command obedience to hoist the shields of objectivity?

This suspicious "fork in the path," in which sensitive markings have been erased, displays a number of new signs. The most visible of those point out that capital and labor, as far as the creation of the wealth of nations is concerned, are no longer differentiators and generators of sustainable competitive advantage. Intangibles, especially knowledge, have caught the attention of enterprise and governments as well. We can affirm that this collapse of certitude has shown paradoxically that knowledge acquisition has now become a key indicator in sociological and economic models on a global scale. This change has come to express itself in a rich concep-

tual diversity, embracing such notions as *knowledge society*, *information society*, *knowledge-based economies*, *the society of uncertainty*, *knowledge management*, *organizational learning*, and others.

Nonetheless, even while becoming one of the most important axioms of contemporary sociology and economy, the phenomenon of knowledge continues to be trivialized from reductionist, objective, linear, and summative points of view. The forking of paths alluded to is not alien to the clashes in discourse between the defenders of Newtonian mechanics and quantum theory, the latter a demonstrably more convincing explanation of the world, the former still defended for purposes of practicality.

The new path is being treaded even deeper by the phenomenon of acceleration taking place throughout the world fueled by the increasing global integration of open systems and energy flows, signaling what many have called a "paradigm shift." To make sense of this new reality, we must focus on those anchor points that give origin to the novel tautological process of *configuring-creating-taking action* in this new world. The risk involved in failing to understand the nature of this cognitive shift is to place in danger the purpose of both government and enterprise, background noise now emanating from the so-called "Arab Spring" and other similar social and economic phenomena.

The anchor point central to this process is *relational semiosis*. By *semiosis* we mean that all signs merge into all signs in a regressive and progressive stream. Stated in another way, it is not really possible to separate the sign—the word, for example—the meaning of the sign—the object the word is pointing to—and the interpreter of the sign—we—as the Cartesian and mechanistic world would have led us to believe until derailed by the arguments of quantum physics. This means, in effect, that we can no longer speak of "ourselves here" and "that world and other stuff out there" as though they were different and separate orders of things. We emerge together.

This may seem confusing initially, but suffice it to say at this time that the so-called "objective" notions that we have been taught to believe in and which, for a time, seemed a reliable basis for organizational theory and design, have lost their relevance, a compass gone awry, notions whose path is increasingly risky and sometimes downright dangerous to follow. Relational semiosis is, then, an ongoing *conversation* which con-figures and re-configures itself relationally (among conversants, signs, and meanings) as it unfolds, not held together by the logic of deduction or induction but rather abduction, roughly understood as pattern recognition. This might be viewed as an ongoing change in a shared landscape, the landscape taking on different shades, sense, emotions, affects, shapes, and forms as the conversation

unfolds, both purposeful and aesthetic. Relational semiosis is not essentially representational, although participants may view it as such, the *representation* being an interpretation coming into mind. We create our own sense.

Coming to grips with the woven texture behind the current relational system in the unfolding of its relations through dialogue, at once aesthetic and purposeful (goal-oriented), means making sense of a *cultural shift* with an array of social flavors, something not seen or understood within the former scope of process management. Of vital importance, then, is the study and appreciation of culturally related themes, the place and role of symbolic and artistic practices, as well as the processes underlying the construction of scenarios and paradigms based on certain prescriptions, as they impact the formation of citizenry, practices of political participation, and the events of everyday life. At the same time, technological change and social mobility have generated transformations in the forms of agency and pertinence that oblige us to look beyond traditional connections among culture, identity, and territory, and to incorporate other coordinates, from where it becomes necessary to explain who we are and where we are going: territoriality seen as effective and transformational cognition.

This bifurcation process has taken place in a world in which unemployment, underemployment, labor flexibility, and job insecurity are part of the process of de-industrialization and the consequent growth of the informal economy. We are traveling, in some or in many ways, towards a new kind of capitalism in which the collapse of hierarchies results is the dematerialization of production and the deterritorialization of production processes. To resist this scenario, it is no longer possible to reproduce hierarchical organizational models (unions, political parties, etc.), coherent spaces of opposition to the new kind of capitalism. This requires changing the relational structure from a hierarchy to a *relarchy*, triggering organization as networks of relationships that become synchronized, seeing themselves effectively, in all their efforts, as a single process, something akin to the Arab Spring. If an organization is defined as a system of relational networks, its condition of viability or conservation becomes expressed through the increasing structural complexity of its organization, both internally and in its engagement with other networks. It is ultimately a matter of changing value diffusion strategies to accelerate decision making, increasing in this way their cohesion and coordination, decentralizing their conduction. This opens the way to move forward with new forms of territorial action since an organizational form has not yet matured. This forward thrust is what can be called "Strategic Intelligence" and the process that shapes it "territoriality."

This book is designed from a cross-disciplinary point of view. It is an invitation to participate in a voyage of no return where the port of departure is the critical assumption or Euro-occidental theory in the slippery space of de-disciplinarity and in building a conceptual framework consistent with leading contemporary polemics and needs, to rethink the current enclaves from the spaces of our own creative emergence. It is an invitation to weave the story of Relational Networks Systems, what will be referred to from now on as "RENS."

So, the displacement of declarative spaces towards our own, as a divergent and epistemologically pertinent territoriality, is a guarantee from the incorporation of solid explanations as well as a methodology that prioritizes the collective participation and construction of alternatives.

The different topics proposed for each chapter establish the foundation for developing a formation oriented towards the design of processes in which the relationships that generate organizations are healthy, that is where reciprocity substantiates heterarchy. The intended clients are those readers who carry with them, as their navigational charts, uncertainty, crisis, and innovation.

The aim of this book is to lay the relational and epistemological bases to explain the change that has occurred during the last decades, one that has severely battered human structures, particularly business organizations, which begin to wither in the generation of wealth as their roots absorb such rarified spirits as knowledge. The market as an explanatory principle has already begun to lose its legitimacy as a legitimate tautology for the generation of value when confronted with creativity. This is perhaps the end of Industrial Capitalism and the advent of a new economy. To confront this, we have made an effort to navigate from the epistemic to the base of cognitive engineering in order to free up the spiral of knowledge that has already broken through and is now impossible to stop.

ORGANIZATION OF THE BOOK

This book consists of 10 chapters, which are tied together in the following way:

Chapter 1: From Autono-Mine to Autono-Yours

This chapter opens the way to understand that what we designate as the self is always in relation to someone or something; it is always an eco-autonomy and not a divorced autonomy. In our history of individualism and individual "liberties," we enter this chapter with historically derived cognitive blindness in any number of domains.

Chapter 2: From Hierarchical Structure to Relational Networks

When we think of organizations, an organizational chart comes to mind, a chart with an organizational head, a General or a General Manager, with direct reports in boxes connected by solid or dotted lines (indicating direct or indirect reporting), and under each first level reports there are other reports, and so on, until a considerable pyramid of boxes portrays the organization of the organization. It is a chart with lots of black boxes with even more white space in between. These organizations are called "functional" and derive from the need for specialized actions in sequential domains; therefore, coordination within each sequence can be separated into logical domains. Each domain is controlled from start to finish, triggering upon completion of its domain of action the beginning of action in the following domain. This chapter invites us to challenge this organizational form, stimulating us to deconstruct the hierarchy and to emphasize the white spaces more than the square boxes: an essential exercise when parallel processes are taking place and even more when organizational contexts are uncertain or dynamic and require extensive coordination and collaboration in reduced periods of time. This leads us to make explicit in some way, the relational forms of relational networks or what we call *RENS* (relational networks). We discover that the greatest challenges for organizations have to do with the world of invisible connections in the white space where most of the value in contemporary organizations is created.

Chapter 3: From Manufacture to Mindfacture

Whatever is "normal" in our day-to-day lives is taken for granted. It is transparent and assumed until something breaks down, until something unexpected just happens. No one goes around thinking about labor relations until there is a strike, and if the strike happens to be particularly violent, it forces us to ask *why?* and to examine the past construction of the present we live in such a way as to expose the origins of the failure, those root causes that have nurtured the process that has led us to where we are today. This chapter looks into the transparency that we consider to be perfectly normal, such as "wages" and where and how they originate, even the concept of organization as we know it and the practices and routines that have developed in certain historical moments and now seem to have outlived their usefulness, or don't seem to be able to respond to the velocity of change, or seem to be moving us in the direction of serious confrontations and possible collapse. This chapter brings into focus a profound paradigm shift that has taken place in such domains as the creation of value and wealth, a shift that still has not been accounted for and which is a risk

until it is. It is a profound shift that changes the nature of "work," value creation, in fundamental ways that could upset entirely the competitiveness of business organizations unless they understand that evolution may no longer be the key to survival.

Chapter 4: Mind Value Processes

The aim of this chapter is to explain, from a relational epistemology, how knowledge is transformed into value. To be more exact, from building the relationship and its consequences between the definition of knowledge and the duality of use value and exchange value, we propose a method to evaluate the process of transforming knowledge into value. For this, we use the framework of cognitive science, both representational and non-representational schools, and the early concepts underlying the theory of value, the theory of dynamic networks, and theory of viable relational systems.

Chapter 5: Value Production Process

Productive Cognitive Capital can be viewed as the knowledge process associated to both exchange value and value in use, something unique to the relational process. This implies Productive Cognitive Capital is directly joined to the relational quality of the network that produces it. This chapter searches for alternatives, both theoretical and methodological, to assess Productive Cognitive Capital.

Chapter 6: Organizational Relational Viability

If we see the world as causal, we must, then, see it also as sequential and consequential. This view is satisfactory for Industrial Era enterprises engineered in a certain order to run in a certain way, whether mining, telegraphs, or manufacturing plants. It can also be applied to conventional type warfare where planning incorporates strategic objectives to be achieved in the air, on land, or sea. This view gets into serious trouble trying to cope with Al Qaeda, the mafia, and the Twitter generation behind the generatively organized Arab Spring uprisings. When the world accelerates, it requires flexibility, and when flexibility is required, integration is required. These attributes and competencies are relatively easy to achieve in network organizations and can be near impossible to achieve in hierarchical type functional organizations, especially in the face of dynamic change. Organization must be tenable, a first step, but to survive, they must be sustainable. This requires different kinds of competencies.

Chapter 7: The Strategic Intelligence Process

This chapter looks at the competencies that must be developed to anticipate, manage, and cope with disruptive events while diffusing value in the organizational network.

Chapter 8: Emerging Design

In a relational unit or network, design emerges as an integral part of a strategic process aimed at achieving a coherent coupling between its relational configuration (tenability) and its matter/energy system (sustainability), so that the identity of the relational unit is not at risk. This chapter shows how we can translate viability in designing or re-designing processes contemplating the possibilities for reconfiguration of the network of relations itself.

Chapter 9: Why Not? New Thinking for an Emergent Networked World

The history of philosophy revolves around two dichotomies, the atomistic versus holistic views of the world. Atomistic views are easier to demonstrate since they can demonstrate how units can be broken down into parts and give innumerable examples of cause-effect. This way of thinking was able to produce something as powerful as Newtonian Mechanics, which, for a time, seemed to explain almost everything. Quantum Physics, however, turns Newtonian Mechanics upside down.

Someone once asked if it would be possible for a square to describe a circle and vice versa. This could be a metaphor for the Cartesian version of a cause-and-effect-based view of the world, adopted and managed by organizations for millennia, as opposed to relational organizations that "adapt" to chaotic (causeless) environments as a surfer rides the waves.

In the cause and effect world, the question "why?" is very important; it looks to the past to explain a breakdown in the present, which, if corrected, may create a better future. In the dynamic "Devo" (development) world of today, the question "why?" does not make much sense. Today's world is a world of possibilities, a world of what could be, more than the world of the matter-of-fact, that which has been, the world inherited as a legacy. Even the word "adaptation" is becoming obsolete. Organizations today must ask themselves what should be possible within the interpretation or "emergent discourse" around what is happening, then ask themselves the question "why not?" This question does not explain anything. It does, however, along with other things, unveil the presence of critical absences, and these are the central spaces for innovation in relational networks, even global.

Chapter 10: The Sound of Spiral

The purpose of this chapter is to develop the use of aesthetic interfaces and non-discrete matrices that might then be used as analog modelers to understand complex cultural structures. Something happens in networks as they co-create themselves in time and space. We see this in terms of a spiral in which there is an obvious coherence and congruence, but each spire of the spiral, while being part of the whole, is also an evolving source of a certain kind of enrichment within the evolving whole.

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Acknowledgment

Chapter 1
From Autono-Mine to Autono-Yours:
Relational Cognition

ABSTRACT

Current styles and ways of thinking that boast of paradigm shifts have failed to pull up the anchors of Cartesianism and the religious Mass celebrated to offer the certainty of the object. No matter what its shape, the epistemological fetish that arises from objectivity and subjectivity has preserved an obscurantism against the possibility of understanding the relationship as the foundation of knowledge. This chapter aims to understand "relationship" as the centralizing concept when we explain the process of knowing and emerging strategies in shaping organizations. From this perspective, it is no longer possible to speak of autonomy, because others are necessary to make it happen (i.e., we necessarily must speak of an epistemology for co-autonomy or autonomy-yours).

INTRODUCTION

About Goal-Seeking and Paradoxes

Accepting our own ways of pondering the history of the world, we should situate ourselves in what different narratives and explanations have called the Western tradition of thought, which, in addition to its logical types and rationality, has proposed to us the paradigm of simplification; this, from the time of Plato to classical science,

has affected philosophy and science. This would not be a major problem, did it not directly impact the domain of decision-making, and therefore, ethics, aesthetics and politics. Its aim is to idealize, rationalize, and standardize; i. e., conceiving reality as something reducible to schemes or ordered and ordering concepts, understood from the perspective of the logic of identity and the principle of disjunction. As for ethics and politics, they are also presided over also by rationalization and unifying order, thus rejecting or excluding forms presumably less developed or irrational. It is a kind of thinking that definitely rests on reified concepts and on an epistemological ideal characterized by assuming an *absolute* point of view, that is, an external and omniscient observer. This epistemological conceit implies, in parallel, the idea of an illusory objectivity, also absolute, which is not affected by the subject/observer. This ideal of knowledge, bred in the bone of classical philosophy and science, is impossible. From the point of view of action it also shows up in social and political history, particularly that of our century, to the degree that it has tried to determine, briefly and forcefully, finally leading to barbarism.

This chapter articulates a series of scientific milestones which make it possible to explain why it has been so difficult to answer the question about how organizations are organized. If the particular universe is the epistemology of relational network systems –RENS–, the observer is then obliged not only to be described within his theory but to describe his configuring. This is a situation in which the objective observer of traditional science does not fit, that objective observer of the world, invariant to the description, who then attempts to separate himself from his own role in culture. Therefore, the fundamental problem, when it comes to the organization of RENS and their producers of meaning, is epistemological, that is, explaining from where we are explaining and how we come to know in the first place, so as to be able to do that explaining. This summarizes why change, which everyone talks about, requires an epistemological format different from that which currently holds sway over the daily sense of ordinary people.

Self-organization and complexity have become recurring concepts in studies associated with the activities and communicational processes of the organization. For decades these topics only interested academics and specialists in fields such as cybernetics, cognitive sciences and philosophy. During this time, some very interesting theories have been developed in these fields, but without much attention on the part of management experts. These ideas now have somehow become explicative principles, in the Bateson's sense, where the corporate narrative is based on these principles for the diverse phenomena with which we associate structure and process.

The systemic perspectives in the organization have been present even from the beginning of cybernetics in the Macy Conferences of the 1940's. There has been a mutual influence between engineering, managerial operations and social epistemological approximations that have fomented the idea of the organization as a *system*,

as something more than the sum of its parts. When referring to an organization, in this context, we are talking about *cultural relational systems*, in any scale, with a decisional history. The management process in this system is constituted by the group of actions that determine the structure and process. The decisional process of organizations, seen as a coherent ensemble of actions which is collaterally specified by communication, directs the analysis of the structure and function of the system on the basis of an active and flexible strategy, where configuration and behavior are developed throughout the course of operation, and not as a prescriptive set of rules. What we call autonomous is always in relation to someone or something, it is always *eco-autonomy*, never just autonomy.

In general, one can say that throughout the history of scientific knowledge, it has been focused on the study of entities. Therefore, the concepts, derived and applied to organizational management, have caused this also to deal with entities, units and objects. Focusing the study on entities has meant –and continues to mean– working towards discovering the properties inherent to the objects under study. The product of this approach allows us to make models that tend to explain these units so they can later be manipulated by those in the position to make decisions. From the beginning, the study of these units has had an integrative perspective. That is, the vision of the units was a single object: the vision of understanding complex units as individualities through the concept of organized unit subsequently occurred. The process of analysis and synthesis in a management that involves the design of parts and wholes in relation, enables the shift from the concept of object in the system concept, the latter being understood as an organized unit and, as such, a number of relationships in smaller units that interact.

However, if it is possible to operate with parts and wholes, the current approach separates, on the one hand, the units from their *entorno* and, on the other, the observer from what is observed. This way of moving forward is based on the idea that the knowable-object is independent of the observer, supporting, a priori, the assessment of matter/energy exchanges in classic models, which aim at generating knowledge and the explanation of a portion of the world in which the observer has been an outside element. In fact, many relationships, some of the knowledge of the process, in which the observer is involved, were lost. For Management, this kind of exercise could translate into the possibility of clearly outlining the organization and fragmenting it into matter/energy indicators of a socio economic kind. We can see from this that relations that process information for decision-making –cultural relations– would remain hidden and unexplained through this kind of indicators (a situation that frequently occurs). We could add, then, that given this point of view, should we come to terms with the relationship *observer-system-observed*, we would have to say that the organization is independent of the observer, the organization is *a thing*. On the other hand, if we conceive said unit as relationally organized, within

a space or communicational context of its own, from which the observer cannot be separated, then we have an idea of organization very different from that previously mentioned. In this way, the management process can be analyzed and executed based on systems theory. In order to do this, it is necessary to classify the process of the organization establishing decision hierarchies which will undoubtedly be based on the way we conceive of them.

According to this initial criteria, it may be noted that what we call organization a priori can be taken as: a) an independent or external thing or object, susceptible to being represented by the observer or society, or b) as a situation *complex*, in which organization is a co-dependent concept, generated and articulated from an enactment based necessarily on human communication with the generation of identity.

From this brief epistemological distinction, the process that involves making decisions is related to the selection of configurations among criteria and assessments of alternative actions within a communications network that emerges epigenetically from its historical process, with reinforcements and restrictions facing the new possibilities of decision. As part of the planning process, decision-making is complex. This statement is grounded on ample dynamics and diversity of relations the agent experiences while interacting with other agents in the context of the decision.

If it follows that the organization is external or independent of the observer, the organization in which decisions are made can be classified within the category of heteronomic systems; this implies decisional responses to external mechanisms. This could be summarized as a situation of organization and territory; classifications, hierarchies and organizational models are "applied" to the territory. We use the word territory with the idea of neutrality; in fact, the territory could be the market or other concepts that imply a relationship with the organization. Conversely, if the territory is codependent –reference-observer relationship–, this organization is considered regional. That is, decisional responses are determined through internal mechanisms where certain messages take on a meaning that is scheduled by the history of previous interactions and communications (closing communication). This could be summarized as organization-territoriality or *ecotomo* (Malpartida & Lavanderos, 1995, 2000) where the classifications, hierarchies, and finally, the organization, emerging from the relationship, do not apply.

Therefore, from this view, the territory is not *experience-able* as an independent external object or thing, but rather as the selection strategy of decisional alternatives or the network of relations of those involved in the process of their construction, i.e., the culture. From this point of view, explaining the organization of organizations implies organizing these units as relational and eco-autonomous made up of communication structures that allow the organization of said units to operate. Such an explanation can be achieved within the field of cognitive science, specifically from a relational approach which reaches its best expression so far in such authors as

Bateson, Maturana, Varela and von Foerster. However, there is currently no theory within the field of cognitive science that accounts for the organization of businesses as autonomic relational systems, in which the basis of distinction is based on the relational process as a pattern of organization and not on the entities that generate it. Varela proposed the strategy of "enaction" as a framework to achieve this explanation: this view suggests that cognitive skills are linked with a lived history (Varela, Thompson, & Rosch, 1992). Cognition is no longer a device for solving through representations to cause a world to emerge through effective action: a history of structural coupling that enacts a world (makes it pop up). However, enaction implies the existence of at least two structures to make it possible for the history of structural coupling to be able to "enact" (Varela et al., 1992). This does not improve the disjunctive Cartesian world view. An explanation of dualism present in this explanation is that although the enactor is co-determined, his utterances from the operation of distinction emerge by identity (belonging) or opposition (differences) in relation to the coupling. We speak of identity whenever a unit or structure is a member: a structure within another structure. We speak of opposition whenever the unit is a class: a structure coupled to or uncoupled from another structure.

Bateson (1984) and von Foerster (1996), on the other hand, sharing an Anglo worldview, do not move in language with the concept of *entorno*, something that always implies an irreconcilable separation of subject and *entorno* (Malpartida & Lavanderos, 2000; Lavanderos and Malpartida, 2001). This implies that operations of distinction are configurations governed by networks of observers, which means that their forms and types can only be understood as "meta" configurations organized around the production and conservation of those very norms. For this reason, if a distinction implies the configurator that operates the distinction, the descriptive process rests on the operating itself, affecting what is observed in such a way as to impede any predictive belief. Therefore, we can say that this operating can only be understood from how we generate distinctions (von Foerster, 1996). Based on the above and for the purpose of structuring the concept of *eco-semio-autopoietic* process, we will define cultures as meta-configurations organized around the conservation guidelines of agency (what one makes his) and belonging (one becomes part of) which allows territoriality to take place.

If the particular universe is that of the epistemology of relational systems, then the observer is obliged not only to describe himself within his theory but to describe his configuring as well. This is a situation where the objective observer of traditional science has no place, this observer of the goal, invariant to the description who then attempts to write, it cannot free himself from his own moving within the culture. For this reason, the fundamental problem when it comes to the organization of culture/territoriality systems and their emerging signifieds, is epistemological, that is, to explain from where we explain and how we know for that explaining.

After these preliminary considerations, and accepting that the organization of organizations is epistemological, the guidelines that constitute it are built beginning with communication processes for agency and belonging in the relation observer/ *entorno* (Lavanderos & Malpartida, 2001). This obliges us to put ourselves into the going on of everyday life, since we generally act in a state of "epistemological blindness", something that carries consequences in our relatedness, such as failures in interpersonal relationships, poor communication, conflicting work environment, etc. Based on what was stated above, the proposal for the organizational unit will develop starting with its organization as a communications process for agency and belonging. This view proposes the base of a relational theory of communication as an eco- auto-poetic process and the sense of territoriality as effective cognition, that is, eco-autonomy.

BACKGROUND

Bases for the Relational Conception of the Unit

The Cartesian view and the disjointed image of the human world, insomuch as the so-called natural world, has been and is still the classic argumentative style of science (Berman, 1987; Buzai & Mateucci, 1998; Ritzer, 1993). The opposing forms of the same argumentative axle can be replicated by thousands; the subject and object are a priori entities, chance is an argument of the measure of maximum uncertainty, chaos is the name of a poorly determined regularity, etc. This is a dual world, but determined in the object, or rather, in the objectivity of the subject. Objectivity allows validation of the arguments against a reference point in experience, something that tautologically confirms the objectivity of the subject, which certainly is a predicate of the object (Glasersfeld, 1998). In the conception of this world that we have been taught and struggled to learn, the relationship as philosophy did not take place. For most scientific works this is a given world of objects that demand the researcher that elaborates interactions, transactions and co-actions among other forms of action (Berman, 1987).

The relationship as philosophy is closely connected to the concept of the experience of temporality and history. The principle of identity and character descriptions inherent in the objects that science holds, correspond to a primary concept in the history of knowledge, that is, the substance, the essence and the autonomous nature of the real. The relational notion is immersed in experience, in situation and circumstance; there is no possibility of ahistorical experience. The irreversibility arises then as a condition of the experience and not just as reformulation of classical thermodynamic concepts such as the non-linear thermodynamics of irreversible

processes of Ilya Prigogine. Seen from this relationship, irreversibility is translated as the logic of history and this is so because it is the logic of the living, the idea of probability arises then from the irreversible and not vice versa (Paci, 1954). Therefore, the notion of entropy does not found irreversibility because it is defined in the statistical domain, is the most likely state, and as a probability is predicated on the basis of the irreversible and non-condition.

In this scheme for the irreversible, to be as such requires novelty, process and emergence; it is found at the base of the notion of systems. If any communication must enter into the relational space of human territory, and as such into the process of experience and history, reality then arises from this existential historical situation and is understandable and orderable only within such a situation. According to Paci (1954), the vice of traditional –popular– metaphysics is to consider the object itself as the substance of being and to isolate the world of "substance" from the world of "experience", and thus reduce the experience to the necessary, the timeless and the unique. Omitting the relationship and the emerging nature of the experience in all decision-making, is to believe that scientific arguments are a-contextual in their meaning, and that the a-historical and a-processal is what characterizes the subject of the relationship and bases its objective character and argumental validation in all of this.

At this point, it is worth asking what ideas we are generating in respect to relationships of territoriality, whether they are immutable images of a demanding world immersed in mechanical clockwork determinism or whether one of possibilities cultivated from the historic understanding of cultural processes.

Cognition and Relationality

During the past two decades, the cognitive science approach has permeated abductively the language of process description in the various branches of scientific knowledge. We speak of abduction when beginning with the description of a given phenomenon we try to adjust the same descriptive rules to other classes of phenomena. In abduction, the units that make up a particular description are not important, rather the formality of the relationships that allow the emergence of a given form of organization (Bateson, 1984; Limone & Bastias, 2006).

The cognitive approach emphasizes the fact that to the extent that the observer is part of scientific and cultural matrices, he acquires ways to understand and participate which have enabled the construction of an alternative to the Cartesian description process, reductionist or not, in the various branches of scientific knowledge (Mires, 1990; Prigogine, 1993; Limone & Bastias, 2006). It is this construction of subject-circumstances that organizes and generates meaning constituting itself in an observer strategy on which seeing, discourse and action are built. From these perspectives, it

should be understood that the descriptive/interpretative process does not apply to a reality that might exist independently of the observing of the observer, but is rather a process of co-circumstantiality in the distinction of units, since it implies both the definition of the observer and the definition of the unit observed. Therefore, the possibility of the observed lies in the centralization and *eco-self-referentiality of the observer*, since it is the observer who makes the argument. The discourse of the subject emerges in relation to *what* is observed, conforming the observing system which, as such, is eco-self-referential. This means there is no implicit subjectivity, since all self-reference operates ever within a network of relationships, i.e., discursive subjectivity is co-constructed. This means that it can be defined as the unit or system of observation to everything whose relationship generates a meaning for the observer in this context of signification (Rabossi, 1995; Steiner & Stewart, 2009). If the possibility of describing arises from our history of descriptions, which means recognizing ourselves as part of the observing system that constitutes the communication pattern, then, what we call system is co-constructed from our distinctions as a relational process. Based on this, we are part of a network of observers for the context of a particular meaning. How does this abductivity work? What is the formality of relationships that allow for the emergence of the form of cultural systems? On what kind of epistemology are the relationships that allow this emergence actually built?

The strategy, to answer these questions, is designed to analyze cognitive assumptions and the resulting forms and types of relationships that emerge from them, within the process of cognition. For this reason we will review the schools of knowledge so as to establish from whence we will build organizations.

Cognitive Science: Schools and Trends

Symbolic School

In principle, we could say that the roots of the Cognitive Sciences reside first in the so-called Cybernetic Science, specifically between 1934 and 1943. The cybernetic movement's stated intention was to create a science of the mind; for this, it aimed to express that phenomena of mind could be modeled as explicit mechanisms and mathematical formalisms. The important thing as a field of knowledge is the legacy of McCulloch, which consists in integrating philosophical, empirical and mathematical. Cognitive Sciences get their name in the process of change between an experimental approach and the leap to a comprehensive research program (Varela et al., 1992). Just as in 1943 came the cybernetic stage, cognitivism as such is born in 1950. The central idea of cognitivism was that knowing is similar to information sciences to the degree that it is a computation based on symbols that represent what they designate. As Varela points out, the idea is of representation or intentional-

ity. The problem is how to correlate representational attributes with the physical changes that an actor undergoes while acting. For the cognitivist school *symbolic cognition* is information processing as symbolic computation or manipulation of symbols based on rules. For this school, symbols must properly represent an aspect of the real world (Rabossi, 1995).

This school, as regards relational unit *organization/territory* –business market–, can only propose from their disjunction, mainly because its operation operates on discrete representations: symbols.

In this way, organization could only interact with the form of symbols (their physical attributes), which implies a representation of their territory, but not every representation: only just an adequate representation which would be confirmed exclusively if the organizational culture, when processing the symbols, should reach an adequate solution of the problem posed as an organization. Under the epistemological approach, we could classify this approximation within a naive and critical realism (Lavanderos & Malpartida, 2001).

Connectionist School

A second approach to cognition arises from the notion of emergent properties and self-organization. Two shortcomings of cognitivism make this acquire a central role. The first shortcoming relates to the processing of symbols based on sequential rules, applied one at a time. If the processing involves many sequential operations, this architecture constitutes a serious limitation. The second, speaks about the symbolic processing being "located": any dysfunction of the system's rules or any part of the symbols results in severe systemic dysfunction. A distributed operation, just the opposite, makes systemic organization more immune to dysfunctions.

Based on this, cognitive construction is achieved through connections among simple units. The configuration a system can build depends on the history of connectivity. Thus, system connectivity becomes inseparable from its history of transformations and is related to the kind of task defined for the system (Varela, et al., 1992). Given that the orientation in the reformulation of cognition resides in the connections, this approach was called *connectionism*. In this case, the strategy does not rest on symbols and rules but connective dynamics among elements. In this approach, each element operates only in its local domain, since the system consists of a network; there is global cooperation that emerges spontaneously when the components reach a mutually satisfactory state. For the connectionist school, cognition is the emergence of global states in a network of simple components, the validation of which is given in the relation of correspondence among the emerging states and the resulting structure for a given cognitive ability. Within this school, the important thing is the disappearance of representations as an idea of the reduction

of reality. The system constructs its own world and its coherence merely reflects the internal laws of the organism. However, this same approach leads us to the case of organization/territory unity, the need to posit its disjunction. In this case, since the self-reference cannot be closed to the self-organization as a process. To overcome this problem the solution is to make the system operate as a closure but in relation to a pre-given world. Therefore, the process continues to show up as disjunctive.

If we describe the organization system as an autopoeitic system, we are assuming that all operations are closed in respect to the territory. Otherwise, the basic assumption is the existence of structural determinism, which would ensure the closed nature of the system's operations. So, the immediate question is how the organization relates to the territory without this causing changes in its organization? For Luhmann (1986), the answer is found in the concept of structural coupling proposed by Maturana (1992), which explains that the territory has data that is not relationally information to the system, so that these kinds of differences would be ignored within its network of operations. It is interesting then wondering how the operations of distinction, operationally closed, account for the difference organization/territory, or how do we know what are the boundaries of our self-referentiality? For Luhmann, if the territory does not specify changes in the system, at least it should be assumed, otherwise, auto-poiesis stops and the system disappears. This means that organization is adapted to territory.

Let us then analyze the consistency of these assumptions in relation to the idea of territory. At this point, the concept is a pendulum between the classical theory of interactions and information theory. This is based on the distinction between self-reference and hetero-reference which, as Luhmann says, always operates from culture, which ultimately is always self-referential in relation to territory. We can only speak of our self-referentiality within a set of relationships that account for this by strengthening identity. Where the organization or identity loses its hetero-referentiality, or the production of relations, it becomes disassociated from selectivity, as a series of historical processes which the system has constructed. Otherwise, although they are adapted, there exists a non-adaptive behavior with respect to territory, which would come to be like the radius of action conferred or permitted (Luhmann, 1985).

The loss of non-self-referential relationships permits the change in the nature of the organization/territory relationship, producing a phenomenon of sismogenesis or differentiation. It is in this sense, and not as Luhmann suggests, that ecological problems of modern society are explained through this permissiveness within the range of an organization adapted to territory.

As a corollary, it might be said that the concept of passive territory fits ideally with the explanation given above, since for Luhmann *territory* and *environment* must be functionally equivalent. It follows then that there can be no self-reference to the self-reference, if this were so, we could justify the significance of the rationality

of the system proposed by Luhmann. This is defined as "exposing the reality and testing before it a distinction, i.e., the distinction between system and environment" (Luhmann, 1985, 1986). This explains the ecological problems of modern society in a dualistic way. The operation was to separate, and this separation denies the relationship as a process of self-reference, of *organism-entorno* relational complexity, then at the level of actions we speak of not avoiding interventions in the *entorno*, and this, closes the Cartesian dualism. Documenting the *system-entorno* difference as to ignore this difference through the disruption of the functioning of the organization. This proposition is completely self-contained from organization, it matters not if whether the distinction is produced or not in regard to the *entorno*. It is clear that we are operating with an isolated cultural system, its flows are from society to society, only there does the possibility of social autopoeisis exist. Unfortunately, the maintenance of the difference described by Luhman assumes that the cultural category and territory are not on the same level. This disrupts the sense of the *entorno* as part of the complexity of relationships generated by the difference between auto and hetero reference, framing the system within an "a-relational" auto-poiesis, an automaton that, as such, has no circumstance, only structured with structure (Arnold-Cathalifaud, 2008).

The Enactive School

Our next school is called enactive. This view argues that cognitive skills are linked with a lived history (Varela et al., 1992). Cognition is no longer a device that resolves through representations, but causes a world to emerge through effective action: a history of structural coupling that enacts, makes a world "show up". Varela classifies the two previous schools as forms of cognitive realism. The basis of this classification is that, for these schools, the world can be divided into regions of elements and discrete tasks. If troubleshooting is constitutive of cognition, its success consists in respecting these properties and relations of pre-given regions. The problem, according to Varela, resides inasmuch as these assumptions only work for tasks in which all states are possible to specify. However, if the lived world has no predefined limits, it seems hardly realistic to try to capture our experience as representation. So, the question arises: Can we build a path that involves both cognition as well as the recovery of a pre-given external world (realism) and at the same time sees cognition as the projection of a pre-given inner world (idealism)? For Varela the solution moves toward the concept of embodied action.

Embodied will be understood as the dependence of cognition in relation to the possession of a body with various sensory motor skills. At the same time, these sensory motor skills are embedded in a broader biological, psychological, and cultural context. In the same way, action emphasizes that in these sensory motor processes,

action and perception are inseparable in lived cognition. The central idea of enaction is "to determine the common principles of legal linkage between sensory and motor systems that explain how action can be guided perceptually in a world dependent on the perceiver" (Varela et al., 1992).

Let's take a further step into Varela's idea, but changing the level of complexity; enaction now must be dealt with in the domain of the organism/environment relationship. For enaction, living systems meet three conditions: rich in self-organizing skills, a way of structural coupling that allows for the "satisfaction" of viable pathways, and the modular character of subnets of independent processes that interact and change themselves. The basic point is that environment is not independent and pre-given, not be separated from what organisms are and do. Hence, living things and their surroundings are related to each other through mutual specification or codetermination. Environmental regularities are the result of a joint history, a congruence born of a long history of links (Lewontin, 1983).

Within this proposal, which I regard as the greatest effort to achieve a relational reformulation of organization/territoriality systems, the culture of disjunction slides away. The first is to use the term enaction as a proposal for the reformulation of cognition. Enaction comes from English; 'to enact', 'act', 'put into action' (Varela et al. 1992). Earlier, we pointed out the impossibility of achieving operational relational equivalences among different languages, specifically in the case of environment and surrounding, since the distinctions from language to language are not precise. Taking this into account from the view of semiotics, trying to explain or reformulate the organism/surrounding unity from the point of view of enaction, is, so to say, making an act of faith in the isomorphism of cultures, more so if the language is seen as something beyond a tool.

Moreover, the idea of "pre-given" is not dealt with only by betting on structural coupling. Enaction implies the existence of at least two structures, so that the history of structural coupling that it enacts becomes possible. Organization/territoriality cannot be expressed or understood as histories of coupling; in fact, in this context, *organization* is a configuration of conservative type distinctions that take place in a network closed for that configuration. Enaction does not overcome Cartesian duality primarily because, although the enactor be co-determined, its enunciations, through the act of distinctions, emerge through identity (pertaining) or opposition (differences) in relation to what is coupled. We refer to identity whenever the unit or structure is a member: a structure within another structure. We refer to opposition whenever the unit is a class: a structure coupled or uncoupled to another structure. The reformulative process definitely follows the regular path of Cartesianism, starting from splintered units to become wholes, never starting with wholes to become wholes. This is clearly the problem, representations of what is pre-given or the internal states projected are always units that need to be co-something. Overcoming

this disjunction is then the next step; the unit organization/territory is a relation-ship, and therefore its dynamics and its reformulation are, from the point of view of relationship, a totality. This we will deal with in the next section, in what we will refer to as the relational school of cognition.

The Relational School

We call the relational approach of knowing the epistemological position that privi-leges the observer/*entorno* relationship as a process of construction of territoriality, defining territoriality as a process of effective equivalence in the exchange of maps or landscapes (configurations of meaning), based on the activity generated in *en-torno*'s observers in communication. Effectiveness emerges in the affective domain.

This school proposes that knowledge is an emergent process of relational con-figurations that are generated from the extraction of differences by an observer within his *entorno* that only has meaning for him (Lavanderos & Malpartida 2001; Malpartida, 1991; Malpartida & Lavanderos, 1995, 2000). This meaning is what allows patterns of territoriality solicitation or, put another way, from creating iden-tity through agency and belonging. From this process territoriality as a collective idea is co-constructed among observers that constitute the network. Consequently, descriptions and interpretations are determined through cultural strategies of com-munication (communication closure) which we define as the generation of configu-rations of territoriality.

Therefore, from this point of view, territoriality cannot be experienced as a physical object, but as the strategy of the selection of alternatives from descriptive elements that emerge, as a property constitutive of the relation of observation (Abel, 1998; Bateson, 1984; Bullen, N., Jones, K., & Duncan, C., 1997; Edmonds 1999; Heylighen, 1997; Varela et al., 1992). From this perspective, the descriptive-inter-pretative process does not apply to a territory, but is a process of co-circumstantiality in distinguishing units, since it involves both the definition of the observer as the definition of the unit observed. The observer is constituted in the act of distinction as a unit (Maturana & Varela, 1982), being a centralizer of the relation with what is observed and therefore a participant in all of this (Maturana, 1980, 1982, 1988a, 1999). From the relational school, we could summarize the cognitive process as the generation of configurations of distinctions in relation to the meaning of the exchange of these distinctions, product of the territoriality of the observer. The territoriality of the observer is evidenced through its discriminative-affective way of acting (distinction) in relation to the unit of observation, which, through some criterion, interrupts a sequence and exposes it, acting on the basis of some meaning to be explained.

The possibility of describing comes out of our history of descriptions, our culture, so we must recognize ourselves as part of the system of observation implicated in the communicational plot. From this perspective, the configuration of territoriality is co-constructed from our distinctions, as a relational organization/territoriality. The observer can no longer be considered only as autonomic, that is, responding only to internal mechanisms of self-organization (Varela et al., 1992) but rather as eco-semio-autonomic, that is, what is reproduced in relationship based on semiotic production. In this context, the observation as a form of distinction not only begins with certain criteria that it is necessary to make explicit, but also responds to a strategy and, of necessity, a cognitive style (Maruyama, 1980). Recall that in this, the communication among observers is of vital importance; for them, messages have meaning that is determined by the history of previous relationships and communications. Classifications, hierarchies and, finally, organization, emerge as part of the process of preserving the organization/territoriality relationship: *territoriality organization*, that is, they are not "applied to something."

The relationship is the basis –we say, as observers– for which and upon which we extract differences, and that these differences, extracted from the relationship, are argued as distinctions. Indeed it is a *trifference*, since the process involves what it extracts. In this process information is the first news added to the differences extracted.

This entire process occurs in an entity capable of "triffering" and processing it as information. The information thus generated can then enter the domain of human communication with its enunciation, which, for the speaker, takes the form of a message. Gregory Bateson (1984) wrote that information was the product of a difference that makes a difference at a later time. In this process, then the referent and the observer/*entorno* are united into a single function. What is known as relations is what emerges from the multiple distinctions that observers generate in their *entorno* of observation; since this is the case, the base relationship can receive multiple characterizations.

Our language is objectual, and in the continuous process of substantiation, we have turned verbs into nouns. The relationship –what is relational should be understood as a verb, as a *functor*, and not as an object– in fact shows that verbs predicate actions, and rarely are links between subject and predicate.

The primary differentiation of the relationship is the difference, and its argument, a distinction (information). From the cognitive relationship, the first consists in distinctions, recognizing as different that which surrounds it. The distinction predicates the ability to cut out, circumscribe a unit and separate it from the rest. The extraction of a unit, the distinction foreground and background, has to do with the individualization and not necessarily that these are different "in fact", either generically or specifically. The generic or specific difference lies between one thing

and another within something, something that should be common to both for an observer. Successive distinctions around objects distinguished as distinct from the observer, enter into the process of successive differentiations that form the spiral of what is: *different / like*. It might appear that the difference between this approach and the previous is very subtle; however, this subtlety for us is abysmal.

In summary, from the different cognitive positions we can say that if we consider the cognitive conception as related to the organization/territoriality relational unit to be pre-given, external or representable –as in symbolism and connectionism–, then cultural organization can be considered heteronomic in relation to the territoriality. This implies action schemes that consider the history of territoriality independent from culture. This is likely to be characterized as a perspective that understands the cultural organization and the territoriality (in this case, *territory*), where "and" makes explicit the disjunction between the two. The consequences of this, translate into the classifications, hierarchies and organizational models being applied to the territory as an object, because they are seen as separate entities.

Moreover, if we consider that the possibility of describing comes from our history of distinctions, that is, recognizing ourselves as part of the observing system involved in the communication plot; then, the territoriality is the result of a co-construction between the actors of that plot, beginning with their distinctions as a relational process. This having been said, the organization as organization/territoriality can be considered as an enactive system only if *organization* and *territory* and have created a history of co-determined structural coupling, but in this case we are still thinking territory as an object. Alternative to this scheme, the territorial process arises as effective equivalence in the exchange of maps and landscapes (configurations of meaning), based on the activity generated in the observers/*entorno* in communication. Effectiveness emerges in the affective domain in the differentiation process through agency and belonging. In this relational perspective there is no structural coupling. Classifications, hierarchies and finally organization emerge as part of the viability process of the organization/territoriality relationship, i.e., "they are not applied on something". Thus, the relational unity organization/territoriality and their configuration are a process which, as such, changes continuously in the maintenance of its organization.

Consequently, the organization/territoriality system modeling process requires epistemological approaches that allow acting out of relational concepts. This means that for a given system, as eco-semio-self-organizing, organization actively determines the arrangement of its components and the significance of its character or behavior is meaningful only with respect to itself. This way of acting generates the plot of distinctions from its own diversity and connectivity. From these perspectives, organization does not apply to a territoriality; it is a process of co-circumstantiality in the distinction of units, which in turn implies both the definition of the observer

and the definition of the unit observed. The observer is constituted in the act of distinction as a unit (Maturana & Varela, 1982). The observer is centralizer of the relationship with the observed and as such participates in that; the possibility of the observed lies in the centralization and the self-referential state of the observer. It is always the observer who argues, discourse belongs to the subject observer in relation to what is observed, creating the observer system which, as such, is self-referential (Keeney, 1987).

This decisional configuration takes place in the relational space of semiosis, which means that our status as observers/speakers is experienced in the way we relate to each other to generate "natural" sense. So an organization/ territoriality system is only possible, from this perspective, within a semiotic network. Therefore, a con-figuration of territoriality, is established as part of this network when members of the organization make it happen and bring it about by living it. As such, the identity and complexity of an organization, continually arises when they live culturally the territoriality to which they belong.

IMPLICATIONS OF CHANGING NOTIONS OF REALITY AND OBSERVER

The linearity and rigidity of objectual and empiricist paradigm that assumes a unique and universal reality, accessible to each and all, existing independently of the observer, is, to put it mildly, difficult to sustain, except by imposition (Buzai & Matteucci, 1998; Edmonds, 1999). According to this way of thinking about the world, the living of being alive is essentially passive, responding to an external environment in which things or objects have meaning in and of themselves, which is accessible by having been previously and objectively defined. According to Guidano (1991): "In this view, the human mind evolves as a passive receptor of external order, which will determine the mind almost entirely". As an alternative to this empiricist paradigm, we are currently experiencing a process that articulates the need for the integration of knowledge, either as interdisciplinary or in a more advanced as trans-disciplinary. This process is explicit to the degree that the observer, in the reformulation, appeals to complexity. Complexity, rather than refer to a property of the object predicates the argumentative quality of the observer. This leads to a radical change in the notion of the relationship observer -observed, in which access to a unique reality independent of the observer, and the observed is no longer accepted as one of those primary acts of faith. Thus, is adopted the position to accept as many realities as ways of living that might emerge from every being (Guidano, 1991b; Mahoney, 1991; Ruiz, 1992), or as many realities as domains of explanations an observer might propose (Maturana,1988 b), or enactive processes (Varela et al., 1992) or as

all possible relational configurations observer/*entorno* that could emerge within a territorial communication network (Lavanderos & Malpartida, 2001).

In this context, what role does the notion of complexity play? It seems that there is a consensus that it is not trivial to decompose or break down certain types of units, particularly those where what we call culture shows up (Brown, 1977; Bullen et al. 1997; Buzai & Mateucci, 1998). So the question arises, what does complexity predicate if the act of relating is a process of the observer that responds to a certain conceptual framework? From the relational point of view, complexity is to make explicit the relational limitations of the observer in his territoriality. From this statement, it is possible to show that there are several ways of conceiving the idea of complexity depending on the position of the observer and his view of reality. The idea of acting on the basis of distinctions that end up with a characterization of complexity allows us to formulate an explanation about those aspects that are creating problems of consistency in the type of logic being used. Resolving this kind of inconsistency would allow building spaces of common language, that link, coordinate and integrate the knowledge generated.

Relationality and Territoriality

Relational theory as an explanatory system bases its acting in the relationship as a process for generating meaning and world. For this theory, the relational unit in cognition is *organism/entorno*, contrary to the classical proposal organism and surrounding, territory or *entorno* (Malpartida & Lavanderos, 1995, 2000). The *entorno* of observer are relational configurations of territoriality, unique and permanent for the observer. Therefore, the inconsistencies in common sense –complexity– is a response to the reduction of territoriality.

The description, interpretation and manipulation of units constitutes the basis of all scientific activity. Independent of the territory of said units, they are a necessary whatever the observation field where they may be considered. We talked about co-circumstantiality in the distinction of units, implying the definition of the observer as well as the definition of the unit observed. The observer is constituted in the act of distinction as a unit. If every unit is a co-construction, the principle of objectivity must then apply to the process by which the unit is defined (acts of distinction). In this sense, we can define objectivity an "operational", as making explicit the mechanisms that generate units.

In the relational process, objectivity does not refer to the territory (what can be experienced), but the process of obtaining the map, or reformulation of experience, that is, what are the criteria, rules, alternatives or conventions, explicit or implicit, that account for the process of building models or reformulations in general and explanations in particular (Kimovsky, 1995). From this, we can say that the units

can be defined in principle as simple and compound. (Maturana 1999; Maturana & Varela, 1982). Simple units are specified as wholes, of which we cannot apply any criteria to decompose them into smaller units. We cannot say how they are constituted, we cannot establish in them parts or component elements. Without being the "thing in itself", by definition, if a unit is taken as simple it cannot be broken down into elements. On the other hand, compound units are those in which we can specify components starting from successive acts of distinction and, also, relations among these components or constitutive parts, these being what verifies its structure in a context in which we distinguish them as a unit. We call these units, *systems*. In the case of a complex unit, the specification is in the relationship and not in the components. For example, if the unit is organization/territoriality, it is not possible to separate this into organization and territoriality.

We believe that territoriality and its configuration constitute a process of continuous drift in the maintenance of its organization. Therefore, it is not a physical object that can be experienced as a physical object (thing), but, as the construction of a process of effective equivalence in the exchange of maps and landscapes (configurations of meaning), is based on the activity generated in environments of observers in communication, which becomes effective in the affective (human communicational space). Territoriality is the construction of a network of relationships (human communicational space), within which are operations that carry the sense of agency, belonging and identity from which are configured spatial and temporal arrangements of a culture (Lavanderos & Malpartida, 2001). Upon conceiving a particular culture as a communications network within a reference unit or composed "ecotome" and among different actors, we can conceptualize that these communication processes are either self-eco-poietic. That is, the reference unit produces and reproduces inward in the autonomic sense, but without losing touch with the outside world, in the sense of its eco-poiesis (Malpartida & Lavanderos, 1995). This implies that the communications network filters everything that allows it to maintain its organization (closure in communication) with non-constitutive or participant nodes external to it, a kind of *ipse* type (self-enclosed). Keeping, however, a structural relationship of *the idem type* (open to that similar to it), which allows it to share meanings with other networks, or non-constitutive nodes.

All this, as a system of relations, we define as a complexion that is, a system of relations whose organization is preserved from the closure of the communication codes that only have meaning within the network and at the same time exchange significant codes as a way to account for this organization based on membership relations or identity. Operations generated in the communication of territoriality (affection) set up arrangements that are opened to processes of exchange of forms and relational memories; under these circumstances, complexity becomes a strategy to force the effectiveness of the exchange. This is verified when the reformulation

process for a network of territoriality within the so-called dominant paradigm, creates uncertainty despite prescriptive defenses.

What they are really saying is that affects are effective in generating world for networks, and, appealing to complexity within an explicative process, result in a game in which the observer preserves and saves the dominant paradigm justifying those fissures of inconsistency between what is prescriptive and its common sense.

Configurations of Culture, Cognitive Territoriality and the Relational Theory of Communication as an Eco-Auto-Poietic Process

As stated previously, if we were to classify cognitive schools, two of the four mentioned would correspond to epistemologies based on the idea of the symbolic and connectionist representation of the world.

The idea of representation is constitutively objectual, mainly because the idea of transcendence in knowing. Consistent with this, one of its pillars is to develop object constancy, something that happens to be one of many cognitive mechanisms acquired in childhood and modulated culturally (Piaget, 1954).

If what we want to preserve, from this perspective, is the distinction of permanence, then culture will retain those configurations that satisfy the idea of permanence within the communication process, securing it territorially. In fact, what is permanent or constant could not be a property imputed to the object but rather the configurations of distinctions or predicates about the object. The question that arises is "what is it that lends permanence and also change in the representation, if the representation is a predicate of the object in the observer's act of configuring?

The relationality of the predicate is definitely what shapes the distinctions, necessary for an observer in culture to generate representations from distinctions of invariance and change. It is this relationality that is exchanged as a condition of culture. We say as a condition since we have defined culture as meta-configurations organized upon conservation models of agency –which one makes his own– and belonging –what one becomes a part of.

For this reason we define *communication* as any activity that organizes the exchange of configurations (ways of extracting differences) to maintain the relationship organism/*entorno*. In this way, what we call communication is a condition of the living unit that organizes relationality and its forms, what we call semiotics form. In this way, the production of living units would involve at least two co-processes: the generation of *autos* (self) from auto-poiesis, the latter being defined as the process of production of components in which each member of the class is a dynamic system defined as a unit by the relations that constitute it as part of the production network. This means participating recursively through their interactions in the generation

and realization of the network of the component production processes network that produce it, and in this network if component production processes as a unit in the space in which they exist creating their own borders (Maturana, 1999). The second process is defined as the production of *entorno* or relationality in communication networks which in higher networks implies relational systems such as culture. This second process we will call *eco-poiesis* and define it as the process of the generation process or relations in a recursive way, centered epigenetically –spiral–, to reproduce patterns of identity and agency morphogenetically for a context of meaning. The unit *eco* is 'related to' and the unit eco-auto 'is related to', and so on, respectively. The generation of *entorno* also processes configurations of participation and ownership. Focused on systemic levels of organization, eco-poiesis is to class as auto-poiesis is to member. That is, taking organism/*entorno* as a unit, the organism is auto-poietic in respect to the unit, but the unit as an emergent organism/*entorno* is eco-poietic.

Taking this into account, the systemic process organization/territoriality implies that the meta-configuration should be organized around the communication of individual configurations (subject/*entorno*) constitutive to that relationality. Relationality, as process, would generate itself beginning with the recursive participation of relational units which, through their processes of distinction, would constitute their own boundaries (closure in communication). The process of distinction referred to is the dynamic of opening and closing, starting with agency and belonging. So, then, it comes about that relational epistemology implies the condition of eco-auto-poiesis for living units, particularly eco-semio-auto-poiesis living units in culture.

We will now develop a proposal of formalization for the cognitive process of the observer from this perspective, with the purpose of reformulating the process of communication in culture from operations of relationality or eco-auto-poiesis. This permits the preservation of culture on the basis of territoriality, referring to territoriality as a process of effective equivalence in the exchange of configurations of meanings (maps or landscapes) based on the activity generated in the *entorno* of observers in communication through agency and belonging. Effectiveness emerges in the domain of affect.

The objective of this recourse to formalization means to show how the relationship observer/*entorno* generates distinctions within contexts of meaning modulated by culture which interact as maps or configurations of distinctions. This relationship of interchange achieves an effective cognition if the process produces equivalences of territoriality in the observers, that is, mobilizes affect. The formalization strategy involves making objectual representations disappear, beginning with the properties that generate them; then, to show how maps of exchange or landscape are configured to generate territoriality. In this way, and configuring the maps of exchange, the kind of relationships from which the forms for extraction are built could be made explicit, and this would ground a relational proposal of communication.

CONCLUSION

The Paradox of the Territorial Cognitive Representations

As von Foerster (1996) said, if we forget that the logical properties of invariance and change belong to representations, then paradoxes arise. So, when we generalize outside a context of meaning, paradoxes arise as follows.

Invariance Paradox

The system is different being the same, which would be formally $S1 = S2$; the question is: why the subscripts? On the other hand, if $S = S$ we establish something about $=$, but nothing about S.

Paradox of Change

The system is the same being different, but it makes sense to write $X = X$.

Now, from the relationship *observer/entorno* (here, every time we write it should be read as co-figurator C.)

Let co-figurator x configure a set of distinctions i within a context of particular significance and organize it as an abstraction for a given time t_j:

$$(C_i (t_j)) \text{ ----------------------- } C_x (C_i (t_j))$$

Let this be at the same time a co-figurator y that generates for that same context y and moment t_j a configuration f:

$$(C_f (t_j)) \text{ ----------------------- } C_y (C_f (t_j))$$

We will define as background of the configuration or *Mxy* every application P, which, acting on the particular configurations $(C_i (t_j))$ and $(C_f (t_j))$, serves as a form of exchange in the communication between the two observers, as follows:

$$P (C_i (t_j)) C_x \text{ ----------------------} M_x$$

$$P (C_f (t_j)) C_y \text{ ----------------------- } M_y$$

If *Mx* and *My* are equivalent, then co-figurator x and co-figurator y generate and share territoriality. This territoriality is computed based on the relations of equivalence in the maps *Mx* and *My*. These equivalences are produced in at least two areas:

$$Equ\ (M_x, M_y) = P\ (C_i,\ _f)$$

As shown, the way to generate the configurations is similar. This would explain a common culture, that is, a process that conserves the way to configure. These configurations are time invariant assigning them a name that makes them different. The other computation of equivalences is for *tj*, implying:

$$Equi\ (M_x, M_y) = T\ (C_i,\ _f)$$

This is an application made on the configuration in tie, it reproduces the configurative process or memory associated to a particular configuration, something that makes it invariant as an associated event. This leads us to show that the concepts we believe invariant and objective are generated mutually in the relational dynamics of the observer. Finally, if:

$$Equi\ (M_x, M_y) = T\ (C_i,\ _f)\ \text{and}\ Equ\ (M_x, M_y) = P\ (C_i,\ _f)$$

and it takes place in the exchange process, the maps M_x and M_y would generate territoriality or effective cognition, which is experienced only in the domain of emotions, which is ultimately what you, the reader, is experiencing it as you read this paragraph. It is this plane that mobilizes the rejection or acceptance of what is written and does not respond precisely to the formal logic of mathematics, but yet sets it up for a decision to take place.

From the above, if we accept that the invariants and their changes are part of our relational dynamics as observers, then there is no possibility of formalizing the relational processes of the observer since the process and results are constitutive of this relationality, closed by culture, and, therefore, always unique and individuals.

Based on the issues raised above, and as we suggested in the introduction, reformulation of the culture/territory unit is possible only from its own relationality. The development strategy for this entire piece has been to make explicit the ways or distinctions that allowed us to explain without representing. The entire game has been to understand cognition in the culture and language of *entorno*. In this way, it has not been necessary to resort to the logic of the object as an invariant and universal ontological reality. The migration of subject to subject/*entorno* generates necessarily the explicitness of the extraction of differences process so that it is no longer possible to classify the predictive as subjective since this is only possible in the prescriptive relationality of culture.

Operations generated in the communication of territoriality (affect) set up arrangements that are open to processes of exchange of relational forms and memories; under these circumstances, the idea of complexity becomes a strategy to force

the effectiveness of the exchange. In fact, the affects, as processes of agency and belonging, are effective in generating the world of networks.

Returning to the theme, if semiopoiesis generates network co-figurations of an "esquizogenic" type, then, the kind of territoriality decreases relationships of reciprocity and confuses relationality with the transaction of object, causing alienation and alienation within; these reach their limits when culturators are confused with objects of transaction and are treated as a commodity. Then one may begin to distinguish a number of symptoms in the forms in communication. An example is the confusion of the symbol with the object, and in addition, the breakdown of cognitive integration as impossibility of establishing contextual connections among distinctions through different modalities in "communication channels". All this has been called *postmodern* from current theoretical areas in which different concepts that distinguish a new era paradigmatically different from modernity, where uncertainty, diversity and tolerance are the hallmark of distinction, and yet, do not explain that the distinction of *change* at a global or worldwide level is increasingly uniform, although groups and collectives, multiple networks so to speak, still survive, holding on and suffering but also trying to build from themselves.

Consistent with what was stated in the Introduction, we have postulated a cognitive theory to explain organization/territory systems. Relational cognition has allowed us to reformulate their organization in the sense of the communication processes of culturally living units. This being the condition, an observer/*entorno* can be explained as part of a cultural network through eco-semio-auto-poietic processes; these communicate among living units the opening of their agency and belong to the network which places them or recognizes them in spaces of territoriality or affect. How effective is the affect that moves the closing or opening to what we call *real,* real whenever it is mapped in an area that recognizes it as part of, that is, if in the exchange "real" is both territorial in the form and in memory of those doing the exchanging.

What guides our actions, then, is not an independent validating reality, but an irreducible and indivisible act of configuring, the result of the cognitive history of our relationality in culture, what we have called affect or dis-affect. This, to the degree our culture might make it explicit as a basic or fundamental configuration of its eco-organization, would generate those desires that have signed and denominated as well being in togetherness. In other words, we are moving from autono-mine to autono-yours.

God could have thrown the dice, but he was not alone.

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KEY TERMS AND DEFINITIONS

Communication: Any activity that organizes the exchange of configurations as ways of extracting differences, to preserve the relationship organism/*entorno*. In this way, communication is a condition of the living unit which organizes relationality and its forms, what we call *languages*.

Configuration: Total of the extraction of dual differences that generate meaning for the observer/*entorno*.

Culture: Set of conservative configurations that guide agency and belonging for an observer/*entorno* or a set of them within a communication network.

Ecotome: The systemic operational relational unit organization/territoriality.

Entorno/Observer: Basic relational unit centralizing information.

Entorno: Relational configurations of territoriality unique and permanent for a living system.

Landscape: The cultural application of exchange related to settings within the communication process among observers.

Relationship: Process of the extraction of differences in the unit *entorno*/observer.

Territoriality: Process of effective equivalence in the exchange of maps or landscapes, as configurations of meaning, derived from activity generated in the *entorno* of observers in communication. Effectiveness emerges in the domain of affect.

Chapter 2

From Hierarchical Structure to Relational Networks

ABSTRACT

In this chapter, the authors show how functional organizations, derived and perpetuated by the Romans, the Church, and the army of Frederick the Great, were ready-at-hand with the emergence of the industrial era and associated with the creation of wealth through a series of subsequent and specialized value-adding steps. This is a typical command and control model. The chapter shows that this is not the only model for wealth creation over the centuries, even though it continues to predominate in contemporary organizations. Relational networks existed throughout the same historical span of time and are undoubtedly responsible for the greatest accumulation of wealth. They often accumulated such a significant amount of wealth that they threatened the legacy models of church and state. Legacy thinking, directly and indirectly, continues to perpetuate questionable assumptions and cognitive blindness about how work really gets done and how wealth is really created.

INTRODUCTION

The Evolution of Organization

Traditionally, it is our custom to view companies as though they were a hierarchical organization chart. We reproduce this structure in management committees and agree upon actions then replicated down the hierarchy following the same logic. This simplicity, however, inherited from the dawn of the industrial revolution and military and ecclesiastical institutions, has little to do with the real complexity exhibited today by 21st century institutions.

Today's world is one in which intangibles, specifically knowledge, have caught the attention of businesses and governments as well. Knowledge goes into production, governing practices, processes and resources. In the process, organizations have been forced to introduce new concepts regarding how to define organizational dynamics, in order to be able to diffuse value, taking into account the complexity and agility being faced under current scientific and technical conditions.

Following this premise, the possibilities of value diffusion are directly related to the organizational culture that builds the pathways of diffusion, based on relationships and processes. By the same token, if current conditions imply complexity, speed, and consistency, management models resting on such rigid structures as hierarchies will constrain value diffusion and create a series of wastes throughout the organization. These wastes show up in any number of ways: lack of coordination among areas, both intra and inter-functional, rework, commitment failures, breakdowns in programming, the favoring of functional targets, and other "invisible" failures.

As seen above, the organization in its evolutionary process must evolve to flexible plastic forms in order to sustain the qualities of value diffusion based on current scientific and technical conditions. Understanding the organization of the 21st century in this way is to visualize configurations of networks of relationships that stand as support to carry out the strategy of value creation and diffusion.

The need to change our way of thinking obliges us to look at the company as a network of relationships organized around the production of value model. This network of relationships is configured in a world of facticity. It constitutes the real business model, not the one declared by the company, calling forth those business processes responsible for the success or failure of the organization. Until now there were no tools capable of diagnosing the real network and exhibit its configuration, present state and capacity to ensure the strategic viability of the company.

This chapter invites us to view new ways of organizing, motivating us to deconstruct hierarchy and focus on the white spaces in the organization chart, thus making explicit the relational shapes of relational networks or RENS.

BACKGROUND

Organizational Common Sense

Taiicho Ohno, considered by many as the father of the Toyota Production System, once commented to this author that Americans could never really understand what *Quality* is all about because they don't understand "real estate". When queried about the connection between the two, he replied that the connection is obvious, all real estate in Japan having a market value per square foot at least several times higher

than its equivalent in the United States, vastly more in the case of large extensions required for industrial use, which, in the United States are plentiful and inexpensive, in Japan scarce and very expensive. Therefore, to choose to compete with the United States in an industry as real estate dependent as the automobile industry, how much money can be dedicated to supplier/customer warehouses, redundant production lines, in-process inventory, spaces for re-work, finished product inventory, etc.? When automobiles are finished, as observed by Ohno, U.S. manufacturers send them first to lots, then to dealers who have lots for them. In Japan they must go to port and be shipped since there is little room for finished product inventory and only a relatively small percentage of finished product is destined to Japanese consumption. The point for Ohno was obvious: when comparative real estate is so expensive, the efficient use of space is not only desirable, it is one of the core imperatives for business competitiveness in those industries. For Ohno, the discovery and elimination of waste was an aspect of survival and quality a kind of derivative. The point, for Ohno, at least, was so obvious that it does not show up in the dozens of books written about "Lean Manufacturing", mostly by Westerners.

Most Japanese live in a historical conversation about the cost of real estate that does not dwell even remotely in the imagination of their American counterparts. They live also in a lot of other historical conversations that have little or no resemblance to those of their American or European counterparts, conversations about institutional loyalty, relating to others, work ethics and shame, to name a few.

Western culture is also obvious, at least to those who share it. Those who share it do so in ways they cannot begin to imagine, through shared linguistic roots, shared philosophies, histories, and values, shared musical scales, folk tales, visions and dreams, shared notions of the world and how to understand, analyze and predict it. We are all historical beings born into an ongoing conversation, ongoing behaviors, practices and institutions. The obviousness concerning who and what we are and why things are as they are we can refer to as the *background of obviousness*; it is so transparent that it is unavailable to consciousness unless an event occurs or the historical context changes in such a way that our normal way of being and doing results in a breakdown of such dimensions that we ask ourselves, "What in the world is going on?" Somehow, we no longer recognize our world or who we are and what we are doing inside of that world. Obviousness shatters and we begin to see things for the first time that we have never seen before.

We are now experiencing a paradigm shift that is breaking away from an obviousness that has existed for more than two thousand years, a paradigm shift as described by Kuhn (1970): revolution as opposed to evolution; an event that turns traditional common sense on its head, shifting often in the opposite direction. This paradigm shift has catastrophic effects on the continuity of economic and business thinking, a phenomenon that shows up the shortened life spans of large, previously solid

business and financial institutions and explains to a large degree the unsettlement of financial institutions and their increasingly erratic, often unethical and lawless behavior as they try to make sense out of a changed world. No business executive can afford to overlook or ignore the collapse of the common sense in which they have been formed. To understand the making and depth of this common sense we must make a historical survey of where it is originated, how it was shaped and the amalgamation of legacies that hold it together and how they shape our inherited way of thinking and doing. We must understand the obviousness of our world before we can understand its catastrophic collapse.

We can thank the Romans for creating much of our obviousness and many of the notions of leadership, organizational structure and management practices that have made our Western societies what they are today. It may be a shock to many to know that as early as Hadrian the Roman army numbered nearly 400,000 soldiers, with legions divided into cohorts and cohorts into companies, each with a specific number of men, including soldiers, cavalry and artillery. Every aspect of defense was organized, from the size, layout and structures of encampments, to the number of miles to advance per day. Combat formations were well regulated, including the space between ranks and files.

Roman armies were expert tacticians; they invented the functional organization around expertise of different kinds and applied it sequentially. First they built roads, wide enough for two-way chariot traffic, fortified logistics stations along the way –*mons fortis*–, then consolidated their legions, cohorts and companies into formation, marched and mobilized to mount the attack. Common tactics were to surround the fortified cities, cut their logistics, and apply artillery –arrows, stones and incendiary devices– to hold down the defenders while machines –catapults– breached the walls. Once they were breached, the prior sequences were replaced by a cavalry attack, followed by an infantry attack and the enemy defense was systematically destroyed. They then organized the conquered cities and country around a bureaucratic system of tribute and taxation; let the locals manage their country and cities reporting to Roman management –*Pro-consuls*– with enough Roman military presence to control the threat of unrest.

The Roman navy, estimated at some 50,000 men, was generally more defensive than offensive in orientation, aimed at keeping piracy under control and the seas safe for navigation and trade. It is no wonder, with these capabilities, that the Romans were able to conquer a large part of the known world and manage it virtually.

The Romans created at least two important traditions shared by modern society: the hierarchy, with its notions of planning and execution for constructing public works and conquering nations, and the bureaucracy, notions of civil and judicial control designed to consolidate and sustain a well ordered civil society.

From Hierarchical Structure to Relational Networks

Both traditions are hierarchical in structure, anchored in divine approbation, characterized by nobility, rank and privilege, agglutinated by laws, rules and protocols with a clear definition of roles and tasks according to function and rank. Action is produced by situational analysis, decision-making, giving orders and executing tasks in the case of military action, designing projects, and by receiving, rejecting, assigning, processing and registering in the case of bureaucratic work. Registries, notary and legal, provide a rich documentation of commercial and civil transactions over many centuries of Roman rule. The judicial system clarified and tightened the common sense.

The upside of these hierarchical and bureaucratic structures is the propagation of stability, clear expectations/reduced uncertainty, recurrent processes, task clarity, productivity, competence based training, order, discipline, standardization and sequential coordination of work and efficiency. According to Gibbon (1776) the Roman Empire at the moment of its greatest expression was composed of some 120 million people, as many slaves as free men, supported by tributes, taxes, conquests and slave labor. We will see later how the substitution of slave labor created practices, taken for granted for millennia, some of these creating significant waste and stifling innovation in the emerging relationally networked world.

The downside of these inherited structures is, in the case of hierarchical control, innovation occurring mainly as a consequence of failure, rigidities and slowness in achieving and implementing change, blindness to context, dependence on oaths of allegiance rather than trust, abuse of authority, proliferation of moods of resignation and resentment, lack of motivation, low capture of individual and team potential to add value, repetition of good practices but constraints on experimentation or search for best practices, overall distrust and high potential for conspiracy. This background noise we refer to as *waste*. In the case of bureaucracy, standardization of practices predominates over context, hierarchy is its own customer, exceptions get lost in the process, and there is a low sense of urgency and slow reaction to the dynamics of change.

While hierarchical and bureaucratic structures formed the backbone of the Roman state and explain to a large extent its ability to expand and sustain itself, there are parallel events taking place throughout the empire related to economic growth: this did not only depend on slave labor but on barter and wage labor. Wages for labor is not a novelty, there are biblical references in Luke 10:7: "For the laborer is worthy of his hire"; and in Matthew 20:13-14: "Friend, I do thee no wrong, didst not thou agree with me for a penny? Take that thine is and go thy way". Labor in Rome might be free, enslaved, or state-coerced. How work is compensated other than through slavery seems transparent enough, but it is intimately related to relational networks that come into being even before the Roman Empire and continue and evolve after its fall, and the practices of these networks are conjoined with the

legacies of bureaucratic structures to form the deep structures that continue to define organizations and their behaviors.

The Emergence of Relational Networks

Guilds are ancient relational networks, referred to as early as the *Digest of Justinian* regarding the Twelve Tablets, or mid-fifth century B.C. Roman code of law, in which the existence and rights of private associations are confirmed. The Twelve Tablets point to private, as opposed to state-inspired, origins for guilds (Epstein, op.cit.). This supports the notion that these associations, known as "colleges", were self-formed groups whose membership consisted of those sharing a common trade or purpose. These associations were composed of full and equal members whose joint participation was aimed at producing a social harmony or the promotion of decisions favorable to the group and its members. Some issues of common interest might concern how to deal with wage issues, how to manage unfair competition, how to protect themselves from outside competitors, how to gain municipal or state support, etc.

These colleges almost certainly originated as groups of artisans or trade associations aimed at dealing with survival issues but eventually ended up codifying employer/employee relations and group-thinking, influencing their environments in a number of ways. Colleges are said to have played a role in the political disorders of the first century B.C., suppressed after the Catalinarian Conspiracy in 64 B.C. until reestablished by Clodius in 58. Julius Caesar is said to have dissolved all artisan guilds except the ancient ones (Walzing, 1895). In the later empire colleges could petition for recognition and were subject to edicts and rules and also could obtain sanctions in the law. The rules often implied the obligation of public service of some kind in exchange for public favors. While colleges attempted to use their relational and networking capacity to obtain privileges from the government, the government was interested in finding out how the colleges could serve its financial and supply needs. As colleges grew in strength, they are contemplated increasingly in legislation, recorded in notarial documents and contract law. While it is difficult to demonstrate a historical continuity between the colleges and associations of the Roman era with medieval guilds, certainly the Roman legal tradition went uninterrupted, even defended by gothic invaders and promoted to ensure civil stability.

The hierarchies and bureaucratic structures of the Roman Empire are visible through historical documents and alive today as part of the cultural DNA transmitted through our Judaeo and Greco-Latin culture. What is not so visible are the cabalistic cults and varied associations, some artisans, others merchants and traders, associated with cults and other marginal practices. The latter, reflect relational thinking and networking on a vast scale, often invisible but nonetheless a way of thinking and

doing that were powerful then and becoming more powerful again as hierarchies and bureaucracies break down under the pressure of the speeding up of change. Democracies owe their existence to the practices of those "colleges" (lodges), and both positive and negative legacies abound in the practices of governmental institutions (congress and senate) and political parties.

After the fall of the Roman Empire colleges and guilds also collapsed, as cities became depopulated and much of the Roman economy was swept away. Wage labor and apprenticeship would only begin to make their comeback when some of the gothic tribes began to understand that it was to their advantage to preserve as much of the productive capacities of the Roman economy as possible and that *colleges* provided not only a significant part of that income but some necessary services as well. Generally, however, colleges had a tough time because of depopulation and the collapse of markets.

By the time of the Carolingians, there is a resurgence of associative organizations, often bound together through oaths, sometimes associated with conspiracies. The Church was more active than the State in condemning these associations, especially objecting to the oaths, while, at the same time, promoting confraternities, lay associations as well as craft or professional groups. The concept of *parish* derives from these lay associations. Again, these groups assume characteristics similar to the colleges of the Roman era although there seems to be no thread of continuity, although, if there were it would be difficult to demonstrate, because of the very introspective nature of this kind of organization (Epstein, 1991).The important features continue to be oaths aimed at mutual protection and commitment to action, the completion of which provide identity for the participant. Even when these associative organizations have peer hierarchies (advancement based on demonstrated acquisition of knowledge or skills, as in the case of competency acquisition in the case of artisan guilds, or knowledge, as in the case of freemasonry), the sense of mutual responsibility and trust are key ingredients. It is important to understand the relational character of associative organizations, their networking capacity, since it is an underlying common sense or undercurrent which threatens and disrupts legacy structures time and time again.

By the year 1000 guilds are once again entrenched in Europe. *The Book of the Eparch* mentions twenty-four professions and crafts, including notaries, bankers, merchants, importers, candle makers, soap-makers, innkeepers, marble workers, butchers, pork-dealers, etc. They are regulated through practices, standards, rules and aspects particular to the trades themselves (Freshfield, 1938). The State intended to control the guilds down to the last detail, in part because of their importance as social institutions within the framework of the governance of cities and towns, but also because of the potential damage should they turn conspiratorial.

For our purposes, the relational aspects of guilds are not only important but also the question of competence acquisition, intellectual capital and the introduction –re-introduction– of wage labor. In the guild system employers emerge with a power that has gone unchallenged through the centuries. Membership of many guilds consists solely of employers. How they conspire to profit from labor and intellectual capital is an enduring structure in Western society and a critical concern for relational networking in the modern age.

The feudal period, often referred to as the late agricultural era, is characterized by the land tenure of feudal lords with its associated system of serfdom, the word 'serf' deriving from *servus* or 'slave'. While serfdom substituted for slavery in the case of agriculture, forestry and mining, the resurgence of growth in cities and towns did not have such a convenient solution. Initially, family members or the socially unfortunate, whose survival depended on work for food and clothing, were sufficient to satisfy manual labor requirements for the merchants and the trades, but as the economy grew (and with it, craft and professional guilds) labor became a source of concern. Keep in mind that the growth of cities also created a pressure to gain self-government from feudal lords, often achieved through some system or other of bureaucratic governance. What fueled growth in the feudal period was not the product of feudal land tenure so much as the revival of trade and market activity along with more effective and efficient forms of production, achieved in large part through the increased importance of guilds.

Employers configured the labor market into three general categories of work-ers: apprentices, skilled workers and ad hoc workers, employed on a needs be basis. Apprentices might work for years depending on the age of internship or the level of complexity required to become competent in a certain craft. Apprentice-ship implied a contract in which the student was obliged to learn and the master obliged to teach. Skilled workers were, of course, expected to possess already the skills necessary to practice the trade. They generally commanded a high wage. Pay was fixed at a certain amount per day worked. Wages might be *locarium, merces, salarium* or *stipendium;* the former two imply a connection between a wage and a rent, and the latter refer strictly to a wage. Notaries recorded the kinds of contracts, depending on the condition of labor. These contracts recorded the kind of promise and agreement involved in the work relationship. While most workers received a daily salary, usually paid on Saturday, as part of a six day work week, certain trades paid on the basis of a piece rate.

There are several important innovations that derive from the resurgence of guilds. One is the relational network itself leveraged in such a way that it is able to persuade and coerce municipalities and governments to legitimize and support its activities (a tactic not unlike that of the formation of labor movements and syndical-ism), the introduction of the concept of apprenticeship, especially as associated to

the obligation to share intellectual capital and competencies in return for work and the commitment to learn; the notion of piece work and especially the regular wage labor and labor contracts. Guild thinking creates the obviousness that the creation of relational networks by employers to protect and further their interests is good for everyone and that contractual agreements around work for pay are a normal way of doing business, so obvious that syndicalism, its counterpart, is seen somehow as devious. Who in today's world would question the goals and objectives of the Chamber of Commerce?

Colleges and guild-type associations are characterized by equality among members, shared concerns, trust, acceptance of majority opinion, speculative conversations, political conversations, debate and dialogue, conversations for group action, networking within and without the group, and commitment to action. The level of trust among members may be to allow for conspiratorial conversations, similar to those of later associations of Freemasons able to organize the creation of democratic institutions to oppose the hierarchical institutions of monarchies and the Church. As cities grow in size these associations, especially commercial ones, acquire significant power since their breakdown or denial to perform and begin to sow the seeds of civil unrest.

The Clash of Feudal Hierarchies and Urban Networks: The Hanseatic League

We have commented abundantly on the resilience and strength of hierarchical organization, especially for specialized sequential activities, from Roman times to the present. With the collapse of the Holy Roman Empire, control over the western world became fragmented but still exhibited hierarchical structures, notably visible throughout the Middle Ages in the feudal system. While the feudal system was able to dominate land tenure and maintain serfdom, it was much less effective in dealing with urban centers, especially larger ones. They were dynamic and active networks of people with common interests striving to protect themselves or to create benefits for the group by controlling activity domains and resources that accumulated power and identity for the network. Many of these networks were invisible, sometimes conspiratorial, in the same way that special interest groups, even in today's world, are often not transparent; well-known organizations, such as Halliburton, demonstrate that buddy-networking is anything but a lost art. It is also interesting to note that it was another network organization, the Lombard league of cities, which eventually broke the back of the Holy Roman Emperors.

During the Middle Ages, for a period of several hundred years, network organizations were, for all practical purposes, more powerful in many ways than fiefdoms and kingdoms and might have come to dominate the western world had they not

been characterized by core-hubs whose principal interest was creating network advantages through the exploitation of their environments rather than the co-creation and co-development of their network environment as well, that is, as networks they viewed their relationship with their environments as a dichotomy, either/or, not holistically as both/and. They were more interested in seeking advantages for their network than in redefining and reinventing themselves to play more ambitious roles in the creation of new roles, such as nation building. They saw their strategic role as one of exploitation.

Little is really known about the Hanseatic League although it dominated European economic development for more than 400 years. The core network was never visible to historical observers, only certain management structures, although its trace, even today, is visible in the economic alliances of nations and regions and trade agreements. The Hanseatic League was eventually overcome, but its practices are as alive today as they were five hundred years ago. They constitute examples of how powerful network thinking and acting can be.

Perhaps the most complete account of the Hanseatic League is given by Helen Zimmern in her work *The Hansa Towns* (1889). Zimmern cites the year 1241 as the time in which the "Hansa" network formally emerged through an alliance between the German towns of Hamburg and Lübeck, although she is clear that the way in which the network developed and became consolidated cannot really be known. Again, when we speak of an alliance between towns, it is clearly an alliance of merchant guilds that have leveraged the power of their networks so that they are able to speak for the communities themselves. This alliance was certainly a critical one, but the key components of the network were probably in place in the mid-12th century. Zimmern states: "Therefore, in order fully to understand the importance and bearing of the League, we must begin our story earlier than its history proper would seem to warrant; only thus can we thoroughly comprehend why the Hanseatic alliance in fostering its own interests, in aggrandizing and enriching itself, was working also for all humanity, since it created and enlarged the idea of public right, and thus sowed the seeds of principles then novel, but on which our modern civilization is largely founded and with which we are now so familiar that it is difficult to realize how matters could ever have been otherwise"(p.11).

If we accept the date given by Zimmern, it becomes even more problematic, given that the German Empire was concerned about alliances of this kind and at the Diet of Worms in 1231, the princes expressed their concerns about this kind of activity and the emergence of a dangerous rival power and against the existing laws of the Germany Empire. This indicates that merchant, urban and regional (even international) networking had reached an important degree of consolidation much earlier.

Despite this, the Hansa, as we have mentioned, was founded through an alliance between the northern towns of Hamburg and Lübeck, which lay on opposite sides of

the base of the Danish peninsula. The alliance made sense considering that Lübeck was strategically located to exploit the herring spawning grounds off the coast of Scania, then part of Danish territory, and Hamburg well positioned to exploit the salt produced in the mines at Kiel. The salting and drying of meat and especially fish opened possibilities to begin to dominate the main dietary staples of the time and control an important part of the economy although a large number of other goods were contemplated in the positioning of the Hansa.

But even before the formalization of the alliance, this "guild", or "Hanse", was a powerful social network with local German roots and powerful ties to the Church and other social and economic interests. As they spread out, they were often spoken of as "foreigners" and they extended their depth and reach with clearly monopolic intentions, dictating to potential allies the terms of belonging, creating a capacity for defensive military actions (and using it), even making and unmaking kings. Within a relatively short period of time they extended their control "from Bergen in the north to Venice in the south, from Novgorod and Smolensk in the east, to York and London in the west" (Zimmern, 1889). First to join the alliance were key towns along the Rhine, followed by other Baltic towns. The Hanse, within a brief period of time, controlled Baltic trade. Although trade in the Baltic had a long history before the Hansa, for centuries this was a loose network with no controlling hub. The Hanseatic League represents the *declaration* of a network hub.

While the Hanse was promoted by associations of merchants, it is one thing to organize the logistics and control of products, as happened in the earliest times, so as to lower transactional costs and control prices, and another thing entirely to position associations at a municipal and inter municipal level, against the expressed concerns of princes and monarchs, to the point of controlling regional trade and trade among nations.

Within a hundred years of the initial alliance, the Hanseatic League was for all practical purposes consolidated. Salt and fish were only the beginning, although salted herrings actually became a medium of exchange, not only for other products but even as a tax or tribute. The allied cities soon gained control over most of the salted herring trade and Cologne joined the League in 1260. Henry III, in 1266, granted the Hansa a charter for operations in England, and by 1282 there was a powerful Hanseatic network in London.

The Lübeck-Hamburg alliance was even in its beginning a complex network. On the one hand it was a trade network agglutinated by merchant associations of different kinds, shapes and sizes. On the other hand it was a network of cities sharing not only economic interests but political interests as well (Margrit Beerbühl, 2012). Certainly, cities that were trade centers were concerned about protecting their central sources of income, but they also shared concerns about their political environments: issues such as taxation, protection, government interference, expec-

tations around support for military actions, etc. Cities, for their own self-defense, developed military capabilities. Indeed some "Hanseatic cities" were networking long before the creation of the League, although the League, in order to defend its own from foreign aggressors and pirates, came to consolidate impressive military assets and capabilities.

The management of the Hanseatic League in its multi-dimensions was far from being a heterarchical organization. There was, however, an obvious presence of commitment, trust, solidarity and sense of shared duty and obligation in both the League's commercial and political networks. The League must still be seen as an *emergent phenomenon*, the process of network interaction involving not only trade associations and trading as an economic fact, but including the impact of these along with that of the formal and informal structures of prevailing political powers and what all of this meant to urban centers, whose network identity was clearly more relevant in those days than in today's cities, that can take the stability of their environment for granted.

The evolution of German merchant networking could undoubtedly fill a number of volumes, but most incipient networking is built on the exchange of promises and trust and agglutinated over time by the reliability and flexibility of interacting nodes, histories that go unrecorded. So, there is, although invisible, a pre-Hansa network formation that may have been hundreds of years in the making, of which virtually nothing is known. The peace agreement between Gotland and Germany in 1161, followed by the Gotland Association, which included Lübeck as well as other merchants from Westphalia and Saxony, may have been the seed of the Hanseatic League, or even the cornerstone of its founding. Cologne merchants were also granted trading privileges in London as early as 1157, long before Lübeck began trading with England. Also, Visby, before its incorporation into the League, had, through its merchants, established in Novgorod. So, the pre-Hansa network consisted of a series of cities with specialized merchant interests acting as hubs, with trading posts as their spokes in different regions or countries, often creating other spokes (trading posts) in more and more upriver communities.

The word "Hanse" originally means "armed convoy" and this name reflects the concern for protection against risks, essentially to gain a competitive identity based on reliability and trustworthiness, a theme we will discuss further on. Within a few decades of its formalization, the Hanseatic League hosted some 200 cities in 17 countries (Belarus, Belgium, England, Estonia, Finland, France, Germany, Iceland, Latvia, Lithuania, Netherlands, Norway, Poland, Russia, Sweden, Scotland and Denmark). By forming a relational network among cities and merchants, the League was able to acquire privileges from member cities, exemption from taxes and protection, as well as a monopoly position in East-West trade (Gert-Jan Hospers op.cit.).

TRUST-BASED NETWORKS

The trading industry is a classical trust-based network, true today and even more critical in the Middle Ages where the time-lapse between the shipping of goods and the acknowledgement of arrival and receipt could take six to eight weeks. By the time of the Hanseatic League traders were no longer peddlers moving about as travelling salesmen selling their goods, but were consolidated in offices with a staff of people who looked after a warehouse, orders, documents and logistics as they dedicated themselves to expanding and consolidating their networks. Managing a "trading post" –a *kontor*– with its associated warehouse and logistics, requires a significant amount of communication, information management and coordination.

Networks of trust were built in several ways. One way was to involve the family in the business, relatives as well as children. Family members were often involved in the business at home to learn the trade and then sent to live in cities abroad to manage the 'kontor' on the receiving end. Sometimes, marriages were encouraged between families in one country and other trading families in other countries. Some larger and well known traders in the League spent many years in important trading cities associated with the League to set up business there before returning to their own countries. Some even took up residence in client countries. Another way to build trust was through the use of "apprenticeships", a millenary tradition in which a non-family member would be taken into the business and taught every aspect in exchange for commitment, and then given significant responsibilities in other League cities, extending his apprenticeship and finally even being involved as a junior partner in the business. Important traders also developed other trading partners. According to Margrit Beerbühl (2012), the merchant Johan Pisz from Danzig (1421-1454) had some 40 trading partners, and Hildebrand Veckinchusen more than 1,100. Sophisticated traders such as the Veckinchusen family often chose trading partners with strong family and political networks as well.

Part of creating trust is ensuring the ability to keep promises, and this has to do with reducing risks. The declaration of the League and its expansion throughout Europe was a formalization of network relationships among important urban centers and their merchant organizations. The formalization of relationships not only reduced political uncertainties, but transactional costs as well: these reduce risk and build trust. The Hanseatic League went even further and leveraged *kontore*. Kontore were auditing entities that institutionalized, supervised and audited norms and rules of conduct that the trading posts must abide by. They had their own jurisdictions and had a series of ways to enforce business conduct, through inspections, audits, claims management, etc., they could punish and even expel members. The existence and enforcement of norms, both reduced risks and created trust. The kontore also acted as communication centers and information hubs, giving news about market

conditions, country conflicts, shipwrecks, etc. (Beerbühl, 2012). Merchants began to invest in partial ownership of a number of sailing vessels, also protecting themselves against the risks of incompletion of commitments. Some ships had as many as 64 different owners. The merchant, by not entrusting his cargo to a single vessel, reduced risks and created a more positive assessment about the reliability of the merchant and his trustworthiness.

Obviously, the actors who had developed impressive trading competencies even before the Hanseatic League were skilled at creating, developing and managing networks not only locally and regionally but among other trading nations, managing all of the social and political complexities. These networking skills increased even more as the Hanseatic League formalized many of the networks. Merchants, at the same time, were not only involved in their craft but participate in political and management organizations of their cities and in varied associations, all networks, formal and informal. The use of multiple networks builds cohesion around purpose and, as networks, especially formal ones, make declarations, policy decisions and build rules and protocols, they begin to create the kinds of organizations that provide network stability. The Hanseatic League became the central network of participating cities to create a sustainable international trade network and the ability to defend it by military means if necessary.

The DNA of the Hanseatic network contained codes, however, that contradicted its efforts to create a sustainable organization. From its beginnings, the League saw itself in an either/or relationship with its environment. It saw itself as a thing apart and designed its network and sub-networks to protect it from so-called environmental threats, seeking to control threats than to create broader and deeper alliances with other existing and emerging networks. Trying to create cohesion or homogenization in its central network, it began to close its relational system to the "outside", finally even legislating that only merchants born in Hanseatic cities could become members (Beerbühl, 2012).

The inability of the League to see itself in terms of the "whole" resulted in rigidities that made it function more and more hierarchically and, therefore, less able to adapt, that is, the network began to close in on itself, excluding numerous cities that were obligated to create their own networks, often with local and regional rulers. The habitual leveraging of privileges and monopolistic practices, policies of exclusion, the polarizing effects of the Reformation, the lack of an internal banking system and the changing political shape of the world with the strengthening of the rule of kings, all began to weaken the critical internal and external ties of the League. Despite several attempts at internal reform, between conflicts with monarchies and the emergence of other competitors, the League failed to adapt changing economic and political realities and lost its ability as a relational network to maintain its structures

of influence and control. After more than 500 years of control, it lost its coherence and congruity, hence its relational competitive advantages and sustainability.

Guilds and Colleges: Positives and Negatives

The ability of the Hanseatic Network to accumulate power and increase enormously the wealth of participating cities over the centuries is an indication of the power of networks to produce effective action. Action is produced by sharing concerns, engaging in dialogue and debate, exploring alternative courses of action, decision-making, legislating group standards and norms, commitment to carry out group agreements and/or (pressure) tactics to shape environmental adjustment to group needs.

The upside of collegiality or association is the ability to agree to effective action in an efficient way, to sustain, increase and leverage relationships built on trust, to agree on acceptable behaviors, standards and norms, to cooperate and coordinate in domains important to the growth and success of the group, to counter predatory practices, to innovate and share innovations, to respect other members and the spaces required for the prosperity of each and all, to discover ways to deal with the negative aspects of state hierarchies and bureaucratic control. In the other hand, the downside of collegiality or association is the tendency of the group to see itself as its own customer, to take positions that privilege the group without considering the context, to lose sight of the context, to ensure trust by requiring oaths, often with severe punishments attached, to abuse trust by conspiring and acting in unethical or illicit ways; to lose sight of the original purpose of the group and use the relational power of the group for personal advantage or the accumulation of power unrelated to the needs or purpose of the association, to create sub-groups within the group, each with separate agendas. The downside of association proved to be the downfall of the Hanseatic League. It punctuated the network as an essentially merchant network concerned with protecting self interests. The world would certainly have taken a different turn if these networks had not been so introspective, seeking not only the integration of self-interested groups but influencing social and economic integration in the emerging nations controlled by monarchs and influenced by the Church.

Inherited Legacies

The collegial character of the Hanseatic League was not completely unique and was operating, as we have seen, in both ancient Greece and Rome on a much more limited scale. Network structures, however powerful, did not so much characterize society as a whole, especially in political aspects. The rule was made by hierarchies. These well entrenched structures and systems of Roman times were inherited, used effectively by the Catholic Church (which reduced the levels of the hierarchy in a

significant way) and later perfected by Frederick the Great of Prussia to organize his unruly mercenary army into a sophisticated fighting machine, creating a planning staff and a unity and chain of command. Most of our present command notions originate with Frederick the great: unity of command, centralization of authority, staff and line, span of control, scalar chain (top to bottom), discipline, subordination of individual interest to general interest, esprit de corps, stability of tenure, and equity (institutionalized "fairness"). The organizational structure was functional and hierarchical, with clear spans of control. These are the basic principles later elaborated by classical management theorists.

Adam Smith's *An Inquiry into the Nature and Causes of the Wealth of Nations* (1776) is remarkable for the depth and scope of the research involved, but even more so, perhaps, because it is the first systems approach to interpreting the creation of wealth. It is curious that a person whose book is a testimony to the abuses of capitalists should be referred to by many as a manifesto for capitalism. Smith studies the emergence from Roman times of the use of metals and finally coins as mechanisms of exchange, the ultimate institution of coins, exchange value and value in use, including the view that "Labour (…) is alone the ultimate and real standard by which the value of all commodities can at all times and places be estimated and compared. It is their real price; money is their nominal price only." (Smith, 1776).

The practice of putting a coin value on labor purposefully less than the exchange value becomes a way to create wealth for the "landholder" and, later on, the business owner, it then becomes a legacy shared by agriculture, commerce, manufacture and other institutions, private, public or religious. Hand labor, later "manu-facture", and the nominal price paid for any kind of organizational activity become the paradigm for the creation of wealth. This transactional view of *quid pro quo* continues to dominate the legacy thinking of businesses stuck in legacy thinking emerging from the early Middle Ages.

The industrial revolution, of course, was heir to this transactional view of pay for labor and the specialized "task sequence structure" born of the Romans and polished by Frederic the Great, a structure that notably suits the mechanization of industry which required precision, speed, clarity, regularity, reliability and efficiency. The classical organizational theorists, Fayol (1916), Mooney (1947) and Taylor (1919), and others, further develop the notion of functions around the inherited "task sequence" structure and give us the hierarchical authority-driven organization. This continued to be viable, more or less, until the 1980's, at which time the inherited system of organization began to fall apart, a phenomenon still not visible to most business schools, or even the organizations themselves. This is a time in which agreements on tariffs and trades, consolidation of industries, de-regulation of industries and the growth of multi-national companies begin to break down the

vertical boundaries of business. The need for lower costs, quicker response time and international coordination begin to call for flatter organizations, quicker and lower level decisions and business processes.

The functional organization was already under stress in industries in which parallel engineering and complex project development were important. This had resulted in a modification of the functional enterprise that consisted in creating a horizontal process structure that crossed functions. This "matrix" organization attempted to reconcile the needs of horizontally simultaneous actions with the notion of vertical subordination and control. With globalization, however, the matrix organization acquired other dimensions and has largely become a tediously slow and bizarre arrangement that forces decision-making to the top. It tries to marry two opposing common senses.

Most of us are aware of the legacy created by Taylor and others, whose insistence on moving "thinking" to the top and "doing" to the bottom enhanced the efficiency of the production line while alienating workers and reinforcing the separation of roles and tasks within the vertical hierarchies, each of which had specific and demanding objectives dictated from the top. This was not, of course, an invention at all, simply an application of the practices inherited from Roman structures re-designed and managed for sequential summative tasks.

Had the mechanistic approach to organization not worked well, it would not have lasted for so long. It produced satisfactory results when the tasks were straightforward and summative, the environment was stable, products were repetitive, precision was necessary and people were compliant. It still works well in such businesses as McDonald's, although the rotation of personnel is often as high as 300% per year. No one makes a career at a McDonald's outlet. It is also important to note that change comes slow in McDonald's and this banner mechanistic company suffered its first losing year in history in 2002.

Mechanist approaches have severe limitations, when adaptation is important, when decisions must be quick and not bureaucratic, when tight collaboration is required among the organizational units and when employees are ambitious. Mechanistic organizations generally lose track of the customer, optimize functional objectives at the expense of the whole, get trapped in their own legacies and have trouble innovating. Mechanistic organizations are beset by every imaginable kind of rigidity and those which are unable to make emergent, qualitative, second order changes are rapidly going out of business.

Organizations from this era are characterized by inward looking styles, clannish and hierarchical. The need to compete for resources and to defend unit and functional objectives reinforce the struggles to protect against overlapping and incompatible objectives, played out in win/lose scenarios. This makes it unlikely that these same

units and functions should be willing to sub-optimize their results for the good of the whole, especially in matrix settings in which the vertical part of the organization tends to be more powerful and long-lasting than the horizontal structure. In the end, the customer and his business get lost in the shuffle.

Accounting for Wealth

Still another legacy, perhaps the most pervasive, rigid and deeply rooted, is that of bookkeeping and accounting. Accounting reports date back even to ancient Babylon, but the double-entry bookkeeping systems was created by a Venetian monk, Fra Luca Pacioli, some five hundred years ago. The real demand for accounting information is concurrent with the early industrial age, related to the need to deal with and keep track of the significant sums of capital required by scale of production processes. Thus textile mills, steel works and railroads create the demand for more structured accounting information.

Mass production and continual operations have high capital requirements. They require a stable work force, making it necessary to hire workers for the long term and significant inventories of raw materials. The integration of conversion processes in internal operations makes it necessary to obtain price information for the outputs of these very processes in order to understand the efficiency of labor and materials and to measure and evaluate as well the effectiveness of managers. Early accounting measures were quite elementary, cost per hour or cost per kilo for each process or sub-process and worker. The core concern of measuring these costs was to understand the costs of end products, the efficiencies of processes and the productivity of workers in order to set and manage goals and objectives. Thanks to the legacy of "wages" and "contracts", inherited from the middle ages, and the summative character of tasks and process steps, tracking human capital costs as related to value added was not complex with basic accounting information, especially since these early process industries were geared to convert raw materials into a single finished product, or move people or freight from point A to point B in the most efficient way possible.

As the complexity of firms grew and faced by economic downturns, there grew a need to understand and incent improved efficiencies. Scientific management sought to find the "one best way" to use labor and material resources. While Taylor's book is insulting to the intelligence of the average working man, it outlines a way to minimize waste and maximize performance by benchmarking best practices, observing competences and measure real performance against demonstrably obtainable standards.

These costing efforts failed for a number of reasons that can be and have been observed from a variety of perspectives. The productivity of assets in the industrial area is certainly a core issue, but value is added in a number of other ways that have

nothing to do directly with the efficiency of productive processes and the productivity of workers. The early accounting information systems did not then and still do not today leave any kind of trace of hidden waste, not even those subtleties referred to by Taiichi Ohno at the beginning of the chapter having to do with real estate. They are equally blind to the wastes of poor coordination and those gaps in many domains between what could be and what actually is (opportunity wastes).

Industrial era organizations are hierarchical in structure, anchored in the need for return on capital investments, intensive in raw material inventory and labor, based on processes that add value sequentially with a division of labor around tasks that require determined movements and times.

Action is produced by organizing sequences of tasks, setting measurements that reflect best practices, executing tasks, supervising tasks and measuring times and movements. Value is added by dividing complex tasks into simple ones, organized sequentially, standardizing work and yields around best practices, and managing for efficiency and productivity.

The upside of these hierarchical structures is the propagation of stability, clear expectations/reduced uncertainty, recurrent practices, task clarity, productivity, competence based training, order, discipline, standardization, and sequential coordination of work and efficiency.

The downside of these inherited structures is, in the case of hierarchical control, innovation occurring mainly as a consequence of failure, rigidities and slowness in achieving and implementing change, blindness to context, abuse of authority, competition for resources, feudal clans, proliferation of moods of resignation and resentment, lack of motivation, low capture of individual and team potential to add value and, finally, the creation of a common sense that value is created by material assets and that human contribution is a cost that must be controlled in terms of productivity.

While single activity firms were fairly straightforward, the evolution of single activity firms to multi-activity firms, through vertical integration, created significantly more complexity. While reducing certain uncertainties in the market place, control issues can threaten efficiencies. The unitary organization is adapted, breaking the organization into specialized departments such as finance, purchasing, manufacturing, distribution, etc. The central coordinating structure seeks to coordinate unit managers and direct them towards common goals. The logic is to optimize the whole, so that the profits of the entire firm would be greater than the sum of the parts. The introduction of unit budgeting processes attempt to ensure the efficiency of resources usage from beginning to end. ROI becomes important but now as a measure of the productivity of capital and begins to drive business toward the achievement of short term goals. The introduction of asset accounting moves organizations to emphasis

on accounting profit and ROI objectives, not just productivity and efficiency objectives. Profits become targets rather than consequences and an ambiguity begins to flow through different units and levels of the organization.

In single activity firms, scientific management constituted a powerful interpretation around the importance of human competencies and practices in creating value, this despite being blind to the potential value to be added by making use of worker brain-power, something totally unrelated to education or demographics. In multi-activity enterprises, costs increase for many reasons unrelated to the creation of value through summative steps on the production line, coordination, communication and planning costs to name but a few.

Budgeting and Return on Investment procedures, in multi-activity enterprises, are aimed at focusing the activities of departments and functions on the overall goals of the enterprise. How capital is managed displaces the focus on summative value as a guiding light and shifts it towards cash flows and cash position. This is an important shift since it assumes that the way value is added in firms of the new era will not change, that traditional costs must be managed in the same way to increase profitability and that making unit managers responsible for unit profitability will make the entire enterprise more profitable in the short and long term. Not so curious in the case of single-activity enterprises, but increasingly more curious in multi-activity enterprises and today's even more complex business firms, is the question of where the value of human and intellectual capital ends up on the balance sheet, or rather where the value of human and intellectual capital does not end up on the balance sheet. In the equation *Profit = Revenues – Costs,* the reduction of salaries and training costs should increase the profitability of the firm. This is an obvious example of the problem of relevance –see Johnson and Kaplan, *Relevance Lost,* (1987)–, where the legacy of cost accounting inherited from one era becomes non-sense in a world in which value is produced less and less by capital, manual labor and machines and more and more by elements invisible to traditional accounting in a net-centric relational world in which knowledge, competencies, aptitudes and attitudes create value.

The emphasis in complex multi-activity enterprises on profit performance as a goal assumes a high level using practices of "attaching costs" as they move through the factory makes it impossible for managers to understand variable from fixed costs, much less come to terms with functional and department level goals within the framework of coherence and congruence required to be both tenable and sustainable as a viable system. Given this state of affairs, it is no wonder that *Scientific Management*, with its focus on productivity and efficiency, rather than accounting profit and ROI, succumbs to Rational Decision Making, attempting to manage the increasing mess. The assumption continues to be a Cartesian summative world of cause and effect, so the common sense is that all problems can be reduced

to their causes, corrections made, deviations corrected, and Humpty Dumpty can be put together again, making reference to Mintzberg (2004). The Oxford Dictionary describes 'analysis' as "the process of separating something into its constituent elements", and this is at the root of Rational Decision-Making.

DECISION-MAKING

Decision-making can be described as the process of selecting a course of action from a set of alternatives. This process usually involves observing, assessing, deciding and taking action. For a decision-making model to be "rational", a set of alternative choices must be put forth, the outcome of which can be generated with some degree of credibility. The model is "objective" if it can establish criteria, weigh them, and select on the basis of weight or value. The steps are wont to include organizational goals and objectives, alternatives, criteria and weight, selection of alternatives most suitable to criteria, the implementation of the decision, managing, evaluating results and starting all over again. In the world of Rational Decision-Making action is taken by analyzing alternatives, making and implementing decisions, evaluating results and re-booting the process.

The upside of rational decision-making is that it pressures executive management to look at problems and attempt to understand them within the scope of complex and far reaching processes, requiring hypotheses, critical information, the careful selection and weighing of criteria and the evaluation of risks. It tends to see the "business" as what is within the context of a competitive environment, generally focusing on the utilization of assets, often through the use of optimization methodologies such as LEAN and Six Sigma. These tools and methodologies, when well used, can produce high degrees of operational excellence and quality while lowering overall costs.

The downside of Rational Decision-Making is that the understanding of problems and the development of hypotheses depend on a historical observer formed in a certain common sense, normally Cartesian, in the context of a historical business formed in a hierarchical, functional way, often relying mostly on accounting information that may be not only irrelevant to the decision-making process but sometimes point in the wrong direction. The information requirements may require time consuming searches, aimed at the wrong "causes", produce mixed results, an over-abundance of detail and paralysis by analysis. The orientation towards facts may overlook aspects of coherence and congruence that may be staring the observer in the face but unseen because it is tacit and relational, residing in breakdowns in relational practices and competences and invisible to a "historical observer." There are none so blind as those who do not see that they do not see, they who are blind to their blindness. The greatest danger of Rational Decision-Making is an inward

looking mindset that loses track of its surroundings and environment, innovating from the past towards the present and blind to the possibility of inventing new futures with existing and potential customers, suppliers and other important stakeholders. Rational Decision-Making *per se* separates the business from its surroundings and closes the system around a historical DNA which may evolve but rarely, if ever, transform itself.

It continues to be commonplace, even today, to view companies as though they were the embodiment of a hierarchical organization chart. Company agents reproduce this structure in management committees and agree upon actions that are then replicated down the hierarchy following the same logic. This simplicity, inherited as we have seen, from the dawn of the industrial revolution and even more distant military and ecclesiastical institutions, has little to do with the real complexity exhibited today by 21st century institutions. It is interesting to note that Porter's model for competitive analysis and his framework for competitive advantage (1980) play out entirely in this inherited world of legacy thinking where markets are to be captured by positioning and power, opponents are to be outgunned and suppliers outwitted. His framework consists of parallel structures of support activities and sequential chains of "primary" activities. The denouement of the Monitor Group, assuming that it moved in concert with this legacy thinking, should come as no surprise since the real world of the Monitor Group would hardly resemble the imaginary world of the model for competitive analysis and the framework for competitive advantage outlined by Porter. The world was in a process of deep structural change even as his books were being published.

The surprise goes beyond Porter, the "all-star" of strategic planning for sustainable success. Commercial corporations generally have a high mortality rate. How many of the Fortune 500 companies of 50 years ago have either vanished or been taken over? The life expectancy of companies is relatively short, some 40 years. Why do so many companies perish in such a short span of time?

CONCLUSION

The Production of Wealth

Henry Mintzberg (2004), in his book *Managers not MB*A's, speaks of the "wrong people, the wrong ways and the wrong consequences." While Mintzberg is addressing the interpretations of MBA programs in universities, the real bottom line shows up in the continuation of corporate business practices in executive positions in those firms that do the buying, selling, hiring and firing, a prolongation of the wrong people, the wrong ways and the wrong consequences. If MBA graduates were not

hired and if the people doing the hiring shared other interpretations, Mintzberg's case would not be so relevant. While the argument: "which comes first?" can always be argued, what is germane has to do with those practices that derive from the historical settings that have created a grammar of action for management that leads to the premature deaths of companies, practices perpetuated in the management schools of most universities. The concept of "shareholder value" is one of the roots that is killing the plant, a concept that shares the same DNA as the historical thinking so criticized by Adam Smith (1776) in his *An Inquiry into the Nature and Causes of the Wealth of Nations.* Smith is a keen systems observer of the consequences of the reification of the production of wealth, some of these consequences linked to the widespread assumptions behind those financial management practices that have been accomplices in the demise of many companies.

We have observed how enterprise thinking becomes reified and summative throughout the industrial age, including the concept of an hourly wage associated with "things done" (or, in scientific management, "things done the right way in the right time"). This thinking becomes clouded when business integration and company divisions occur where tracking the things that add value are not so clear. Yet, the market price versus costs determines the profitability of the firm and the scale and scope of the accompanying *quid pro quo* practices from end to end. The final result is the accumulation of wealth measured in terms of financial capital. It is a world of bits, bytes and bites.

In this world, financial capital is the only kind of capital that is visible and it is related to "things" that produce, asset utilization and how this takes place through the application of hourly work. In this interpretation, every "thing" has a monetary equivalent. This monetary "equivalence" leads to the accounting declaration that "assets create wealth" and "liabilities are a claim against wealth [destroy wealth]". No wonder, then, that many companies pursue as objectives accounting measures more than measures of operational excellence.

In a world in which a single "product" emerges as the final outcome of a manufacturing process, it is not so difficult to believe that "accounting assets" produce wealth through a chain in which value is added at each step. If the "product" is personalized and specialized where a particular customer concern is being addressed, it is difficult to visualize how the "design" stage of the product can be "accounted for" under the traditional definition of assets. When the firm is more involved in services and relationships, the interpretation becomes even more difficult to sustain.

Today's world is one in which so-called *intangibles*, specifically knowledge (in a broad use of the term), have caught the attention of businesses and governments as well. Knowledge goes into production, governing practices, processes and resources. In the process, organizations have been forced to introduce new concepts regarding how to define organizational dynamics, in order to be able to diffuse value, taking

into account the complexity and agility being faced under current scientific and technical conditions.

There are good reasons to doubt whether "capital", in the traditional interpretation of finances, is any longer a critical component of competitive success, compared to other kinds of capital, pragmatic (knowledge, competences, capabilities, relationships) and symbolic (identity, brand, social responsibility). Even in such traditional enterprises as mining, knowledge of the reserve and the mining plan are more likely be more critical to business success than the ore extraction process itself. Since the knowledge and skills required to design the plan are "intangibles", how can we continue to assert that "assets create wealth" and "liabilities" (brain power) destroy it?

This view is inadequate for our historical moment. Looking more deeply, the misconception is rooted in an old interpretation about human invention and the future in which we predict the future from an existing fixed reality and manipulate objects to get the best outcome.

In today's organizations in which value is produced more by intangible than tangible "assets", the possibilities of value diffusion are directly related to the organizational culture that builds the pathways of diffusion, based on relationships and processes. By the same token, if current conditions imply complexity, speed, and integration, management models resting on such rigid structures as hierarchies will constrain value diffusion and create a series of wastes throughout the organization. These wastes show up in any number of ways: lack of coordination among areas, both intra and inter-functional, rework, commitment failures, breakdowns in programming, the favoring of functional targets over processes, lack of preventive and predictive maintenance, etc.

As seen above, the organization in its evolutionary process must evolve to flexible plastic forms in order to sustain the qualities of value diffusion based on current scientific and technical conditions. Understanding the organization of the 21st century in this way is to visualize configurations of networks of relationships that stand as support to carry out the strategy of value creation and diffusion.

The need to change our way of thinking leads us to look at the company as a network of relationships organized around the production of value model. This network of relationships is configured in a world of facticity. It constitutes the real business model, not the one declared by the company, calling forth those business processes responsible for the success or failure of the organization. Until now, there were no tools capable of diagnosing the real network and exhibit its configuration, present state and capacity to ensure the strategic viability of the company.

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KEY TERMS AND DEFINITIONS

Associativity: A formalized network relationship in which mutual obligations are declared through covenants, contracts, agreements or other documents that can be interpreted and enforced through processes of interpretation and arbitration.

Coin value: A quid pro quo arrangement in which a transaction is governed by a monetary arrangement with an amount established and declared payable upon satisfactory completion of the agreement. The amount, with the currency usually stipulated, is the "coin value".

Hierarchy: A command and control governance structure in which functional responsibilities, roles and authority are delegated to subordinates from the top to subsequent lower levels with clear constraints regarding scale and scope, and reporting mechanisms and rules to resolve potential conflicts. The structure normally assumes or specifies sequential functional inputs and outputs, which trigger actions in other functions.

Intangibles: Nonphysical things that produce value which can be measured in terms of results but not quantified in digital forms of measurement, such as Intellectual Capital, Design Thinking, Creativity, and so on.

Legacies: Multiple domains of tangibles and intangibles that are inherited, especially significant in the production of a certain common sense, or way of viewing the world that is taken for granted, interpreted within that common sense as "the world" instead of "our world". Legacies show up in automatic practices and habits and trigger perceptions and interpretations that we may consider truths or realities.

Network: A group or system of interconnected people or things, interesting for our purpose to show up the kind and quality of interactions and relationships between and among people, especially for the purpose achieving common goals through mutual exchanges of promises between and among the participants in order to co-create new futures.

Obviousness: A reflection of legacy thinking and inherited common sense in which interpretations are generated automatically and accepted as truths.

Paradigm Shift: A dramatic change in the common sense of a community in which the previous common sense no longer serves to explain how things in the same convincing way are becomes viewed rather as merely an interpretation of how things are, often an interpretation of lesser strength or reliability than a newer and more powerful way to view the same, such as the shift implied in Newtonian versus Quantum physics.

Tangibles: Things that can be touched. For our purpose the quantifiable and measurable things that can be turned into value and those observable things that are employed in the transformation process, especially all "assets" in the original accounting proposition.

Chapter 3
From Manufacture to Mindfacture

ABSTRACT

In this chapter, the authors observe the historical shift from man-made to mind-made. They show how the common sense of inherited legacies shaped the attempts to account for how value is added in a product-oriented view that pushes products to market. They show how legacy thinking creates havoc when the focus shifts from things to concerns and accounting practices lose touch with reality. As the world becomes more complex, the need to view the world in a holistic way is assumed. The authors show how a U.S. manufacturing company deals with its own legacies and those created by government practices and legislation. As the world accelerates, human interaction requires increased and more rapid interaction, through relationship building and ever-expanding networks.

INTRODUCTION

Value Added

The economy of the 21st century has been characterized as a knowledge economy. This characterization corresponds to the metamorphosis of value where it has evolved from a conception of *products* or *services* (1800-1950) to *personalized services* (1950-1990); then, to *quality of the relationship* (1990-2005) and finally to *quality of the relationship* and, additionally, *quality of experience*. In synthesis, the generation of wealth has come to be dominated more and more by the world of intangibles, the world of varied skills and competences (Savage, 1990).

To understand where we are today requires having a better understanding of where we come from, where our common sense was created, and what are the legacies we have inherited, both enormously resistant to change. Relational networks are not new. In fact, they have been responsible for some of the most profound changes in our inherited cultures. As we have seen, relational networks have a long history in occidental culture from the colleges mentioned by Plutarch, legislated centuries later by Marcus Aurelius, to the artificial, magisterial and later *guilds*, some of them originating before, others after the fall of Roman Empire. What is important to note is, that despite the discontinuity occasioned by the Gothic invasions of Rome, these kinds of relational networks were not interrupted: both notary records and legislation, especially contracts, reveal these sources of wealth, their relational structures and evolution.

Furthermore, what lies in the background of the early industrial revolution and sets the stage for scientific management are the practices of early guilds and these are related to the emergence of contracted versus slave or family labor and the concept of piecework and pay for piecework (Epstein, 1991). These practices establish not only the legal spaces, but the management and early accounting practices that recognize the processes of value added and how to manage them internally in the business and through guilds and associations to ensure individual and city competitiveness.

Moving from slave or family labor to pay for piecework and discrete applications of labor, synchronizes with the predominant view of the world as essentially atomistic, cause and effect, and summative: an obviousness essential to the industrial revolution. Guilds were not only important for developing the notions of pay for piecework and wages for discrete additions of value added, but also helped in developing the notions of value added through competences, from those of an apprentice to those of a master or 'virtuoso'. It is no surprise that some of the world's finest instruments derive from guilds and many of their secrets are still undiscovered.

The early Industrial Era, influenced by military organizations, especially and by the tactical genius of Frederick the Great in particular, lent incipient industrial organizations the kind of steep hierarchies that are particularly successful in the sequential management of value added, in the case of product creation, tasks and value adding steps that can be observed, accounted for and rewarded by wages. Labor, then, is the source of value.

Some years away, in the later Industrial Age, as industry is automated capital is required, and the utilization of installed capacity becomes a necessity. As labor becomes more involved in operational excellence, in its many shapes and forms and for the reliability of equipment use and maintenance, it becomes less clear how value is being added and how accounting creates notions such as "cost centers", attempting to obviate, if not the individual contribution to value, at least a general functional interpretation.

As the world changes and product quality is no longer a clear differentiator, services begin to acquire importance and the focus shifts from products to customers. Once the customer is recognized as the determinant of value, there emerges a need to create a relationship with the customer, to bring him or her into the relational network. Finally, as knowledge, skills and competences, managed in relational networks with customers become recognized as key in the creation and diffusion of value, the aesthetic aspects of relational networking become more important in the creation of a customer experience (Savage, 1990).

Given those circumstances, management accounting has become increasingly obsolete in this emerging design of value creation, and concepts such as "shareholder value" anchored in mistaken interpretations of how value is created in the 21st century, beginning to put organizations at risk.

This chapter affirms that as knowledge, competences, end-to-end business processes, client/supplier teams working on the design and creation of value, emerge as the essential elements of value creation and diffusion, everything traditional about creative value inherited from the past tends not only to add less value but to contribute to greater waste. We are witnessing a situation in which assets from the past become liabilities and past liabilities become assets, that is, what creates wealth becomes inverted. Organizations that don't understand that the deep structure and code for competitiveness have shifted (a true paradigm shift) run the risk of extinction. We affirm that the changes mentioned in the two preceding chapters can only point to a profound transformation in the generation of wealth, knowledge and their communities, a revolution in reciprocity that announces the passage from Manufacture to Mindfacture.

BACKGROUND

Disclosing the Historical Emergence of Value Creation Competences in Networks

As we have seen, the historical shift from past to present has disclosed the emergence of significantly varied forms of organization, each contributing to legacies that continue to populate not only inherited traditions of seeing and doing but also tied to institutional declarations, protocols, policies, procedures and practices, many of them directly or indirectly mandated by legislation and quasi-legal instruments, such as certifications and formal evaluations and other kinds of documents that imply varied degrees of compliance or bondage. The GAAP is but one of a myriad examples of how outdated principles can continue to hold sway over enterprises, which in almost no way resemble those organizations for which the principles were

designed to begin with. If you are running a business, how long do you think you will stay in business if you are not in compliance with GAAP guidelines? It is not only the functional organization with its cost centers and staff and line thinking focused on meeting the budget that typifies an obsolete common sense, but a myriad number of other legacies deeply ingrained in the social and legal fabric of countries themselves, some countries with a greater sense of awareness and the need for rapid change, others wondering why things no longer are as they were and how to keep up with a changing world or perhaps how to stop the change or slow it down.

This chapter looks at the evolution of value creation from the early Industrial Era to the present Network Era in order to demonstrate the shift from *hand-made* to *mind-made*, pointing out how the search for competitive advantage becomes more and more customer centric, requiring not only the elimination of customer concerns but timely response as well. Agility in the modern world requires increased flexibility and flexibility requires greater integration and networking throughout the entire system, a system that is now global in scope and scale. Innovation must center on observing a world of concerns and networking allows a timely and competitive response, often involving agents across the globe. Competition no longer involves just businesses but nations. Some nations network well, some, including the U.S., have not caught on and are falling behind (Liveris, 2012).

The Industrial Revolution changed forever the notion of *handmade*, even when machines were produced by hands, controlled by hands and repaired by hands, with value understood as the difference between the cost and the sales price. From manufacture have come human jobs that require wages to be paid to people for accomplishing tasks and activities in production processes, with varying degrees of mechanization, where things are made. It represents a common sense that sees production facilities as fixed and human know-how as "applied" to run, maintain and then to improve operations by uncovering and eliminating root causes anchored in the past. *Manufacture* has always been a kind of misnomer. There is a big difference between a Stradivarius, a painting by Velázquez and a Model T Ford. How many Lamborghinis might be traded for the Mona Lisa? Although DaVinci's hands did the work, the world has yet to fathom the depths of the know-how that drove those hands.

The Industrial Revolution was an era of "push". Products can be pushed, providing there is some kind of a market, as long as there is no appreciable difference from one product to another or no comparable alternative, profits determined by what the consumer is willing to pay over the cost. When all products are perceived as equal, the consumer looks first for a price advantage and, if that is not appreciable, for something additional, usually geographical location, post sales offers, maintenance advantages, or, finally, some distinct kind of service. Competition then begins to shift from the product itself to qualitatively different kinds of value added. When

even "service" offers can no longer be differentiated, a relationship can make the difference, even a frequent flyer kind of relationship. How many people continue to fly American Airlines because they are designated as Platinum or Gold, while service has dropped from among the best to among the worst of major airlines? Finally, customer experience is the differentiator. Each competitive stage represents a paradigm shift and a new array of competences, especially relational.

It is clear, throughout, that the paradigm shift requires greater communication, collaboration and coordination not only within the organization and its functions but throughout the value chain, including clients, suppliers and other stakeholders. Vertical organizations in complex, dynamic environments discover that managing the boxes that populate the organization chart is not nearly as important or difficult as managing the white space in between, as Geary Rummler once observed (Rummler & Brache, 1990). Managing the white spaces takes considerably more skill than managing the boxes, especially when the white spaces become international or global and include every conceivable number of internal and external stakeholders, including regulators and legislators and a vast array of processes. As competitive based paradigms shift from product to services, from services to relations and from relations to experience, the white spaces clearly begin to dominate the organization chart and the degree of complexity increases. The greater the complexity, the greater the breadth and depth of required competences, both organizational and individual.

The degree of complexity has a lot to do with what we call the *system/environment* relationship, local, regional, national and global, that is, the inherited accumulation of beliefs, relationships, practices and structures that are not only in place and in action, but have generated mechanisms to perpetuate themselves and to keep themselves in place and in action, a socio-legal-historical-economic-cultural *perpetuum mobile*, often poorly understood and inappropriately referred to as "barriers" and "resistance" to change. The system includes an increasingly large number of stakeholders in an ever dynamic emergent environment. Managing the white spaces in this ecosystem requires an even more complex set of competences, almost all of which are directly or indirectly related to human networking.

Andrew N. Liveris, CEO of DOW, in his book *Make it in America* (2012), argues that the decline of manufacturing in the United States has a lot to do with relational breakdowns within the U.S. itself and at a global level. The breakdowns begin with the obsolete common sense that manufacture, and the value it adds, is anchored in manual labor rather than in a vast warehouse of intellectual as well as other kinds of capital, financial, symbolic and, above all, relational. Liveris summarizes his own personal and professional challenges as CEO of DOW to defy the mechanistic product-centered interpretation of the business and convert the company into a customer and partner oriented concern aimed at co-creation and co-invention of futures and future possibilities. For Liveris, the world is now entering the "golden

age of manufacturing", an age of highly specialized, value added manufacturing in which intellectual capital has emerged as the key driver of success, not manual labor. The United States continues to live to a large degree in a legacy common sense bred-in-the-bone of the manual Industrial Age, not the *Knowledge Industrial Age*, in the age of summative tasks and activities, not partnering, virtual net-working, inventing and innovating, knowledge creating and sharing. The U.S. has been a clear leader in productivity in the world that was but has fallen behind in the emerging world of tomorrow. There is still a shared common sense that services can somehow replace manufacturing and that these somehow again are richer in knowledge and intellectual capital, a view of the world that is completely out of focus and increasingly more dangerous.

It was incumbent on Liveris to challenge a similar shared common sense in DOW and to convince shareholders that only real strategy, not tactics, would permit DOW to survive and prosper in the long term and that is often preferable to pay for survival with short term earnings than to have attractive quarterly earnings before suddenly disappearing from the Fortune 100. He had also to convince shareholders that we live in a stakeholder world concerned about clean energy and global warming and that even tiny stakeholders have big access to mass media when stepped on by a giant. Most of all Liveris had to make the choice that Lafley of Procter and Gamble also made, to listen to customers and other important stakeholders, understand their concerns and apply a diversity of capital, mostly intellectual, to eliminate those concerns, often inventing and co-inventing new products with client organizations, more and more through open innovation strategies. A realist, understanding that not listening to shareholders could cost him credibility (as well as a sizeable pay-check), Liveris had to make the kind of choices that have resulted in the migration of manufacturing from the continental U.S. to other countries and other continents, and with the migration of manufacturing the concomitant migration of intellectual capital, R&D, co-inventors and suppliers, human talent, and knowledge creating institutions. Liveris at the same time fought to create conditions favorable to continuing investment in the United States, leveraging his own relational know-how. How many CEO's have had to put shareholder value above their own sense of patriotism and the social and economic well-being of the communities they live in, eventually "selling out" (making the "right" choices for shareholders) to whomever makes the most attractive offer? We still live in a material world and shareholders are material girls. Stakeholders, on the other hand, are left wondering what happened to the stake they are supposed to be holding.

'Make it in America' does not concentrate on Liveris' achievements as such. They are mentioned to underline the relational breakdowns in the fractured web of government policies, legislation, agencies, regulators, educational institutions, businesses and investors, a shared blindness around the kinds of active relationships required

to envision and build futures in a globally competitive world. The United States, in short, has not yet come to the realization that it is no longer about *manufacture*, it is about *mind-facture*, and that we must live in the world of the future, not of the past, or face the consequences. Like it or not, it is a transactional world and will continue so until it becomes truly networked for global sustainability… or crashes. Liveris sites examples such as Kindle, designed and developed in 2007 at Lab 126 somewhere in Silicon Valley. Amazon partnered with E-Ink, a company started by researchers from MIT's Media Lab, requiring technologies similar to that of LCD televisions. Finally, Kindle could not be manufactured in the United States and was built by a manufacturer based in Taiwan. Then Kindle's E-Ink supplier relocated to Taiwan as well and now all Kindles are produced elsewhere and imported by the country that originally created the design, but whose intellectual capital is now creating employment, prestige and revenue for the country's global competitors and increasing the dollar drain of its country of origin. In the last 15 years, 50% of U.S. manufacturing has disappeared and with it an enormous amount of intellectual capital: this, in our own era, in which minds, not hands, create value. Not only has manufacturing migrated, but the *chain of experience* (relational know-how), to cite Andy Grove, has been broken.

Acceleration theory makes mention of a number of technologies that are speeding up our world. Ours is the mind-made world of development. Evolution demonstrates that open systems in general, with an abundant availability of matter/energy, increase in complexity and this speeds things up as well, although lazily in comparison to development, the "EvoDevo" nexus of *acceleration theory* (Smart, 2009). The elimination of restrictions to interaction also speeds things up and this has taken place in a remarkable way since World War II, through the elimination of trade barriers, the Economic Union of Europe, the collapse of the Soviet bloc and the integration of China into the World Trade Organization. The emergence of the Internet is a world-wide platform that eliminates an enormous number of barriers related to space and time and creates ubiquitous possibilities for instantaneous global reach. With the Internet, "chains" become a thing of the past and supply "chains" end up "networked" from end to end. Dell, in its glory days, was a classic example of end-to-end networking in a world in which infinite configuration in record time was still a valuable offer, although Dell had (still has) few competencies for the relational world and saw their business as the flexible manufacture of a personalized "product", a view squarely focused on the world of "things". A Lafley/Dell get-together could have made a world of difference for Michael Dell.

In his highly insightful work, Charles M. Savage (1990) offers deep insights into the migration of enterprises through historical eras, from rigid hierarchies to dynamic networks. Savage presents a masterful view of the distinctive organizational characteristics of each historical era and the notions of value creation that predominate

in each, the formation of associated legacies and the eventual difficulties of effective integration in the new "knowledge era". His work provides a solid foundation for exploring the notions and implications of value creation in this new world of enterprise and the agonizing structural implications of change.

More than the transition from the vertical to the horizontal enterprise, we are witnessing the often excruciating death and transformation of our own lived culture and values built into virtually everything we see and do. This implies a radical change in our own historical "observer" to even begin to fathom the nature of the change and the revolution that is now upon us, obliging us to adapt or perish. We will attempt to build on the foundations built by Savage and others to relate them to new conversations about value creation in the emerging world of networking, in which both tenability and sustainability must be understood and practiced to ensure survival and growth.

We must keep in mind that by the time of the Industrial Revolution, as noted so clearly by Adam Smith (1776), wealth was assumed to emerge as the difference between the costs accrued in the production of an object and its sales price; charging more for the value added by labor than its cost was the key to wealth creation. As the complexity of production processes increased, the understanding of each step became more important in order to understand and control the total structure of labor costs and to detect and eliminate the waste of inefficiencies that had a direct impact on net profit. Management accounting was supposed to be a privileged instrument for keeping track of the variables.

Industrial enterprises were forced early to decide how to manage costing, in order to "account" for how wealth is created. Surely wealth should be accounted for in a rational way to support rational decision-making. As organizational complexity increases, direct costing becomes virtually impossible and absorption costing comes limping to the rescue as a tool of choice (Kaplan, 1987). At the level of the message, accounting "adjusts" to changes in the business environment. At the level of the code, the relational paradigm behind the creation of wealth has changed and accounting no longer really "accounts" for how wealth is created. It attempts to leave a register, a "reasonable story". International accounting institutes are grappling now with the challenge to link the creation of value to intellectual capital and how it is leveraged through individuals through commitment/action networks, knowing full well that intellectual capital is not a liability, although it is "accounted for" as one. Speaking of accounting, it is interesting to note that there is no historical account for the legacy of sales commissions, a unique example in the business narrative that distinguishes between the value added by workers and administrative personnel and that added by sales men and women. During the initial phases of industry, companies did not *sell*, consumers *bought*. These were the happy days of Henry Ford and American

Telephone and Telegraph. Some business enterprises still have not got the message. Sony is sometimes cited as an example.

Toyota demonstrated to the world that a product with demonstrable superior quality could, to a large degree, sell itself; product quality, clearly visible, is a convincing argument to a potential customer (keep in mind, however, that Toyota has polished customer listening skills and really sells antidotes). If it were all this simple, however, sales people would not be needed and the curious invention of the "sales commission" would not have taken place. There are several points to be made here. One is that wealth is not created at all unless *value* is also created and value is an assessment made by the buyer. *Worth* is fundamentally an assessment. Worth, however, is often not easy to assess and this is where a new and valuable competence is introduced into the relational equation between those who create and those who consume. Sales people interact with potential customers in an exchange relationship based on knowledge, competencies and emotional skills whose value is acknowledged through a commission, although the conversation with potential customers is often more of a "worth" conversation (it is the worth of added value).

What escapes to accounting is the cost of opportunity, the ratio between sales made and sales lost, the size of discounts and loyalty. How do you measure the creation of value or, on the other hand, understand and manage the kind of wastes associated with cost of opportunity? Cost of opportunity is, parenthetically, a waste much greater than the seven or eight "muda" of the LEAN movement, and this is saying a lot. The widespread historical use of sales commission is a recognition of the value created by the application of sales knowledge and skills in conversations relating to what something is *worth*. Some organizations vary the commission according to the marginal contribution achieved by the sales person; the lower the discount or the higher the price, the better the commission, a clear recognition of the potential to create or protect value on the part of the sales person. The migration from *manufacture* to *mindfacture* begins with the conversation related to value and its composition, a conversation grounded ultimately in the world of concern of the client (worth) and the relationship. The world of individual and networked concerns is ultimately behind the emergence of all innovation and development and is ultimately the path to value.

Product Pushing and Selling

As we have said, the early Industrial Era of mass production pushes products to consumers, attractive because of price/quality advantages not previously available, a Ford in any color you want, as long as it's black. Of course, when there is competition with a slightly different business model, General Motors, for example, "sales" migrates from the conversation of explanation to the conversation of seduction,

requiring additional competencies that are emotional, linguistic and observational as well as the ability to demonstrate knowledge of the product and how it works. Sales moves from the margin to the center of the competitive game and sales peoples' knowledge, unlike that of hand labor, is generally not recognized on the basis of a "wage", rather a wage plus a sales commission or, in some cases, solely commission. General Motors, in many ways, listened to potential customers better than Ford and understood that most of the people who needed cars also needed low cost financing in order to purchase the cars. Most General Motors CEO's have come from finances, with both automobile styles and financing aimed at the emerging and conservative middle class. DeLorean was an anomaly within General Motors.

The ability to sell, often interpreted as an innate quirk or trait of personality, is a set of observable and measureable competencies. Commissions, based on results, almost always overlook, in the sales conversation, the competencies applied to obtain the results achieved. Poor sales conversations can often have a bigger impact on final results than the labor costs involved in production… a blindness in many organizations. If we look deeply at sales skills and competencies, a complex world emerges in which human intellectual capital creates value. Obviously, knowledge of the product (or service) to be sold is an important part of the sales conversation. Sales competencies also join together a larger set of skills, emotional, listening, corporal and linguistic. The way these skills are sequenced, managed and leveraged increases sales, or, to look at it another way, reduces the cost of opportunity in which every sales conversation may be seen as a sale to be achieved or lost. The ratio of sales achieved over prospects "called upon" is an important measure of the overall competencies of a sales person.

Let us keep in mind that even before the sales conversation is initiated a relational world begins to disclose itself in which the construction of confidence is a critical measure of the depth of the relationship. The sales person initiates an interaction with a certain cognitive predisposition or bias, part of the "sizing up" of the customer. Cognitive biases are a complex part of the makeup of every human being, with origins derived from that person's linguistic, historical and biological development from the time of birth to the present. Cognitive biases trigger moods and emotions, as pointed out by Damasio (2010) and Prinz (2004) and the sales person must have the skill to recognize what mood he or she is in as the sales conversation begins. The ability of the sales person to understand where his or her moods are coming from and how to deal with these moods is critical to the initiation of the conversation. Moods are directly associated to futures; most futures depend on moods. Ambition creates one future, apathy another. So, history and biology emerge in both sales person and customer before the conversation even begins. A sales person must be in the mood to sell and a customer in the mood to purchase or find themselves in the mood through the subtle evolution and management of the conversation.

The sales conversation is, of course, a dyadic network relationship in which the sales person must establish a strong tie, or density, in the *betweenness* of the relationship in a relatively short period of time, although the duration of the conversation often becomes an indicator of the developing strength of the relationship. The longer the conversation, the greater the commitment to come to terms (on both sides), understood as each listening to the other's concerns and negotiating a deal. After "sizing up" the customer and dealing with his moods, a skillful sales person will begin the conversation by eliciting the concerns of the customer, bringing into the disclosive space a keen set of observational skills that include not only the expressed concerns of the customer but assessments of the person's moods, an observing of the customer's language, biology and historical or cultural formation and a concomitant dealing of the sales person, with his or her own moods as the customer discloses him or herself in the ensuing conversation. These skills often come to be to some degree automatic and intuitive in the sales person.

Perhaps no one has researched the human capital involved in successful sales calls more than Dr. Neil Rackham from Huthwaite Research Group, in his investigations that involved more than 35,000 sales calls in a number of countries (Rackham, 1988). His research produces evidence that goes against the grain of many classical theories of sales and demonstrates the importance of relationships for success in larger sales. Rackham's investigation focuses heavily on listening to customer concerns, those that make the sales call possible, and those concerning implied, explicit needs, value, and finally, trust in the sales person and his or her ability to eliminate those concerns through the offer. While listening is an emotional skill, it requires a number of other cognitive and linguistic skills in order to get to the root of the customer's concerns and the associated narrative of value. Listening skills and relationship building are especially important for success in larger sales, and we are still speaking only of sales and not a co-creation of even more desired futures. We are bracketing our observations within the framework of sustainability, not the kind of short-term thinking that lead DOW, Procter & Gamble and many other companies to the brink of disaster until more powerful observers such as Liveris and Lafley came along. Other companies were not so fortunate.

Effective listening is not passive but active and involves discovering, as we have mentioned, explicit and implied needs (Rackham, 1988). Effective listening begins with effective questions, aimed first at understanding the business and purchasing context. Understanding the context allows the sales person to explore the breakdowns in different domains as well as those affected by the breakdowns and what they are feeling. Once the sales person understands the breakdowns and how they affect different stakeholders, the questions shift towards the implications for the business and its internal and external stakeholders. These questions begin to introduce conversations concerning value and costs of opportunity, what it means

to solve the problem, to solve it only partially or to leave it unsolved. They are network questions reaching out to the identification of the concerns of both internal and external stakeholders. They seek to lead *worth* to emerge. These *needs-payoff* questions set the stage for the value of the offer, the question of costs/benefits and, implicitly, the trustworthiness of the sales person.

The sales conversation has now shifted to one of features, advantages and benefits; in larger sales, features are not central, advantages and especially benefits become the focus. The ability to create a powerful narrative around advantages and benefits hinges to a large degree on the kind of *listening* that has taken place in the conversation around needs and concerns. Since needs are visible only to a certain kind of observer, the ability to dig deeper into a larger world of concerns on the part of the sales person will create a new observer, one with a deeper understanding of how the business and its stakeholders are affected. This, in turn, allows the sales person to create a more powerful narrative around the advantages and benefits with greater scope and depth in the domain of value. The final sale depends on the ability of the sales person to anticipate and settle the doubts and uncertainties of the potential customer, an ability in which the emotional side of both comes to the fore, confidence, integrity, concern, resolution, and other moods, finally gaining the commitment of the potential customer. The customer ultimately must decide what the solutions to concerns are *worth* and with whom he will construct the future of the enterprise and his own.

As we pointed out earlier, when products become differentiated in a competitive environment, decision-making becomes more complex and the product does not sell itself but requires a sales person. The importance of the sales person is validated by the historical practice of paying commissions, a recognition of the value added by the sales person. The commission, however, in legacy thinking, is part of the *cost* of doing business, not *value added* by the possession and leveraging of intellectual capital. It is a "necessary evil" to counter the competitive offers of the competition. Most businesses have, at one point or another, lost key sales people to their competitors and have seen only too well the impact on their business, including customer desertion because the trust relationship is often not business to business but person to person, the elementary dyad in the structuring of networks. We have only begun to examine the migration from manufacture to mindfacture and it is already clear that value is not only produced in the creation and assembly of the product but in relating the inherent potential of the product to a network of needs and concerns within the client organization, a conversational process that depends heavily on the density of the relationship between the sales person and his or her customer. By no means do we intend to minimize the complexity of the product, a derivative of applied knowledge, metallurgical know-how, mechanical-design, foundry, machin-

ing and hundreds of other kinds of accumulated know-how. We wish to underline how larger concerns drive greater complexity requiring greater knowledge, skills and competences and how all of this combined plays out increasingly in an ever greater systems environment held together by networking capabilities. The product is precisely a *product* of these.

Migrating from Push to Pull

A sales conversation around an existing product is usually a kind of conversation where the product is essentially being pushed to the marketplace. When a product must be modified, or made to order, another kind of conversation is necessary and the system itself has become more complex. The relational aspects of the system also increase in complexity and the network requirements expand. Not only do the sales people have to have deeper skills, in part to understand the world of concerns of the potential customer, but many other players in both organizations find themselves drawn into the network. The knowledge questions, "who, what, why, when, where and how", begin to emerge in networks of concern on both the customer side and the supplier side of the transaction, involving not only line functions but administrative and support functions as well, that is, by a number of people with roles and responsibilities within these functions whose present state is perturbed or disturbed by a request to modify an existing product or use existing capacities to make something to order or make something new.

On the supplier side, there are likely to be interactions among sales, finance and manufacturing at least, possibly engineering, service, projects, human resources, and perhaps even labor unions. These conversations may take place in a number of domains involving skills and competencies, equipment modifications, project management, profitability analysis, resource allotment, budgeting, cost centers, new investments, collective bargaining agreements, etc., as well as *who* coordinates *with whom* to complete what commitments in *what* time span, and *who* will measure *whom* by means of *what* indicators or *who* is accountable *to whom*. How will it be done and where? These interactions involve networks and networking, either formal, informal or both. They require a complex set of individual and team competences, knowledge and skill sets as well as positive emotional skills, especially trust. They also require a variety of resources, human, structural, material, technological, among others. Organizations with purely functional practices that attempt to push a promise through a chain soon discover that the chain metaphor is weak at every link and that networks of commitment require the ability, intention and resources of people with first and last names who interact, communicate and coordinate throughout the network to fulfill their promises to one another and to their final customer.

LEAN addresses many of the wastes that disclose themselves as different kinds of "muda" when one begins to question the common sense behind the legacies produced by industrial era push systems. LEAN does not normally contemplate networking and does not, therefore, disclose the hidden waste implicit in a world with merely six degrees of separation (Barabasi, 2002). Networked knowledge, skills and attitudes are disclosed in the success of "pull" systems. *Push* to *pull* is not a conversation about styles, but about a migration from one historical era to another, a change of paradigm, from tasks and activities to promises made by people with first and last names, standards and fulfillment dates, promises aimed at eliminating someone's concerns. In a networked world, anything more than six degrees of separation might be considered *waste*, and in a networked enterprise, considerably less. The "degrees of separation" concept provides the background for a new and more powerful interpretation of waste in terms of creating and coordinating commitments and purposeful action. It discloses *network waste*.

The world of *pull* begins to move the center of the relationship from the inner world of the firm's competencies embodied in products and services to the exterior world of customer and stakeholder concerns. The push world is a transactional world, the world of Porter's "Five Forces" . The more power as a supplier, the greater the push; the more powerful the customer, the weaker the push. It is anything but a win/win world, rather a Darwinian world with strategies based on fear, resignation, resentment and distrust. Selling, in this world, means stuffing something down someone's throat vs. groveling, depending on the weight of accumulated power: this is a perilous world of short-sighted executives and short-term shareholders.

NETWORKS IN ACTION

For our purposes, networks, in order to produce change, must be seen as *networks in action*, that is, networks in which the relational components are, eventually, people with first and last names that learn how to dialogue with one another, trust each other and make and keep promises, promises related to doing, to action. It is a "sustainable performance" driven world. Pull begins with listening and listening opens a conversational space which we can understand as a network for the creation of mutual promises to take care of mutual concerns. Networks for action, relational networks of commitments, have five stages: listening, proposing, mutually committing, delivering and evaluating the mutual completion of promises and the mutual elimination of concerns.
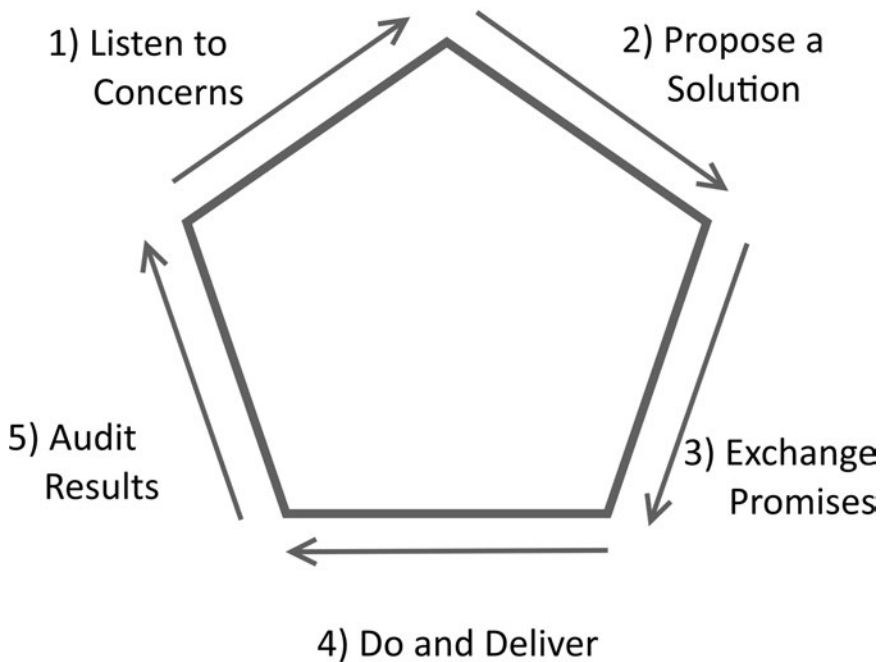
Listening to Concerns

In the early 90's this author was invited by CEMEX (Cementos Mexicanos) to create and manage its corporate *Business Process Center* to support the globalization of CEMEX, a function that created several world benchmark processes, most notably the capacity to deliver ready-mix concrete in congested urban environments in less time than it takes for Domino's to deliver pizza. The creation of a Business Process Center required not only breakthrough process design, networks as opposed to inputs/outputs, but a new kind of observer as well, an observer that can see that a ready-mix business is really a radio-taxi business more than a raw materials mixing business, with possibilities for huge potential improvements in fleet productivity and customer experience (not to mention a large gain in net profits). Urban environments are dynamic and chaotic and immune to structuring, chaos must be networked and *surfed*, not controlled (Pascale, 2000). Creating a new kind of observer means, among other things, creating a deep set of listening and design skills.

Listening is much more than a biological phenomenon. It is a linguistic phenomenon and a historical phenomenon as well. The biological aspect, in fact, has more to do with assessments and moods than with auditory nerves; these assessments and moods in turn filter and shade our listening. When we migrate from the world of products to the world of services, effectiveness demands an existential disruption in the kind of listening that characterizes us. A mood of apathy, resentment or resignation shades our assessments about the world *as is* and also about the world *as possible*, what we refer to as our future. We, as human beings, seen from our own point of view, are a complex system of numerous biological components shaped by a complex and ongoing interaction with our surroundings, an interaction that creates and shapes our historical self as it also shapes the environment, an iterative process. This interaction is made possible by our linguistic self, that part of our observer that makes and carries assessments in memory and voices them –thinks them– automatically at every moment of consciousness. Listening is, then, a product of a complex overlapping of the biological, historical and linguistic components of our being in the world. Listening is automatic and transparent until we learn to listen to how we (and others) listen, then listening opens possibilities for new futures. We must learn *to listen to how we listen* before we can change our listening and, with it, our future. For CEMEX, listening to the concerns of contractors, listening to the chaotic environment of congested urban environments and listening to the need to be close to clients in time and/or space opened possibilities to develop a network approach to the networked coordination of everyone and everything in as close to real time as possible to set world standards from order-to-delivery in its ready-mix

Figure 1. The Relational Commitment Loop

The Relational Commitment Loop

1) Listen to Concerns

2) Propose a Solution

3) Exchange Promises

4) Do and Deliver

5) Audit Results

business. CEMEX listened to *how* it was listening and discovered that its present listening was bad for its customers and bad for itself. We will discuss this in more depth in a later chapter.

Another CEMEX benchmark was triggered by the Business Process Center in response to a long-time concern by the CEMEX executive team regarding its historical inability to position itself in a relevant way in the mass market, a market controlled by one of its competitors, Cruz Azul. Cruz Azul is a cooperative and, as such, has a DNA more in tune with the bottom of the pyramid. At that point in time (mid 90's) CEMEX was more synchronized to industrial consumers of cement and ready-mix and, with thousands of distributors, several cement plants in different parts of the country and some 175 mixing plants in 65 cities with a fleet of 1,500 trucks, was an excellent offer to construction companies. However, the base of the pyramid in its entirety was a huge market in which CEMEX had not found a way to participate. Founded in 1906 as a regional Mexican cement producer, CEMEX, under the leadership of Lorenzo H. Zambrano, was among the first to detect that

the worldwide consolidation of the cement industry would soon take place and that ambitious first-movers could take important industry positions by moving smart and fast before the window of opportunity closed. Among the strategic business processes of CEMEX was its newly designed M&A process, an important tool for the coming flood of acquisitions undertaken by Zambrano from the mid 90's onward. Within a decade, CEMEX had grown from ninth position to being one of the three largest cement producers in the world. Still, as CEMEX was gearing up for global conquest, it was vulnerable to the cyclical nature of its dominant market segment in Mexico, its base, the popular market, being a far more stable and profitable segment, one in which CEMEX had not yet found its way.

Possibly seeing the growth potential of CEMEX, due to its ability to produce much better than average marginal contribution in its industry, Holcim threatened CEMEX by putting a large plant near Monterrey, the headquarters of CEMEX, probably hoping, among other things, to reduce CEMEX margins and limit its growth. This showed up even more the weaknesses of CEMEX in balancing its commercial strategies. It also signaled to Zambrano the need to send a strong message to competitors. Zambrano also sent a message to his own organization: "No more business as usual."

The Mexican market for cement consisted of a do-it-yourself market, public works, traditional construction and cement consuming applications and products. The do-it-yourself segment had traditionally accounted for little of CEMEX sales in that country. Holcim's bold expansion into CEMEX territory meant competing for market share not simply defending geographic territories. This made it an imperative to discover a way into the mass market of popular consumption, especially since there was, at the time, an estimated shortage of housing of some 5 million homes. Within the housing market, the largest segment was that of low-income consumers, an area dominated by Cruz Azul.

Many low-income consumers live in poor neighborhoods, characterized by a very basic infrastructure with electricity and water, but little else. These neighborhoods make up some 20% of Mexico's urban population and represent several million households. The ability to penetrate this market segment could potentially offer increased volume, reduce cyclical variability and even increased marginal contribution in sales not subject to discounting. Factoring population growth into the equation, some 700,000 additional homes were required per year just to keep up with population growth.

The Business Process Center argued that *listening*, not the competition, was the major problem, that CEMEX' historical observer was both unable to understand the concerns lived by those referred to as the "base of the pyramid", some of whom did not use cement at all and would be even less likely to order a load of ready-mix. Driving by economically depressed areas in a late model automobile, a tailored suit,

Hermes tie and Bruno Magli shoes, and stopping to chat with the dwellers would never trigger the creation of a disruptive game-changer. Other competencies were needed, beginning with listening, then developing a relational win/win bond to consumers. Networking, as we have mentioned, is a unique relationship in which each connection has a first and last name, which means essentially that there is no mass market, only a very large number of people with first and last names with whom to relate who will extend the network, if they see value, by including their own networks of people with first and last names. It would be highly unlikely to find any potential customer wearing Bruno Magli shoes unless they were purchased by chance, second-hand, from a used clothing market.

The initial challenge to the team selected to create a new interpretation and process for low-income segments was to come to terms with a legacy problem, cognitive blindness. CEMEX did not see what it must do and, additionally, did not even see *that it did not see what it must do*, a legacy very much related metaphorically to Hermes ties and Bruno Magli shoes. The team had to see its own blindness and understand the constitution of its own blindness to create a new kind of listening and a new kind of observer. There was, in brief, no kind of relationship with low-income consumers, only a superficial one with local distributors who, in most cases, had not much of a relationship either. There was no idea whatsoever of what it would take to build a relationship, and less still, what that relationship would look like.

A California based consulting group (now called Vision, from the UK), selected by the Business Process Center, was contracted to help create new competencies, listening, observational, conversational and network-design. The decision was taken to learn how to listen to low-income markets in Guadalajara, not Monterrey, precisely to distance team members from Hermes ties and Bruno Magli shoes and, hopefully, from other accompanying legacies and cognitive blindness in a number of important and constitutional domains. The task was not unlike that of Bruno Latour in his book *Laboratory Life* (1986), to make sense of what is automatic to others but still makes no sense to the observer alien to that common sense.

The interdisciplinary team, led by Israel Moreno, became a daily presence in the targeted low-income neighborhood, talking with neighbors, visiting families, getting to know their lives, their living, their thoughts and feelings, purchasing practices, building practices, the stores they visited, their habits of consumption, saving, borrowing, religious practices, political affiliations, community activities, trust relationships and other communicational and collaborative mechanisms. Team members had to become open, learn to suspend their own assessments, and suspend or vacate their historical common sense in order to put themselves authentically into the shoes of the neighbors, seeing through their eyes, feeling with their hearts, living their hopes and fears, and, finally, building a communication built on sincerity, authenticity and trust. After several months of immersion in the low-income

community, the team learned to appreciate more fully the importance given by residents to be able to build a home, a core aspect of creating *patrimony*, not just a home but a way to project themselves and their offspring into a more stable and promising future: to create a legacy of their own, and, at the same time, improve their lives in the daily struggle to hang on, in other words, improve, consolidate and then take another step forward. Some in the community were resigned to their destiny and had convinced themselves there was really no way to get ahead; their situation in life was God's will and in God's hands, a resignation that, for CEMEX, could and must be shaken.

The CEMEX team began to understand and articulate the constraints associated with building from scratch or building onto what little one already had. These constraints included difficulties in saving money, lack of credit, little knowledge of construction, especially in seismic areas, inability to make grounded assessments concerning the quality of materials, no safe place to store materials and lack of competences to plan and execute a project. Adding rooms or building a home could take 5 or 10 years, materials often degraded or stolen during the process.

The CEMEX team also discovered certain marginal practices that being reinterpreted, redesigned and refocused could be leveraged to produce greater benefits. They discovered a pooling concept called a "tanda", a device used by low income people in poor communities to create a pocket of savings that could be used for improvement projects. A traditional tanda is a group of around ten people who pay the equivalent of 10 dollars each week into a pool. The week produces a winner of 100 dollars, and the tanda continues until each member has won. Tanda participants who did not use the money on household needs, unexpected situations or partying end up with enough money to make a modest advance in improvement projects. While this marginal practice helped people who were disciplined, it was still a slow and uncertain approach since it is difficult to sustain a home-building or improvement project in bits and pieces; moreover, storing materials is often not a workable option, especially for people with limited space in complicated environments.

Meanwhile, Cruz Azul, the CEMEX competitor, had brand recognition because of its popular soccer team and because it had published a comic book with a poor handy-man living in a poor community, tackling home improvement projects, combining plot and know-how, providing amusement and suggesting solutions. The brand recognition provided very little loyalty, however, because a relationship was still missing. The CEMEX team had networked successfully with the community, extended their community learning experience and were no longer blind to the historical, biological and linguistic legacies of the market segment they wished to enter. They began to know many people by name: they learned how to listen. To eliminate the concerns of poor urban dwellers, however, they still needed to create an offer which would have to go way beyond that of a product, even one combined

with a service. Poor persons don't need cement, they need savings, credit, storage space, building know-how and a light in the tunnel; meaning, from their point of view, daylight at the end of the tunnel and not a train coming from the opposite direction. CEMEX realized that it was about much more than cement. They must create a unique relational experience with potential customers that would eliminate or reduce substantially a whole world of concerns shared by the urban poor.

Proposing Solutions

Solutions are never solutions unless they eliminate concerns, and concerns usually come in clusters. The proposal, in this case, was 'Patrimonio Hoy', a mixture of Grameen Bank, a tanda, a layaway, Avon and some unique innovations: a combination of new and leveraged or re-positioned marginal practices that constituted a new common sense, born of deep relentless listening. CEMEX designed and created 'Patrimonio Hoy', a new business model, aimed at eliminating the concerns of low income communities. It solved the credit problem by establishing itself as a bank for tanda type deposits over a 70 weeks period. It solved the storage problem by devising a kind of layaway system with its distributors for goods and services in which both goods and services were valued at the time of deposit and kept safe from inflation. It ensured commitment by using mini tandas of 3 persons, a mutual support group, all affected if one of the members failed to make its payment, fining the group a late fee and applying a week delay in delivery. At the end of the 70 weeks period, services and supplies were delivered, sufficient to initiate the construction of a home or add a room.

Exchanging Promises

Networks can only be held together by mutual commitment, and 'Patrimonio Hoy' is a networking solution to problems. The small tanda is glued together by mutual promises member-to-member and, as members of the group, to CEMEX. CEMEX, in turn, makes through 'Patrimonio Hoy' important promises to the group to manage their savings through weekly deposits of the stipulated amount, making it easy to deposit, managing a consequence system for non-compliance and ensuring quality products at the prices offered at the time of deposit. Since the group makes a group promise, the group itself exercises peer pressure to honor individual commitments.

Through this exchange of promises, group members take responsibility for self-regulation, acting as a social network, and 'Patrimonio Hoy' promises to guarantee the price of services and honor each member's delivery schedule.

Do and Deliver & Audit the Results

Each party executes the promises made, members making their payments on time and CEMEX managing the process: making deliveries to each member of services and products to meet the needs of each group constituent. Action is not effective unless people make good on their promises within an agreed upon framework in time. Making and keeping promises is also a foundational skill for the building of trust, an essential agreement to build trust. Agreed upon actions undertaken on time and completed as promised builds trust and keeps action networks together, an essential adhesive.

At the end of the 70 week period, group members assess the completion of promises made by CEMEX, and the company, upon delivery, recognizes the completion of promises made by the group. The completion of commitments by all is celebrated by a group party organized by 'Patrimonio Hoy'.

There is nothing transactional about this relationship, every node in the network has a first and last name, promises to make and promises to keep, all of the components of sustainable relations. Networks of promises can never be *quid pro quo*, because they involve more than two participants: they are the glue that keep trust alive and sustain group cohesion. What differentiates action networks from social networks is, to a great degree, the making and keeping of on-time promises among members of the network. Futures are created by promise-based action networks with performance goals and measures.

'Patrimonio Hoy' provides low-income families living in urban and semi-urban areas with access to building materials such as cement, concrete blocks, and steel at average market prices as well as micro financing, technical advice and logistical support to assist participants in building their own homes. The program accomplishes this through a collaborative network of local CEMEX distributors: community-based promoters, mainly women, trained and empowered through the program, who build trust and secure participation of community members, and the families themselves. Women generally control family budgets and can make day by day trade-offs between satisfying daily needs and creating a new and better future for the household.

Since its inception, 'Patrimonio Hoy' has advanced countless millions of dollars in microcredit. Most participants would not have been able to build their house without the program, and the market value of homes built through 'Patrimonio Hoy' is approximately twenty percent higher as a result of the higher quality and functionality of the structures. The program creates jobs mainly among local masons and those trained as promoters; 95% of promoters, as we have mentioned, are women, of which half had no previous working experience. Approximately one-third of participants use their homes, or extra rooms that they have built through their participation in 'Patrimonio Hoy', to build their own businesses. Areas in which the program

has been most successful also report reduced rates of delinquency and improved scholastic performance of the children of the families who have participated. One of the participants reported to this author that she had built three additional rooms to her house in three years by eliminating soft drinks from the family budget and with this savings made payments to the program. Participants are not only able to build their homes or additions three times faster and at a third of the average but, by increasing their patrimony, gain access to new credit markets and can improve their job situations by demonstrating a greater economic and social stability.

Following the successful development of this relational model, 'Patrimonio Hoy' extended its reach, creating several cells throughout Mexico. Each cell is placed in areas with a population exceeding 50,000 with average incomes of around $400 dollars a month and practices of do-it-yourself construction. Cells are autonomous and self-sustaining, with competences for promoting, planning, scheduling, managing revenues, coordinating deliveries with distributors, giving technical advice and help desk, often multi skills in a small number of people. A locality may have more than one cell. Most cells become profitable within a year (serving some 600 families), have a business plan and growth goals. Several years after its inception, 'Patrimonio Hoy' had more than 60 cells throughout Mexico and CEMEX has achieved, by far, the best brand recognition in the low-income segment as well as international acknowledgement for corporate social responsibility.

Relationship Building

The CEMEX program, so far, has provided affordable solutions to more than one million people throughout Latin America. It has helped more than 350,000 families build their own homes. 'Patrimonio Hoy' now operates through more than 100 centers in Mexico, Colombia, Costa Rica, Nicaragua and the Dominican Republic. It has received international recognitions and multiple awards. In 2000, 'Patrimonio Hoy' received the World Business Award from the International Chamber of Commerce, the Prince of Wales International Business Leader's Forum, and the United Nations Development Program for its support to the Millennium Development Goals. In 2007, it was chosen for the Corporate Citizen of the Americas Award from the Trust for the Americas. More recently, in 2009, it was recognized with the United Nations HABITAT Business Award in the category of accessible housing solutions.

As we see, the development of a dense relationship in low-income communities opened up other relational possibilities, part of which have come from listening to the concerns of customers that go beyond those related to having their own home. In addition to housing, 'Patrimonio Hoy' now contributes to the improvement of local public school infrastructure, including classrooms, bathrooms and sports facilities,

with the active participation of the program participants. Program benefits accrue not only to the participants themselves but to the community at large.

CEMEX not only has built relationships with low-income consumers but deeper relationships with their distributors as well and this and other relational know-how have allowed it to create other social enterprises. Such is the case of ConstruApoyo, winner of the UN Habitat Business Award, an offer to communities to respond to Stan and Wilma, the hurricanes that devastated much of Chiapas, Mexico, in 2005. When disasters such as this occur, recovering some semblance of normalcy as soon as possible becomes a priority for governments, nongovernmental organizations and the affected communities themselves, hopefully in an efficient way with as little waste as possible, and CEMEX was able to leverage its credibility to create ConstruApoyo.

Following a disaster, the regional government identifies beneficiaries and provides the funds. CEMEX distributes the funds in the form of debit cards, produces a catalogue of materials at fixed prices, manages the entire supply chain, and reports to the government the results of the program. ConstruApoyo serves as a model of efficiency and transparency in disaster relief: the program speeds the delivery of financial assistance, enables real-time tracking of materials delivery, and provides an audit trail showing how funds are spent. ConstruApoyo has proved so successful that CEMEX has expanded the model beyond natural disaster relief to other government-subsidized housing and community infrastructure initiatives.

Expand the Network

'Lazos Familiares' (translated as *Family Ties*) is another program which also begun in 2005, and it is designed to help communities build and renovate their institutions and buildings, such as health centers, hospitals, orphanages, and schools. With the assistance of the program's network of clients and distributors, as well as individuals in the communities, 'Lazos Familiares' has completed more than 15,000 square meters of built or renovated community infrastructure and has benefited more than 30,000 people.

'Mejora tu Calle' (*Improve your Street*) helps communities and governments work together to improve neighborhoods. Through this program, which unites public and private sector's efforts to prove a market-based solution to address critical paving needs, CEMEX provides micro loans to community residents. The residents use the funds to help pay for the paving of streets and sidewalks with cement. By combining community contributions with government funding, most projects are completed in just 70 weeks, rather than the up to 10 years that is more typical in low-income neighborhoods. These paved streets make it easier for people to travel, increase neighborhood safety, and improve access to public services such as electric-

ity, sewage and transportation. As a result of it, property values and incomes rise in the communities that 'Mejora tu Calle' serves. Since the program began operation, more than 35,000 micro-loans have been allocated to finance cement paving of approximately 400,000 square meters, benefiting 7,000 low-income families.

CEMEX plans to replicate the model within Mexico municipalities whose streets are unpaved, and focus the program on municipalities subject to low tax-collection levels and low tariff levels for the delivery of public services. The program could facilitate the paving of 20 million square meters in 50 major cities in Mexico. If the program continues to succeed in Mexico, it can be replicated in virtually any country in Latin America.

Centro Productivos de Autoempleo, CPA, (*Productive Centers of Self Employent*) is still a fourth program in which CEMEX partners with municipal or state authorities, as well as NGO's and communities, agreed to establish community centers where low-income families can temporarily work. Participants produce concrete blocks and other precast products, half of which they can use to build, repair, or expand their homes. Municipal or state governments purchase the other half for infrastructure development. The resulting proceeds are reinvested in the centers to make them self-sustaining.

In 2010, CEMEX used CPA's to assist the victims of Hurricane Alex in northern Mexico. Also in 2010, CEMEX expanded the CPA program to Colombia, where it is called ''Bloqueras Solidarias'', through a partnership with the Inter-American Development Bank (IADB). This collaboration allows CEMEX to leverage its investment to help more families and, by extension, their communities. The program not only improves housing conditions but also empowers the community as a whole through the development of relationships with participating local NGO's and government agencies. More than 40,000 families have been assisted throughout the program.

Part of the listening experience in developing relationships with low-income communities was the realization that many members of the community had migrated, many illegally, to the United States to obtain more gainful employment and were regularly sending economic resources to their families living in those same communities, often a costly transaction. CEMEX decided to enrich the relationship with clients by creating Construmex. Mexico receives over $22 billion dollars per year in remittances from migrants, more than any other country in the world. These remittances, however, have historically had little impact in improving socio-economic indicators. Remittances had normally not been invested in housing. CEMEX wished to provide migrants a way to create tangible patrimony through their remittances by extending part of them to 'Patrimonio Hoy', making it possible for migrants to target housing for their family and themselves as a place to invest their savings.

CEMEX partnered with consulates, Migrant Clubs, the Mexican Ministry for Social Development (SEDESOL) and suppliers, to create credit mechanisms for the

sale of construction materials and houses, offering loans and mortgages instead of only channeling present income investments. Migrants were able to obtain loans for as much as $50,000 USD to obtain homes in their communities. Construmex developed savings plans for clients to save and purchase construction materials certificates which could be exchanged for materials when they decided to build. Construmex formed agreements with some of the biggest and best real estate firms in Mexico to create a wider selection of housing alternatives in different regions of the country. CEMEX is now referred to by many of its low-income constituents as the "Dream Builder", an attractive nickname for its decade long effort to build win/win relationships with the bottom of the pyramid. CEMEX not only created new customers but loyal partners committed to the mutual creation of wealth and well-being.

CONCLUSION

Zambrano of CEMEX, Lafley, of Procter and Gamble and Liveris, of DOW, have something in common. They challenge their own common sense and that of their stakeholders, especially internal stakeholders. They understand that innovation and listening share a lot of verbs that are a prerequisite for unveiling concerns, envisioning possible futures, opening new disclosive spaces for co-creating and doing whatever it takes to create communities of action (Latour, 2005). CEMEX began its quest based on its own concern, no identity and no sales at the base of the pyramid. Then CEMEX executives, urged and supported by Zambrano, discovered their cognitive blindness:"selling cement ultimately has nothing to do with selling cement." Selling cement is a consequence of becoming a partner in the elimination of a broad number of concerns of certain kinds of networks in certain kinds of communities populated by certain kinds of people. One of those concerns is stabilizing the family through the creation of a patrimony ("roots"). Another concern has to do with schools, community centers and supporting institutions. Still another has to do with how to cope with natural disasters. Also improving community roads and sidewalks. And, for CEMEX, becoming visible within a municipality or a region. Another has to do with credit and, for migrant populations, how to effectively participate in networks as a migrant, to return money safely, inexpensively and also create a patrimony at a distance to finally return home with value added in the meantime.

CEMEX learned how to listen and then to form a value creating partnership with people with first and last names within a community, to do whatever it took to eliminate problems within its domains of expertise and to re-configure its own relationships with distributors. CEMEX discovered that only 30% of the savings it helped to manage were destined to the purchase of cement, the rest to other build-

ing materials sold by its distributors and that cement was pulled by the community not pushed to the community. It then discovered that it had built an identity in an increasing number of communities, then States, then regions, then other countries. CEMEX discovered that it could be seen and trusted as a valuable player in a number of different kinds of games, even disaster relief at a national level. Why? Because CEMEX did not and does not arrive at the scene with solutions, it arrives at the scene to listen, to construct partnering relationships and to co-create new experiences based on making and keeping promises and building trust.

By learning how to listen, CEMEX made a number of important discoveries. It discovered first that good business should not be based merely on one's own self-interest but on interest in others' selves. It discovered that communities are more than business segments in geographical locations, that communities have their own ways of self-organizing and that the "tanda" was one of these. It discovered that communities, especially poorer ones, have concerns about stability in which "patrimony" plays an important role, and security, both personal and material. CEMEX discovered that people in a community can be trusted and that it could become trusted as well by the community and its people. CEMEX discovered that within the needs for community members to coordinate it could create a role for itself by creating new coordinating mechanisms, enriching self-organizing traditions and creating both stability and security as concerned money and building materials, credit, and protection against inflation.

CEMEX discovered that it needed to break down its own legacy mindsets and rules, to separate its new business from its traditional business in order to keep its new disclosive space from collapsing under the weight of inherited practices and concepts of risks. Zambrano, himself given to defy legacy common sense, at one point challenged his lawyers to reflect seriously upon whether their legacy thinking would add value or destroy value for new enterprise thinking, especially taking into account the potential cost of distrust. After sounding out their views, he decided that it would be preferable for 'Patrimonio Hoy' to employ its own legal support in order to circumvent (rather than change) the risk averse common sense of the corporate legal team, a common sense with many up-sides but definite entrepreneurial down-sides. The message was clear, risks are to be taken, confronted and managed not avoided in the creation of emergent business opportunities. Above all CEMEX discovered that networks embody purpose but that purpose without process, coordination, and some kind of holding place or logistics center is not enough to permit the mobilization of action to achieve intended results. Purpose may be coherent but coherence alone does not guarantee sustainable results. Finally CEMEX discovered that purpose takes shape around openings for future possibilities and that CEMEX could position itself in a credible way to open all kinds of futures, create spaces for

action and coordinate networks of commitments, but always within given worlds of concerns.

We have seen how value is added in a much different way as we migrate from the world of products to a world of relationships and customer experiences accompanied by an increasing complexity of applied knowledge, competences and emotional and behavioral skills. The world of 'Patrimonio Hoy' is an interactive world in which employees of CEMEX collaborate on a daily basis with their customers, a game played out on the turf of flesh and blood, sweat and tears, hard-earned dollars and high quality building materials exchanged from one to another accompanied by words, hand-shakes and eye-to-eye contact. Not all relationships and experiences build trust in this way. The nodes in some networks exchange promises and build trust in a virtual world in which some players have first and last names while others are nameless.

CEMEX initially had no identity nor any degree of intimacy with the so-called "base of the pyramid", a vague marketing denominated market segment consisting of a very large group of low-income people spread across the nation in rural and urban areas. Corporate meetings attended by well-attired and well-meaning executives understood the potential value in capturing some significant market share but failed to articulate any convincing plan or strategy. The acquisition of a soccer team, "Tigres", to compete with the competitor's "Cruz Azul", provided entertainment rather than sales, no magnet for increased popular consumption of cement.

CEMEX executives came to appreciate that the lack of identity was related to a lack of intimacy with the inhabitants of low income communities and the lack of intimacy was a major constraint in understanding not only why these communities consumed relatively little cement and hardly any produced by CEMEX in its varied brand names, even when CEMEX had a number of plants throughout the country located near all important urban centers. It became obvious through increased dialogue and self-examination that intimacy could not be produced by observation alone, neither at a distance or in proximity, it must be produced by developing one-on-one relationships with typical community members, a relationship initiated by an exchange of first and last names and frequent and repeated conversations with community members to be able to live their experience, their thinking, their hopes and despairs, that is, to develop a listening and capacity to observe as close as possible as that shared by members of the community, most of all, to be seen as persons also with a first and last name that could be trusted to act as partners in reducing or eliminating shared concerns. This required the creation and maintenance of conversational spaces and authenticity (sincerity and integrity) in the participating members of the CEMEX team.

The CEMEX team realized it must start from scratch. Step number one of the Relational Commitment Loop = "Listen to concerns." It chose a low-income location in Guadalajara, distant from its corporate location in Monterrey, in large part to reduce legacy assumptions, and then attempted to get-to-know the chosen community, its culture and its people and listen to their concerns. The team discovered after some time that a team cannot just come and go and expect to develop a relationship with people but must circulate in the community from sunrise to sunset striving to become familiar enough names and faces that they could open a disclosive space for intimate kinds of conversations. Since the locals knew little or nothing of CEMEX, the team identified itself with the local CEMEX "brand", from an acquired company with a lengthy presence in the area. Although people knew the brand, they did not see the company as a supplier since CEMEX sold through distributors, distancing the producer even further from the potential consumer. The team interacted daily with community members and developed a first name relationship with numerous community member, finally with sufficient intimacy to get to know how people were living and thinking, understanding their basic and essential concerns, especially those around having something to call their own, a patrimony, a home, a place to live and raise a family, create an identity.

The CEMEX team had made a significant advance after more than half a year of listening. They had created the identity of concerned people with first and last names, representing a brand that could potentially prove of some value related to some of the most central concerns of the community, creating a patrimony for themselves and their families. They began to understand the "worth" of patrimony, especially for the disenfranchised, but had yet to understand how to help create a value offer. By creating a personal identity, they began to create "symbolic capital", that is, they were seen as persons with first and last names who were sincerely interested in helping people with first and last names, a certain credibility that they could put to a test.

As Patti Anklam observes (*Net Work, Butterworth-Heinemann, Elsevier, Inc.*, 2007) "net work" is about balancing (network purpose vs. self-purpose, open vs. closed, transparent vs. opaque, tangible vs. intangible, and perhaps most important of all, flexibility vs. accountability). CEMEX had to balance towards the network, transparency, aperture and flexibility but not obviate its own business purpose of taking an important position in the existing low income market for cement and, if possible, increase the preference of cement over other building materials. The CEMEX team would be held accountable but the business model must be highly flexible.

Generative dialogue created an ever clearer notion about how the CEMEX offer, 'Patrimonio Hoy', must be designed and supported, a co-creation involving the team and the community, built almost entirely of intellectual capital contributed by both partners, CEMEX and community members, a combination of intellectual, structural and relational capital. This second step is essentially business design, the

creating and enabling of an offer designed to reduce or eliminate the core concerns of people with first and last names concerned about the creation of not only a place to live but, for many, the only real material patrimony they had every possessed, stepping-stone to a qualitatively different kind of future. CEMEX, in order to make this offer, must design a network that would unite the human, structural and relational capital of CEMEX itself, the 'Patrimonio Hoy' team of the future, the business processes and their structural enablers within CEMEX itself and with its distributors, as well as the creation of a new role and new practices in participating distributors. It required new concepts and new practices related to financing and organizing work, in which community members acted not only as customers but often as sales people and network organizers.

'Patrimonio Hoy', similar to other network designs, such as Amazon and eBay, depends not only on intellectual capital at the core but on the creation of symbolic, pragmatic and economic value for all of the network constituents. Community members create a new identity for themselves, learn how to save and create a new future and a patrimony that extends beyond the property value of the construction, which, in 'Patrimonio Hoy', is rewarded additionally by the quality of the materials. CEMEX has created for itself an identity that has opened disclosive spaces for multiple additional offers co-created with other networked stakeholders, as mentioned, including recognition around the world. It has learned how to create new business in new ways and how to create mutual wealth at the base of the pyramid through network design and new network competencies, businesses that go beyond selling cement to distributors to engage with final consumers creating and financing a new "pull" demand that adds value to the entire network, creating new revenues for CEMEX and a variety of new businesses, from managing migrant savings, to disaster recovery and paving streets.

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KEY TERMS AND DEFINITIONS

Assets and Liabilities: The former seen as those resources "owned and controlled" by the business and expected to produce future benefits, the latter seen as *obligations* of the business arising from past transactions or costs whose settlements may result in the transfer of assets; the former "creating wealth", the latter as "claims against wealth". The term "intangible assets" is an attempt to somehow adjust traditional accounting logic.

Cognitive Blindness: The inability of a person to see that he or she does not see, thereby eliminating the possibility to see and the perpetuation of ignorance (also, the ignorance of being ignorant).

Cost of Opportunity: The recognition that the failure to capture potential value creates a gap between what has been achieved versus what could have been achieved. The failure to perform at optimal levels must be seen as a kind of waste that can be measured. It is invisible to accounting, although the impact on the bottom line generally has greater potential to improve profitability than the reduction of costs evident through traditional accounting. It is generally associated with human collaboration, coordination and performance.

Degrees of Separation: Six degrees of separation is an unproven theory that no two people on earth are more than six contacts removed from one another. We use this concept to assert that in human organizations, much smaller in scope than the planet earth, the degrees of separation are theoretically even fewer than six, so that action networks can and should be knit tightly, and that avoidable links can be construed as a new kind of waste, much greater than that contemplated by LEAN where the focus is more on the use of physical space that the space between actors in the network. We view this as a new theory of waste.

Disclosive Space: A concept developed principally by Heidegger and Foucault but used by ourselves in the sense provided by Dreyfus, Spinoza and Flores as an organized and developed "set of practices for dealing with oneself, other people, and things that produces a relatively self-contained web of meanings".

Generative Dialogue: A concept developed by the physicist David Bohm, William Isaacs and Otto Scharmer which requires the ability to listen to oneself while listening to others, recognize and suspend one's assessments, listen in a holistic way, open oneself to the possibility of changing or modifying assessments, connecting to the flow of discourse and allowing a shared interpretation to emerge through co-creation.

Level of the Code: We refer to the deep structures, often an assumed logic or set of rules which underlie interpretations and pre-determine boundaries and restrictions. An organization chart is coded for unity of command and functional boundaries, assuming that the organization is composed of a finite number of relevant action domains and that the actions performed within the domains are summative and indicative of successful coping for the organization as a whole. We insist that, for a dynamic world, the level of the code should be based on the interaction of nodes within a network oriented to the tenability and sustainability of the network.

Operational Excellence: We see operational excellence as the determination of what should be possible for an organization given its assets and competencies. What is possible is articulated through performance indicators. The gap between what is and what is possible is articulated as the cost of opportunity and actions are to be designed in whatever domain is required to close the gap, since the gap can be defined as "waste."

Organization Chart: A coded structure to regulate the domains and levels in which people's roles and responsibilities should be specified and to specify the chain of command. Job descriptions outline the roles and responsibilities from level to level within each domain.

Shareholder Value: In much contemporary business thinking, the mission and goals of the enterprise are specified in terms of the financial value to which the owners or investors in the enterprise are entitled since the business "belongs" to them. This interpretation has been challenged by a more sustainable interpretation which views all organizations as existing to eliminate the concerns of their clients and other affected entities (stakeholders) and profitability is a consequence since shareholders are also important entities.

Chapter 4
Mind Value Processes

ABSTRACT

Capitalism today faces a daunting challenge since much of the value produced in today's world is not a direct consequence of investment dollars or working capital but produced by skills, knowledge, and relational associativity. Although the so-called "intangibles" that produce value today are referred to as "assets," they are accounted for as expenses and are usually not managed as "capital" at all. Leading businesses are attempting to understand how Intellectual Capital produces value, and it marks the beginning of a shift from traditional ways of looking at value creation, but the phrase itself embodies legacy thinking and moves in the wrong direction. It is necessary, therefore, to return to the epistemological basis of the concept of value. This chapter attempts to explain the relational basis of value and its transformation from knowing, as the organizing process of what is behind being human.

INTRODUCTION

In modern capitalism, knowledge has become a necessary factor, as much or more than labor or capital. To be more exact, it is an intermediary factor. Knowledge goes into production, governing practices, processes and resources. In the productive circuit of industrial capitalism, work generates knowledge, and knowledge, in turn, creates value. Thus, capital, to accrue value, not only must subsume this *living labor* but also the knowledge it generates and puts into circuit. There reside precisely the difficulties of this subsuming, which, to put it short, fails to reduce knowledge to

capital. In summary, within the process of value creation, knowledge is a complex mediator since its valuation does not respond to the categories of tangibles. Moreover, they differ widely from the liberal or Marxist thought in their respective theories of value, to such a degree that there are as many definitions of knowledge associated to value (intellectual capital) as there are researchers dedicated to develop this topic. Kaufmann and Schneider (2004) identify 37 definitions of intellectual capital, and if we add to this other renowned researchers such as Brooking (1997), Andriessen (2003), Viedma (2001), Meritum Project (2001), Club Intelect (1998), Allee (2000) or Saint Onge (1996), we come up with more than 45 different definitions of intellectual capital. It follows that there is a vast literature aimed at the value generation process starting from a relatively new concept.

The question is, therefore, what is the cause of the explosion of such varied methods? Why there are so many methods used to explain how an organization generates its wealth through the knowledge it possesses? Why do IC reports such as those from Skandia show different indicators from year to year? If companies, to survive, must be unique (Andriessen, 2001), should there be as many methods to identify intellectual capital as companies that wish to manage it? For us it is clear that the answer to this last question is no, but then, how do we explain such diversity? In our view, the explanation to this question is the lack of analysis of the epistemological roots of knowledge and the concept of value, in agreement with assessments of Kaufmann and Schneider (2004): "a comparison of the theoretical roots of the publications shows that several different attempts were made to help in dealing with intangibles, but no broad theoretical basis exists that offers grounded explanations for the management of intangibles" (p.380). Note that Goran and Johan Roos (1997) make an attempt to develop an epistemology of intellectual capital from the classification of cognitive science posed by Varela (1998), but only manages to establish that if individuals who make up the organization behave according to some of the cognitive distinctions (cognitive, connectionist and autopoietic), the organizations must also behave this way, then the most effective management of knowledge should also point in the same direction.

According to Rullani (2004) "neither the theory of value, of the Marxist tradition, nor the currently dominant liberal tradition can account for the transformation of knowledge into value". In fact, knowledge certainly has a value in use –for users, for society– but does not have a cost reference value that can be employed as a yardstick to determine the exchange value, functioning either as marginal cost (neoclassical theory) or reproduction cost (Marxist theory). Indeed, when applying this duality a curious situation arises, since, in contrast to most tangible goods, knowledge has economic value –exchange value– only when used. The fundamental problem underlying duality of value, its use and exchange, is that both are built on

the properties of the *object* and not the *relationship*. For this reason, the design of value must be built on the notion of process and relational structure.

The aim of this chapter is to explain how knowledge is turned into value, derived from a relational epistemology. To be more exact, the aim is to propose a method that makes it possible to evaluate the process of transformation of knowledge into value, beginning with the construction of the relationship and its consequences, between the definition of knowledge and the duality involving value in use and exchange value. For this purpose, we use the framework of cognitive science, the representational as well as non-representational schools, and also the inherited concepts underlying value theory: theory of dynamic networks and the theory of viable relational systems.

A CHIMERA OF KNOWLEDGE AND ITS VALUE. INTELLECTUAL CAPITAL

Different researchers of intellectual capital agree that knowledge is what generates sustainable competitive advantage today; however, there is no clarity between the theoretical perspective and practical application (Kaufmann & Schneider, 2004). Another point of agreement is that the pioneers in the research and practice of intellectual capital are Erick Sveiby, who introduced the concept of intangible assets in 1997, which Tom Stewart popularized in an article in *Fortune* magazine in 1994 and in his book in 1997. Other contemporary contributions are Edvinsson and Malone (1999), Sullivan (2000), Brooking (1997) and Roos et al. (2001); also Alle, (2000), Petty & Guthrie (2000) and Kaufmann & Schneider 2004). From Kaufmann and Schneider (2004) until the present, the methods generated have been derived from the methodologies proposed by the authors mentioned above. We can, therefore, assert that they are the ones that ground the concept and guide the objectives of this work. Stewart (1998) defines intellectual capital as "the sum of all the knowledge possessed by all employees of a company and which give it a competitive advantage", or, in other words "intellectual material –knowledge, information, intellectual property, experience– that can be leveraged to create wealth". Edvinsson and Malone (1999), those who developed the Skandia methodology to identify, measure and manage intellectual capital, point out that perhaps the best way to visualize intellectual capital is through a metaphor of the tree, which shows that the life of the tree depends on the roots that are under ground, the same way the success of a company depends on its intellectual capital that is a hidden resource. In other words, in their concept of intellectual capital, they included factors such as knowledge, skills, inventiveness and ability of individual company employees to perform their tasks in addition to the hardware, software, databases, patents, brands, customer relationships and so

on. Looking at each of the ideas expressed by the various authors, we can extract a set of similarities across words such as intangibles, knowledge and value creation, that is to say that intellectual capital can also be seen as a combination of so-called *intangible assets* (Alle, 1999; Sveiby, 2000), or *immaterial* (Brooking, 1997; Lev, 2001) that are not on the balance sheets (Club intellect, 1998: Roos & Roos, 1997) and that, well managed, permit sustained competitive advantages in time, and thus, generate value.

KNOWLEDGE AND VALUE

Before discussing the *knowledge/value* relationship, we think it is important to understand the assumptions which have been generated to explain the *work/value* relationship. The general explanation found in the generation of value comes from the concept of work. The latter can be defined as a process of transformation between man and nature, where it is modified to generate more man (from a cybernetic point of view). The useful distance between the natural object and man, so to speak, has to do with the reproduction of the latter. That is, a utilitarian relationship to reproduce the relationship *(human)organism/environment* is defined as value in use. Value in use, although intrinsic to the idea of object, is relative and depends on the kind of relational network that defines it. This means that *eco-semio-poiesis* determines the value in use. In relation to the unit alive in culture, we could declare that such distinctions as the intrinsic and extrinsic properties of objects, surrounded by this unit, determine the relative magnitude of value in use. This determination is related to the role of poiesis playing on eco-semio-auto production of the unit.

Viewed from the Theory of Relational Viability, value in use generates territoriality, adoption and belonging in the domains of tenability and sustainability. This condition allows for a *plus value* for value in use established within the flow exchange in the domain of tenability (relational domain or system REL). This plus value is possible only when the eco-semio-autopiesis process is one of a "schizo-demic" type, i.e., when expressed as a disassociation of man and nature: the "and" manifests the division. In other words, value is propagated in the relational domain, and value in use within the domain of sustainability or matter/energy, what has been called "the material content of wealth, whatever its social form" (Marx, 1946) and its magnitude depends on the scope of the quality of the sustainability process. From the relational point of view, material content is not only historic but relative to the culture that defines it, that is, the relational shape or configuration that gives it meaning and sense. Also, value, that is, the sense of wealth, is only possible in the domain of sustainability.

Mind Value Processes

Let us see how *schizodemia* or dissociation is expressed in the domain of sustain-ability. From a classical view, the object, generated exclusively through exchange, is defined in terms of goods. When transiting through the domain of viability, as we have mentioned, the commodity has a dual character. In this case we are interested in the value that lies behind the value in use while acting as bearer of exchange value. "Goods are only that due to their duality, as objects of use and simultaneously bearers of value. They are only presented as goods and thus only bear the shape or goods, in the sense that they have a dual form: a natural form and a value form" (Marx, 1946). Value is defined as invested social work, that is, work invested through a relational network in the elaboration of a good under conditions of production, legitimized as necessary and sufficient. Consequently, it is only possible to disguise it, as value in use, in the domain of tenability, something that has been and continues to be the main engine of the Capitalist system. It is crucial to understand that value, for purposes of accumulation, is only possible to the extent that relational viability is sustainable but not tenable, as we will define first order dissociation. This dis-sociation explains the deterioration in the living conditions of the life of the planet and world and particularly in the so-called "developing countries". The so-called sustainability aimed to transform the semiotics of the relationship culture/nature into the fetish semiosis, "environment". For this reason, current impacts, misnamed *environmental* are but a reflection of this dissociation. By using the environmental concept, the relational process eco-semio-autopoiesis as a unit dissociates into eco-autopoietic systems environment and eco-semio-autopoietic cultural systems. The latter, when reproduced through schizo-semiosis, privilege the "sustainability" of their split environment over the culture/nature relationships that determine viability.

Returning to value as such, a pre-relational concept is so-called "abstract labor". The idea of this concept is the crystallization of value into a particle, based on an invariant narrative and universal observer. The concept reads as follows: independent of context, work constitutes the generation of entropy in a living unit, or wear and tear in a node, is preferred to wear, but only when goods are produced. It appears in the form of a structure or network and becomes abstract work, expressing the mutual dependence among all producers of goods. The specific network settings for so-called abstract work is revealed in the process of exchange which makes it possible for one good to be equivalent to another, since the value would be reduced a magnitude of equivalence, independent of the form. The magnitude of the value of goods is determined by the amount of socially necessary labor. The above statement is only possible if the equations relating to the equivalence of goods assume that they, in their magnitudes, are the result of a measurement, not an inventory. If this were not so, it would mean confusing number with quantity, so 5 oranges would be equivalent to 5 liters of water which is absurd, since the former are the result of an account and are of digital type and the second type are analog, creating a confusion

of logical types when generating equivalences. This implies that abstract labor would be a reduction of relational complexity underlying the process of exchange value. On the other hand, if the value were subjective, the number or amount assigned to that value, in order to be exchanged, would depend on the degree of schizodemia established in the ecosemiotic process which would then determine the distance of usefulness in the "acculturation" in relation to the environmental adjustment process. Taking this into consideration, we can say that the relationship among men or women in the context of the production of goods and services, expresses value through the type of co-territoriality built into the goods. In Neo-liberalism, the utility distance regarding objects is necessarily distorted to achieve added value. Up to now we have spoken about work as a fundamental engine in transformation and generation of value. It isn't work itself, however, what interests us since the world of wealth today rests on intangibles, specifically untamed knowledge. As we mentioned in the Introduction, the material content of wealth enters a world where the fetish is blurred and there emerges something that can't be described: there is no object, no border, so that each creation that draws close to defining its value from the certitude of knowledge achieves no more than measuring collections of objects and generating variability, that is, more of the same.

So, beginning with this, none of the economic theories can account for the process of the transformation of knowledge into value. This is due to the fact that what is referred to as knowledge has no value as a referent in order to determine exchange value. Some authors like Rullani (2004), in order to explain the above statement, resort to treating knowledge as a resource, so as to explain value starting from non-scarcity: "Knowledge is not a naturally scarce resource, its scarcity is only artificial." As an intermediate term, knowledge would have no influence on the theory of value if it were merely a sort of semi-finished good which only "conserves" and "transmits" to ongoing processes the value of capital and labor used to produce it. However, things do not happen that way. The theory of value, in either the currently dominant tradition Marxist or liberal, cannot account for the transformation of knowledge into value. Before discussing the nature of knowledge within the circuit of value generation, it seems prudent to ground the epistemological basis from which we will address the problem. For this, we will go to Cognitive Sciences and associated schools already mentioned in Chapter 1.

Beginning with the symbolic school, knowledge is a reality observable and reducible to symbols, then, an observer must have the universal character and create an invariant narrative in relation to knowledge since it possesses the operations for its representation. But, is what is "representable" a knowledge derived from physical characteristics? And if so, what would these be so as to permit their representation and, in addition, the associated semantic rules? From this perspective, the only thing we can represent are objects to which we associate the quality of knowledge in fact

for most of the work about the cognitive value, or so-called "Intellectual Capital"; knowledge is presented as a form determined by some quality. This is a distinction that on the one hand, presents the object or knowledge and, on the other hand, accompanies quality in which it is presented. In other words, it gives a name to the object presented and it is also associated with a phrase to express what the object represents. Here, the object presented is *knowledge*, and it is presented as a quality of intangible objects. Consider the definition of Stewart (1978) concerning IC as "the sum of all the knowledge possessed by all employees of a company and which give it a competitive advantage". This definition clearly shows that knowledge is conceived as an object so that it can fulfill the condition of sum total. This same concept is repeated when the researchers divide Intellectual Capital into human, structural and relational capital. Another way in which knowledge is presented to us as an object, but expressed through a series of intangibles, is in Andriessen (2003). This author selects a set of distinctions that help describe knowledge as a form of accumulation, citing, for example, the idea of "information management", which implies a reification of the knowledge process. From this perspective, knowledge is homologous to socially useful work since it is taken as the cause of the wealth creation. Viewed this way, the knowledge acts as a causal cumulative force, a kind of "stock" held by members of the organization. Therefore, the amount of knowledge should be proportional to the number of individuals in the company, which, by *reductio ad absurdum*, would imply that companies with greater IC should be mega-firms. At this point, we can summarize that the Intellectual Capital is seen in most cases as a concept that shows up through the production of objects to which are associated the quality of knowledge. This creates the illusion of measurement to the degree that we can quantify objects associated to that quality.

This illusion leads to believe in the universality of the observer status and descriptive invariance, so that it is possible to speak of the accounting of human resources and financial tables. For this reason, the idea of objectual representation leads to the design of multiple indicators, all different, including those of companies belonging to the same category, such as reports of Skandia intellectual capital, Caja Madrid, applications of the Balanced Scorecard, and so on. This directly impacts the inability to make distinctions for each indicator regarding what is good and what is bad, low level of interpretation by investors and, most importantly, not being able to establish how the indicator and value creation are related. Given this, we can say that the problems that have emerged from the multiplicity of approaches to measuring and managing intellectual capital are due to knowledge being seen as a symbolic representation or as an object. This view does not solve exchange value and value for knowledge.

If symbols should leave the scene, which one of the relational theories allows laying the foundation for an epistemology of Intellectual Capital (IC)?

From school connectionist internal representation, we are interested in processing rules that respect the semantics of the internal representation of knowledge that create value. Knowledge, in this domain, would be an emergent process of communication, an observer interpretation of the interaction between two observers, so knowledge would be a representation of a relationship between one's self with another. This would establish equivalencies determined by language, in terms of number, and by culture in relation to the diversity of knowledge that creates value. The latter could explain the problem that indicators are all different, even those of companies that belong to the same industry, as well as the ambiguity of interpretation by investors. The fundamental problem of this approach is the idea that relations are representable as internal computations of entities and instances (von Foerster, 1996). IC would then be taken as a terminal representation, in the physical sense, a product of a middle term, the firm, whose internal structure (the specific organization) is an internal representation of the IC. If this approach eliminates a number of assumptions of obligation such as objectivity, its main limitation is access to the internal structure or the way in which relational processes acquire sense and meaning, not for an individual but for the network. So IC would be "calculable" from the point of view of operations or computations of the representation that creates this structure, akin to the vision of the company/operations which have shown little effectiveness in application. Knowledge cannot be a thing or the property of a thing, because it primarily refers to process; it cannot be located independently of the network that generates it. From this, it follows that it is not possible to represent knowledge, either as object or relationship. Knowledge takes into account *relatedness* which implies that it is not possible to describe a middle term to generate knowledge as an internal representation of a structure of knowledge. Therefore, this results in the creation of an array of indicators as numerous as companies that determine them and who change them within a given period of time for lack of satisfaction. This view does not resolve exchange value and value for knowledge. So, if we cannot represent knowledge, we should abandon the idea and seek the refuge in non-representation.

We will now analyze the possibilities of the non-representational cognitive schools that offer a definition of Intellectual Capital against operationalization. If knowledge emerges as action in the world (Varela, 1998), that is, if the knowledge that creates value makes a world of meaning emerge, then IC is a set of actions that are accepted as such. This would mean an operational closure, an autonomy; in the context of organization it would allow us to would make the distinction in that set of actions that are constitutive and generative of the network, enabling its emergence as such. Although this approach called "enaction", allows us to refer to the process and not the object, it does not permit an assessment of Intellectual Capital in an operational way. This statement is based on the following phrase: "(…) knowledge is at the interface between the mind, society and culture and not in one or even all

of these elements. Knowledge does not pre-exist in any form or place but is enacted in particular conditions" (Varela et al., 1992). The question that immediately arises is, what are the special conditions that allow the enaction of knowledge that creates value? By the same token, if certain given conditions must be given, then the computation of these depends on the observer that describes both them and the network for which they are described. In other words, what is enacted will be a translation enacted by the narrator, a return to subjectivity, but this time without representation. For this reason, exchange value and value for knowledge are not resolved and surge "enactedly" in a trans-subjective way.

Based on the above, it would seem that computations associated with IC should not operate from inside the observer, but longer operate from the internal observer but in the art of storytelling; this, understood as a configuration, the product of operating in culture, the result of organizing relations as semiosis, that is, highly significant networks that create value for the organization. For the latter, we will take the relational view, which forces us to think that knowledge constitutes territoriality (Lavanderos & Malpartida, 2005), meaning the generation of codes for adoption and belonging to the network, considering that this network configuration is achieved through the idea of *value*, which is found in the exchange activity with other networks. Relational theory states that transactional activity among different networks allows the equivalence of territoriality associated with the concept of value, projected towards the object, as a configuration located in the relationship and not the object itself. So, the definition of value comes to be located in the *mode* of exchange and the *kind* of configuration that makes sense for being exchanged. For this reason, we can speak of a measure of value as the structural expression of the relationships that in the culture determines those configurations, and within territoriality, produces adoption and belonging from the idea of value. From this perspective, the knowledge object disappears and what "accumulates" is the relational strategy for the production of value configurations that allow, for a high degree of semiotic equivalence, its transactionality with other networks. On this basis, what must be evaluated is the relational structure of the network in such a way that, for different contexts, the cognitive value has to be seen as one of coherence of configurations that has supported the organization of the network, allowing it to continue on. This having been said, we return to the problem of the transformation of knowledge into value.

A HIDDEN GUEST

In the productive circuit of industrial capitalism, under the current forms and styles of thought, it is knowledge that generates value. For that reason, the reproduction of capital is only possible to the extent that knowledge, as a relationship, configures dual forms of exchange, that is, the reading on how adoption and belonging to a relational network, and the denial of the relationship of utility as a primary base for territoriality. In this way, it is possible to express the value relationship as money, and because of that, the theory of subjective value –according to which price is determined by the distinctions of individuals concerning the utility or benefit that a good, thing or service offers regarding one's needs at a given time– confirms the dissociative basis for establishing the relationship value/price. The object, the merchandise, is worthless in and of itself, and it can't attribute nor be attributed to the subject as an isolated unit. Value is given in the relationship and it is constitutive of the history of eco-semiosis of the network. Capital as logic is *relational*, not subject/predicate nor object/attribute, so its foundation deriving from objects, money, capital, value are not things, but relations.

Some authors, such as Rullani (2004), assert that knowledge cannot be estimated from the value in use, so it is necessary to dimension its value in terms of exchange: "The value in use of knowledge is no longer the fixed point on which to base its exchange value, as is the case with marginal contribution in the neoclassical theory of value. In fact, regardless of the value in use for the users, in a system of free competition, the exchange value of a commodity, whose cost of reproduction is zero, inevitably tends to zero". The exchange value of knowledge is then entirely linked to the practical ability to restrict its free diffusion, to create legal constraints –patents, copyrights, licenses, contracts– or monopolize the ability to copy, to imitate, to reinvent, to learn skills of others. Strictly speaking, and given that Rulliani uses knowledge based on its reproduction more than knowledge itself, the author is making reference to information or sources of information to which access is constrained, so that information as a resource, being limited, impedes the reproduction of knowledge. The concept of information (in-forming) defies measuring, since it is fundamentally relational: a difference that creates a second difference, in our appreciation, a *triferential* process, organized by culture into distinctions (information), so knowledge is a configurator since distinctions are the bases for decision-making. If this is so, value in use is information and value itself in knowledge. The latter is hidden in the production process since increasing productivity generates a decrease in the value or social work invested; this decrease would affect the exchange value decreasing goodwill. Therefore, to maintain the capitalist relation, knowledge is hidden and not reflected in the price, although it generates direct impacts on decisional speed, reduced expense and the production costs of goods and services; what's more, the

configurability that knowledge confers is expressed in the relational change required by organizational structures. For this reason, today's discourse is emphasizing the change from hierarchical to relational.

FINALLY, WHAT IS ECONOMY?

Regardless of the school of thought, economy must be thought of as the way to manage the relational system. The *oikos* is a system of relations determined ideologically and managed with a consistent policy, in consequence, its viability depends on the kind of relationship established: if these are of a schizo-genic type such as those defining Capitalism and its current expression, Neoliberalism, then the possibilities of self-regulation –which could make it look like a viable strategy– are little more than a chimera, a button.

Present day firms invest not only to lower entropy but to improve dramatically the relationships that constitute them. Organizing today's organizations is to unveil the *hidden guest*, to restore its condition based in its human character, its creativity.

If this, for Marx, was work, for us it is knowledge, the ethical and aesthetic engine that organizes networks of relationships.

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KEY TERMS AND DEFINITIONS

Capitalism: The relational system in which viability is determined by tenability at the expense of sustainability.

Intellectual Capital: Knowledge which creates value.

Knowledge: The process of the configuration of world and meaning.

Market: The system of imaginary community determined by the continuity of transactions.

Relational: The process of "trifferential" organization to configure meaning.

Value: The process of the generation of territoriality (agency and belonging) in the domains of tenability and sustainability.

Viability: The process of relational reproduction for the preservation of organization of the system.

Chapter 5

Value Creation Process

ABSTRACT

At present, knowledge plays a key role in the new economy. Nevertheless, its measurement as intellectual capital has not been possible from a certainty vision for the states, events, and entities, leaving aside the complexity of organizations. This chapter proposes a paradigmatic shift where the fundamental support is the relational-semiotic condition of human organizations; any deviation from its strategic goals could be explained through the closeness between language and the action emerging from language. Defined as coherence and congruity (sustainability) management, the process named NEUS allows increasing both coherence and congruity through co-participating in decisional modeling, and transferring repulsion interactions to organization areas that re-signify the conflict. Configurations arising from viability are Production Cognitive Value.

INTRODUCTION

In an economy of tangibles, the language of objects, or nominalization, has been called upon to deal with intangible world demands. If, however, we define *organization* as a relational system, composed of relational processes and organized semiotically from the culture, which is evoked to legitimize this task, then knowledge production can be seen as the result of structuring codes that generate intentionality to accomplish a determined product/service process and additionally partnering relationships and experiences.

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In the same vein, we can affirm that a concept such as *intellectual capital* makes no sense if it is limited to the heaping up of ideas. So, it makes more sense to talk about *productive cognitive capital* than intellectual capital. Productive cognitive capital could be defined as a system of codes (semiosis) intentionally aimed at the production of goods and services. An initial difference between the two is that productive cognitive capital is sharper, focused on processes. Naturally, since any system of code needs to be interpreted, this process generates uncertainty because there is a gap between the intention of the code and the associated action: a smaller gap means less uncertainty.

Productive cognitive capital falls within the scope of *business intelligence* since it facilitates decision-making through the understanding of how things function at present and the anticipation of action, thus generating a consistent direction when dealing with complex scenarios. This definition makes it possible to assess semiotic structure effectiveness within the production process through proximity evaluation, known as *coherence*. This involves a paradigm shift in business focus and the role of R&I (Research and Innovation), which would impact directly the associated development of strategies. For this reason, design efforts associated to R&I should be driven from the relationship between these strategies in order to shape the knowledge associated with their development. This would provide a better explanation of value in use and exchange value in the scope of the new economy. Productive cognitive capital should be viewed as the knowledge –or configuration– process associated to both values, a feature unique to the relational process. This implies that an increase in productive cognitive capital exists in strict proportion to the relational quality of the network that produces it; in other words, a rapprochement between the argumentative line and the associated degree of action (coherence).

A desirable outcome of this development will be an increase in network coherence and, therefore, in productive cognitive capital, reflected as company value. In this new scope, knowledge generation is a natural process aligned with the organization's "emotional state", supported by three cornerstones: *cognition*, *semiotics* and *interactivity*.

The present chapter aims to find alternatives, both theoretical and methodological, to evaluate productive cognitive capital.

Knowledge society and *knowledge economy* are concepts coined in the 20th century to highlight the role of knowledge as a key and differentiating element of economic growth. Hence, intellectual capital, defined in the simplest possible terms as knowledge that generates value, has become the subject of study in many research works (Petty & Guthrie 2000). However, there exist as many definitions of intellectual capital as there are researchers devoted to the study of this matter.

A possible explanation is that the knowledge-based economy, as a value generation process, is fundamentally characterized by its uncertainty condition. This

is based on the fact that knowledge production is the result of organization's relational dynamics, which does not allow locating a productive source in a person but in the propagation value process of a network. In general, it would be difficult to produce an explicit definition of what researchers mean by *knowledge*, perhaps because most models are born in business practice and perhaps, given this context, not all distinctions can be explained by linguistic categories. For this reason, there is considerable content expressed through complex nonverbal units that cannot be translated by one or more verbal units, except through vague approximations (Eco, 1976). In the case of knowledge associated with value generation, semiosis can be developed starting from a fairly clear idea of what is meant. This does not imply a clear way to articulate it, and the *how* process, in turn, cannot be concluded until a certain content be configured exactly. This being absent makes it difficult to develop any clear elaboration (Garavaglia & Menna, 1998) and might explain why there so many models of intellectual capital have arisen in so few years. From our taxonomy and classification, two major blocks can be distinguished: the first, beginning with the origins of intellectual capital until 2000, where most of the works are classified as cognitivists, implying the need for certainty in the measurement of intangibles; the second, from 2000 onwards drifting towards the connectionist school, which means the search for conditions distant from reductionism.

Talking about the knowledge and the value of intellectual capital is tantamount to referring to the relationship as a process. Accordingly, it is not possible to generate universal rules for building a single story structure. It is in this sense that the cognitive sciences contribute adequate guidance as to the consequences of including intellectual capital within the domains of representation and non-representation.

With this in mind, first and foremost is to understand the epistemology that allows us to create a coherent explanation in relation to value generation from the point of view of knowledge. For this purpose we have developed a brief analysis beginning with the schools that constitute cognitive sciences, dealt with in the opening chapters in the context of the idea of intellectual capital.

ANALYSIS OF THE DEFINITIONS OF INTELLECTUAL CAPITAL: THE COGNITIVE SCHOOLS PERSECTIVES AND THEIR CONSEQUENCES

From the standpoint of the symbolic school, if a company's knowledge is a reality, that is, observable, and can be reduced to symbols, then an observer would have a universal character. In addition, he/she could make an invariant narrative with regards to knowledge, given the fact that he/she has a mastery of the possible operations for its representation. But, can knowledge be represented on the basis of its physi-

cal characteristics? Furthermore, if this were so, which should these be in order to enable their representation, apart from the associated semantic rules?

From this perspective, the only entities that can be represented are objects to which one associates the quality of knowledge. In fact, in most of the work on intellectual capital (IC), knowledge is presented as a form determined by a quality. This is a distinction which, on the one hand, presents the object or knowledge –as in this case–, and, on the other hand, accompanies the quality in which it is presented. In other words, it assigns a name to the object presented, and on the other hand, it associates it with a phrase, to express the capability of such an object to be presented. The object herein presented is knowledge, and it becomes such as an intangible character.

Let us examine the definition of IC offered by Stewart (1998): "It is the sum of everything everybody in a company knows that gives it a competitive edge". This clearly shows that knowledge is conceived as an object so that it may fulfill the condition of the sum. This same conception is repeated when researchers divide IC into human, structural and relational capital. Another form in which knowledge manifests itself as an object is that of Andriessen (2001, 2003), who expressed it through a series of intangibles. Andriessen chose a set of distinctions that allowed him to describe knowledge as a form of accumulation. For example, these authors quote their idea of management information, manuals, etc. The first viewpoint implies a reifying of the process of knowledge. This means that knowledge is homologous to socially useful work, since it is conceived as the root cause for the generation of wealth. From this perspective, knowledge acts as a causative cumulative force –as a sort of "stock" possessed by the members of an organization. Therefore, the amount of knowledge should be proportional to that of the individuals who make up the institution, which, by reduction to the absurd, would imply that organizations with a greater intellectual capital should be mega-companies.

At this point, it can be stated that IC is conceived in most cases as a concept that can be representable on the basis of the production of objects to which the quality of knowledge is associated. This enables us to create the illusion of measure inasmuch as one can quantify the number of objects associated with that quality. This illusion is reflected in believing in the condition of the universality of the observer, and his/her descriptive invariance which, in turn, makes it possible to speak of "human resources accounting" and financial balances. By this same token, the "objectual" idea of representation leads us to the design of multiple indicators, all of which are different, even those of companies that belong to the same industry (for example Skandia's IC reports, Caja Madrid, Balanced Scorecard applications, among others). This has a direct impact on the impossibility of establishing distinctions for each indicator as to how much is good or bad, providing for a low level of interpretation

by investors, and what is more important, being unable to establish how the indicator and the creation of value relate.

On the basis of all what has been stated, one can express that the issues that have arisen from the multiplicity of approaches for measuring and managing IC derive from the fact that knowledge is conceived from symbolic representation, or as an object. Nevertheless, if the symbols were to disappear from this scenario, which of the relational theories or cognitive schools would enable us establish the groundwork for an epistemology of IC?

Towards an Epistemology of Knowledge as Value

Based on the ideas presented so far, we can deduce, as a general rule that IC definitions are built from a symbolic conception, which creates, as an effect, the multiplicity of models and indices. Consequently, on this point the authors analyze the tendencies to build IC seen in the connectionist, enactive and relational schools.

From the viewpoint of the connectionist or internal representation school, the authors are interested in the processing rules that respect the semantics of the internal representation of knowledge, that which generates value. In this domain, knowledge would be an emergent of the communication process, an interpretation made by an observer of the interaction between two observers. Hence, knowledge would be a representation of a relation between oneself and some other party. This would imply establishing equivalences determined by language, in terms of number and culture, in relation to the diversity of knowledge which generates value. The latter could explain the problem of the existence of different indicators, even those in organizations that belong to the same industry, and, in addition, to the ambiguity in the interpretation on the part of investors. The fundamental problem with this approach is the notion that the relations can be represented as internal computations (von Foerster, 1996), of entities and instants. Hence, IC would be taken as a terminal representation, in the physical sense: that is, a result, the product of a relational element, the organization, whose internal structure –the specific organization– is, in turn, an internal representation of that IC. Even though this approach eliminates a series of obligatory assumptions, such as objectivity, its main limitation is the access to the internal structure or the form in which the relational process acquires sense and meaning, not for an individual, but for the network. IC would be thus "calculable" in terms of the operations, or computations of the representation which said structure makes, something akin to the vision of the organization whose operations, according to these authors, have shown very little efficacy in their application.

Knowledge cannot be an object or the property of such because it remits itself primarily to a process; it cannot be located independently from the network that generates it. Hence, it follows that it is not possible to represent knowledge either as

an object or as a relation. Knowledge accounts for relational aspects, which implies that it is unattainable to describe a relational element that generates knowledge as an internal representation of a knowledge structure. This, in turn, brings about as a consequence the creation of a barrage of indicators, under the form of organizations that determine them. Finally, these indicators are changed by the same organizations within a given time due to dissatisfaction.

Taking this into account, if knowledge cannot be represented, the idea must be given up, seeking refuge in non-representation. Next, we shall analyze the possibilities that the non-representational cognitive schools offer us *vis-à-vis* operationalizing the definition of IC. If knowledge emerges as action in the world (Varela, 1998), that is, if knowledge that generates value makes a world of meaning emerge, then IC is a set of actions that are accepted as such. An operational closure, an autonomy would be taking place here, which in the organizational context would enable a distinction to be made in that set of actions which constitute and are generative of the network, making its emergence as such possible. Even though this approach, designated as enactment, allows us to redirect to the process and not to the object, it does not allow us to assess IC in an operational manner.

The former statement is based on the following sentences:

"Knowledge is at an interface between the mind, society and culture, and not in one or even in all of these elements. Knowledge does not pre-exist in any form or place, but is enacted under particular conditions" (Varela et al., 1992).

The question that immediately arises is: what are the particular conditions that permit the enactment of knowledge that generates value? Given the same condition, if certain particular conditions are to take place, then their computation depends on the description of the observer and on the network for which they are described. In other words, what has been enacted will be an enacted translation made by a narrator, a return to subjectivity, but this time, without any representation.

On the basis of what has been stated, it would seem that computations associated with IC should not operate from within the observer, but through narrative act, understood as a configuration; a product of operating in culture, the fruit of organizing the relations as semiosis. This includes highly significant networks that generate value for the organization. In order to achieve the latter, the authors will assume the relational vision, which compels them to think that knowledge constitutes territoriality (Lavanderos & Malpartida, 2005). The latter refers to the generation of codes for bonding and belonging, bearing in mind that this network configura-

tion is achieved through the idea of value, whose locus is the activity of exchange with other networks.

Relational theory establishes that transactional activity across different networks enables the territorial equivalence of value associated with the named concept, projected to the object as a localized configuration in the relation and not in the object as such. It is, then, network activity and the supporting structure that which constitutes IC; the definition of knowledge in IC happens to locate it in the exchange mode and in the type of configuration in which it makes sense to be exchanged.

Following this line, one can talk of measures of IC as the structural expression of the relations which culturally determine those configurations which, within territoriality, bond and belong to, in terms of the value notion. From this perspective, the notion of knowledge as an object disappears, and what is "accumulated" is the relational strategy for the production of value configurations that permit, due to the high degree of semiotic equivalence, their transactionality with other networks.

On this basis, what must be evaluated is the relational structure of the network and this, in such a fashion, that for different contexts the value of IC would be the consistency of the configurations that have sustained the organization of the network, enabling its conservation.

MAIN FOCUS

The Relational Organization (RO) as Value

Relational Organization is a way of studying organizations coming from relational processes –viewing processes, rather than substances, as the basic forms of the universe. RO prioritizes change over conservation, novelty over continuity and emergence over reduction. Creativity, change, disruption, and uncertainty are the main topics of a relational view.

This approach looks at relationships as fundamental, and does not require the existence of states, events, and entities, but insists on unpacking them as distinctions from culture which emerge as complex processes involved in –set of activities and transactions that take place and contribute to– their constitution.

The *relational view* relies on anti-dualism, the recognition that everything that is has no sense apart from its relationship with other things, and, therefore, long established dualisms such as mind and body, reason and emotion, humanity and nature, tangible and intangible, object and subject, need to be dealt with.

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In a tangible economy, object language, that is, nominalization, has been the condition to deal with intangible world demands. Thus, if we define *organization* as a relational system –in other words, a set of relational processes–, semiotically organized from the culture, as a legitimator of the above mentioned, then, knowledge production can be defined as the result of code structuring which generates intentionality to accomplish a determined product/service development process.

Related to the above, we can state that a concept like intellectual capital will have no sense if it is bounded to idea accumulation. So, it is much more appropriate to speak about the *value production process* instead of intellectual capital. The value production process should be defined as a dynamical code system (semiosis) intentionally aimed at goods/services production and easy and agile propagation. A first difference between the two is that the value production process is sharper, focused on processes. Naturally, as any code needs to be interpreted, this process generates uncertainty, because there is a gap between the code intention and the associated action; a smaller gap means less uncertainty.

The value production process is located in the Business Intelligence framework, since it facilitates decision-making through the comprehension of current functioning and action anticipation, generating a consistent direction in the face of complex scenarios.

The above definition lets us evaluate semiotic structure effectiveness in the productive process through proximity evaluation, otherwise known as *coherence*. This involves a paradigmatic shift in the business view and R&I (Research and Innovation) role, which would directly impact the associated strategies development. Therefore, design efforts associated to R&I must be driven from the relationship among those strategies to the form of knowledge associated to its development, since this would better explain the generation of value in use and value of exchange in the new economy framework. The value production process must be understood as the knowledge or configurative process associated to both values, a feature found only in the relational process. This implies that an increase in the value production process is in strict proportion to the relational quality of the network which produces it; in other words, a rapprochement between the argumentative line and the associated action degree (coherence). A desirable consequence of this development would be an increase in network coherence and, hence, in the value production process as company value. In this new framework, knowledge generation would be a natural process aligned with organization's "emotional state", which is supported by three cornerstones: *cognition, semiotics and interactivity*. It is, then, network activity and the structure supporting it that which constitutes the value process. Thus, knowledge definition in intellectual capital becomes located in the exchange mode and in the configuration type in which it makes sense to be exchanged. Therefore, we may speak of intellectual capital evaluation as the structural expression of the relations

which culturally determine those configurations in terms of the value notion that generates territoriality. From this perspective, knowledge as an object disappears, and what is accumulated becomes the relational strategy for the production of value configurations that allow, due to the high degree of semiotic equivalence, the ability to transact with other networks.

Upon this basis, what must be evaluated is the network relational structure so that, for different contexts, the intellectual capital value is seen as the consistency of the configurations which have sustained the organization of the network, allowing its conservation.

As can be inferred from the above, talking about knowledge and value is to make a reference to the relation as a process. Consequently, it is not possible to generate universal rules for building a unique semiotic structure.

In summary, epistemological foundations that better interpret the value process spirit in the 21st century are in relational theory. This allows the development of a new vision of value creation that emphasizes the organization of the relations determined by a culture.

If we take a deep look through this perspective, we can define a company as a process of relationships determined by its culture and organized according to the exchanges of codes of bonding and belonging among people which guide the decision-making process for value generation. Therefore, *value* –as knowledge which generates value– emerges from the consistency of the relational process between the structure of the organization and the decisional process within that structure.

Based on the above, knowledge as a condition would be distributed in the network of relationships that create the organization, so that the "measure" of value should focus on understanding, as a fundamental step, the configurations of relationships that permit its development. Thus, there would not be an inside and an outside but a complex network of relationships that reproduced on the basis of its culture. Understanding the latter as a code producing process to bring about and belong to the relational system based on the generation of intangible wealth.

In conclusion, *knowledge*, measured as coherence and congruity, is defined as the value production process. From relational epistemology we can deduce that intellectual capital cannot be conceived as an object, but as a process: the value production process. Finally, wealth generation in the new economy will depend on quality of relationships which should structurally overcome hierarchies, moving to heterarchies.

Neus Method as an Approximation to Value Production Process (VPP) Assessment

The Value Production Process evaluation process is named NEUS (Network Evaluation for Unbalanced Systems); it is aimed at reducing incoherence and incongruity through joint participation in decision modeling, managing difficult interactions by means of reconfiguring the relationships, improving in this way both coherence and congruence.

NEUS is focused in explaining and evaluating network linking states on a configuration exchange basis –i. e., narrative– as well as action schemes or interactivity –behavior– that have meaning for the network context.

VPP arises from relational process sustainability between the organization structure and its decision process; also, its evaluation can be supported by two parallel processes: meaning exchange (semiotic configurations) and interactivity.

Semiotic configuration exchange is the process that generates meaning equivalence from the applied narrative. Narrative arises from the cognitive type that generates it, linked to semiotic recursive circuits' presence, and the possible meaning in the exchange process, named *structural* and *semiotic equivalence*, respectively. On the other hand, interactivity is related to organization's behavioral dynamics, which is understood as the approach or rejection process among stakeholders, when a decision process occurs.

Then: $VPP = f\,(NCA, NSA, NIA)$

Where:

- VPP is the Value Production Process
- NCA is the Network Cognitive Affinity
- NSA is the Network Semiotic Affinity
- NIA is the Network Interactivity Affinity

Network Cognitive Affinity in the Decision Process (NCA)

In essence, human activity is based on semiotic operations, particularly language; thus, the base of distinctions as cognitive operation generates connective structures in the reformulation speech with regard to a question. These structures arise from connection type and number among concepts used in an explanatory process. Semiotic relationships relate to terms or words presence in any series as the paradigmatic ones are to joining terms or words without specifying a particular way. Speech

paradigmatic axis translates essential, stable, accepted and implicit relationships for a certain network.

From this, an analogy is established among the axes of the speech, the distinctions and the applied relationality, in the following way:

- Speech syntagma (distinctions from a base question).
- Thinking paradigm (connective network of distinctions).
- Type of used associations or terminological relationships: associative or causal.

The following are some rules or outlines that allow connecting the syntagmas:

- **Attainment**: Concepts in which the presence of one affects other, the connection is temporary. The simplest scheme is causality.
- **Association**: Concepts overlapping their meanings in the relationship.

From the above, it is established that the discursive process, from its base of distinctions, generates a configuration of concepts by means of consecutive and associative connectors. In the case of a network, for every member the type of configuration expresses the degree of affinity among them when building the explanations.

The specific methodology for this kind of modeling is based on the *cognitive map concept* (Ackerman et al. 1995), a system that charts the reasoning line of the observer as concepts and connections (*Figure 1*), where rectangles S_i represent the semiotic line, connectors the paradigmatic line, arrow connectors the attainment, and simple connectors the association; P_1 is the question that rules the context and S_5 is the potential attractor. From this structure, it is possible to carry out different types of analysis, for example: speech attractors, terminal elements, opening elements, and concept centrality. With this, it is possible to find out that some reasoning concepts centralize and rule the connectivity of ideas and concepts, so that they allow characterizing the cognitive speech type. The cognitive map accounts for the paradigm from where the observer builds its observation. This technique allows to structure, analyze and generate meaning for different problem types. Cognitive mapping can be developed directly in an interview, allowing the observer to build and argue, as the problem arises.

The narrative structure is generated as a cognitive map, from concepts within the scope of decision-making problems inside the organization, as well as their connections. Maps are compared, trying to establish significant differences among speech structures. The criteria used to evaluate if there are differences among speech structures is focused, on one hand, in the conservation of the "attractors" of the generated structures, and in the presence of semiotic circuits. An attractor is a con-

Figure 1. Example of a cognitive map
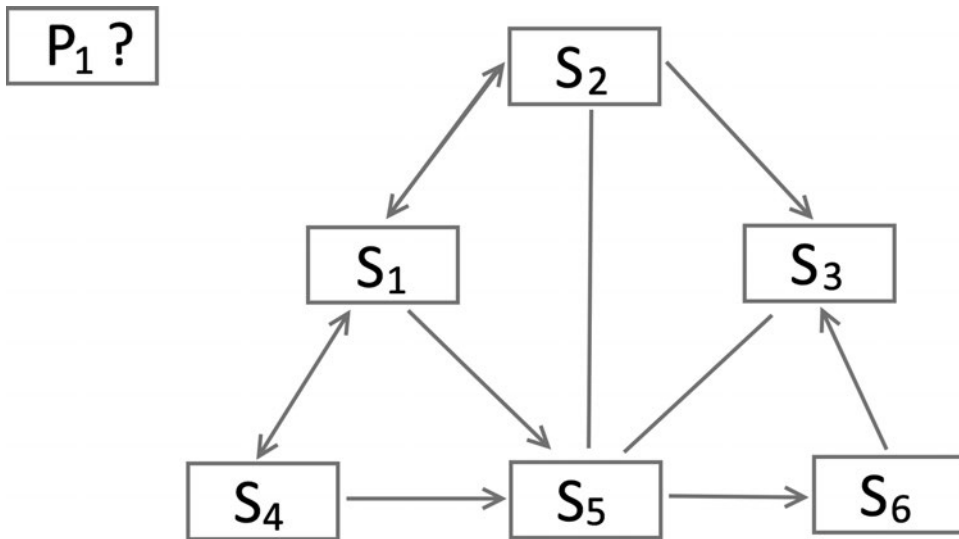
cept that guides and centralizes the construction of explanatory ways or argumentation: it is obtained from the calculation of the centrality of the elements that compose the cognitive map. On the other hand, the comparison of the contexts of discursive structures is focused on observing the presence or absence of circuits, specifically the presence of "recursive semiotic circuits".

These criteria enable us to make explicit the explanatory routes or the sequences of concepts that generate meaning, from which the generative mechanism of the explanation is shown. Types of analysis used and their aim are:

- **Centrality Analysis**: Prioritizes the connective density around syntagmas and their connectivity domain. The aim is to show the presence of centrality elements ruling the reformulation ways.
- **Circuit Analysis**: Extracts circuits generated by semiotic model concepts. If there is recursion (the process a procedure goes through when one of the steps of the procedure involves re-running the procedure), the complexity of the explanation structure and its way of association with other processes are predicated. When a closed circuit is formed, it generates a complex chain of argumentation.

From this, the Cognitive Type Affinity (NCA) is a function of the narrative type generated by the connectivity (attainment and association) and the recursion degree or number of present circuits when the centralizer is compared with the rest of the network.

With this, the Cognitive Type Affinity (NCA) equals to: f (CRT$_j$ versus CRT$_i$), where CRT is the connective-recursive type which allows getting the structural equivalence degree, when the members of the network are compared with their boss or centralizer. CRT is obtained from the predominant Connective Type (CT) and from the circuits' presence or Recursion Degree (RD) by means of a matrix arrangement of both.

Connective Type (CT)

CT is calculated from the affinity/closeness among the connective types of the centralizer (CT$_j$) and the rest of network members (CT$_i$). This way, CT$_j$ is equivalent to the number of *dominating connections* divided by the number of *total connections*, whose values are ranked in categories of Dominating Connective Type (causal or associative).

Once CT$_j$ is calculated, the connective dominance is calculated for the rest of the nodes of the network (CT$_i$). If the connective type of a node is inversely proportional to CT$_j$ dominance type, then it takes the category of opposite. For any purpose, the subscript j is assigned to the centralizer and the subscript i to the rest of the network.

Recursion Level (RL)

RL is calculated from the rate of circuits over a heuristic value of 10. This way, RL$_j$ (centralizer) corresponds to the number of circuits of the centralizer divided by 10. This operation iterates for all network members.

As previously mentioned, CRT is obtained from the matrix arrangement: CRT$_{ji}$, where j equals to (CT- RL)$_j$ and i equals to (CT-RL)$_i$, values taken by the matrix are qualitatively determined. This way, when comparing the *centralizer j* and the *collaborator i*, the Cognitive Type on the recursion is prioritized. In the case that CT of both is associative; the distinction is determined by the recursion.

Once CRT$_{ji}$ is obtained, it is ranked in five categories, depending on the closeness obtained after comparing CT-RL of the centralizer to each member of the network. Two individuals have a high NCA inside the network if their cognitive maps are close. This means that, facing any question, people making up the network structure the solution in a similar way; therefore, they have close structures or forms, allowing them a better possibility of coherence, scenario that propitiates VPP generation.

Table 1. Cognitive Affinity categories in the scope of the network

Value	Category
0.75 < NCA ≤ 1.00	Cognitively Homogeneous
0.50 < NCA ≤ 0.75	Cognitively Allied
0.25 < NCA ≤ 0.50	Cognitively Loose
0.00 < NCA ≤ 0.25	Cognitively Heterogeneous

Network Cognitive Affinity (NCA)

The type of feature associated to the description of the Network Cognitive Affinity is based on the idea of building an "organizational mesh" from the communication process. For the same reason, an organization is compatible if the cognitive structure (way of establishing an explanation in a context) is common for its members. In other words, they obey the same paradigmatic type. See *Table 1*.

Network Semiotic Affinity in the Decisional Process (NSA)

A second step in the development of NEUS is to evaluate speech closeness, according to its content; i.e. to evaluate the semiotics associated to cognitive map structures.

An indicator of this is the speech attractor and, as defined previously, it is the one that centralizes the connections in relation to the universe of concepts composing the map: according to Bateson (1980), it is an explanatory principle. The attractor can be understood as the concept that rules the meaning of the speech. Semiotic equivalence is calculated from this base, which implies to establish the closeness among the attractor of the boss and the attractor of every member of the network. Semiotic equivalence from the attractor is calculated from certainty and similarity conditions.

The relationship established among attractors is named "relata", forming the following typology:

- **Hyper-Relata:** Context shared by all, is equivalent to the base question.
- **Hyporelata:** Vertical concepts, different natures, there is no relationship.
- **Holorelata:** Member-class concepts, coincidence of constituent parts, equal idea.
- **Merorelata:** Member-class concepts, horizontal, establish inclusion.

When comparing the meanings of the attractors, there are two large categories arising to which these can ascribe, concepts whose relationship with the central-

izer's attractor are of a different nature, for example: "Corporate image" versus "Create internal learning cycles", where the first one comes from a strategic scope and the second one from an operational scope, that is, in spite of being under the same hyperrelata or context, the explanatory principles that support the centralizer speeches versus its collaborator are in different hierarchical levels, which qualifies as hyporelata.

Another large category refers to holo-merorelata types, which explains the equivalence degree in terms of meaning. Of both, the holorelata is where the biggest resemblance is established. As an example, the attractors "Corporate image" and "Institutional prestige" correspond to the same relata.

Likewise, the category of merorelata is established when there is a smaller equivalence degree between two concepts from an inclusive relationship (one is part of the other). Example, in the scope of planning "to define roles" is part of "Corporate image".

On the other hand, the concept of certainty is related to the possibilities of interpretation associated to the attractor, in a given context. This means that an attractor allowing a wide scale of meanings is classified as of low certainty, this impacts negatively on the execution of the decision-making process. For example, "Corporate image" generates a wide scale of meanings, which diversifies and allows high degree of freedom in how it must be understood inside the network.

In the cognitive map framework, certainty is conveyed in the attractor's *entorno* structure. This way, there are concentrating (incoming connections) and dissipating (outgoing connections) attractors. Because these connections are causal and associative, they can be classified according to their dominance, forming three categories: *incoming causal*, *outgoing causal* and *stationary* (equal number of inputs and outputs, or associative dominance). Relationship coherence is analyzed between the certainty level of the attractor and its structure. This way, an outgoing causal low certainty attractor is highly coherent, but not when it is incoming causal. This is established from that a wide meaning concept (low certainty) needs to be explained by a high number of concepts (dissipates) to be able to give content.

Then, based on similarity and certainty, a matrix array in the form SC_{ji} where j corresponds to *relata- entorno$_j$* and i to *relata-entorno$_i$* is developed, values taken by the matrix are qualitatively determined. This way, when comparing the *centralizer j* and the *collaborator i*, the type of similarity (relata) is prioritized over certainty. In the specific case of hiporelatas, it is not possible to compare them, since by definition there is no relationship. When comparing merorelatas, values are determined by the certainty generated by the attraction and dissipation structure.

Once SC_{ji} is obtained, the viability of certainty and similarity types generated by the crossover between the centralizer and each member of the network compared is analyzed. *Table 2* shows the classification.

Table 2. Network Types after the loyalty degree of decisional speech reproduction

Type	Status	Definition
Tuned up	$0.75 < \text{NSA} \leq 1.00$	Decisional process is completely reproduced by the network
Convergent	$0.50 < \text{NSA} \leq 0.75$	Decisional process is partially reproduced by the network
Divergent	$0.25 < \text{NSA} \leq 0.50$	Decisional process is inadequately reproduced by the network
Discordant	$0.00 < \text{NSA} \leq 0.25$	Decisional process is not reproduced by the network

From the classification, it is possible to explain the differences, in the scope of action, between a control structure that designs an action scheme and the design implementation responsible team.

Network Interactivity Affinity (NIA)

Production cognitive capital is constituted from success in narrative reproduction of company's management associated to the executing relational structure (command).

Relationships are not measurable, since they belong to the information scope (Bateson 1973, 1980; von Foerster, 1974). A methodological possibility is to deduce them from value judgments made by persons about their own colleagues in an organization. These judgments allow establishing action schemes which are translated to attraction or repulsion processes inside the network. Action schemes that determine cohesion or disintegration are called network interactivity.

Establishing the organizational network configuration from interactivity, is aimed to deduce relationship types allowing the organization to be carried out as a process. This network is constructed according to the affective-relative position of every actor inside the organization. Its construction is performed from what every member connotes in relation to other participants, from the company's daily activities.

The interactivity type of the stakeholder towards the question: how do you evaluate *actor k* competence against *actor i* to carry out a decision-making process?

This interactivity process can change in time, generating a recurrent pattern, which is analyzed, evaluating if it is stable and sustainable as structure base. The stability, as interactivity type, is initially evaluated locally, this is, from every actor towards the network and, later, local values are integrated into a global indicator.

NIA calculation is developed from the answers of network members to interviews. As an example, in the calculation of NIA between *A* and *B*, there are 3 "participants": *A*, *B* and *R*, being *R* the remaining members (neither *A* nor *B*) of the network.

Every participant expresses simple judgments –*declaration*–, which are grouped according to:

1. *A* declares about (*A versus B*)
2. *B* declares about (*A versus B*)
3. *B* declares about (*A versus R*)
4. *A* declares about (*B versus R*)
5. *R* declares about (*A versus B*)

From the above, 3 values are calculated:

D₁) Relative difference between 1 and 2.
D₂) Relative difference between 3 and 4.
D₃) Average of the relative differences between (5 and 1) and (5 and 2).

Every difference between *A* and *B* is calculated as: $\left|A - B\right| \times \dfrac{\left(A + B\right)}{2}$

Values are weighted (by p_i) and added, and the result is multiplied by a heuristic correction factor (k), being p_1 greater than p_2 and p_3.

In short, the Network Interactivity Affinity index between *A* and *B* (NIA $_{AB}$) is obtained from: $k \sum p_i D_i$

The resulting values are compound judgments of simple judgment comparison.

NIA values range between 0 (high level of repulsion) and 1 (high level of attraction), which is classified according to *Table 3*.

When having a network classified as reciprocal, it is said that the dominating relationships regulate the differences among persons in such a way that, in case of divergence, these are lowered through coexistence quality. In case of a dealer network, the dominating relationships force to look for agreements to normalize coexistence. Finally, complementary and symmetrical relationships generate division and rupture; the complementary, because of subjection to hierarchy, and the symmetrical, because of direct amplification of the discrepancy.

Table 3. Interactivity of NIA values

Type	Status
Reciprocal	0.75 < NIA ≤ 1.00
Dealer	0.50 < NIA ≤ 0.75
Complementary	0.25 < NIA ≤ 0.50
Symmetrical	0.00 < NIA ≤ 0.25

VPP Calculation

Finally, when relating the three indicators previously described, a quantification of VPP is obtained.

It is important to emphasize VPP value in leading the network coherence state, this is essential as soon as it moves away from the idea of "reification" or objectualization of this intangible.

VPP analysis leads to a triadic interpretation of Cognitive Affinity (NCA), Semiotic Affinity (NSA) and Interactivity Affinity (NIA). It is necessary to emphasize that this process is complex, and reductionism shall be avoided in the interpretation (See Equation 1).

Quantitatively,

$$VPP = \sqrt[3]{NCAxNSAxNIA} \tag{1}$$

VPP takes values between 0 and 1, which are classified in *Table 4*.

In this way a decisional network, which has compatible cognitive types of sintonic speech reproduction and a reciprocal NIA, classifies as cohesive.

The way from prescriptive to postcriptive logic, in relation to what is understood as knowledge production, implies locating the creation of value (as VPP) in the decisional process coherence which can be configured as: distinction-explanation-decision-action between objectives and goals, between actions and programs, that is, to look for the alignment according to the narrative and action axes. Incoherencies produced are fundamentally due to insufficiency of communication support to control the difference between both axes, so difference amplification is generated, by cognitive type incompatibility or low certainty speech generation in decision-making, or because in the daily affective ambience a symmetrical relationship freezes any possibility of network cohesion.

Table 4. Organization's coherence classification

Type	Range	Definition
Cohesive	$0.8 < VPP \le 1.0$	High coherence
United	$0.5 < VPP \le 0.8$	Medium coherence
Untied	$0.2 < VPP \le 0.5$	Low coherence
Disperse	$0.0 < VPP \le 0.2$	Very low coherence

Network state is dynamic. Although cognitive type is the variable showing the least possibility of change, this does not define network state by itself. Coherence can be improved by managing speech decisional certainty and re-configuring inter-activity, by generating participation in decisional modeling and modifying repulsive type interactions to non-conflicting areas.

Coherence management evaluates the decision-action configurations the network can take as bending and stressing, which occurs from the triadic cognition-semiotics-interactivity. These configurations are the organization's VPP because they are legible not only to the own network but also to the external ones, with which they have decided to establish or to cut off relationships.

NEUS goal is the evaluation analysis and management of productive processes decisional coherence, generating a communicatively sustainable connective network, proposing configurations to manage the difference between the narratives to do and the doing of an organization.

INVENTING AN ORGANIZATION AS RELATIONAL STATES STRUCTURE

In the current context, the value generation process is rooted in understanding the strategic role of intangibles, especially when speaking about knowledge. Obligatorily, this statement involves a paradigmatic change in the vision of business and the role of R&I (Research and Innovation), that which would directly affect the development of innovation strategies. Taking the above as a basis, design efforts associated with R&I must be driven from the relationship between innovation strategies and the knowledge form associated with its development, since value generation would be explained to a better degree in the new economy framework.

One feature constituting this relationship is expressed in the degree of coherence, which is the closeness between the narrative of decision-making and the actions actually made. Therefore, a small gap leads to a high organizational degree of coherence. Under this scheme, management is stated so that its results change, from a certainty vision to one of confidence. This separation from certainty responds to the fact that organizations must be understood as communicating networks, where transactions are organized and directed from culture-language relationship, so any operation-action is always an interpretation.

This uncertainty condition in the interpretation lets us venture that the center of attention is not goal fulfillment, but coherence. By the same, it is through coherence that value generation might be explained, to a better degree, in the economy of the scope of knowledge. Managing coherence implies designing a strategy to reduce

the gap between the narrative and the actions derived from the decision-making so that, a lesser gap drives the organization to a higher of coherence.

Value will arise in every step of the production process assembly relationships as it controls the difference between the "saying-and-doing" frames of reference. But, where is this difference located? What determines the difference between the narrative and the action frameworks? A possible answer is to explain this by means of two concurrent processes:

- Exchange of meanings (effectiveness in command reproduction), and
- Network interactivity (behavioral process of rapprochement or rejection among actors, when carrying out a decisional process).

In other words, the network has a way of thinking and doing, consequence of its history of decisions, which is conservative, through shielding or closure operations in the face of external agents. This means that a person joining a network to work for the first time will not understand the network working codes, although the words are the same he/she handles. Simultaneously, the persons who make up the network do not necessarily understand what their boss is looking for in decision-making, what will generate uncertainty and actions will be far from what is desired. These processes generate differences between saying and doing and are responsible for the loss of effectiveness and efficiency while facing strategic operations.

An organization can be defined as a "constituted relational structure, from its culture, from narrative and behavior configurations for decision making in contexts of certain meanings"; then, the coherence concept binds closely to code and meaning notions as base operation. This leads us to reconsider management, going from a certainty belief to a sensation of confidence in uncertainty or complexity. So, if we consider organizations as complex systems (since their operations are fundamentally processes organized in the language which introduces the uncertainty condition), it does not turn out to be strange to observe, in practice, the low correspondence between strategic programs and their fulfillment actions.

Analogous to the *network* concept, we have defined *REL* or *relational system*, which allows locating organizational problems in the relations that emerge in their daily dynamics; this implies that relational methods evaluate persons as entities in regard to others. If we take that into account, the low correspondence would be explained as a specific state of the relational structure associated to decision-making.

Both narrative and interactivity are expressed in relational structure quality which is defined from its co-organization, cohesion, conduction and coordination, Co4. The *strategic alignment* process to improve business coherence and congruity has been called *Co4 System Configuration* (the whole –inside and outside– relational system).

One of the strategic results obtained from interactivity (NIA) and semiosis is the connective structure of the network. From this it is possible to derive the key players (Everett & Borgatti, 1999).

The key player problem is compounded of two related but different questions about a social network.

Type 1, KPP-1, or KPP-Neg.

- It is the minimum set of *k* nodes which, if deleted, generate maximum perturbation or disconnection (augments the number of components or the mean distance) in the network, resulting in a residual network with minimum cohesion. They connect in high degree, allowing establishing "bridges" among all the actors; without their presence, the network fragments.
- Quantifies network fragmentation after deleting nodes in non-directed and non-weighed networks.
- To solve the problem, Fragmentation (*F*) and Distance (*F^D*) are measured in the network (graph).

$$F = 1 - \frac{\sum_i si\left(si - 1\right)}{N\left(N - 1\right)} \tag{2}$$

$$F^D = 1 - \frac{2\sum_{i>j} s_i\left(s_i - 1\right)}{N\left(N - 1\right)} \tag{3}$$

Type 2, KPP-2, or KPP-Pos.

- It is the minimum set of *k* nodes, which is maximally connected to the rest of the network. It is applied to evaluate the *transmission* or *dynamization* of ideas.
- One approach is the distance-weighed Reach (*R^D*), considering differences among individual routes.
- To solve the problem, the amount of connections among a set and the rest of the network (graph) is directly measured (cohesion among sets).

Value Creation Process

$$R^D \sum_j \frac{1/d_{mj}}{N}$$

The state of the whole organizational *Rel* settles from four concomitant processes:

- **Co-organization.** Code production to maintain the organization.
- **Cohesion.** Robustness of the resulting structure from the reciprocal relations determined by interactivity and semiosis. In this way, the more reciprocal connections, the greater the network cohesion.
- **Conduction.** The ruling form associated to command, which goes from highly centralized systems (hierarchies) to decentralized systems (heterarchies).
- **Coordination.** Propagation quality (reach) among members of the network facing an event.

We have called Co4 a relational structure, as shown in *Figure 2*. In turn, Co4 is defined according to three generative conditions:

1. Cognitive type or knowledge (*C*),
2. Semiotic process or narrative (*S*), and
3. Interactivity or confidence (*I*).

The qualitative expression of the four processes would be:

- Communication $= f (C, S)$
- Cohesion $= f (S, I)$
- Conduction $= f (I, S)$
- Coordination $= f (S, C)$

Note: *C*, *S* and *I* factors appear in different order, reflecting this way the difference in their relative importance (weighing) for every case.

Taking this into account, if an organization, considering its form of knowledge, is not verbalizing the key business concepts and, at the same time, lack of confidence exists among actors, the probable result is a low sustainability between strategic programs and their fulfillment actions. The expression of that, in Co4 jargon, will be: low cohesion, low coordination, high centralization (in conduction), and low co-organization.

Once obtained the VPP (Cohesive, United, Untied, and Disperse), types are directly related to Co4 structure, which takes a value ranging between Highly Hierarchized (low cohesion, high centralization, low coordination, and low co-organization) to

Figure 2. Co4 relational structure
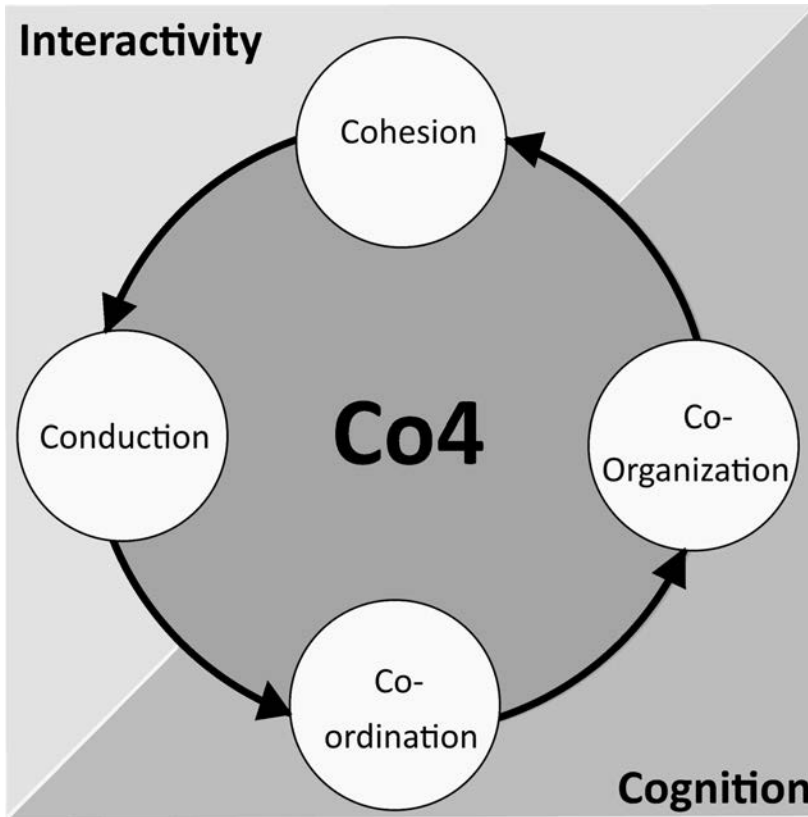
Highly Heterarchized (high cohesion, low centralization, high coordination, and high co-organization).

CONCLUSION

Netout Process

The art or process of Co4 improvement or reconfiguration, aiming to diminish the gap between the narrative of decision making and actual actions (coherence), consists of reproducing the conditions under which Co4 is generated, making business generative networks emerge and reconfigure those that do not contribute. This process has been defined as *Netout*. Depending on its location, it implies managing coherence –inside the network– and congruity (relating to other networks). The process consists of finding the network which generates business knowledge, consolidating

it through the generation of semiotics or specific language, coordinated with action and change lines in repulsion interactivity types or dissociative behaviors. As a result of the above, the degree of strategic alignment emerges from the language generation process and its harmonic spreading within the network.

Coherence management through Netout can be done by designing and implementing devices that control the proper narrative field of the guidelines and *entorno* of the supporting relationships, strategically aligning them to the managing of the decision-making network. This alignment is translated to cohesion improvement, conduction decentralization, augmenting the relational system coordination, and co-organization, through integrated and configured communication channels, so that they are sustainable and, by means of which, the strategic alignments are reinforced in the organization's day-to-day.

There is a set of tools which allow evaluating the quality of the decisional process from the way of thinking (cognitive), the degree of guidelines understanding (semiotic quality) and the *entorno* or climate in which the process develops (interactivity). This assessment is established, on one hand, from the strategic command distinctions, regarding those of their collaborators (cognitive maps, decision making programmable models), and on the other hand, of the state of interactivity within the team.

Co4 System Configuration permits, from results obtained in the diagnosis, the establishment of a strategy for improving management sustainability. This process aims to elaborate narrative, by building a Strategic Scenario (S2). S2 is built by configuring four general criteria: political, economic, social and technical and twelve sub-criteria resulting from the combination of these. Each criterion and sub criterion generates a meaning context which permits comparing a set of business solution alternatives. The building process incorporates cohesion up to congruity, organizing the team constituting a high link quality unit, both in narrative and interactivity.

Today, there must be a paradigm shift, from *object* to *relation*. Relations constitute complexity, and result from *Rel*'s culture. This way, uncertainty as a condition is added. The strategy to contemplate this kind of system is understanding how territory narratives are produced and interchanged to generate meaning and action equivalence among relational systems. This invites us to correct certainty-based criteria, specifically in what is named *value creation* through *knowledge production*. As stated earlier in this chapter, knowledge is configurative, which translates into organizational structures highly dependent of their interactivity and semiosis; by the same token, the production of intellectual capital is partially located at those organizational structures that are highly coherent; i.e., decision-making, as an action, is very close to the proposed narrative corresponding to that action; strictly speaking, it is where the decision-making supporting knowledge process is produced. From a relational epistemology view, we can deduce that intellectual capital cannot be conceived as an object, but as a process, the *Value Production Process*.

Organization's VPP shall be understood as the knowledge that generates the value of use and the value of exchange.

- The *value of use* is a function of organizational coherence, hence its generation depends directly on the cognitive type, semiotic quality, and trust.
- The *value of exchange* is a function of congruence, which implies that the three factors (cognitive type, semiotic quality and trust) are legitimated in an exchange relationship between two *Rel*.

Productive cognitive capital is that which generates sustainability as a value generation process, so that its measurement shows the *Rel*'s effectiveness in producing the organization's intellectual capital.

Finally, wealth generation in the new economy will depend on the quality of relationships which must structurally overcome hierarchies, moving to heterarchies.

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KEY TERMS and DEFINITIONS

Cognitive Sciences: Theories and scientific analyses of knowledge in all its dimensions. **Coherence:** Closeness between narrative and its corresponding actions.

Congruity: Emergent feature of the relationship among the command team and other networks inside and outside the organization.

Intangibles: Use value configurations which, in the exchange process (exchange value), are transformed into assets.

Key Players: Given a social network, there are members who play different roles, one kind, if removed, would maximally disrupt communication among the remaining members, and the other, who are maximally connected to all other members.

Knowledge: Territoriality configurations (i.e., generation of bonding and be-longing codes), by way of configurations of the networks within a process, which the network designates as value.

Relational Approach: Epistemology which supports the knowledge process in any relationship, which configures as culture-determined effective and affective distinctions.

Sustainability: Organization's conservative strategy, as a relational system, from structural or configurational changes in the relationships, determined from the culture.

Uncertainty: Time-space location impossibility of extracting the difference between two objects.

Value Production Process: Knowledge generating use and exchange value in a productive context.

Chapter 6
Organizational Relational Viability

ABSTRACT

In the organizational design concept, feasibility proves highly relevant since it reveals the conservation strategies of an organization. Understanding these strategies allows us to assess where emphasis must be placed to generate value. This makes it possible to anticipate the breakdowns and productivity areas that the organization will address in its evolution. This chapter introduces the reader to Organizational Relational Viability as a theoretical framework for evaluation and organizational design.

INTRODUCTION

Due to the acceleration of change, we are entering into a qualitatively different world which is difficult to understand and assimilate. We are witnessing the birth of the *network society* (flat, transversal, dynamic structures) extremely different from the traditional "pyramid society" handed down from Roman times. The network society is characterized by agility, flexibility, ubiquity, malleability and creativity. Likewise, the new way to create value means putting knowledge into circuit.

Complexity demands the development of attitudes and competences around knowledge sharing and development, motivating people to synchronize in a responsible managerial culture based on dialogue. Failure to do so will accelerate entropy. Agility, flexibility, ubiquity, malleability and creativity all help create the efficiency

required of 21ˢᵗ century enterprises, without which they are highly unlikely to be able to reinvent themselves.

Companies capable of internalizing and managing viability mechanisms will lead change in productive models in the new economy. These companies flatly structured, organized around process and relationships, high in coherence and congruity, will define and shape the paradigm of the company of the 21ˢᵗ century. These changes require us to think of new ways to approach organizations as systems, not in the input/output model, but as relational. If we have gone from such rigid forms as hierarchies to plastic forms, such as networks of collaboration, then we must imagine that these accrue to different strategies of information and communication.

If we understand a company as a team of people who interact and manage processes for the production of goods and services, then the profitability of what they produce is a function of the quality of their relations and coordination. Failing to do so has a cost, visible or invisible, and diminishes the profits of the organization. If we define an organization as an organized network of relationships, its viability and profitability will depend on two strategic areas:

- *Tenability*, that is, the ability to put together a quality of relationships and environment that allow people to collaborate in such a way that successful or profitable decisions are possible.
- *Sustainability*, that is, the quality with which processes are managed (efficient resource management) within and without the company over the course of time.

A viable and profitable relational organization rests on a business model that has solved both tenability and sustainability; in this chapter we want to introduce the reader to the theory of viable relational systems as a new way to explain how 21ˢᵗ century organizations must organize themselves.

Current thinking styles, largely determined by the sense of closeness and immediacy to any event – regardless of their geographic location, type or size–, have become permeated, paradoxically, by the idea of complexity and uncertainty. We have slowly started to understand the impossibility of explaining these ideas based on the classical forms which are essentially mechanistic and linear. Even as we are aware of the need to overcome the classical view, we are still far from being able to accept uncertainty and complexity as a condition of human organization. This is not a motive for premature despair since science in some way or another, touched by this kind of ideas, has begun to recover a forgotten observer, and art as well has begun to be subsumed in the aesthetics of the multiverse, as an inter-subjective fractal form of narrative. For this reason, starting from this paradoxical and silent paradigm shift, organizations have begun to address ways of management which cannot be

"measured" the way it is is done classically. Today, there emerge unquestionably and decisively a set of actors that always lurked in the shadow of accountability, deleted and ignored in the economy: they, sons of a certain Zeus –which is knowledge–, are the *intangibles*.

"We now know that the source of wealth is specifically human: knowledge. If we apply knowledge to tasks that we already know how to do, we call it productivity. If we apply knowledge to tasks that are new and different, we call it innovation. Only knowledge allows us to achieve these two objectives." - Peter F. Drucker (1992).

This chapter is a reflection of our work over the past two decades in major corporations around the world, which has focused on explaining and improving relational networks that make up organizations both in the private and the public sector, whether large or small. This story, among other things, talks about how to make decision-making transparent, and how to undertake transformation processes and organizational diagnosis and design.

We have ordered the narrative so that the reader can live somehow the story about the way in which this thinking has been built. For this, we have chosen as a starting point Stafford Beer and his cybernetic view of organizations. The rationale for this choice is that Beer is a pioneer of relational systems analysis, and, though he could not formulate it as such, he reached the threshold of this process. We might say that Beer's model is pre-relational. For this reason, it is essential to understand the disquisitions of Beer in order to understand how to build viable systems and, from our perspective, what would be the limitations that must be overcome to allow the transition from what is "viable" to what is *relationally viable* or *REL*, a step that is not a small one since it enables us to deconstruct the objectified concept of network, overcoming the belief that the tangible connection is the tangible that organizes the network, and thus gives form and meaning to organizations.

ORIGINAL IDEAS: DISTINCTIONS BASED ON BEER

Stafford Beer was born in 1926 in London. After his initial studies in mathematics, philosophy and psychology at the Whitgift School and the University of London (University College), he spent a year as military psychologist in an experimental unit of 180 young soldiers, beginning in the fall of 1947 until 1948. All these men were illiterate, and all had been qualified by a psychiatrist as psychopathological. However, if they lacked the classic anticipated skills such as writing a letter home, or reading a newspaper, they possessed other skills that implied discussions, calculations and precisions that were not necessarily explicit. As Beer tells the story,

they had their own notion of discipline and other values that allowed them to see themselves as a unit with identity. Taking this into account, Beer makes the following hypothesis: "Invariance would exist in the behavior of individuals, 'normal' or not, that could spread to the group, reaching even the highest levels within the unit to which they belong". In other words, there should be rules or codes within a network that generate identity and allow self-organization.

With this in mind, Beer took 30 years to satisfy the question of how these units maintain themselves or how they manage to exist independently if their exterior is changing. This he called its viability and called his explanatory model as the *Viable Systems Model* (VSM). The concept of systemic viability has been widely used as a conceptual tool for understanding organizations, their redesign and support for change management. The VSM is perhaps one of the most insightful and powerful currently available for the study of the structure of organizations. As Espejo observes (1989), it focuses on the resources and relationships needed to support the viability of an organization rather than on the formal structure of the organization, providing a way to overcome the traditional overemphasis on hierarchical relationships. Its underlying assumption is that viable organizations arise when people find successful strategies for working together, to the extent they are able to develop and maintain a group identity, despite environmental disturbances.

If we follow Beer and Espejo we find that the emphasis is located in a double ontology, the *being of the organization* and the *being of the* environment. Faced with this, self-organization is a function of the preservation of the identity of the group. Otherwise, an external observer ought to distinguish two units, one of which has an ordering process that allows the observer to remove it from its surroundings or environment, an ordering process that also allows it to be classified as different, an identity process. Given their training, Beer must necessarily make explicit the criteria on which to build identity and also, as a basis for conservation, maintain the status of invariants. We will discuss this in the following paragraphs.

Beer's Invariances

As noted by Beer (1985): "The invariances that I had finally unearthed were stated; and the central principle of recursion (that every viable system contains and is contained in a viable system) stood duty as the explanation of all the observational evidence that had begun to accumulate from the military experience onward". If we pause a moment on this, we could assert that what Beer designates as viable are configurations within a continuum that has the status of being stored, it implies for practical purposes that no matter where you make the cut, the condition for viability will be there and will be reproduced at all levels of the organization. But how do we

know? The possibility is to generate a second ontology, an "environment" against which the organization will have to adapt. This necessarily leads us to unveil the communication mechanisms that facilitate this ability to adapt, beginning with their own learning processes. That is, the participation of the same configurations will be observable at any level of organization: these settings that speak of complexity can be viewed as cohesive and coordinated autonomous networks. Coordination and cohesion are processes that need a happy ending, one which can be achieved by control, monitoring and adaptation processes.

Complexity Appears

Let us move forward a little more. Reading Raúl Espejo (1989), we find categorical statements like "We are surrounded by a complexity much greater than we can confront with answers one to one". So necessarily, under this paradigm, we can say that organizations have less complexity than their environment, "there is a natural imbalance (inherent) that needs to be recognized and addressed through the leveraging of various strategies that the organization employs to carry this complexity within its range of response". Therefore, to address this complexity implies somehow to "measure it", since by stating that it is much greater we are somehow circumventing quantity. In this sense, Beer moves to Ashby's idea of variety, specifically the law that predicts that "Only variety can absorb variety" (PAGES). Thus, the VSM can enter under complex operating as an autonomous unit. In summary, the three cornerstones of VSM are located on *dissociation viable unit* and *environment, recursiveness* and *complexity*.

Previously, we mention that Beer was a precursor for the idea that relation can be found in the midst of variety since, necessarily and explicitly, the measurement takes place according to the observer and his relationship with what is observed. Nonetheless, Beer's starting point –that is, his disassociation from the base viable unity-environment– distances him from the relational to remain subsumed in the paradigm of the object and its lineal simplicity. For this reason, we need to break the Cartesian dualism, object/environment. To achieve these we will review three fundamental concepts around a viable unit and the consequences they have when it comes to assessing organizations from a relational perspective.

Separating Waters

Immersed in considering the relationship as a viable unit of study, but just not as a vital or survival unit, certain problems arise regarding the meaning of the word(s) that designate the members of the relationship, specifically the second member. They

have been used basically three words more or less interchangeably to describe what in principle we can denominate as "surrounding a viable unit", these are "environment and entorno".

In recent years it has become clearer that these uses and meanings should be reconsidered. Here, we will study briefly their etymology, the possibility of use as descriptors and also their epistemological reach in relation to the life of organizations.

The 'Medium'

It is a Latin root word the meaning of which is 'start at the midpoint', 'divide into two parts'. In our language, medium means 'intermediate', 'what is the way', corresponding to the Latin adjective *medius, -a, -um*, and, in turn the Greek *εo = mesos*, which adds to the previous a meaning of 'ambiguous'. Following the etymology, the word *medium* is very unfortunate, referring to that which surrounds an organization, since its meaning brings into play a third element, alluding to what is 'in the middle'. If we take as a beginning the viable unit and that which surrounds it, it is clear that nothing can stand between the terms. This is why Font Quer (1970) notes that medium is an inappropriate way of naming the external surrounding. The *medium* can be qualified according to the type of physical place where an activity takes place. So, for example, one can refer to "aquatic medium" or "air medium", and even a kind of "internal medium". It is important to note here that if external conditions, whatever they may be, influence the activities of an organization the medium is decisive or instructive, taken not as a unit but a uni-directional process from the medium that patterns the activities, the actions and ultimately the behavior of the organization.

The 'Environment'

From Latin (*amb-:* 'around' and *-eo-*: 'go'), which is equivalent to 'surrounding' but in an active sense. The term 'environment' refers to a number of factors that define a place, for example: employment, supply, demand, etc.: types of services. If we consider the ambience or the environment as a member of what should be a unit (viable system-environment) the environment is not larger than the viable system object. One thing is to consider the system and the environment and quite another to talk about the system in its environment; here, what is trying to be expressed is the totality, which has little to do with the parts separately: the system is immersed in its environment and at the same time *interacts* with it, the space inhabited by a system is *its* space. This being so, and it seems to be understood by everyone, how is it that what is environmental can stand as autonomous', as a domain of knowledge?

The Notion of 'Entorno'

A system, or viable unit in a relational sense, cannot be separated from its circumstances, what surrounds it must remain with it. What is referred to as external *is not an entity apart from the unit,* and for that reason the definitions of 'medium' and 'environment' that are being used do not correspond to these criteria. The description of the unit to which we refer requires an introduction and active participation; it requires this in the sense of a behavioral notion which, to be sure, is lacking the ideas of medium and environment. These words, whether by use or as derivatives, are notions that reference external objects with inherent properties independent of viable systems.

The word 'entorno' derives from the Late Latin *superundare,* 'to overflow', equivalent to Latin *super + undare* (to flood), derivative of *undulate* 'nude wave'. As noted by Maturana & Varela (1984) 'entorno' is: "everything that surrounds an organism and which is specified as outside it for its own activities". This definition is very appropriate, as it recovers the sense of von Uexküll (1945), who, noticing the strain in the use and meaning of the german *umwelt*, wrote: "It is a totally vain desire to want to stand against the use of language (...) not the expression 'surrounding world' (*umwelt*) corresponds closely to the concept to which it is attributed. For that reason, I would like to replace it with the word 'perceivable world' (*merkwelt*), which thereby mean that for each living unit there is a special world, which consists of the distinctive notes taken by it from the outside world". The world is not previously given, there is no adaptation directed or pressured into it. The mutual game of tension and flexibility allows the system-*entorno* unit to evolve. For further details regarding the epistemological differences between medium, environment and *entorno,* refer to Malpartida and Lavanderos (2000). Nevertheless, the use of the concept of *entorno* is not free, its meaning implies what it surrounds and remains (Malpartida, 1991, 1992; Lahitte, H., Hurrell, J., & Malpartida, A., 1993).

A Last Try for Duality

The reader may be feeling lost in so much definition. Before moving on, we would like to light up the path. In organizational design, the concept of viability proves highly relevant since it shows up the conservation strategies of an organization. Viability has been defined as the ability to maintain separate existences, hence a living system is viable if it is skilled enough to adapt and survive in its environment (Beer, 1979). But, as we have seen, to describe a viable system is not trivial if done in relation to what surrounds it. In fact, one can experience the consequences of this operation in the everyday life of organizations. For example, the Finance function looks outward; its goal is the market or environment, unlike HR management, whose

purpose is oriented enterprise inward. But, why don't both functions point toward the organization/market relationship? Why assume that both entities should be treated separately? These are questions that arise when we use terms such as 'environment' and 'medium', which imply that the use of these in the description of organization carries with them the ideologically important consequences discussed below.

Before answering both questions, it is essential to analyze the suggested skill we are building. If we must adapt, the baseline supposition is the independent existence of another unit that somehow instructs us in the adaptation process (market). When we operate in accordance with this distinction, what prevails is not the relationship between the two, but the a priori definition of them. When we pointed out that we must adapt and survive, what we are proposing is the existence of at least two ontologies, the first being that of why or what does the adapting and the second being that to which the former is adapted. In order for these two ontologies to make sense as a unit, every property attributed to them must be distributed asymmetrically in order to achieve a movement from the least to the most. The property of adapting is in this case independent of the relationship between the unit and its context, and can be described using the terms 'medium' and 'environment'.

Let me return to Espejo and analyze the following statement by Espejo and Gill (Espejo & Gill, 1997), "The idea of complexity is fundamental to cybernetic thinking. Put simply, we are all surrounded by a far greater complexity than we can deal with by a one-to-one response. We cannot possibly 'see' all the varied intricacies that others 'see', of our situation, but can only hope that by correctly recognizing salient features and patterns (often through instinct), we can respond adequately to remain 'in balance' with those in our everyday surroundings". This statement suggests that complexity is ultimately outside and is not part of the relationship that I establish in the distinction process. In other words, I broke the initial relationship and distributed the property of complexity asymmetrically between external "all surrounded" and internal "we can deal", claiming that greater complexity is outside.

Another assertion similar to the previous statement reads: "Similarly, organizations have far less inner complexity than their environments: there is to natural imbalance that needs to be recognized and addressed through various leverage strategies that the organization employs to bring this complexity within its response range". In this case, the meaning and direction of the property of complexity becomes viable if we accept, regardless of anything else, the condition of "natural imbalance". But what lies behind the use of these concepts? Generally scientists seldom explain from where they are speaking, that is, they do not make explicit their beliefs and epistemological anchors, in order to understand what is the basis for affirming something.

On the other hand, contemplated by the field of cognitive science, only the conception of representation allows asserting the natural imbalance, specifically the symbolic school, which as we mentioned in previous chapters assumes an external

reality that is "captured" and symbolically reproduced, "organizations have far less inner complexity than their environments".

Viability is then dealt with as a response to environment, beginning with the ability to process symbols representing environmental reality and that are manipulable from rules (Varela, 1998), allowing adaptation to the environment and survival as a result.

According to this world view, the status of an organization is essentially passive, responding to an external environment or market in which things or objects have meaning in and of themselves, which is accessible by having been previously and objectively defined. According to Guidano (1991): "In this view, the human mind evolves as a passive recipient of external order, which will determine it almost entirely". In this view, what is called horizontality is just a strategy to unite the dissociation of Organizational and Environmental categories. The social sciences, particularly sociology, have become apparently stripped bare faced with the environment as a concept; this is mainly due to the dual identity of the natural and social categories. This results in the inability to deliver a tautological speech in the creation of organization-environment theory. The crisis of sociology, described by Luhmann, consider it impossible for sociology to present a tautological component in creating a theory of society, that is, understanding its purpose as something that describes itself. This results in the inability to explain the constant structures of experience and social action, so it is not possible to explain organizations as a result of a predictive process of selecting alternatives on the part of individuals.

An example of this is as follows. Suppose we have to evaluate the "success" of a mining company, where do we classify the unit 'enterprise' or 'market', in the environmental domain, the social domain, or both? Let us understand *social* as the relationships that form the firm as *identity*.

If we classify it as market, then its success is independent of the social, since it would be enough for it to have access to inherent properties measured by means of financial, administrative and standardized process indicators. From this perspective, it would be enough just to meet the standards and practices that make it successful. If we think twice, within the current description the social domain does not appear; we are talking about a company paradoxically outside of the social domain, although it is we, ourselves, who are talking about it.

If, however, we refer to the company from the social domain, the possibility of success lies in the benefits it produces, this economist reduction is the most frequent. And yet, if we persist classifying it in both domains, the solution is to incorporate explicitly the social component, through its regulatory function of flows of exchange and market impacts. However, it is never explained, from this cognitive base, how is possible to relate cultural, scenic, aesthetic and educational values with exchange flows and market impacts.

In fact, if we are to propose a new organization-*entorno* relationship, based on relational viability, the decoupling of this relationship makes it non-viable. Thus, the organization of organization-*entorno* systems should be understood as autonomous relational systems, i.e., the basis of distinction is grounded on the relational process as an organizational guideline, not in the entities that generate it.

An organization can be defined then as *a relational structure constituted, from its very culture, based on certain forms and styles of speech and action schemes incorporated to these, that are expressed in the decision-making process for a given context*. This move away from the certainty of so-called "hard indicators" reflects the fact that organizations must be understood as communication networks, where transactions are organized and directed from the relationship between culture and language; then, any operation is always an interpretation. This leads to reconsider management, moving from a belief of certainty to a sense of confidence within the domains of uncertainty and complexity. Then, the focus is not compliance but to achieve high degree of alignment objectives-goals and actions-programs. For this reason, the starting point at an enterprise-level is the generation of strategic scenarios and, as a result, knowing how to align strategies with the operational actions that shape them. In other words, it is the art of aligning the relational structure of the organization with its decision-making process.

Understanding *culture* as meta-configurations organized around the conservation of patterns of agency (adoption) –that which one makes his own– and belonging –one becomes part of– that which allows territoriality to be achieved (Malpartida & Lavanderos, 2000), the relational type that emerges can generate viable structures or not to reproduce the organization's cultural system. We refer to territoriality as a process of effective equivalence in the exchange of sense-making configurations (maps or landscapes) beginning with activities generated in the *entorno* of observers' process configurations, meaning exchange (maps or landscapes) from the activity generated in the *entorno* of observers in communication for agency and belonging (Lavanderos, 2002). From the above, where we have explained the dualistic way in the narratives related to viability, let us return to the initial questions and the implications for organizational design.

If the design proposal rests on a condition of duality, viability is conceived as a response (successful) to external signals. In this way, measurements, evaluations and practices will be designed to find, fix, and change properties (if necessary) distributed asymmetrically in objects to achieve the desired response to successful adaptation. As an example, the classic market surveys or questions about the processes that define production within the organization are samples of these searches for certainty. Consistent with the above, improvement or change actions will prioritize action schemes associated to competencies and processes, confusing the interaction of people with their relationships. Process variability is reduced

and controlled by obtaining commitments (e.g., action plan) among people in order to eliminate a number of wastes that are part of the processes, and that ultimately generate expenses. However, if the commitment is not a condition of the relational form of the system, the initially constrained network emerges from its relational history, closing the constraints, to return to the culturally determined states.

On the other hand, if we consider the viability as a condition of organization, then it emerges from the unit-*entorno* relationship, so when we talk about an *entorno* unit, we speak of a relational unit in which the 'entorno' only has meaning for itself. This situation is not necessarily true for the words 'medium' and 'environment'. Based on the above, viability, as a condition, becomes distributed in the network of relationships that generates the organization, so that the design should focus on understanding as a fundamental starting point, relational configurations that allow viability. In this way, there would be no inside or outside, but a network of complex relationships that reproduces itself on the basis of its culture. Understanding the latter as the process that produces codes for agency and belonging to the relational system.

THE CONCEPT OF RELATIONAL VIABILITY

While we agree with part of Beer's definition, the fundamental difference is that the "viable" is the relational structure; the content that is reproduced –in different scales– is relational dynamics, so a relational viable system is one that *resolves its organizational conservation through a relational structural change strategy which consists in propagating value from the quality of relationships and the fit between them and their material-energetic resources*. We understand as an organization the set of relations that shape their identity, which condition is conservative. In this way, which may vary is the relationship structure, under the condition that the change holder is made, or allowed within the organization.

Consistent with the above definitions, we define a *Viable Relational System* (VRS), as a configuration of relational networks that has achieved a coherent coupling between their relational configuration –tenability– and its material energy system –sustainability– so that it does not jeopardize the relationships that generate their organization. Tenability, or relational quality, is evaluated from the coherence of command and its congruence or capacity to exchange *intra* and *inter* network. Sustainability is assessed from the set of breakdowns or gaps identified in the processes that define production. In other words, managing a VRS translates into coupling processes, whether by design or redesign, with the possibility of reconfiguration of the network of relationships in order to approach the Pareto 80:20.

The diagram below shows the model for Viable Relational Systems. As can be seen, the process of tenability or achievability generates coherence surroundings within the interior of the network and of congruence to the outside. This configuration process allows us to evaluate achievability (*ACH*) for coherence (*CO*) and congruence (*GC*), which determines the sustainability strategy (*SUST*). The degree of fit between both planes is determined from the E2 model or strategic scenario, which is a function of the political conception of the organization, i.e., of the key concepts that generate it as an organization.

Before continuing with the associated concepts and definitions relating to the viability of the relationship, it is necessary to clarify some language problems that are related to what is sustainable and achievable.

Language Problems, Sustainability and Tenability

Today, many authors refer to the concept of sustainability as ambiguous and subject to discussion or controversy; however, there is consensus that, in general, sustainability refers to the ability or capacity to endure (Broekhuis & Vos, 2003; Giannetti, Almeida & Bonilla, 2010; Geels, 2010). On the other hand, 'sustainability' associated with the concept of 'development', seems to be a new archetype of social, environmental and economic development which has begun to spread globally in our time (Brundtland, 1987). The term 'sustainable development' (established in Brundtland, 1987) can be defined as "meeting the needs of the present generation without compromising the ability of future generation to meet their needs"(Ginsburg, 2000). From the above, we can conclude that such a definition is a consequence of the distinctions we have today around it, leading to the need to propose and build a new relationship between culture and nature. For this reason, the idea of sustainability is imposed as an encompassing term, across biological, economic and social systems, looking for harmonization or balance that will enhance the quality of the life of man (Osay, 2002). Sustainability (Achkar, 2005) has four dimensions, which relate to each other, as we can see in *Figure 2*.

1. **Physical and Biological:** considers those aspects that have to do with preserving and enhancing the diversity and complexity of ecosystems, their productivity, natural cycles and biodiversity.
2. **Social:** considers equal access to the goods of nature, both in inter-generational and intra-generational terms, between genders and among cultures, among social groups and classes, and also at an individual scale.

Figure 1. E2 model
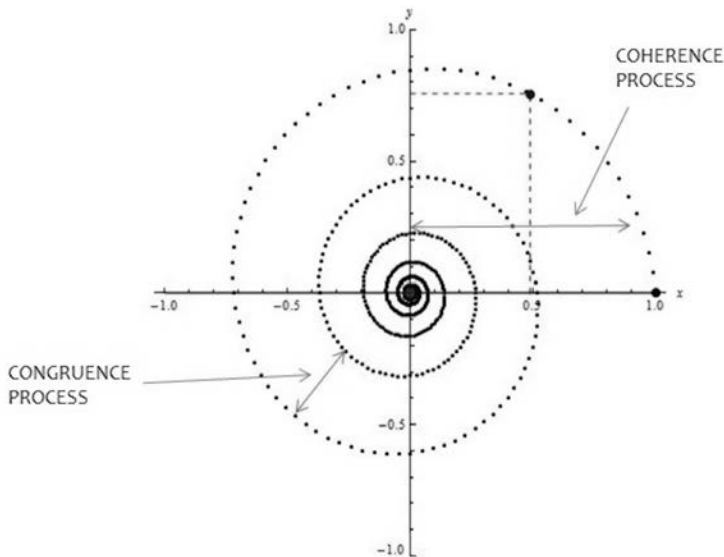
3. **Economic:** includes full range of human activities related to the production, distribution and consumption of goods and services. Resulting necessary to redefine traditional economic concepts, especially the concepts of social and individual material and immaterial needs and satisfiers.
4. **Political:** refers to the direct involvement of people in decision-making, in defining collective and potential futures, management structures of public goods and the content of democracy.

Under the premise of horizontality, then comes the challenge of modeling sustainability indicators, to keep the biophysical, social, economic and political, dimensions interrelated and integrated in such a way as to build a foundation on which to make decisions on all levels of sustainable development. Furthermore, it should be noted that there will be indicators that can be applied globally in the same way, in every place, however, there are also indicators that may be inappropriate or inadequate to measure sustainability in a particular region. In fact, experience shows that there are difficulties in the collection and assessment of data to be used as valid indicators of sustainability. Indicators may also not be entirely accurate, incorrect or ill applied (Osay, 2002).

Figure 2. The four dimensions of sustainability
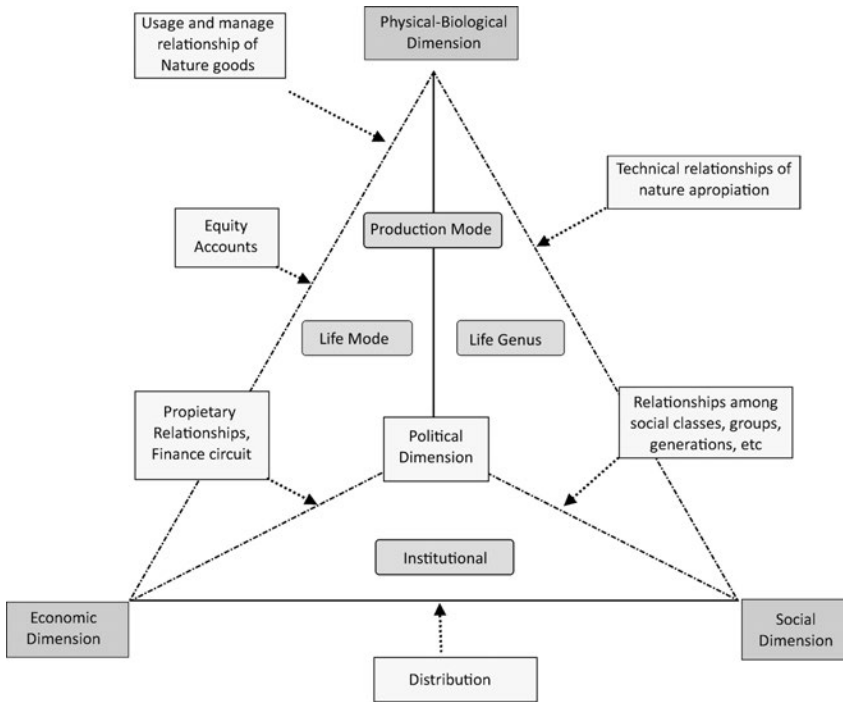
Despite these limitations, it is now inevitable that the economy on their balance sheets include both social and environmental sustainability. Proof of this is the creation of performance standards that help IFC and its clients manage and improve their social and environmental performance using a results-based approach. To achieve the desired results, followed by the specific requirements it is essential that a consistent approach be applied to avoid adverse impacts on workers, communities and in those cases where avoiding is impossible to reduce, mitigate or compensate for impacts, as appropriate.

However, faced with all these good intentions raised in the preceding paragraphs, the sustainability proposed is born of a concept dissociated from world. We believe, as we shall see in the next section, the error or failure most authors have referred to have their counterpart in this dissociation of knowledge and in the confusion of logical types. The viability both conceptual and as praxis of sustainability must necessarily abandon the epistemology of certainty and object type reductionism to move to one that is constituted from complexity, uncertainty, and "*relationality*".

To deal with this, the first thing we do is separate the water. When we talk about sustainability we are making distinctions within the realm of energetic materials, in other words, it is the strategy in the use for the resources needed for operations that

constitute potential products or services. Moreover, when we talk about tenability distinctions arise within the ambit of relational networks. Therefore, developing indicators involves evaluating the robustness of this structure in relation to the semiosis that the system generates to preserve itself. Unlike traditional indices, this proposal permits assessing whether the organization, faced with a particular concept, such as environment, generates coherence and congruence in the decision making process in relation to that. Therefore, sustainability, from this perspective, is the conservation strategy of the organization, as a relational system, starting from structural or configuration changes in relationships, determined by the culture.

As an example, suppose that you marry the daughter of a banker who has just died and left his inheritance, it is highly possible that your sustainability is settled for a while. But, between as wife and you cannot stand each other, this makes your daily relationship become untenable, but, if you are able to hold on, taking into account that your material and energy needs are satisfied, then we could say that your marriage has a viability strategy although the emotional cost is high. We could put it another way, your marriage, although it has viability, is far from the Pareto 80:20, such that the inheritance will tumble in less time.

Tenability Process: Description, Explanation and Tautology

Pragmatically, access to the field of sustainability is experiencing a system of actions towards achieving a goal; then, its success depends mainly on the relational vision and coherence among those things described: the associated explanation and the legitimacy of the tautology to the relational network. The description of the actions does not support any logic, that is, as Bateson (1980) indicates, a series of events of which do not know how they interconnect. For this reason, the explanation does not provide more information than is already possessed by the description. It is then the tautology or connective form applied to the description that lets actions be connected thus generating meaning to the number of facts in the description for a given context. So, when we talk about the legitimacy of tautology, we declare is that for a relational network of command; an instruction does not necessarily achieve an explanation that generates decisional coherence: this means that the narrative does not necessarily match what will finally be done. Thus, tenability is achieved from the degree of legitimacy of the tautologies used in the management process, i.e., to the degree that there is greater tautological legitimacy the greater the coherence in the management process, producing, as a consequence a very cohesive relational network ('value in us'): coordinated, decentralized and with a high exchange value. So, the issue is to understand that the processes that enable sustainability are effective semiotic-aesthetic exchanges, which open the network to a space of actions that hold it together to achieve an objective. We understand the semiotic-aesthetic

domain as relational configurations that generate belonging and effective and affective agency. This could be exemplified as follows: it is not enough for a leader to generate orientation in actions with high explanatory value, that is, the result of applied tautology; he or she must also become legitimate in the affects or trust of subordinates (followership).

From the beginning, there has been an effort to develop measures of economic success based on the rigor and objectivity of the scientific method, that implies rationalist rigidity, objectivist insensitivity, reductionist simplicity, the charade of neutrality and indifference to history and context, typical of the dominant positivist paradigm (Lavanderos, 2002); the goal, then, is to open, to disclose a thinking style open to an interpretive, methodological and ethical sensitivity. This means assuming uncertainty and instability as premises for the direction of strategic sustainability, including complexity, diversity, interdependence, differences and non-linearity of ecological, social, economic and political phenomena, and mainly the participation of actors affected by the design and redesign of strategic sustainability.

To address this challenge, we propose an epistemological shift that can structure a theory for viability from the viewpoint of complexity and uncertainty that allow the evolution of an ontology of realism to a "*postscriptive*" epistemology of relational viability. Such an approach is possible if founded on the *relational theory* of knowledge which we discussed in the previous chapters. However, it is always good to remember that all theories, and not only these, are always reread and they reconfigure themselves all the time.

Relational theory grounds its explanatory framework on the basis that any and all organization are a configuration or arrangement of relationships of the relational system-*entorno* kind, in this case we speak of REL. This unit is a relational type making it irreducible to parts, it is neither the *entorno* nor the system apart, and the *unit* is the relationship. Thus, an organization can be defined as a *systemic relational structure constituted from its culture, of certain forms and styles of speech and action schemes incorporated to these, which are expressed in the decision-making process for a given context.*

Organization Structure for Achievability

An organization is relationally viable *if* and *when* its relations make it viable. This assertion is fundamental to establish the form that constitutes organized relatedness. From this point of view, each and every process is productive: it is not possible to separate processes into primary and support. The identity of the organization is not the result of what it produces, be it product or service, but of the strategy to produce it. From this perspective, an organization can be explained as a semiotic flow which, like the irrigation ditches, should be organized to achieve the most

effective span and the best quality of meaning. Therefore, the organization of the 21st century should bid farewell to the Taylor model if it wishes to incorporate the cognitive domain into its value scheme.

We need to build a structure that allows us decisional reliability and agility. We begin by defining their outline or border on the basis of changes in flow. This leads us to use processes of interchange or trade or value exchange with other semiotic flow system. The border of our organization is defined by the semiosis of exchange value, which subsumes the semiosis of each and every relational process that are not produced for this purpose, both in content and meaning.

This taken into account, the relational network *eco* defines itself making itself viable as a meta-network, which is co-formed from the coupling among units from the domains of achievability and sustainability. Unlike the viable systems of Beer, here co-autonomy occurs so that coordination is not a function of correcting the variety generated in the autonomic dynamics, but rather a catalytic process of se-lection of alternatives.

The viable relational model is based on a heterarchical network structure as a condition, which is organized into 4 processes: cohesion, coordination, com-munication and conduction. Heterarchy is a system in which members don't think about deciding about others, but interact. This form of participation can generate multiple ideas, suggestions and support for a whole group to function properly. It provides greater freedom of action. *Heterarchies are networks, often hierarchical, interconnected and overlapping with individual components that belong and act simultaneously on multiple networks and with a whole-system dynamics that governs and emerges precisely from this whole set of interactions.*

From this, we can define the organization of an organization as a political system which designs and declares the political configuration of management. When we refer to configuration, we are giving an account of the form that results from the criteria that produce the organizational –political– fabric, the kind of relationships that permit putting it together –economic–, the coherence and congruence of the weaving –social– in relation to the political configuration an its erotetic base (ontol-ogy, epistemology and methodology).

In short, an organization is composed of:

- **Political System or 'Viabiliazer':** It configures and communicates the sense of management and the organization of this sense.
- **Achievability or Relational System**: It corrects the quality loss of the policy configuration consistency due to variety in coherence and congruence, propa-gating the sense of management.
- **System Sustainability**: This enables matter/energy resources so that the *sense* of management achieves its viability objectives.

The political system provides command and control from its intelligence unit which is responsible for the coupling process between systems of achievability and sustainability, this unit is called Co4.

Co4 or Process Intelligence Unit

This unit constitutes the political leadership of the organization in order to ensure the success of process viability. Its structures should ensure the success of the following processes associated to coupling:

- **Cohesion:** The degree of belonging and adoption that generates political criteria to the network. It is measured by its *coherence value*.
- **Coordination:** This is referred to the quality of the alignment process in function of time, extension and feedback against a disturbance or proposals. It is measured in terms of value in diffusion by congruence.
- **Communication:** Quality link for the diffusion of a process. It is measured by the value of the interaction of *congruence*.
- **Conduction:** The form of the structure's propagation (hierarchical, heterarchical, homoarchical).

To ensure that the processes that constitute it are viable, the Co4 unit needs to produce continuous data streams to ensure the nature of the conduction, continuously improving communication, coordination and cohesion. In the case of coordination it acts as a selector of processes that increase reliability, availability and decisional agility, that is, decisional catalyst.

CONCLUSION

Organizational Tenability from Coherence and Congruence

In the present context, the value generation process is mainly located in the strategic role of intangibles, as noted earlier, value propagation necessarily implies understanding that this process is definitely distanced from traditional physical rules whenever there emerges a relational field that allows its implementation. If we understand that the fundamental unit is the relationship, then complex weaving together is the result of the relational semiosis that has no representation as a sign, given, that its expression comes from an emerging of differences that are not located in time space. If we accept this ghostly condition then we can define achievability as a relational process whose emergent which is a weaving that holds the relationships that make the organization a distinct and unit distinguishable for a communication context.

It is important to underline the status of relationships; we say this because when one speaks of a relationship in the here and now you are no longer talking about it because the aspects that generate meaning leap forward, the relationship will always be found in the ambit of the analog, our description provided in digital. For this reason, the process from this perspective will always be a co-discourse built on the basis of the uncertainty of language. Thus, the tenability of an organization may be assessed from narratives whose differences will ground the degree of achievability of the complex.

One aspect of this is expressed in the degree of coherence. Coherence is defined as "the closeness between the narrative of making decisions and the actions finally taken". Therefore, a small gap between them leads to a high degree of organizational coherence. Value arises where each link in the process chain –as the control of the difference; in this way, the process of knowledge associated to its richness– emerges from the recursive process of the differences, brought forth and exchanged among the actors culturally constituted as a network (Lavanderos 2002; Lavanderos & Malpartida, 2001, 2005; Malpartida & Lavanderos, 2000). Knowledge turns out to be a process of constant configuration of a relational network that is expressed in its own decisional style, from very coherent to incoherent.

As we analyze the definition of organization, the concept of coherence is strongly connected with the notions of meta-communication as a fundamental operation. This leads us to reconsider the accounting in the context of a value chain, and the audit of the distinction of certainty to uncertainty-trust in complexity.

Organizational coherence is an emerging feature produced by the relationship between what is said by the leader and what is understood by his direct reports.

From the point of view of value, *value in use* is a function of organizational coherence, where its generation depends directly on the cognitive type, semiotic quality and trust. The condition of uncertainty in interpretation, then, allows us to venture that the spotlight is not focused on the achievement of goals, but the coherency that builds trust. For this reason, it is through coherence that value generation can be explained, within the context of sustainability. Managing coherence involves designing a strategy to reduce the gap between the narrative and the actions resulting from the decision-making, so that a reduced gap may lead the organization to a higher degree of coherency.

Value emerges at each step of the relationships in the assembling of the production process to the extent that this controls the difference between the ambits of saying and doing. But where is this difference located? What determines the difference between narrative and ambits of action? One possible answer is to explain this through two concurrent processes:

- **Exchange of Meanings:** (effectiveness in the reproduction of control).
- **Interactivity Network:** (behavioral process of rapprochement among actors or rejection, at the moment of the decision-making process).

In other words, the network is a way of thinking and doing, given from its history of decisions, which is conserved by acts of closure or protecting against external agents. This means that a person who joins a network to work for the first time will not understand the working codes of the network, even though the words are the same as he or she uses.

At the same, the people who make up the network do not necessarily understand what the manager aims to do while making decisions; this generates uncertainty and actions will drift from what is expected. Similarly, there are good and bad relationships, which can be momentary or permanent. These processes generate differences between saying and doing and are responsible for the loss of effectiveness and efficiency in such strategic operations as energy, materials, resources or management (sustainability). This leads us to reconsider management radically eliminating certainty as a cognitive basis. Taking this into account, if we consider organizations as complex systems (because their operations are primarily organized in the communication process and the goal of communication that introduces the condition of uncertainty), it is not unusual to see, in practice, little correspondence between strategic planning and implementation actions.

Another aspect of this is expressed in the degree of congruence which is defined as the operative capacity of the team: this means that command is incorporated as yet another player within the network, so that assessments are each and all against each and all. The evaluation of congruence makes it possible to classify the network within the group typology as an *Operational Team*, or simply a group of persons that directly impact the generation of value.

This being so, the state of Relational Viability of an organization implies thinking of it as a structure of relational networks that propagate value based on the quality of their relationships and the fit between these and the matter/energy resources that make it possible as an organization. In this way, if we understand organization as a group of persons that interact and manage processes for the production of knowledge and value, viability will depend on the strategic axes previously mentioned (tenability and sustainability). For this reason, making organizations viable under the present conditions of global knowledge implies making them change from rigid structures, such as hierarchies, to flexible structures such as heterarchies.

Mind-facture today has only one currency, the speed of decision-making.

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KEY TERMS AND DEFINITIONS

Coherence: The degree of proximity between the narrative of decision-making and the actions finally taken.

Entorno: A configurative system is one in which adaptation is a condition and not a result in the operation of an organism.

Environment: A weak relational system that operates in adaptation as a result provoking disassociations in distinctions.

Organization: A system of canonic relations, which permits the operation of what is different while being the same

Relational: The process of trifferential organization to configure sense.

Structure: A relational system of a "warping" type, which conserves organization.

Viability: The process of relational reproduction for the preservation of systemic organization.

Chapter 7
Strategic Intelligence Process

ABSTRACT

Organization is a constant process of the construction of viability, which requires a strategy to minimize entropy and maximize negentropy. Therefore, it is the domain of tenability that will determine how it is possible or how much disposition there is to reduce entropy in relation to the production of exchange value. This is the question faced by upper-level executives and its solution means the diffusion of a political vision associated with a type of relational structure. The facilitating or support process for the spread of a political vision is the Strategic Intelligence Process (SIP). In this chapter, the authors show how the conceptual foundations of the SIP and its application to organizations are put forward.

INTRODUCTION

For a viable relational systems theory business model, we must understand the coupling strategy for strategic decisions that enable the management of processes and relationships in order to create value at operational, tactical and strategic levels. From the standpoint of sustainability, the business model can be understood as a platform that connects to resources, processes and service delivery, the coordination of which translates into long-term benefits. Based on the above, a cost –visible or submerged– that diminishes company profits is called *uncoupling*.

Disruptive or uncoupling events (singularities) are ruptures or interstices between the strategic decisions and the relations that create value, translated into presence or absence of elements that can reduce agility, flexibility, integration and innovation in the business process. Considering the previous definition, *Strategic Intelligence of Processe*s points to locate these and later to anticipate them inside the global processes. Therefore, the *SIP* has as its target to establish, by means of stage simulations, where and when they can produce this type of event to apply remedial or corrective practices within networks of collaboration.

This chapter explains how we anticipate, correct and eliminate disruptive events so that value can diffuse throughout the organizational network.

ORGANIZATIONAL THEORY AS A RELATIONAL SEMIOTIC SYSTEM

As we asserted in several previous chapters, relational dynamics as a basis for explanation in the world has been managed clandestinely in relation to the official narrative of classical science. The belief in the measure and permanence of the object have been beyond a doubt the official and necessary vision behind the legitimacy of knowing. For this reason, before going into the Strategic Intelligence Process (SIP), it is necessary to explain the changes that have occurred in relation to the observer, the concept of organization and the algorithms of transformation.

Related to this, a connecting thread that can help us understand how organizations are organized is a theory that is still in its infancy and in full swing. Since our goal is to ensure a successful coupling for viability, we will focus on understanding organizations from the perspective of their administration; mainly because this reflects, in a sublime way, the impact of prevailing metaphors, which, as noted by Miller (1978), reflect the form of scientific models for the generations that live them. "Scientists terms in the language of the nineteenth century made reference to linear effects rather than force fields..."; "The twentieth century has characteristically taken its metaphors of the relativistic theory of Einstein...", "Field theory, gestalt theory and systems theory, despite their differences, all recognize that the relationships among co-acting components of an organized whole are of critical importance to the understanding of the whole".

Management as a field of study has not remained distant from this process, although the incorporation of new knowledge has not been up to par. Considering that in the 1940's management did not exist as a discipline and it simply made reference of people issuing orders within the company, only in the 21st century can we say that organizations have begun to understand the need to organize intangibles as a strategy to generate value and survival.

Any number of varied definitions of management are available in the context of successful business administration. The definition of this discipline has co-evolved with enterprise to the degree that it has proliferated. Today, we can find many authors who have turned their views into definitions that help understand the state of the art. Our exercise, in conjunction with the above, will reveal where the observer is speaking from, how he visualizes the idea of organization. This exercise will allow us to understand that, depending on where the emphasis is placed, the conception of a human organization will be either a set of related objects that are related, or systems of organized relations. This difference is absolutely strategic because, as we shall see later, it determines the type of diagnosis and therefore the kind of transformation possible.

Following Koontz (1998), management is the process of designing and maintaining an environment in which, by working in groups, individuals efficiently meet specific objectives. This definition highlights several important distinctions about relevant aspects of administration. The existence of a group of people working together have a goal as a network of relations, but require someone who enables or facilitates the conditions for this to take place efficiently. According to Flores (2002), management seeks effective and cooperative action and, at a higher level, the generation of contexts in which effective action can consistently be achieved, emphasizing the facilitating role that this discipline plays in relation to the group that wants to work in a coordinated manner.

Peter Drucker incorporates a new element into management, taking into account current trends and concerns: *knowledge*. Knowledge is highlighted as the ingredient that administration brings to the group work so that it effectively leads to organizational success. This kind of society is characterized by an economic and social structure in which knowledge has replaced labor, raw materials and capital as the most important source of productivity growth and social inequalities (see Drucker, 2002).

If we examine the position of the observer in Drucker, we find that his speech is based on the reduction and a priori analysis of the object being studied. A priori reduction involves isolating the unit and eliminating the context in which the description is produced. A priori analysis consists in the separation of the object into its component parts in order to study their properties. The characteristics of this conceptual framework have profound consequences even today in business processes which imply a pre-established world, composed of groups of objects with inherent characteristics, which show up in the same way for each and every observer.

While not wishing to disavow the achievements of Western culture, the reductionist paradigm has characteristics that can be seen as limitations, especially when it comes to explaining human actions. First, the reductionist paradigm employment of causation and deduction to generate an explanatory discourse imposes a world-view,

creating a "blind spot" that eliminates distinctions, for which a cause cannot be associated. This being the case, we recur to objectivity as the illusion of independence of mind and reality, an act that allows us to keep separate the cultural characteristics of the observer and his or her descriptions. Beyond a shadow of a doubt, objectivity and rationality have come to be the virtues most valued in Western culture, where the "objective opinions" of representatives of the scientific world justify and explain whatever social problem. This is why the scientific method acts in a legitimizing function rather than ensuring reality and certainty.

The reductionist paradigm is reflected in the classic definitions of management so long as there is talk about an "environment" and "context" external to the observer, interacting with the observer to influence action in such a way that it becomes both "effective" and "efficient." The first thing that shows up is a separation of mind and world, and the desire to design the world so as to affect the mind in a positive way.

The definition given by Peter Drucker reifies knowledge, since it views it as a physical resource or object that can be "applied" to achieve some form of benefit to management. As we have already defined, knowledge has to do with the distinctions made by an observer in his environment (Lavanderos & Malpartida, 2000). This confusion of process with substance is the product of a corrupt language that has its origin in a first order paradigm, as von Foerster (1996) labels a world-view free of observers.

Apparently, management is not free from the influence of the reductionist paradigm, in the same way as a large part of Western thought. Since its improvised beginnings, this science has evolved with the need to manage increasingly complex corporations. Today's companies are made up of thousands of employees, manage million dollar budgets, catalogs with hundreds of products and maintain relationships with diverse external organizations. Although these changes did not take place overnight, the speed with which change takes place has put a lot of pressure on management experts so that this discipline sets the pace for managerial actions and helps achieve a harmonious and efficient work that leads to the completion of organizational goals and objectives.

The search for principles to explain the difficulties of the companies has resulted in a growing list of management approaches: the mathematical approach, or "management science", the decision theory approach, the reengineering approach, the systems approach, the cooperative social systems approach, the group behavior approach, total quality management, and others. It can still be argued that the apparent increase in the degree of complexity that modern corporations have acquired is due mainly to the use of paradigms inadequate for the understanding the organizational context.

According to the logic pursued by traditional management paradigms (first order), complexity is a property of an object distinguishable to any observer, that is, we have an invariant narrative for a universal observer. This translates to the

search for different tools and paradigms to manage this complexity and to live with it and avoid the proliferation of disorder. The underlying cognitive system of these theories leads us to conclude that complexity in the organization is discovered. Our language and our cultural paradigms determine how we look at the organization and likewise determines its complexity in relation to ourselves. The issue of complexity is, therefore, reduced to choosing the paradigm appropriate for our relationship with the organization. In the same way, we can interpret that the basis of management paradigms, reductionism, is not a language suited for talking about organizations.

Initially, management thinking was inspired directly by the scientific method and its reductionist background. In 1911 Frederick Taylor wrote *The Principles of Scientific Management*, in which the scientific method is applied to management with the ultimate goal of achieving greater efficiency in the industrial workplace.

The scientific method profoundly impacted the subsequent development of the management theory in its way of dealing with knowledge. According to the interpretation of Taylor, the scientific method supposes the determination of objective facts observation. Scientists analyze these facts to determine causal relationships. Once the accuracy of these generalizations or hypotheses are tested and their capacity to reflect "reality" confirmed, they are called "principles". These principles are then used to predict what will happen in similar circumstances, ascribing them predictive features (Koontz, 1998). Management theory continues to be built on the principles determined by the scientific method, based on objective and linear logic. Novel theories of administration do not deviate from the path set initially by Taylor.

We owe Taylor, and his way of seeing things, today's hierarchical structures that have posed the greatest resistance to change processes; we could make the assessment that the hierarchical structure has permeated even beyond the command responsibility, having infiltrated the domains of operations to such a degree as to impede autonomy in contexts of the need for swift decisions. This is one of the first goals of recognition in the task of strategic intelligence, the evaluation of how robust the hierarchy is.

Commitment and Action, the Fernando Flores Reductionism

The Fernando Flores school created a theory of management relying on concepts derived from Heideggerian philosophy, Jurgen Habermas, and the philosophy of language, influenced by Austin and Searle. It figures among the innovative new ways of viewing management. The approach taken towards communication differs notably from traditional management paradigms. Communication, normally dealt within the framework of information theory, is seen as a physical element and thus transferable from sender to receiver in an entropic way: this is seen instead by Flores (1982) as "speech acts" that lend themselves to the construction of the world.

Flores was among the first to see organizations as conversational networks and coordination as conversations that produce action through commitment. This is not something that would have startled Shannon and Weaver since their focus, often misunderstood, had to do with the efficiency of channels and how information was degraded in transmission, a completely different kind of observer seeking to improve channels, not coordination. The effectiveness of conversational networks concerned with coordination implies a shared understanding of purpose and shared commitment. Flores attempts to build on this interpretation through his interpretation of "speech acts", leaning on the concept of "commitment" which Austin attributes to different kinds of utterances, such as *assertives, directives, commissives, declaratives* and *expressives*. Both Austin and Searle argue that all of these utterances involve notions of commitment, a view somewhat shared in Heideggerian hermeneutics, seen from a different lens. For Austin, there is a whole spectrum of commitments that accompany different kinds of speech acts.

The word 'commitment' derives from Latin *committere*, meaning "to unite, combine, bring together." It's later use in English derives from French and is used to denote a promise, often in a legal sense.

Now, one thing is to say that all utterances share the notion of some kind of commitment, as derived from Latin (unite, combine, bring together). Language after all is social and exists to *bring together*. It is another thing entirely to say that "…a speaker performing an utterance cannot avoid making commitments" (Flores, 1989), grounding the word in the French tradition. This means being tautologically "assertive", seeing all utterances as constituting "promises", quite a leap of logic which is neither deductive, inductive nor abductive. Flores somehow chooses this path and it is one that can be troublesome when speech acts are seen as being involved in a "commitment" that goes beyond the phenomenon of language (in its uniting role) to include the notion that language creates a binding commitment on the part of the agent since speech acts somehow create promises.

Flores says: "It is important to isolate these basic phenomena that are constitutive of social action (requests and promises) from the particular linguistic and cultural forms that appear" (Flores, 1989). Flores interprets a communicative act from its culture, which necessarily reduces everything to commitments, extracting syntactic exchange from the context that gives it meaning. In this theory, that sought to break the traditional paradigms of management, the same reductionism shows up that characterizes the scientific method; the phenomenon is isolated from its cultural context assuming that this does not affect its meaning within its communication network.

Flores does not really define the word "commitment" and, as the word is used by Austin and Searle, *intention* may have been a better choice. In the book's Postscript, Flores mentions that Searle has been working on a theory of "Intentionality" that may "…allow us to discover connections between the intentionality of mental states

and human commitments." This seems to undermine the notion that "commitment" (later English usage as derived from French) is everywhere in language.

Flores states: "All we are saying is that, when speaking, a person commits himself to the intelligibility, truth, sincerity and appropriateness of what he says". Most people would have a hard time buying this definition. It is, to use Flores' own distinctions, an ungrounded assessment that simply does not stand up to any kind of reality check. It seems to be, rather, an attempt to fuse two distinct etymological origins for the word "commitment", one, as we have mentioned, Latinate, the other, French, with a huge historical gap in between. This does not mean that commitment is not a key ingredient of sustainable networking, where failure to make and keep promises can be a major source of waste, undermining trust, credibility and, therefore, sustainability. It does mean, to *paraphrase* Flores, "that, when speaking, a person ***does not*** necessarily commit himself to the intelligibility, truth, sincerity and appropriateness of what he says"; this, rather, is a practice that must be developed, along with an encouragement to "walk the talk", an oft repeated recommendation that rebukes a lack of commitment.

It is not our intention to wrest importance from speech acts in the constitution of a social world nor in the importance of commitment as a key ingredient in the coherence and sustainability of networks, especially networks constituted to produce action, but to dispute the idea that commitment is somehow genetically imbued in speech acts and, therefore, language itself. If this was the case, we might also conclude that human nature, in the context of language, is, genetically, "commitment."

Other elements important to Flores in the development of his notion of language for action have to do with moods, listening, breakdowns and design. Flores sees moods as important in a Heideggerian sense: "Moods are a fundamental phenomenon together with understanding a certain 'tuning in' to our situation that opens us to certain possibilities and simultaneously closes us off from others". Listening is expressed as fundamental to Flores' world and is related to the capacity to observe breakdowns, fundamental for change: "We are now in a position to summarize our position. 'World' is not a collection or aggregate of things or persons (…) but also includes all of our concerns. It is *all that is listened to in the commitments we make* (…) 'Listening' is our term for integrated know-how of our concerns with the world (…) The world is always already organized around some fundamental human project, it depends upon this project for its being and organization. We can see this in any office: without some project there would be no office (…) It is to this project with its background of possibilities that we listen". Breakdowns have to do with "…what has deteriorated, is missing, or obtruding, in the end, our successful dealings with the world" . "Design is seen as a discourse for dealing with recurrent breakdowns".

With these background distinctions, Flores developed his management theory, called *coordinator* (supported by a software marketed by Action Technologies). The coordinator concept sees effective action as a conversational loop consisting of requests/offers, then a negotiation around the conditions of satisfaction, then the execution of action and declaration of completion by the promisor, followed by an evaluation by the client around the completion of promises in time. Each phase of the loop terminates with a discrete "thing", an offer (or request), a contract of things to be done with standards, measurements and consequences, a report and, finally, an evaluation of completion according to the stipulations of the contract.

While the coordination loop has a lot of merit, there are some problems alluded to by Flores himself in his background thinking. To begin with, "listening" is an extraordinarily complex process that has to do with producing an alignment among persons in a huge number of domains. It means the establishment of a shared territory of scope and scale and sharing an understanding of what each and every person understands as "breakdowns". As employed by Flores, "breakdowns" show up in the *Matter-of-Fact World*. Increasingly, however, the relevant breakdowns in the world of work have to do with the *Future World*, anticipatory rather than reactive. If the coordination loop begins with requests and/or offers, it takes for granted the issue of shared territoriality and each actor, in his own "background of obviousness" could execute his or her promises on time and still not eliminate essential concerns. Effective action does not begin with requests or offers but with a deep shared understanding of the world of concerns of all essential actors and through a whole network of "loops" that take care of all "network concerns". This is a tall order and certainly more of a desired future world than any Matter-of-Fact world. As constituted by Flores, the loop still lives in the transactional customer/supplier world, although an improvement over the hierarchical world of command and control dominated by orders. The loop "punctuates" a larger discourse network. Flores introduces, through the loop, the concept of "commitment processes", as opposed to material or information processes and this helps shift the world from vertical to horizontal.

While it is important to introduce the notion of making and keeping promises within a network, to strengthen the network and avoid the isolation or shriveling of nodes and separation of hubs, networks just don't show up this way, they are, in Heideggerian terms, already being-in-the-world, structured already in their own way.

Let's take this a little further: if the network is organized into structures of non-commitment (in terms of the network as a whole), then, is it possible to diagnose viability through some sign? Fortunately, the answer is affirmative. Thanks to von Foerster, who has skillfully identified these signs, we can now speak of social schizophrenia, or schizodemia (division of people). Von Foerster makes an interesting parallel between mental illness and disease that we suffer as members of human

organizations within a cultural context. In today's firms, as a human organization, we can clearly identify the signs of this "illness", which we might have considered as effects of some other cause. We could even say that Weber lived these signs in some way when he pointed to the evolutionary process of Western society as one unswervingly oriented to a "goal-oriented rational behavior", forgetting the relational structure. This process is expressed in functional divisions, positions hierarchically ordered, selection of personnel through technical classification and written documentation of rules and decisions. While this allowed the effectiveness and efficiency of production in the Industrial Era, today, given the change in connectivity and the role of intangibles, these bureaucratic mammoths are not made to survive current conditions.

The idea of this chapter is not to review all business schools and approaches emanating from sociology: we are interested primarily in those that establish relational forms in their structure because these forms are ultimately what determine the quality of the link between what is tenable and what is sustainable.

As we will discuss later, SIP (Strategic Intelligence of Processes) incorporates a number of theoretical and methodological approaches that enable an accurate diagnosis in relation to the health of the structure of the organizational network. We will begin by describing the "signs" of von Foerster, then, we will introduce the *Strategic Intelligence Process*.

Signs of Schizodemia

Rupture of Cognitive Integration

In the firm, the compartmentalization of knowledge is reflected at the first level in the formal subdivision of the organization around departments: marketing, production, finance, logistics, systems, etc. Each of these departments generates its own discourse based on key concepts related to its central theme.

In the sales function the problem can be expressed in terms of: margins, customers, demand and promotions. In IT, business problems can be expressed based on different concepts such as bandwidth, servers, modems or storage capacity. Discussions within each department are shaped by concepts appropriate to their own culture and over time keep revolving more and more around the same closing-in, increasingly on the same issues: digging deeper while reducing the landscape.

Professionals who come to the firm have already been molded by the educational system to separate knowledge into areas of expertise, which helps distribute responsibilities and segregates efforts undertaken by departments.

Cognitive disintegration is reflected in an impoverishment of relational semantic structure:

- Rare words for the culture used too often.
- Common words for the culture infrequently used.

Another result of cognitive decay is a reduction of the options against a given decision, where the spectrum of possible actions to take are reduced hopefully to two, mutually exclusive. This lack of options is directly related to the inability to integrate the conclusions of the differing subcultures that coincide within the organization.

Loss of Empathy

In Western culture, our cognitive paradigms have evolved on the basis of objectivity and the elimination of the observer. It is usual for our conceptual apparatus that every argument appreciated as such should be built on the principle of objectivity, as a proof that grants legitimacy. The first commandment of the scientific method is that the properties of the observer should not enter the description of the observations, generating a ban on talking about oneself.

Management produces decisions that directly affect workers and corporate stakeholders. Consequently, traditional management seeks to ensure rational, serious, data-based decisions, characteristics that this approach associates with objectivity. Favorable opinions are considered a welcome support for objective decisions, but different opinions are dismissed for lack of knowledge. Everything that cannot be explained by the objectivist paradigm does not exist for it (Forester, 1996). The paradigm does not allow us to consider these "irrational" views and leads us to disregard people with dissenting opinions.

The results of these rational decisions were well captured by the British economist Keynes (1978), who said "there is nothing as disastrous as a rational investment policy in an irrational world". We could summarize it in this way; ensure rational, serious, data-based decisions in which the opinions of those affected by the decisions do not have sufficient merit to compete against objective data.

Confusion of Symbol with Object

Symbol-object confusion is defined as the belief that what is represented (the object) and what represents it (the symbol) are one and the same. For example, to believe and act with an employee as a human resource. This implies that managers of firms often think they are the business of making money instead of the wine business, the automobile business, the travel or food business. With the pressure it means to have an annual balance showing growth year after year, the scope of action and alternatives may be severely reduced to the point that work entails taking the customer's

money rather than concentrating on the product or service they are putting to market, in which profit is a consequence.

Lucid Sensing

Organizations that suffer the above symptoms are aware that their senses are altered; their perceptual clarity, sense of direction and visual acuity and auditory discrimination are intact.

The signs described act as a defense system directly setting the variables that constitute the relational structure of the organization. In particular, the previously discussed Co4 structure: communication, cohesion, coordination and conduction.

Diagnostics, Networks and Conflict

All networks that are presented with an innovative proposal are configured, and their patterns generally respond to so-called "defenses" that are conservative and fight to maintain the *status quo* that gives them sense, whether or not this sense is mistaken. They may be networks operating in rationalist, empirical or Cartesian terms; networks that do not have the capacity to tolerate uncertainty in their many expressions. They usually lack the ability to suspend judgment, so that cannot do without the peace and protection given them by "rationality and objectivity". What they seek is the quickly reassuring field of "concrete" facts in the belief that these in fact exist. Anchored in conservative constructs they are not able in any way to tolerate new proposals for change, even if these come one or another components of the network.

MAIN FOCUS

Strategic Intelligence Process or Reverse Intelligence (SIP)

Just as the *map* is mistaken for the *territory*, the *process* often gets confused with the *procedure*, even though the procedure does not extend beyond being recipe or digital format of the process. Not because one has a cake recipe can he or she be ensured that of getting the cake. For this reason, we will define the process as a *meta-guideline*, a connection which organizes the connections within a system of relations, for which it makes sense being impossible to conceive of independent of the culture or network that makes it happen. On this basis, the schizodemic condition would be located in the relational configuration, specifically in relationships that generate loss of coherence and congruity. Consequently, a company, as a relational

system, must be conceived as a complex flow of configurations that are exchanged to produce a "something", which in turn is exchanged with other relational systems. However, for an observer of the network is not possible to decipher the relationship as to what access schemes are interactions, from which it is not possible to infer the type of relationship. This merits a pause. Suppose we are in a bank. What we observe is a set of actions among people, for example: extending hands, talking kindly or not with executives, moving here and there, gesturing of secretaries, etc. From all this we cannot possibly speculate about the relationships that constitute the business of the bank. Another example: many algorithms are currently used in relation to interactions within social networks in order to explain the connective structures. We could apply these algorithms to an adjacency matrix produced by the interaction between billiard balls and could end up with something truly and surprisingly similar to the network relationship. It is essential to understand the difference between interaction and relationship.

Moving on to another subject, as we said previously, an organization can be seen as a semiotic flow of the political vision of management to achieve the strategic objective. If we visualize this complex flow we can locate those bridges that stop or slow its dynamic. In other words, those relations that prioritize another kind of flow at the expense of the political configuration. These bridges that produce delays we have called *singularities*.

It is in relation to them that we design the process of reverse intelligence or SIP, as a correction mechanism for the relational structures that hinder the propagation and reproduction of the decisional strategy of the organization.

The SIP is designed to identify, neutralize, degrade and/or deconstruct the relational network of information that generates singularities, which are reflected in the loss of coordination and cohesion, affecting the quality of communication and generating waste in management.

As we pointed out in the previous chapter, one can distinguish two kinds of sub-networks: the command-and-control, dedicated to the reproduction of the political vision (coordination among managers and the diffusion of strategy) and the sub-network of data, dedicated to the flow of the information obtained from centers of operations to the centers of analysis centers or command-and-control. In fact, the organization is a constant process of the construction of viability which demands a strategy for the minimization of entropy and the maximization of negative entropy. Therefore, it is the domain of sustainability that which will determine how much is possible and how much it is disposed to diminish entropy in relation to the production of exchange value. This is the question that faces command, and its solution requires diffusing a political vision associated with some type of relational structure.

The support process or facilitator is *strategic intelligence* which, to a large degree, is composed of a continuous cycle that begins at the moment that the general

manager insists on the need for change or improvement based on the impossibility of reproducing his or her political vision given the focus or spaces that preserve opposing styles. The *intelligence team* gives support by initiating the stage of collecting information or diagnostics aimed at determining the links that are dissociative in nature or of low coherence and congruity, as well as the actors producing them. When this stage is complete the team responsible interviews the different agents (managerial and sub-managerial functions) looking for data to understand cognitive types, proximity in meaning to the general manager and trust related to this person and the control network. The data is sent to the intelligence team, and, having received the information, the following stage, *configuration*, begins. In *configuration* the aim is to determine the possibilities of change for each agent, the risks associated with management and the relationships that constrain or make impossible the propagation of a political vision. Finally, a network map of key players is tendered for the purpose of making the necessary decisions before intervening in the network. The knowledge of nodes and their connections will allow the identification of critical nodes, these being the ones that must be neutralized so as to produce the positive effect of low coherence towards the various domains of the network.

As for the "defensive" tactics, they seek to protect the management style reflected in decisions and commitments within strategic management, so potential support networks should be assured. When we speak of "neutralization" of nodes we are saying that the process of building networks of reciprocity, or heterarchical process, involves intervening those nodes of high hierarchical status weakening defenses against change. This will be seen in more depth in the following paragraphs.

In summary, the first phase synthesis reveals structures of networks or sub-networks that are generating a delay in the spread of management style. It is important to clarify that when we talk about network or sub-networks we are not saying that the agents involved form a purposeful structure; we speak of a network because they share similar levels of congruence.

Strategic Intelligence Cycle Before Intervention

The intelligence cycle is formed, before the intervention of the network, primarily in gathering information to identify critical nodes. This process evaluates the degree of fit among the networks of tenability and sustainability based on the information related to coherence and consistency. In this way, the cycle can be broken down into information collection and identification of *critical nodes*.

Information Collection

At this stage, data related to cognitive types and semiotic proximity are collected through cognitive maps. Likewise, interactivity test are performed to evaluate the interactions of repulsion and attraction within the network (see evaluation of congruence and coherence below).

Identification of Critical Nodes

From the data collected, coherence and consistency algorithms are applied to identify the nodes that are most removed from upper management and are isolated from the network. The first intervention will be applied to this configuration in order to neutralize cognitive defenses.

Domains of Intervention

As seen, the identification of critical nodes in the network is top priority for the intelligence management team and for that they must determine the structure and processes that are developed within. Once these nodes are identified, there begins the process of analysis of coherence and congruence in three domains, reliability, availability and decisional velocity, associated to communications (TICS). The latter are the relational emergence of technical scientific knowledge with relational competences (cohesion, coordination, conduction and communication) and connective quality.

The reliability mesh is one that ensures, through the relationship expert knowledge/relational competences, that strategic processes do not "fail". This network is primarily preventive and predictive. It is formed by all levels of the organization that make up the sub-network of command and control, and also the data sub-network.

The availability mesh is one that ensures, through the relationship resources-knowledge/expert-competence, that the resource designated for a task or mission is available in the form and at the time required.

Finally, agile decision network is defined by the relationship of connective quality-relational skills, ensuring short diffusion and response times.

None of the three named meshes is independent of the others. The availability network must be able to receive or deliver information to the agile decision network, and this, in turn, be integrated to the reliability network; the integration of both meshes should contribute to strategy of planning and monitoring. On the other hand, for the execution of some systematizations such as strategic alignment, it will be necessary to use the resources of the agile decision network decisional. Undoubtedly, the integration points of the three meshes identified will be the objective of

impact analysis generated by the critical nodes –if they are part of them–, which determines in the instance the work of the intelligence process.

Searching for Information

Prior to the relational reconfiguration of the network, the most important thing for materializing the *Intelligence Cycle* is to identify not only the critical nodes and their position but the kind of defenses that transform them into "short circuits". For this reason, it is necessary to explore information sources that are not appropriately part of the work context, for this brief therapy process (SIP) is designed with a kind of the type of defense analysis, containment, psycho-education and relational restoration.

Distribution of Intelligence

The reliability mesh requires increasing the diffusion rate of intelligence produced, using its own information mesh, the availability and agile decision mesh or a combination of the three. Therefore, all the alternatives of diffusion should be known since the change process at critical nods is slow and can return to states of "short circuits".

Operations of Diffusion

The political vision, like its diffusion model, generates a strong sense of belonging of members to the organizational network; for this reason, the use of TICS for the processing and dissemination of this vision in multiple formats (images and sound) is fundamental. It is a question of strengthening the depth of belonging and agency of individuals to their knowledge and collaboration networks. These operations are of paramount importance since the change, from hierarchical to heterarchical arrangements, requires constant reinforcement to break down the mental structures that emerge as defenses and act unconsciously holding back new proposals for action and thought.

AND WHERE TO FROM HERE?

One would think that in the 21st century technology advances, systems associated with the information, thought patterns and their impact on decision-making should complexify directly with the degree of these advances. Our experience in organizations, however, has shown us otherwise. Schemes of action and processes of productive identity continue to be sequential and disaggregated, the same as schemes of managerial thinking. Taylorism, which led to important changes in the

organization of organizations, today has turned into von Foerster's schizodemia virus. Agility and the power of connective quality are way ahead of current managerial form and style, something that translates into an invisible waste that diminishes in an important way the production of wealth. Confronted with this, recovering people and making the organizational relationally healthy must be the immediate goal if we are to produce value in the 21st century. For this reason, and to achieve this cure, we designed the Strategic Intelligence Process (SIP), in order to ensure the flow of the narratives of belonging and adoption, constantly oxygenating the identity of the relational network. It is ultimately a return to politics as a healing discourse and action guide in which people live relationally an effective and affective integration in the domain of productive creativity.

The SIP not only locates short circuits but rebuilds them based on community engineering, a network of reciprocity that grows into a kind of heterarchy, the foundation of value creation in the 21st century. In the following example we will show how we have applied the SIP cycle based on the evaluation of coherence and congruence of a relational management system in a given enterprise, *ALFA*.

Building Bridges over Uncertainty: Intelligence Cycle

Situational Analysis and Objectives Proposal

Currently, the control team of ALFA is undergoing a process of structural change caused mainly by the introduction of a new management style and logic, adding to the rotation key personnel within the organization. Key should be understood as individuals forming part of the executive command team but not necessarily decisive in the decisional process. In order to generate a forward-looking strategy, conducive to a successful outcome, an intelligence team was put in place to assess, from the perspective of enterprise viability, the current status of the command network and potential risks associated with the style and logic of the decision-making process.

Ceo Situation: The CEO comes from outside the company and, therefore, is not in possession of the codes of agency and belonging to the relational network. Although he has an extensive background in business and strong leadership skills, at the time in which the SIP is initiated, he is virtually isolated.

Objectives are set as, based on intelligence analysis, to identify potential partners for the creation of a task force in whom the CEO can confide along with mobilizers of the future management style and logic. This means generating a management model determined by the political and economic vision of the manager to constitute a baseline for decisions at all levels. This process substantially improves language generation for the network. Also, locating critical nodes and neutralizing the nega-

tive interactions that produce certain relationships within the command contributes to improvement.

Data Collection: Data collection was developed from interviewing 18 people from the areas of 5 managers and 12 assistant managers. The intelligence unit responsible for conducting the interviews consisted of two experts in psychoanalysis and cognitive mapping.

Interviews were conducted in about an hour and a half each and consisted of two questions previously developed with the CEO. These questions are developed using cognitive maps, which allows the calculation of cognitive style and the paradigmatic basis of the respondent. A second test helped establish the degree of confidence in the CEO and trust levels within the network of command. This part of the process is the responsibility of the mapper and, in parallel, the analyst constructs a configuration based on action and language patterns that emerge from the respondent with the different tests. In the case of enterprise ALFA, 54 maps were accomplished which established the nearness to the CEO based on how to solve the base question. The other questions were addressed to resolve planning problems and gave an insight into why they had not executed their proposed solutions. In other words, it became possible to show up inconsistencies in the decisional process. The *Table 1* below shows the results of the *why nots?* proposed.

Identification of Bridges Cut

This analysis aims to determine structures that generate risk management or brake. This is to determine the set of people who, for various reasons, generate repulsive activity or hierarchical bypass in the "shadows". This process is drawn from the measure of interactivity and reliability test.

In order to identify targets of neutralization, to strengthen the network and/or to identify those nodes that can hold a large amount of information, the key players –which are very useful in an adverse management scenario– should be calculated if you run an intervention to achieve effective change, because their connections are able to influence others, allowing for targeted intervention.

For our case, we observed that: The group of *management* and *superintendency* (*Figure 6*) generates high variability in the values of confidence to CEO (1-9). From these values, and calculating the key players of type 1 and 2 (connectors and diffusers) that found structure consists of *A*, *C*, *J*, *M* and *D*. It is important to note that this network does not operate in concert, interactivity is the result the relational history of the network, i.e., it is not a conscious act. These allow players to connect to the network by 50%: involves isolating, neutralizing negative interactions or, as applicable, to the net spread value in full. In terms of intelligence, *J* is a strategic ally today from a political and technical criteria: there is a legitimacy of his speech

that enables you to connect to multiple nodes. However, in relation to the General Manager, there is not a relationship of trust in management, a work to be developed quickly.

In the case of *A*, its influence is important making it risky if you do not receive guidance from a strategic vision. This person is medium risk, but potentially can neutralize the current management given its "non-recognition" in the matter of promotion.

Moreover, *C* generates schemas of repulsive action type, this is high on interactivity with *J* and *W*, so that must be treated in a particular way in order to support.

M generates activity revulsion command, he is recognized as a leader over the entire network, but its output does not improve coherence as a whole if interactivity significantly better within the network, i.e., decreases the repulsive interactions as shown in the *Figure 1* below:

The confidence value obtained is *0.187,* which classifies the network as *Insecure*. The ranges are shown in *Table 2*.

Domains of Intervention

Given the condition of the CEO (little time in belonging) the evaluation of these three networks was re-established through the evaluation of coherence and congruence.

Evaluation of Coherence

Coherence is defined as the correspondence between decisions taken and the actions appropriately executed. Its evaluation permits obtaining a degree of consensus around the way of thinking about the business, the way of understanding things in a similar way and the degree of commitment within the network that makes up organizational command. The value of coherence is obtained from the evaluation of 3 variables: affinity with the Manager's logic of thinking (*CA*), affinity with the Manager's decisional style (*SA*) and interaction or confidence of the group in the General Manager (*IA*). The range of coherence assumes values between 0 and 1, and the value obtain for *ALFA* is 0.41.

Value Obtained for Alfa: 0.41 (Low Coherence)

The result obtained demonstrates that the group of interviewed do not reproduce the General Manager's proposition. This is explained through 2 of 3 variables, semiotic affinity (*SA*) and interaction (*I*), which, as we have defined earlier, are related to style of command and trust.

Cognitive affinity (*CA*) is defined as the proximity in the logic of thinking between the General Manager and those who work with him or her. In relation to the CEO, the management team shows a partial affinity isomorph (0,14): this means

Table 1. How to align my people according to my style? Results based on the why nots?, the attractor surrenders the vision of why an effective alignment has not taken place.   ***Strategic Intelligence Process***

Name	Question	Attractor	Points Out
ALFA (CEO)	Why is he not fair?	BECAUSE THEY ARE INDIVIDUALISTS	They are egotistical, no empathy, lust for power, distrustful, don't want to show their weaknesses.
A	Why doesn't the conversation work?	FOR THE KIND OF MESSAGE	I haven't picked the right moments, for lack of time, rapid conversations, not the right language.
V	Why don't we achieve possible routes?	ROUTE POORLY DEFINED	Decision to abort was voluntary.
C	Why can't we say we have shared values?	WE HAVE THE BEST ORGANIZATIONAL CLIMATE OF THE GROUP AND THE BEST IN OUR HISTORY	Because safety is of most importance because it is visible from outside.
V2	Why hasn't the evaluation turned out?	THERE IS NO CULTURE	Fear, no one has given importance to the topic, no promotion for climate, few instances.
R	Why don't you take charge?	I THINK THINGS WOULD HAPPEN WITHOUT MY ACTING	There wouldn't be a chain of command, the company would lose its identity, problem of declared values, goals aren't clear, I don't see any planning, there is no real organizational culture.
J	Why isn't there good communication?	LACK OF LEADERSHIP	Low credibility.
C6	Why aren't you hearing them?	THEY DON'T KNOW	They accomplish their tasks without thinking, confused, not rational, not valid.
M	Why wouldn't you hear their comments, suggestions, etc.?	DON'T HAVE ALL OF THE INFORMATION	It never worked before, deep analysis with little information, reiterative, more of the same.
M2	Why aren't there opportunities for people to suggest and apply their ideas?	BECAUSE OF THEIR HIGH EXPECTATIONS, FRUSTRATION	No room for errors, people don't buy in, don't recognize competences, incapable of taking risks.
M3	Why isn't there good communication?	EVERYONE IS IN HIS PATCH	Professional jealousy for distrust, lack of interest due to lack of understanding of other people's problems, living in the day to day, don't speak the same language?
C1	Why there is no common purpose?	LITTLE COLLABORATION	Ego, no collective success, it is individual, hasn't been clear with everyone so they can't understand how valuable the activity is.

Name	Question	Attractor	Points Out
C3	Why there is no confidence in alignment?	DISTRUST	Risks, silence, there's not equity, inconsequence, inconsistence
D1	Why there is no excellence?	CULTURE	Wrong personnel selection, non-renewable business, lack of responsibility
D2	Who is not listening to suggestions of others?	TOO CENTRALIZED	Everyone has his own truth, different cultures, not taking time, not understanding the competencies.
G	Why is there no leadership in the trenches?	LACK OF ANALYSIS TO TAKE DECISIONS	Lack of competencies, poor planning.
BETA	Why there is no concept of teamwork?	SUPREMACY OF INDIVIDUAL EGOS	Ineffective communication, no understanding what teamwork is all about.
J2	Why haven't you produced a common vision?	WE DON'T REINFORCE COMMON OBJECTIVES	Process of adaptation to change, lack of conflict management, different interests.
M5	Why don't we get feedback?	INDIVIDUALISM	Indifference, divergence of goals, distrust, no opportunity.
P2	Why haven't you built a cohesive team with a common objective?	LEADERSHIP TEAM HAS PROBLEMS	Lack of maturity in discussions, management team communicates poorly and gives no direction, objectives unclear.

that the way of generating explanations is similar to the CEO, with fewer degrees of variability.

The next graph, *Figure 2*, should be read in the following way: the General Manager (CEO) is at the center of the radar; the first ring assumes the value of *1* (affinity) and so on in succession until *5*. The graph demonstrates how each of the team members is distanced in comparison to the CEO. Those interviewed are assigned letters chosen at random (*A,B,C*… etc.).

The scale of values is seen in *Table 4*.

The value obtained for semiotic affinity (*AS*) is 0.222, which classifies the network interviewed as *Asynchronic*. This means that the style of the CEO, understood as a proposal directed towards the development of a high degree of autonomy, who can organize things by himself, is not understood within the current network. See *Figure 3*:

The graph shows that the management style is understood by 5 of 17 persons (*M*, *J*, *G*, *E*, *C*), which means that the decisional processes are of high variability. The evaluation scale is shown below:

Figure 6. Trust level in relation to the CEO
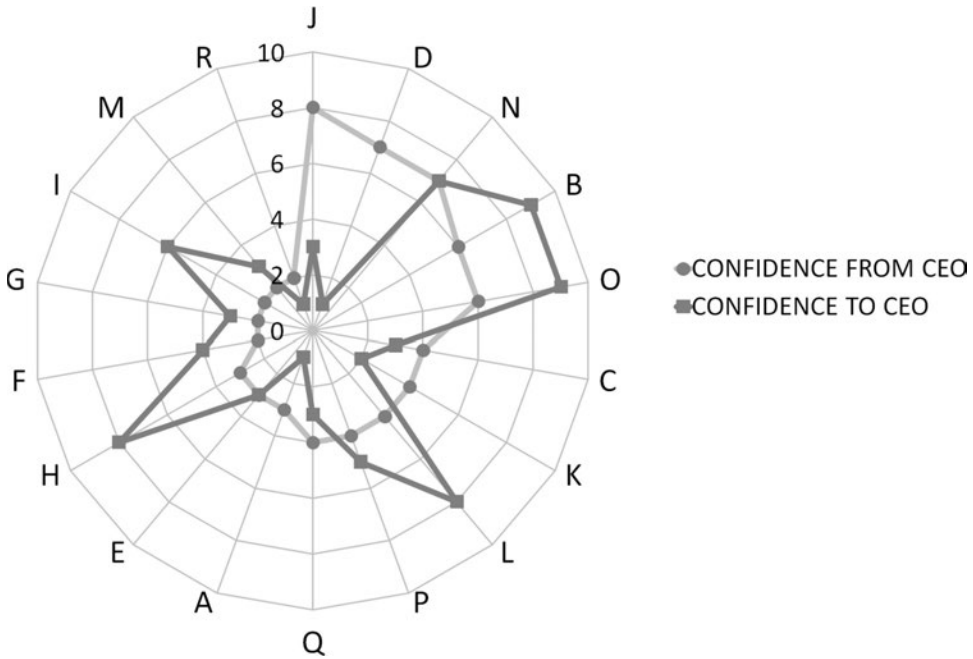
The value obtained for *affinity through interaction* (*AI*) was 0.514, which classifies the network as *transactive*. This means that the network has not developed a sense of commitment with the current Manager and can be summarized as "I work for pay and the responsibility for final results is yours, not mine." *Figure 4* shows proximity to the CEO from a second level; the trust network is non-existent and the trust network and degree of interaction of rejection is close to 50%.

The evaluation scale is as follows:

Evaluation of Congruence

Congruence is defined as the operating capacity of the team as a whole; this means that the General Manager is incorporated as one more person inside of the network, so that assessments are all towards all. The evaluation of congruence allows classifying the network within the typology of human aggregate as an *operating team* or, simply, a group of persons that have a direct impact on the creation of value. The range of congruence assumes values between 0 and 1.

Value Obtained for Alfa: 0,391 (Low Congruence)

Figure 1. Interactivity comparison
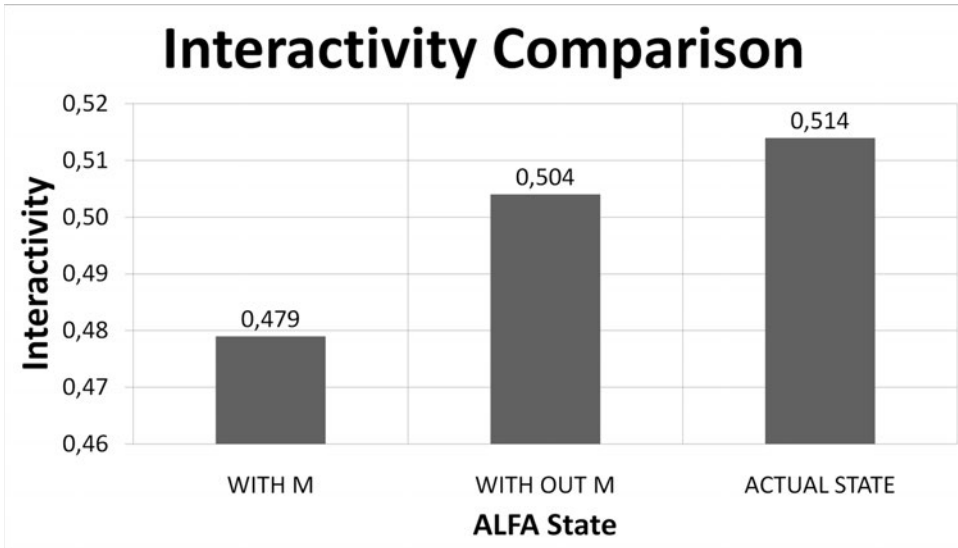
Table 2. Confidence ranges

Range	
Total confidence	0.80 - 1.00
Fidelity	0.50 - 0.80
Tranquility	0.40 - 0.50
Insecurity	0.20 - 0.40
Distrust	0.00 - 0.20

Table 3. Evaluation mesh of reliability, availability and agility

		Network	
Network	**Cognitive Type**	**Semiosis**	**Interaction**
Cognitive Type	Organizational cognitive style	Learning and diffusion network	Scientific technical network
Semiosis		Organizational identity network	Political network
Interaction			Reliability network

For ALFA, the value for congruence is 0.391, which classifies the network as one low in congruence. This value is explained by low semiotic affinity and interactivity, which have values of de 0.092 and 0.557, respectively. As refers to semiotic affinity, the value implies that the network is *Asynchronic*, which makes it highly unstable in relation to decisional processes. In other words, discourses are individual, not shared, and there is a lack of trust within the network. See *Figure 5*.

The graph represents the values obtained for congruence, that is, the capacity of the network to operate the business model as a whole. The base of interaction and Semiotic Affinity shows up as weak accounting for a centralized network with low coordination, cohesion and operationally ineffective.

Based on interaction, the trust level of the network in relation to the CEO can be derived. This is seen in *Figure 6*.

The trust graph can be summarized in the phrase "Nothing is as it seems". By observing the darkest line, which represents the persons whom the CEO trusts, this does not coincide with the lighter line which is the trust those persons have in the CEO.

Based on the results obtained around coherence and congruence, it is then possible to calculate the tenability of the network. The results are shown below.

Tenability

The calculation of tenability shows a value of 0.361, which corresponds to *Low Tenability*.

This value indicates that at the interior of the network the relationships are deteriorated, manifesting itself in a state of insecurity and a low reproduction of the command discourse in day-to-day actions. The following table shows the characteristics of the low tenability of the network.

Taking the value of coherence it is possible to calculate the efficiency potential for the General Manager. For our case, taking the value of coherence at 0.41, the EP for 20 effort is 51%. The value indicates that the decision-making process is effective at a rate of 51%. Figure 7 shows the ALFA curve (upper line), the current curve for coherence is 0.41 (lower line) and the potential coherence curve is 0.7 (medium).

Report to Ceo

The management network shows a greater level of disaggregation (rivalry) than the superintendents' network. While the team has an acceptable understanding of the business, its ability to use this understanding to produce changes is low, since the decision-making processes are not collaborative, and the degree of interaction as a

*Figure 2. Cognitive affinity*

Cognitive Affinity
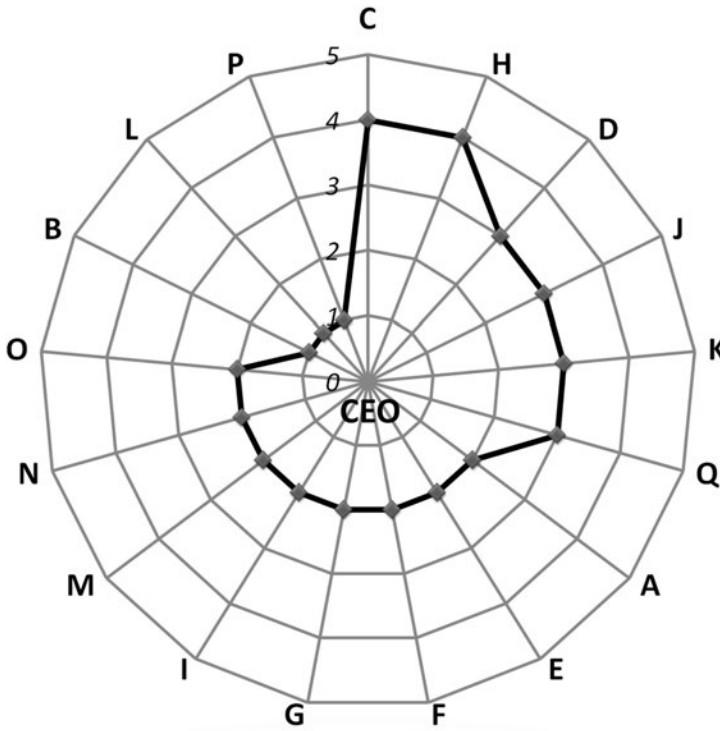
team businessmen and women, co-responsible for results, is low. There exists in the network an immune system of professional deformations already configured and generally deeply rooted in the "network or group", whose unproductive functioning brings to the fore, as a constant phenomenon, its poor communication and distrust.

Table 4. Cognitive affinity evaluation scale

Isomorph	0.75 – 1.00
Partial isomorph	0.50 – 0.75
Partial alomorph	0.25 – 0.50
Alomorph	0.00 – 0.25

Figure 3. Semiotic affinity

Semiotic Affinity
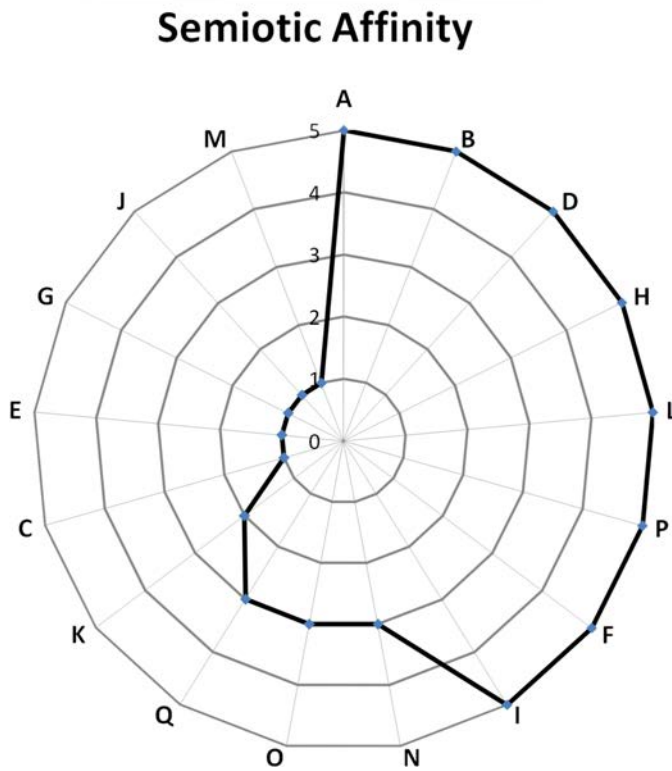
The analysis of the results leads to the conclusion that the current relational structure partially supports the decisional process; this is manifested in a partial spread of value and knowledge. Currently, the coherence is 0.41, mainly due to low values of *trust* and *understanding*. The results achieved are not significantly different from the previous phase.

In line with the recommendation to create a team with high operational capacity, the goal for the reconfiguration stage –taking into account the possible change scenarios based on the results obtained– is to raise the coherence value to 0.7, which

Table 5. Semiotic affinity evaluation scale

Synchronic	0.75 – 1.00
Partial Sinchronic	0.50 – 0.75
Partial Asynchronic	0.25 – 0.50
Asynchronic	0.00 – 0.25

Figure 4. Interactivity affinity

Interactivity Affinity
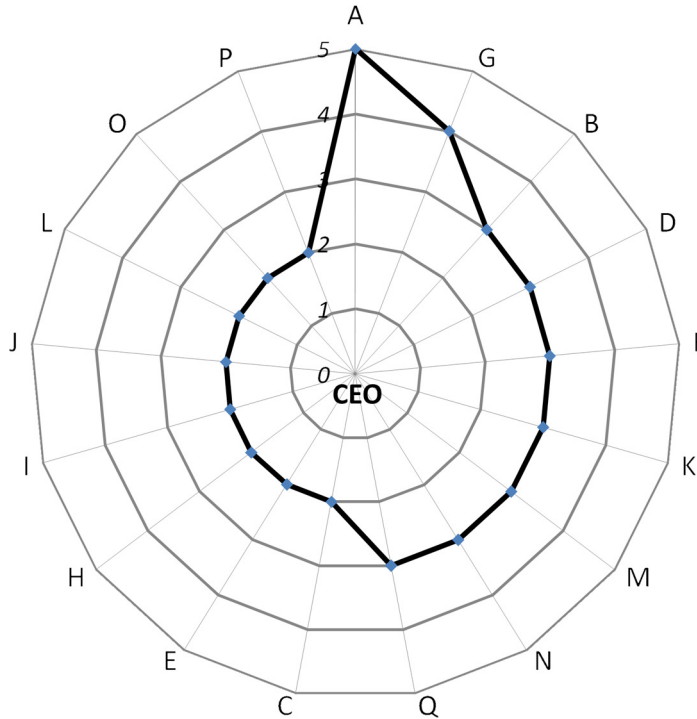
would generate a benefit of 84% in effectiveness in the domain of decision-making. This is made evident because 80% of management waste is caused by interaction of the type "I do my work, but results are the responsibility of management", a way of thinking that shows up a lack of commitment and political vision of the business. Ultimately, achieving the promotion of strategic change in management is a function of *business perspective*.

Table 6. Interactivity affinity evaluation scale

Reciprocal	0.75 – 1.00
Transactive	0.50 – 0.75
Complementary	0.25 – 0.50
Symmetrical	0.00 – 0.25

Figure 5. Value of congruence
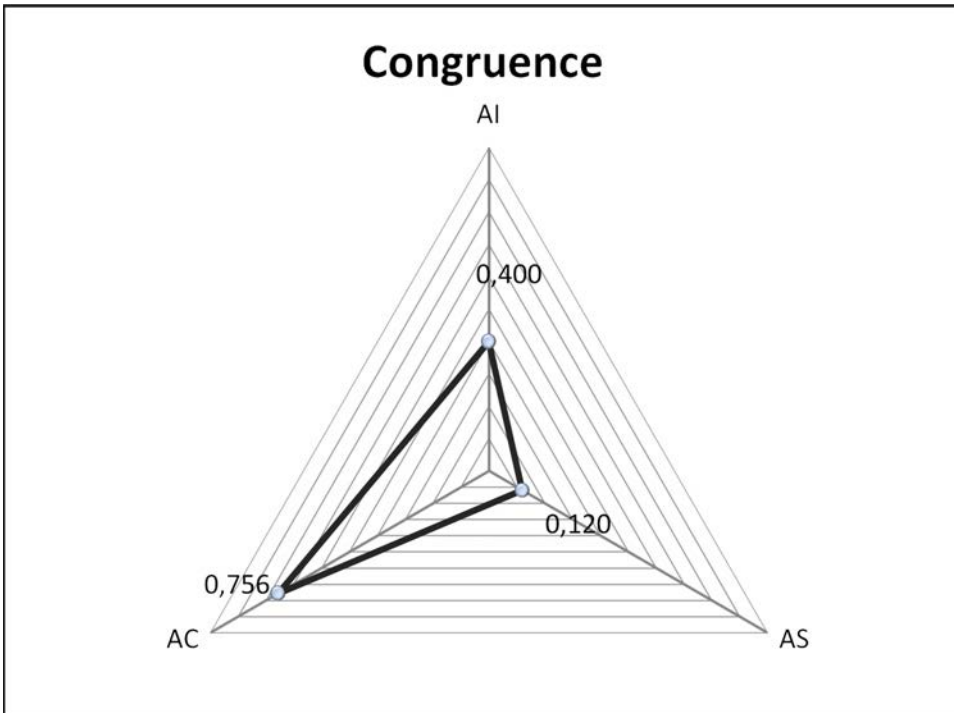
BUSINESS PERSPECTIVE

While the team has an acceptable understanding of the business, its ability to bring this understanding to produce changes is low, since the decision-making processes are not collaborative and the degree of interaction as a team of businessmen and women co-responsible for results is low. Theirs is a human aggregate with similar notions of business, not a team built to produce effective action together. Missing are declarations of alignment and insistence on changes of practices with orientation to mapping and management of cross-functional processes with KPI that emphasize group results (for example, reducing gaps between planning and execution).

The lack of cohesion in the semiotic domain –understanding– and interaction impacts the ability to reconfigure practices, roles and structures to achieve sustainability. The lack of a robust culture-oriented to business constrains the ability of the organization to absorb the *strategic plan* and its implications; worse still, since strategic conversations have not involved all key stakeholders. A process of "dialogue" on a broad level involving units, businesses and functions is missing: to break common sense no longer applicable and to create new common sense oriented to

Table 7. Low tenability characteristics

Criteria	Symptom	Diagnostic
Groupability for production	Low, Individual at Mgmt. Level. Medium for Superintendents.	Human Aggregate More Than Network
Bonding	Individualists: "every person for him/herself"	
Risks through bonding	Medium level risk. Competition: high (rivalry among Mgrs.) Medium level competition among Superintendents	
Communication	Transactional	
Strategic Style	Individual, challenge centered in activities tied to the functional role of each person within the Mgmt. Function reproduced in Superintendents by hierarchy.	
Relation among activities	Low	
Work methods	Individualistic or defined by CEO	
Decision-making	Hierarchical, centralized	
Conflict resoluiton	Via hierarchy	

practices aimed at gaining a better understanding of current and potential customers and to producing a more coherent view of the present and future business. Until a more business-oriented culture is developed, it is unlikely that there will be an improvement in the level of congruence in the organization.

From the Perspective of Process Intelligence

In the diagnosis we detected those elements that are opposed to change, the immune system and pre-configured professional deformations, generally deeply rooted in the "network or group", whose inefficient way of doing things shows up as a constant phenomenon: their lack of communication, distrust, low semiosis and low interaction. The immune system works against the integration of processes since the relational configurations prioritize individual work. Resistance is greater among managers than assistant managers. Managers do not accept criticism, since poor communication is part of their condition. The style of communication is highly transactional and the exchange currency is information. Responsibility for the results is delegated upwards to the General Manager. A good working environment is confused with negation of conflict.

Figure 7. Efficiency potential
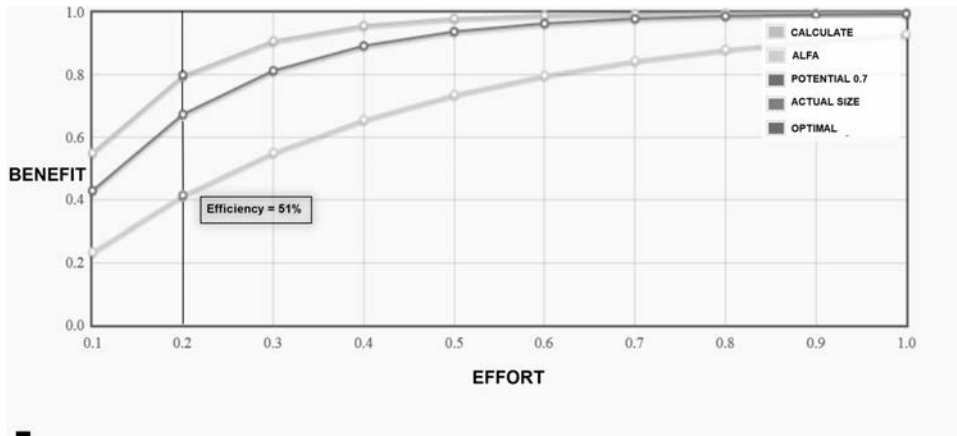
From the Perspective of Relational Structures

The analysis of results leads to the conclusion that the current relational structure partially supports the decisional process: this bias is manifested in a partial spread of value and knowledge. We can say that the domino effect that occurs in relation to expenditure is located in the networks of current relationships, which do not allow functional configurations operate consistently. As noted, the different areas, given the repulsive interactions and distrust, not achieved coupling the decisional process. The *efficiency potential* graph (*Figure 7*) clearly reflects this malfunction.

Also, the style of the command does not engage with the current configurations, since the group is highly dependent; it is used to receiving orders. This approach results in a high generation of waste in management.

CONCLUSION

Elaboration of the Intelligence Component, Actions

Given that present managers need easy-to-read documents for more agile decisions, the SIP generates the following format

Action 1. Network Management Intervention

Objective: Increase coherence to a range from 0 to -0.7 through the *Strategic Alignment Process*: improve interactivity and verbalization of actions (semiosis).

Success Indicator: Changing the value of the *index of interactivity* 0.504 to 0.7 and value change index *semiotics* of 0.209 to 0.59 through the following changes:

- Interaction and semiosis at critical nodes.
- Co- construction of *hierarchical strategic process model*, starting from the vision of the General Manager.
- Propagation of the social, political, economic and technical vision of the General Manager. Development of *management models* to develop success indicators.

Action 2. Intervention in superintendent network

Objective: Increasing coherence to a range of 0.41 or 0.7 through the *Strategic Alignment Process*, improving interaction and verbalization of actions (semiosis).

Success Indicator: Changing the value of the *index of interactivity* from 0.504 to 0.7 and change of value in the *semiotic index* of 0.209 to 0.59, based on changing interaction and semiosis at critical nodes.

Action 3. Support for the design of new functionality

Objective: Sustain in style and logic the proposal of the General Manager for a new management structure.

Method: Dynamic network modeling for optimal calculation of the functional structure of management.

Action 4. Support in evaluating executives for new positions

Objective: To provide support to the shape and profile of the professional to achieve a high degree of fit with the network control.

Method: Evaluation of partial coherence through *cognitive mapping*.

Currently, the consistency is 0.41 mainly due to the low values in trust and understanding. According to the recommendation to create a team with high operational capacity, it is possible to raise consistency within a range of 0 or -0.7, which would generate a gain of 70 and 84% in the effectiveness of decision- making. This is explained because 80% of management waste is caused by type transactional type interactions, lack of commitment and lack of a political vision of the business.

Synthesis

With the advent of information technology and the process of infinite connectivity that we are experiencing, we have accelerated the processes of decision-making in a vertiginous way, so today we pay bills online, communicate with others via chat or email, we read messages from computers to cell phones, we can locate an address using satellites, in short, we gain a lot of time. Paradoxically this gain in daily life is not reflected in the decision-making processes associated to productivity in organizations, whether public or private. One possible explanation lies in the fact that we have inherited hierarchical structures which, for what is needed today in agility, are not able to subsume such a demand. For this reason, a structural change is required that allows us to move from a hierarchical to heterarchical style. Heterarchy is a system in which members do not think of deciding for others but to interact, to generate solutions. This form of participation, with greater freedom of action, can generate multiple ideas, proposals and support for a whole group to work coherently. *Heterarchies are networks, superimposed, with individual components that simultaneously belong to and act in multiple networks with a whole system dynamics that governs and emerges precisely out of this whole set of interactions*. The hierarchy being questioned is not that of responsibility but rather that of process, one does not delegate responsibilities. So, subsuming acceleration in the process of decision-making and bringing to bear a change in speed in migrating from hierarchy to heterarchy, the strategic horizon of every organization is constituted.

The Correlation of Productivity and the Configuration of Relational Networks

Related to what has been said, it is clear that management involves great challenges that not only face organizations but also individuals who, on the one hand, will become fellow travelers in the process and, on the other, must be constituted as change agents or mobilizers to kick-off and coordinate diffusion processes within.

For the launch and implementation of a diffusion process, it is necessary that organizations comply with conditions that facilitate openness towards the process. One of these conditions, for example, is a leadership style that fosters communication and dialogue in order to build and strengthen a sense of belonging, cohesion, coordination and commitment into the midst of operating teams. This is necessary to ensure a co-commitment in relation to the objectives and strategic goals of the organization.

Finally, transformation cannot be imposed but must be co-created and assumed by all the people involved. From this context, we can minimize the resistance that constrains and impedes the implementation of these processes. Transforming or

reconfiguring networks are processes which open the culture of the firm to possibilities of action that were submerged and, when faced with a paradigm shift, emerge to create value. In the next section we will discuss the design should support the organizations of the 21st century.

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KEY TERMS AND DEFINITIONS

Economy: The relational system determined by tenability.

Intelligence: The process of the choice of configurations in relation to an object.

Intervention: The process of infiltration and neutralization to change the state of viability (positive or negative).

Political vision: The system of concepts that generate organizational complexity around it.

Process: The group of differences that generate a pattern for a culture.

Relational Networks: The system of "trifferences" that generate organization.

Social Criteria: The values of coherence and congruence for a network of relationships.

Strategy: The system of actions determined by tenability (relational system).

Chapter 8
Emerging Design:
The Warp Network

ABSTRACT

The organization of the twenty-first century requires plasticity; this must be understood as the existence in the here-and-now of ways to work that are defined to operate transversely in relation to strategic objectives. The minimum requirements are horizontal streaming and non-permanence. A relational structural foundation involves the generation and concatenation of three core networks: network reliability, availability, and decisional agility. The process of design and implementation of these networks is called Emergent Design (ED), which is discussed in this chapter.

INTRODUCTION

Given the current conditions attached to the speed at which changes occur globally, what we call *organizational design* has begun to misrepresent conditions of certainty and determinacy. This breakdown in organizational design has gone so far that traditional epistemologies can no longer explain how changing spreads across networks. Regarding this distinction, this chapter proposes a new theory to develop the process of organizational design from the conditions of indeterminacy and uncertainty.

In *Emerging Design*, viability becomes a relevant concept because it unveils the organization's sustainment strategies. Coined by Beer 30 years ago, viability is defined as *the ability to maintain a separate existence* (Beer, 1979); that is to say, a living system is viable if it is able enough to adapt and survive in its environment. The above definition is generally not disputed, but one may well ask whether this ability is a result or an inherent condition. Depending on the answer, one might again ask what the consequences are for organizational design.

In *Emerging Design*, process variability will be decreased and controlled through achieving commitments (action schemes) among people to eliminate process waste, which finally generates costs. Nevertheless, if the commitment (action scheme) is not an inherent condition of system's relational being, the initially constrained network will emerge from its relational history, neutralizing the constraints and returning to its culturally determined states. If we consider *viability* to be an inherent condition of the organization, then it arises from the entity-*entorno* relationship. For more detail about epistemological differences between *entorno*, surroundings, environment and media, see Malpartida and Lavanderos (2000), Lavanderos and Malpartida (2001), Lavanderos (2002). At this level of explanation, is important to highlight that the usage of the 'surroundings' concept is not equiparable to entorno, as the latter means "that which revolves around and remains" (Malpartida, 1991). By that, when we talk about an *entorno unit*, we speak of a relational unit in which the environs have a meaning only for it. Based on the above, viability as an inherent condition would be distributed in the network of relations that generates organization, so the design should be centered on understanding the configurations of relations that allow viability as a fundamental step. In this way, there would not be an "inside" or "outside" but a complex relations network reproduced on the base of its culture. This must be understood as the code producing process for bonding and belonging to the relational system.

In a relational unit, *Emerging Design* is a strategic process that achieves a coherent coupling between its relational configuration –attainability– and its material energy system –sustainability– so that it does not put its identity at risk. In this chapter we show how viability can be translated into designing or re-designing processes through the reconfiguration of possibilities of networks of relations.

SOME FOOTPRINTS

The consideration of organizational design based on universally applicable laws and common models for organizations has had a development repeated in the history of its definition, both from the contributions of psychology, sociology, anthropology, political science, economics and organizational development, as well as engineering

Table 1. Two Cognitive Sciences axes

	Regulation and Stability	**Radical Change**
Individual	Internal Representation	External Representation
Organization		

and other disciplines as diverse areas associated with administration. The emphasis on the use of the representation, as a model of knowledge, has always resulted in formulating a conceptualization of organizational phenomena as properties of some unit, whether individual or organization, in terms of its structure. As an example of this, in keeping with the findings of Burrell and Morgan (1979) postulate that organization theories can be sorted along two axes:

- Social theory, emphasizing regulation and stability versus radical change.
- Theories that rest on the subjective experience (individuals) versus those emphasizing objective social reality (structure).

If we generate a matrix of both axes and we classify them from the point of view of Cognitive Sciences, we come to the following:

This matrix can explain the "objectual" sense (subjective or objective) of paradigms that arise from the combination of both axes.

If we give organizational design a functionalist grounding so that the organization can be predicted from measurable properties in people, we will have to assume that they act rationally so that organizations can be known, understood and their behavior predicted through a positive methodology of hypothesis testing. This implies that the internal representation is shared and equivalent for all individuals and therefore to be regulated and stabilized. This is not sustainable the same as what is external –*entorno* or system– is what determines the restrictions and impediments that limit human potential. At any rate, organizational design has been based on operating from the intrinsic properties of the object, be it a single unit (person) or complex (system). To understand what we have just stated, we refer to Morgan and his *metaphors*, because using them greatly helps to understand the form one alludes to in order to explain another form that cannot be verbalized or defined directly. Morgan (1997) defines 'metaphor' as any attempt to understand one element of experience in terms of another. We will explore some of these approaching the relational as an attempt. The exercise is to understand the tenor or form of speech, the vehicle that resembles the tenor, and the grounding that is the relation by resemblance between the tenor and the vehicle.

The orthodox view in organization theory has been based predominantly on metaphors of machine and organism. For *Emerging Design* the important metaphor in organization theory is the *organism*. An organism is explained as a system with properties of centralization, self-production, with strategies to couple with the environment. We have already discussed what this means, so we will go directly to examine how far this goes within organizational design. The links between the metaphor of the organism and many of the modern theories of organizations are defined linearly. Instead of a machine, the fundamental emphasis is on the idea of *open system*, this implies that for an organization its interaction with the environment turns out to be constitutively essential as the quality of the interaction. The Hawthorne studies, the structural functionalist theories, socio-technical systems, the general systems approach, and many of the modern theories of contingency are all based on the development of the metaphor of the organism. The core placed on properties such as needs and functionality allowed focusing lines of research aimed at answering what keeps a body in good shape. As noted by Morgan "The imperative to meet the psychological needs of members of the organization, and to adopt appropriate management styles, technology, patterns of differentiation, integration and resolution conflict, and forms of control and strategic choice were all incorporated in contemporary contingency theory, which essentially load the implications of the organic metaphor to its logical conclusion". With the advent of cybernetics, alternative metaphors were created, such as loosely coupled systems and ecological population, which define organizations as adaptive systems. On the other hand, metaphors with the associated cognitive schools of representation question the basis on which the functionalist theory is built, the idea being to highlight that organizational realities are created and sustained. From this point of view, organizational realities emerge as symbolic structures governed by rules. Language is not merely descriptive and communicational, it is biological.

Clearly, all these metaphors and associated properties, as such, derive from what is a living being. They say something about a living being. This allows a direct critique in so much as a "definition of life" is generated based on properties and relationships but not on relationships even though the word should appear. Let us see how to interpret this story from the point of view of Cognitive Science legacy of self- organization.

Auto

More than forty years ago Maturana and Varela (1984), based on notions of molecular interaction, posited the idea that the basic condition of living systems is the constant production of *self* and called this "theory of autopoiesis", a term generated from the Greek roots *autos*, 'self', and *poiesis*, 'production'. After this work, the path

has remained opened for various conceptualizations, encompassing as autopoietic unities the characterization of the family, society and many other units, creating schools within family therapy, sociology and organizational design, all of which has generated more confusion than forward-movement by taking autopoiesis out of its biological context. Autopoiesis is interactive in character, not relational; this implies that what is experienced is an action framework which, when mixed in the circumstances of each organism-*entorno*, enters the relational system that produces meaning. In the case of organizations, the dimensions that enter into design are the concept of organization and the concept of *oikos* (Malpartida & Lavanderos, 2000).

Also, for Morin (1981, 1983), autopoiesis must be woven into the concept of organization, when we are speaking of the organization of "selfs"; also self-organization must also complexify itself through the necessary dependence (from both a theoretical-conceptual, and empirical-observational point of view) as a living being in relation to its environs. The latter concept is referred to *oikos*, in virtue of which the living system unit is generated in relation; thus, through this basic principle, we can finally define the organism-*entorno* as a unit (Malpartida & Lavanderos, 2000). Therefore, according to Morin, the living system emerges from the concept of eco-organization, which, integrated the above concepts, allows them being self-organized eco-systems.

However, there is some kind of objectuality basis of explanation that, somehow, always slips: strictly speaking, the living units of communication are self-organized eco-systems; on the one hand the *oikos*, but on the other hand, the self.

In this way, organizations are relations in culture in such a way that autonomy is not the primary thing: the foundation is co-autonomy and eco-dependence which, strictly speaking, is for us spontaneous. Life then is not only substance, life is relationship. Therefore, organizations as complex systems living in culture should be treated as such, as relational semiotic processes. As for any unit taken as a system, it is necessary that the organization remains stable. *Stable* here is not static, i.e., we understand stable as that feature which sustains constant changes or calibrations within a range of possibilities made possible by the structure itself of the unit in question. With this, we are asserting that changes keep the identity of the unit intact. For living systems as such, self-organized is the condition of existence, the maintaining of the organization-of-itself. From this it can be understood that if the structural relations, producers-of-selves, disappear; if a change in the producer-of-self threatens the identity of the living unit, thus changing its organization, this would end up changing the living system leading it to death. This statement functions as a metaphor for organizations.

Referring to the statement at the beginning of this chapter we can summarize that metaphors used in organizations refer indirectly to the following properties of what is living:

- **Autonomy**: That which has to do with the character of self-production of-selves.
- **Self-Reference**: The unit identifies itself in its own constituents, it bears the identification-of-itself as a unit and each of its constitutive elements (it is the autoimmune dimension).
- **Operational Closure:** This refers to conditions of the closing of the system, the containment self, not the isolation self.
- **Self-Control:** This means that if they are self-constituting they do it as a form of control or regulation-of-self.
- **Auto-Reproduction:** This deals with the biological transcendence or per-petuation of the self-same through its own production of "the-same".

With this, we show that the introduction of the selves in a higher dimension of complexity extends the notion of autopoiesis. However, taking into sole consideration the self-organizational dimension (in condition of closure) is, from the point of view of entropy, to obviate opening the system/environment interaction (von Foerster, 1976). So, in the design of "selfs" and "oikos" is centered the idea of mutual de-pendence postulated by Morin, which he calls eco-organization.

The concept of eco-organization, without invalidating that of self-organization, allows us to re-open the unity that makes up a system, including its environs, *en-torno*. In this condition, the question of open or closed should have reference to boundaries, conditions of constant permeability, not static or impermeable limits, not notions of "on/off" or triggering. By this, we mean that open or closed, autonomy or dependence, must be relativized in coming to grips with organizations.

The starting points for a study begin their task by dealing with *selfs* or *oikos*, and this depends on the criteria considered as the starting point. We believe that this is an unbreakable bond, maintaining the basic principle that whatever point of entry is acceptable. Organizations in their design must be based on the *oikos-selfs* relationship.

Oikos

Jacob (1986) asserts that for Claude Bernard "conditions for life reside neither in the body nor in the external environment, but both at once". Jacob himself notes that the body cannot be separated from its environment since "it is the whole that is transformed and modified".

Notions of selfs and *oikos* are complementary, and can be articulated in a single relational thought. Calling to mind that the organization is a systemic predicate that has to do with relationships, the relationship *in-and-with-you* is the eco-system, as long as it deals with the sense "in-it" of selfs and the sense "with-their" of *oikos.*

It was and is common, in the domain of ecology and economics, studying the relationships of dependence and exchange showing them up as energy transfer; this constitutes a way to separate the parts from the wholes, to generate hierarchies and "make discrete" the dependency relationships with the environment, which are necessarily eco-spontaneous. That is, they arise spontaneously when it is not possible to think of a living unit without an environment and/or an environment devoid of any thing or any one.

The destruction of *oikos* brings with it the destruction of selfs, since the organizational nature implied in the relationship *oikos*-selfs implicates the selfs in *oikos*. Here, the idea of destruction speaks of conditions for relational viability, the bond is inseparable. However, as complex as the unity is, it carries a hidden paradox in the fact that the organization is in its environment at the same time as it interacts with it.

The dimension of *oikos* involves, on the one hand, the organization's relationship with its environment and, on the other hand, the relationship of the organization in its environment as part of itself. Auto-eco-organization is the main feature that living systems must maintain in order to exist as living. In addition to organization-of-itself (based on autopoiesis), living systems have an organization-of-self-in-relation. From this point of view, it is necessary to change the notion of reference system, since it is no longer only the individual-organism but the organism-environment in a spontaneous organization, as we have pointed out.

For this reason, the term ecopoietic organization has been proposed for the producer organization (Lahitte, Hurrel, & Malpartida, 1988; Malpartida & Lavanderos, 2000): the organism-environment unity considered from this point of view as the reference system. In these works, it was mentioned that the term ecopoiesis has its Greek counterpart *oikopoios*, that means "making livable".

In this regard, we express the two conditions of life reported by Morin (1983) for the organism, ecopoiesis and autopoiesis and constitute the basis of eco-auto-organization. Thus, we can define living systems from a relational epistemology as eco-auto-organized and as characterized by:

- **Relationship:** Otherness in the link, constitution of identity in relation to others. Agency of what is common as common and pertinent.
- **Eco-Reference:** Identification of its own ecological relationships as organism.
- **Openness:** A unit under relationships have mutual regulatory effects, and are necessary for maintenance of the unit stood as a system and "open" in nature.
- **Eco-dependence:** Relationships have mutual regulatory effects and are necessary for maintenance of the unit.
- **Eco-spontaneity:** That which allows the system the reproduction of its constitutive relations.

BASIS OF EMERGING DESIGN: THE WARP NETWORK (AN IMAGINARY DIALOGUE)

In a dialogue, a manager asks his colleague: "How were you able to make such large improvements in productivity in so little time?" The colleague replies: "I applied a warp drive, the kind NASA is experimenting with." The first, perplexed, exclaims: "A what, a warp? And what does this have to do with NASA?"

Now, what is this all about? In 1994, the Mexican physicist Miguel Alcubierre, published in the *Journal Classical and Quantum Gravity* (1994) a mathematical model that allows traveling faster than the speed of light, that is, at superluminal speed, by performing tricks with space-time. The system envisioned by Alcubierre for space travel system in English is called "Warp Drive" (the same name used in Star Trek movie). The basic principle of this method of hypothetical superluminal travel is that, instead of accelerating an object (the spaceship) to c or near c, the very "fabric" of space-time would be curved, so that the objects would be able to travel without any movement of the ship in the usual sense of the word: rather than the ship moving, space-time is moved: curved, "warped". In terms of the organization, the ship is the decisional, with a hierarchical structure that remains invariant, and space-time are infinite networks where the organization (suppliers, customers, managers, administration, and so on) "surf".

If today the decisional speed has increased thanks to TICS, then how do we achieve the "superluminal" trip? To put it in another way, if the increasing in Internet connectivity and other notable progress have accelerated speed decision in unthinkable ways, how do we take this advantage of this acceleration?

In first place, what is needed it is not the use of the hierarchical structure to speed up decisions, but rather using the "curve" of networks. Or, to explain this in another way, the curving or deforming (warping), means using informal networks that are more flexible, accelerating them, achieving this superluminal voyage in the process of decision-making. Decisional shapes and styles curve or deform the decisional "fabric" of relational networks. Therefore, we must take advantage of these deformations, letting the casual functionality of the organization, as relations among units are not in the organization chart and become warped according to the importance of the objective and the decisional urgency to achieve it. In this way, we increase productivity by using the flexibility of relational networks, keeping only the hierarchy of responsibility: our "superluminal" trip.

The *Warp Network* is the configuration that results from the relational system, determined by the political vision of management. The latter is what defines legitimate connectivities or tautologies for communication; in other words, it is the shape of the relationship *oikos-semio-auto* organized from the semiosis of political vision.

In this design, there are no fixed limits regarding the beginning or end of organization, it reproduces itself continuously and, for that reason, the interior/exterior process of organization cannot be viewed separately (if, at this point, it is even possible to speak about that). From this point of view, it is strategic to understand the following:

A change in the command structure must take place, that is, it isn't possible to continue making semiotic flows hierarchical. This implies making the hierarchical structure coexist with a horizontal system that allows for co-autonomy (*oikos-auto*). The political vision must be configured in such a way that its reproduction by propagation subsumes the independent decision-making processes of the structure type. This does not deny the importance of structural change in the sense of making propagation horizontal.

Organizations of the twenty-first century need plasticity, being understood as the existence in the here-and-now of operating methods that are defined to operate transversely against strategic objectives, the minimum requirements having to do with transversal, not permanence. The structural basis of *Emerging Design* is the generation and concatenation of three main networks: *networks of reliability*, *availability* and *decisional agility*.

In addition, being a manager in an organization involves a particular way of being in the world, defined by the language game that a person must play to function and be recognized as a manager. Organizational concepts that shape notions of rationality, bureaucratic structure, delegation, control, etc., are management concepts that label and account for a world in which managers can act as managers. In a similar way, the concept and detailed language of leadership creates and defines the nature of leadership as an ongoing process. Seeing this in terms of the metaphor of language game, organizations are created and sustained as patterns of social activity through the use of language; they merely constitute a special form of discourse.

From Hierarchical Tautologies to Heterarchic Tautologies

We have inherited hierarchical structures which, for the agility required in today's world, are not able to produce the speed necessary for the decisional process. For this reason, a structural change is required to permit moving from a hierarchical to a heterarchical mode. Heterarchy is a system in which members are not thinking about making decisions about one thing or another, but in interacting in such a way as to generate solutions. This form of participation, by having greater freedom of action, can generate multiple ideas, recommendations and supports for a whole group to work coherently. *Heterarchies are networks of relationships, with overlapping subject-entorno units that simultaneously belong to and act in multiple networks with a whole system, a dynamic that governs and emerges precisely from the whole*

set of relationships. The hierarchy in question is not that of responsibility, but of process, one does not delegate responsibilities. For this reason, in the 21st century, hierarchy must co-exist with heterarchy. So, subsuming acceleration in the process of decision-making creates a change in velocity by moving from a hierarchical to heterarchical, and ties it to the strategic horizon of every organization. Additionally, management faces great challenges not only in organizations but also related to personnel, who, on the one hand, will become partners in the process, but also facilitators to initiate and coordinate propagation processes focused inwards.

For the launch and implementation of a process of *Emerging Design*, organizations must comply with conditions that facilitate openness to the process. One of these conditions, for example, is a leadership style that fosters communication and dialogue so as to build and strengthen a sense of belonging, cohesion, coordination and commitment into the core of operational teams. In this way they will ensure a co-commitment regarding the objectives and strategic goals of the organization.

Finally, transformation cannot be imposed, but must be co-created and assumed by all those involved. With this context as the starting point we can minimize the kinds of resistance that block and impede the implementation of these kinds of processes. Transforming or reconfiguring networks are processes that open possibilities for action previously hidden to the culture of the firm and that emerge to be constituted as value within a change of paradigms.

Emergence as Meta-Network

As we have mentioned, there are three basic networks for emergence; the concatenation of these generates a *network of networks* or *meta-network*.

We define the *reliability network* as a fabric woven together by techno-political relations. This network is a structure that aims to reproduce and propagate the political vision of management. It is characterized by its transversal character and the quality of political education that holds it together.

Availability network is defined as the fabric that connects the energy/material resources and technical staff with initiative or task defined for a particular purpose.

Finally, the *swift decisions network* is one that supports the structure of reliability through the communication and information resources.

These networks are designed from the *coherence* and *congruence* matrices, as in *Table 2*.

The current matrix achieves emergent structures that make *Emergent Design* possible by crossing the variables of coherence and congruence. These structures help to attain quality and stability through network analysis. The next matrix as in *Table 3* shows the classification of organizations according to the constituent categories of coherence and congruence:

Table 2. Matrix for coherence and congruence

Teams	Cognitive Style Team	Semiosis Team	Interactivity TEAM
Cognitive Style Team	Director Style	Network of learning and propagation	Decisional network
Semiosis Team		Network for organizational identity	Availability network
Interactivity Team			Reliability network

The numerical results obtained in the diagnosis allow establishing an adjacency matrix which reflects the structure of the different networks. *Table 4* shows the matrix of ALFA and network reliability for congruence.

Network

Once these structures are obtained it is possible to evaluate a series of indicators that permit redesigning interactions.

Political Model for Heterarchy: Preparing for Diffusion

Political criteria as a guiding concept for any organization permit aligning teams around these criteria and determining the guidelines and the reproduction of actions in order to make the management of the enterprise viable. Politics form the core concepts of governance, establish the criteria that guide actions putting into context all levels of the organization. Politics makes use of economic, social, scientific and technical criteria, as well as the image that is projected through the social communications, institutional relations and social responsibility.

The center line of the political domain is *co-autonomy*, which must be understood within the context of the organization of the 21st century as a network share in which decisions are not the result of subordination to authority and obedience but rather the result of incorporating the ability to constantly question the norms of operation as a result of everyday interaction, and where each part of the organization learns from others and take responsibility for results.

Seen this way, the organization is a system of cooperation full of overlapping –a heterarchy–, multiplicity, mixed or divergent ascendance, where all elements coexist with patterns of relationship. In such a system there is no single governing sub-system: each subsystem has some influence over others, but does not make decisions for them. Each individual agent decides for himself, but lacks the capacity to

Table 3. Constituent categories of coherence and congruence

TEAMS		TEAM STYLE		TEAM SEMIOSIS		INTERACTIVITY	
		CAUSAL	*ASSOCIATIVE*	*HIGH*	*LOW*	*TRUST*	*DISTRUST*
TEAM STYLE	*CAUSAL*	CAUSAL		HIERARCHICAL	TASK ORIENTATION	TECHNICAL EMPHASIS	BUREAUCRATIC
	ASSOCIATIVE		ASSOCIATIVE	PARTICIPATIVE	INCLUSIVE	POLITICAL EMPHASIS	REDUCED TEAM TRUST
TEAM SEMIOSIS	*HIGH*			STRATEGIC ALIGNMENT		CO-LEADERSHIP	AREA LEADERS
	LOW				TACTICAL ALIGNMENT	COLLABORATION	OPPORTUNISM
TEAM INTERACTION	*TRUST*					TRUST HIGH	
	DISTRUST						RELIABILITY LOW

make decisions concerning others. This privileges the exchange of knowledge and flexible coordination among different actors.

In this context, autonomy must be pursued responsibly through practices of transparency, collaboration and creativity. These actions enable the shift to a heterarchical structure of thought and decision, which is one the guiding principles of participation: not adding and subtracting but taking care of things instead of worrying. This form of participation generates numerous ideas, suggestions and support for all of the different teams to function in the best way possible, effectively, innovatively and with initiative and responsibility which the organization as a whole requires. Taking into account all of the above, we must migrate from:

- **The Discipline of Hierarchy to the Dialogue of Heterarchy:** Even though it may be relatively benign, hierarchical discipline tends to inhibit independent thinking, creativity and taking responsibilities, the opposite of heterarchy where there is no concentration of power and all components are indepen-

Table 4. ALFA network reliability for congruence

TEAM 0.314		TEAM STYLE 0.756		SEMIOSIS 0.228		INTERACTIVITY 0.40	
		CAUSAL	**ASSOCIATIVE**	**HIGH**	**LOW**	**TRUST**	**DISTRUST**
TEAM STYLE 0.756	CAUSAL	Directive style causal			Task oriented learning and diffusion		Bureaucratic decisions
	ASSOCIATIVE						
TEAM SEMIOSIS 0.228	HIGH						
	LOW				Identity associated to tactics		Availability Opening to opportunism
INTERACTIVITY TEAM 0.40	TRUST						
	DISTRUST						Reality for team future Low

dent. The concept of authoritative command gives way to that of influencing and interacting with freedom of thought.

- **From Objectives-Based Evaluation to Results-Based Evaluations:** The evaluation of objectives expect results independently of the culture and network experience; the result is tautological. Not so in the case of results based evaluations which are a consequence of network knowledge related to the process, one which allows flexibility and constant feedback.

- **From Uncommitted Bureaucracy to Decisional Agility:** Given current connectivity conditions that have accelerated decision-making, achieving cost competitiveness and increased productivity, this necessarily implies eliminating procedures that not only cause delay but generate malaise in and outside of the network. This means a need for logical procedures and common sense.

- **From Dependent Behavior to Co-Autonomy:** An individual or a group have sufficient autonomy to decide what to do, when and where, but are fully responsible for the results of their decision. In this system there are no "external" rules. The presence of responsibility and commitment, knowing what is going on with others, is what sets co-autonomy apart.

Expression of Co-Autonomy and Heterarchy in Permanent Questioning the Norms of Operation

By valuing cooperation more than competition, understanding that what is good for the goose is not necessarily good for the gander, questioning unceasingly the variability that occurs in production processes, all points to coming up with innovative alternatives and permanent feedback based on the techno-scientific knowledge available. This gets translated into generating communities of knowledge and learning, and the constitution of innovation as part of their core value.

From this point of view, the foundations of co-autonomy and value diffusion through cooperation networks imply generating sustainability by making transversal domains the very constitutive parts of strategy development. An example would be that of complying with legal normativity and regulations required of a business, whether by the organization's own employees or those of all stakeholder organizations and suppliers, understanding that a development strategy must be seen as a policy of interaction and reciprocity, not as one of supremacy.

The Time is Now: Value Diffusion

Network transformation through propagating the political configuration of the management model eliminates a number of constraints, that is, elements or rela-

tionships that slow decision-making which create waste in coordination, cohesion and leadership of the command structure, management. This effect can be seen in:

- Increased positive interactions among managers and assistant managers, resulting in reduced response times in strategic decisions.
- Stability and improvement of organizational climate.
- Improvement on the reproduction of strategic objectives for the network.
- Decreasing relational breakdowns.
- Decreasing inconsistency and negative relationships for decision-making in discourses.
- Decreasing negative interaction between persons.

When discussing value, we are talking initially about value in use: this implies that network generates more network, since it increases meaning in its sense of belonging and adoption. This value, expressed in increasing sustainability (coherence and congruence), enables calculating exchange value based on the potential for efficiency.

SPIRAL OF DIFFUSION

Based on *Spiral of Silence: Public opinion-our social skin* by German political scientist Elisabeth Noelle-Neumann (1977/1993), the spiral of value propagation is designed to act in reverse, and is in fact, an inverse spiral, implying that it tightens until getting close to the value proposed for coherence and congruence.

The assumptions on the *Spiral of Silence* adapted to organizations are:

- The network of relationships threatens individuals with isolation if they stray from their cognitive and semiotic styles.
- People change interactivity in coherence and congruence with continual fear of being isolated.
- This change results in continually evaluating the process of tautologies which are legitimized in the network.
- The results of this evaluation show up in public expression or concealing opinions.

On the other hand, the *spiral of value diffusion*:

- Brings to the fore fears of isolation, revealing divergent opinions and accepting them as part of the inherent condition of uncertainty.

- Considers tautologies of defense and change as a unit.
- Decreases semiotic distance increasing connectivity.
- Makes the cognitive style explicit in order to establish narrative strategies.

So, the goal is to reduce waste that shows up in management in each turn of the spiral; given the shape of the spiral, two process indicators are used: each turn in the spiral represents a process phase. There are no fixed phases, each turn determines the activities to be performed.

1. The radial dimension represents the % of reduction in gaps per phase.
2. The angular dimension represents the progress made in completing each cycle of the spiral.
   This is explicit from the connectivity indicator:

$$C = [d\,(d+f)]^{\,f}$$

where *d* is the value of congruence and *f* is the value of coherence.

In the following sections we will explore the steps required for the spiral of diffusion.

Initiation Stage

This step aims to consolidate a network base or propagator with the Management Model and the neutralization of the units that generate noise in communication for decision making. It comprises two stages:

Supervised Relational Reconfiguration

This phase develops the design of the transformation platform based on configurative therapy, and has two objectives: first, dealing with relations that generate permanent conflict and going beyond the normal tools for managing "human resources". The second, building a semiosis change which allows moving the conservation tautologies that are currently dominating the decision-making network. Using the model for the relational configuration of organizations (*Figure 1*), an alignment procedure is established, that is, organized from the insinuations or desires for change. In practice, the group builds its semiotics and this changes according to the challenges and resolutions generated during the sessions until the decisional phase is reached, where multi-criteria and multi-decisional strategies have been established to bring what is agreed upon to action.

The activation phase is the first transference intervention of the *management model* (political model), paying more attention to the relationships of greater proximity and command in relation to the General Manager. This has to do with consolidating a core nucleus of diffusion; it consists of those closer to the style and logic of the General Manager. The prototype achieved by the daily practice of the group; a "Doctrine of Autonomy and Heterarchy" is put into practice.

Diffusion Stage

As the name implies, this stage has as its objective: the intensive and extensive diffusion of the management model across the command network. The diffusion process should be understood as the total or partial reproduction of the management model of the General Manager. This stage has two phases:

Induction

The induction phase generates small cores of top level command units to whom the management model has been transferred. These nuclei will be responsible for the generalized diffusion. Once past the viability stage, a decisional model is implemented that to reproduce the prototype in their specific environments. These models are evaluated and improved according to the degree of coherence that exists in relation to the *viability test*.

Amplification

This final phase has as its objective at the co-reproduction of management model by the nuclei generated by induction within their sub-networks. We will view how this process has resulted in the case of the ALFA organization.

CASE STUDY: ORGANIZATION ALFA

As explained in the previous chapter, the investigation concerning management for coherence in ALFA organization, at the diagnostic phase, determined that the command network falls within the classification of *detached* and *low coherence* (KI = 0.49 and 0.43 respectively). The intervention aims to design and develop together –ALFA +Team + Consultants– changes in the relational network system in the domains of discourse and interactions among people there at the place where the principle causes that affect the coherence of the decisional process are located. The initial ALFA tenability state is shown in *Figure 2*.

The figure shows the initial tenability configuration for ALFA. The CEO is the bigger sphere. The managers and assistant managers follow in decreasing size in the graph. The distance between them and the CEO shows coherence value, and

*Figure 1. Model for the relational configuration of organizations*
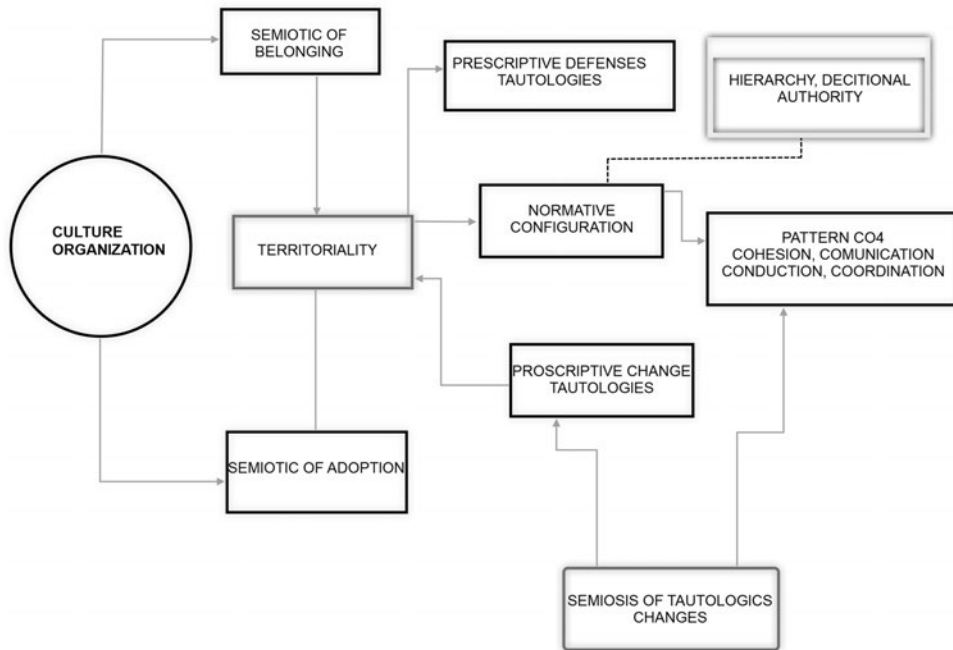
respectively, each connector between managers and assistant managers shows congruence values.

Warping the Network

This specifically implies reconfiguring the relational structures of the network (warping) and counteracting the semiotic processes that generate noise in the communication related to decision- making. The warp process is performed by constructing a postscriptive kind of narrative –what is not prohibited is allowed–, resulting from the deconstruction and displacement of the prescriptive –what is not permitted is prohibited. In this case, the cornerstone of the process is found in the generation of degrees of operational freedom based on the construction of the concept of autonomy and heterarchy. The development of the above aims to produce changes in the kind of interactivity of the group, starting with the generation of concepts of innovation. This process improves reliability, availability and agility in the network, all of which determines an increase of coherence.

The reconfiguration, or degree of warping, is determined from the spiral diffusion that was calculated with the values of coherence and congruence determined by the diagnosis, the center of which represents the strategic goal to increase the

Figure 2. Initial tenability configuration for ALFA
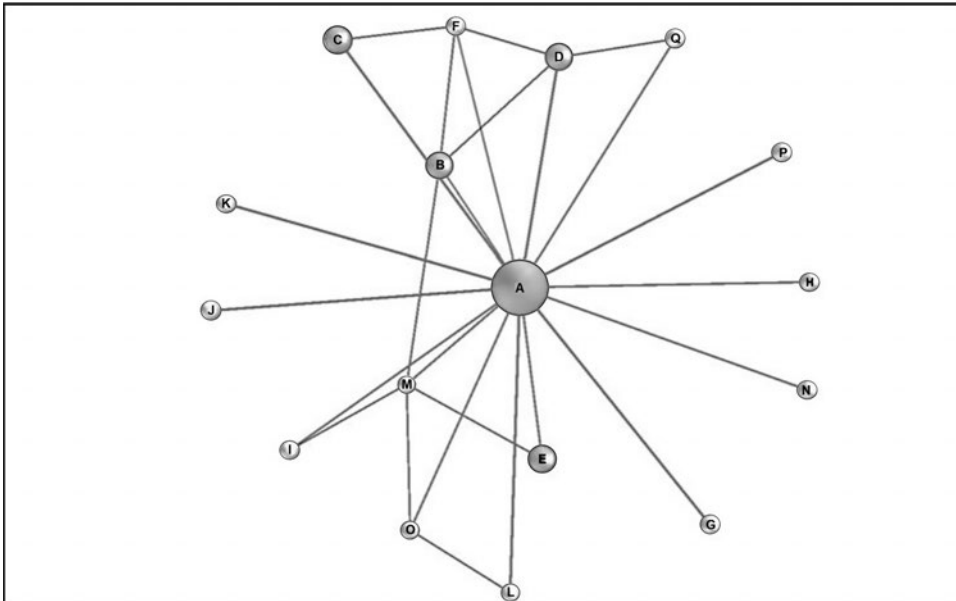
benefit to 0.7 for a 0.2 of effort, achieving an efficiency of 80%. In principle, phases 1 and 2 (relational supervised configuration and activation) should eliminate 81% of management waste as since they are responsible for neutralizing constraints and consolidating the propagators. In *Figure 3* we see the graph for ALFA's spiral diffusion, that was calculated with the values of coherence and congruence determined by the diagnosis.

The strategy for warping ALFA was an interactive meta-guideline for the concept of co-autonomy and heterarchy. *Figure 4* shows the semiotic originator resting on the four criteria for change. Based on this, the work sessions were directed towards the semiotic production of the aforementioned concepts and the improving of interactivity, in such a way as to account for the changes of state that are produced to the degree that new configurations are established and operate within the network dynamics.

Based on the previous diagnosis, the *defense tautology* was established and the *replacement tautology* was designed over the political discourse.

The defense tautology is expressed as: absence of leadership, conservative and closure rituals, restrictions to the semantic process, fuzzy membership and need of certainties. The associated feelings are confusion, mistrust and dependence.

The replacement tautology requires a specific leadership style, a permissive framework to encourage strategic, innovative actions. It is expected that this will

enable the development of productivity inherent to the group in a framework of respect, specifying a dialogue domain along with the leader, establishing a point of reference within the company, making tasks challenging.

The therapeutic procedure meant dismantling the defense tautology, which is expressed in the resistance of the group to experience the inevitability of change and fear of the unknown, at the same time as his very change adds value to network performance. The therapist uses de-configuration actions to obtain a tautology of exchange which highlights:

- One's own actions. Showing up in an interchange with other networks that results in the generation of value associated with technological innovation.
- The possible actions. Associated with the ability of the group to explore ways of communication, integrating group creativity to accommodate new requests from their own and external units.
- The viable actions. The task of the group consists in permitting dialogue with closed silos, aperture in old rituals and generation of new introductions, coping with the uncertainty of cultural change.
- The generative actions. The task is integrating a flexible, complex, autonomous and interdependent decisional culture.

The operational reconfiguration implemented a political model in the ALFA relational system. The objective was to radically improve consistency in the group of actors who generated the most waste within the network.

From the initial diagnosis of the network that suggests a high energy expenditure due to its transactional character, in interactions and detachment, at the semiotic level, we proposed a method for modeling coherence in successive series leading to configurations network, where the centralizer is placed at reasonably accessible distance, i.e., it increases proximity without affecting the complexity and reduces the cost of energy to produce alignment in the decisional process. The network operates from a common model of cognitive structure, giving priority to causal processes and association of low complexity.

The displacement of the network or change in the status of tenability reached by applying a method of successive series of configuration. This starts from a normative configuration of a prescriptive type (low permissiveness, progressive linear schemes of unidirectional action, oriented goals and deadlines), and then moves towards an *emerging exchange* associated with new operating states achieved through a strategy of verbalization, taking advantage of what is proscriptive in the context (what is not forbidden is allowed).

In the semiotic domain, the procedure of recursively configuring the network allowed a fluid control of those elements that can be defined as attractors or dis-

Figure 3. EPV model for ALFA
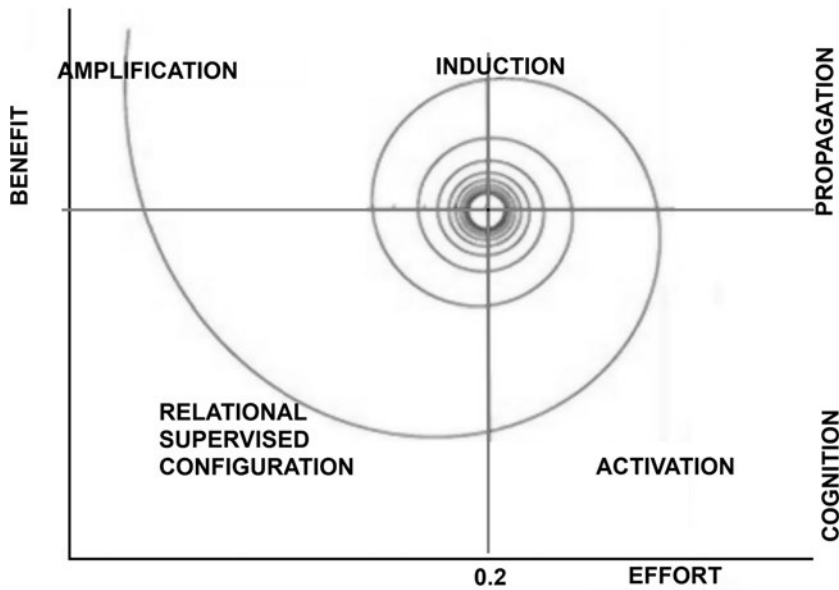
course centralizers, difficult to define, and therefore associated with anxieties and issues experienced as deficiencies. The reiteration of the configuration, through the exercise of mapping, achieves the effect of redirecting uncertainty to the point of reformulation of terms that are explanatory pathways of the attractors for the discourse to be aligned.

In the domain of interactivity, raised the proposed procedure tended to favor relationships that give structure, that is, to allow a plausible modality to group culture and integrate into that structure a decision-making that mobilizes the processes of membership and adoption.

As a base for the model we assume a normative configuration, which gives structure and constrains. This explains the difficulties of changing patterns of action, given that this is a system of restrictions and permissions, operating from the network, prescriptive in nature, i.e., it discloses itself as it transgresses. The narrative is set up as a normative tautology (an evident truth), in which innovation becomes the explanatory principle that needs to be explained by the network through group work. This caused serious problems to deal with and at times seemed to stagnate without progress. The group navigates to break the deadlock heading towards a tautology of trading, a permissive tautology.

Figure 4. Semiotic originator
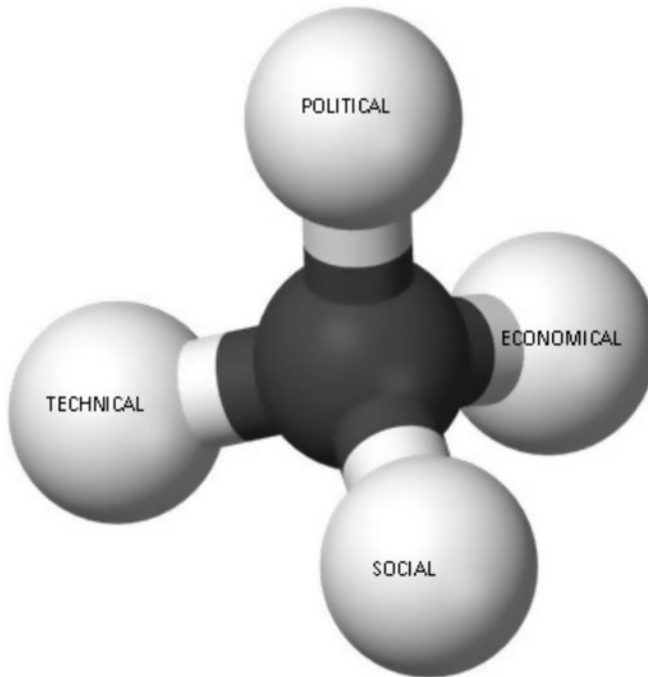
Warp Action Schemes

In practice, this process meant to operate four *warp action schemes* that account for network distorting:

Coordination

The lack shows up as a blockage to what is coming: projects, distance from the day-to-day and challenges. The group is awaiting the ability to generate a narrative based on "knowledge" and is trapped in the difficulty of operating with the definitions on the semantic level. It is expressed by confusion in the way the group operates, disorientation as related to process and routine production when faced with the need to change. The network maintains a negative scheme for action with coercive elements tending to neutrality and positive transaction (proaction).

Conduction

We have been talking about an action model structured in a prescriptive mode, of the kind "what is not permitted, is prohibited", resulting in inhibited behavior patterns of distrust related to performance. This produces a context favorable to "double binds" in which the same action produces a "damned if you do, damned if you don't". Both schemes limit the coherent action of the network in the decisional process, inasmuch as generative processes are inhibited in productivity and diminished in binding.

Cohesion

The group search has allowed highlighting the presence of restrictive regulatory frameworks, recognized as the basis and support of decision-making processes and that of those whose access is limited and conditioned. This corresponds to codes governing the closure of the network.

A partial explanation of these, in the group, is generating major changes in the mobility of the network structure since it goes against the unformulated character of these precepts while, at the same time, opening perspectives of the development of the group as a team capable of challenging constitutive elements with the objective of achieving a task all together. The group's task is to challenge the assumptions and assume the viability of a flexible, complex and autonomous decisional culture.

Communication

The search is incipient but not far from the interests of the group, which is aware of its level of interdependence with the other structures of the organization. These other instances are a source of feedback to the process of change and innovation; here has become recognized a diffuse area where expectations and fears come together. Obviously the group is developing plans of action that are preferentially targeted to the construction of internal interactivity, that is, cognition, narrative and behavior.

Starting from what has been described, the condition of ALFA Network today represents a change of values in respect to coherence and congruence. Once the tautologies and political narrative are installed in the network, noticeable changes were observed in the patterns of action. As shown in *Figure 5*, indicators of coherence and congruence increased of their value x to y, y from f to g respectively, which was reflected in increased decisional speed, improved organizational climate and networking capability. Note the changes in coherence (distance from the manager and assistant manager to the CEO) and the increase in the congruence (new connection between the manager and assistant manager).

AT THE END OF THE DAY

Emergent Design or *Warp Network* is fundamentally a relational process developed from co- autonomy upon a heterarchical operational structure. The main difference with previous models is we can warp a network from cognitive styles, semiosis and trust. That is, the connectivity presented is derived from a notion of intangibles.

We could summarize by saying that organizational design needs, fundamentally, plasticity and permanent configuration. This is achieved from three conditions: Affection, political education and technical capacity. Any structure that overlooks these conditions will pay a high price in order to survive its own viability.

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Figure 5. Final tenability of ALFA network
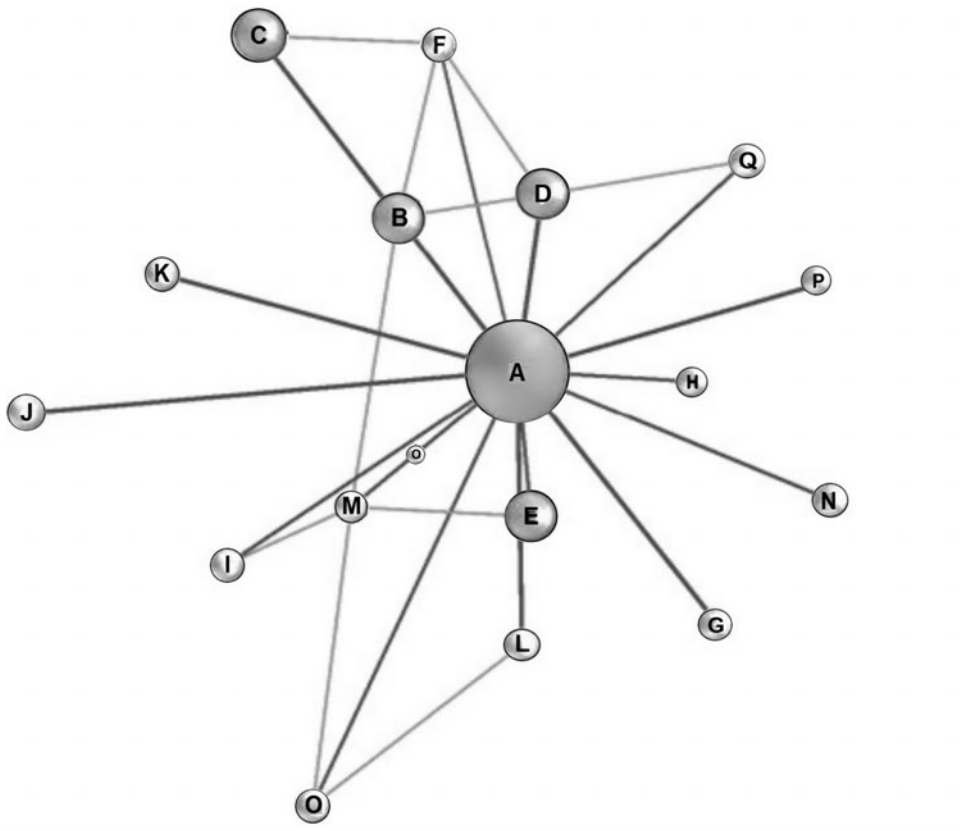
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KEY TERMS AND DEFINITIONS

Aesthetics: A process for generating form based on affective configurations of territoriality (agency and belonging).

Alcubierre Drive: Rather than exceeding the speed of light within its local frame of reference, a spacecraft would traverse distances by contracting space in front of it and by expanding space behind it, resulting in effective *faster-than-light* travel.

Heterarchical: A system of cooperation full of overlapping, multiplicity, with mixed or divergent ascendance where all elements coexist with patterns of relationship.

Meta Network: The concatenation of a reliability network, an availability network and a swift decisions network generates a *Network of networks* or *Meta-Network*.

Relational Design: Models in which we can warp a network from cognitive styles, semiosis and trust.

Spiral propagation: The curve generated by the relationship between the percentage of reduction in gaps (coherence and congruence) per phase and the progress made each cycle.

Warping Network: A relational process developed from co-autonomy upon a heterarchical operational structure.

Chapter 9

Why Not?
New Thinking for an Emergent Networked World

ABSTRACT

In this chapter, the authors show how leading companies are introducing new business logics and how innovations are produced through new ways of design thinking. They show how the elimination of constraints triggers acceleration and how this must be dealt with through new paradigms. The authors show the migration from cause and effect thinking to emergent design, from the world of tangible assets to that of emergent dialogue in relational networks. They show that in a world of transformation being successful means managing both the matter-of-fact world that we have inherited and the visionary world as it emerges: one a world of things, the other a world of competences. The authors show why the question is no longer "Why?" five times over, but "Why not?"

INTRODUCTION

In the process of migration from physical assets to intellectual capital (accounting liabilities), neither DOW, Procter and Gamble nor CEMEX have abandoned their legacy mechanistic worlds of value creation. They have, however, shifted the balance of value producing activities as they have evolved from products and services

to relationships and a more interactive customer experience. This migration is accomplished in a significant way through business design, including designing and creating entirely new business models.

In his deeply insightful book, *The Design of Business*, Roger Martin (2009) has made an important contribution towards thinking about business sustainability and competitiveness by introducing the notions of reliability –based on analytical thinking– as opposed to design thinking –based on intuition–, the latter based on a new kind of thinking required by a new kind of world. Martin makes reference to some of the "logical" distinctions introduced by the brilliant, although not well-known, American philosopher, Charles Sanders Peirce, specifically his introduction of *abductive* reasoning as opposed to the well-established and historically recognized concepts of deduction and induction.

Martin might have made the case that Conan Doyle's Sherlock Holmes never solved a case through "brilliant deduction". Each and every case was solved through the use of abductive reasoning. Martin introduces the *knowledge funnel* as a way of moving from the world of "mystery", through heuristics to algorithms, seen by Martin as "performance guarantees". Mihnea Moldoveanu, as Martin sites, sees hunches as "prelinguistic intuitions" and heuristics as "open-ended prompts" and "explicit" since they bring intuitions to language. These then lead to algorithms which are seen as "certified production processes."

It may be clearer to the reader to view abductive reasoning as something more akin to "pattern recognition" and this might save us from the increasingly applied use of heuristics or "rules of thumb" in the wrong way, a way in which they turn into a two-edged sword. Rules of thumb can often be associated with established patterns (recognitions themselves) that instead of opening the way to pattern recognition serve rather to impose a pattern based on accumulated experience. Rules of thumb often represent a frozen common sense or pre-established pattern. Abduction, on the other hand, tries to make sense of things by entertaining and sorting out a vast array of associations, a kind of jigsaw puzzle for the five senses which invites playing around with the past, the present and possible futures, reducing little by little the degrees of separation in what is "observed" (smelt, felt, seen, heard, thought, and so on) until a pattern emerges: an "Aha!" moment, a moment in which things finally make sense. Recent studies in neuro-science disclose the networked associations of complex brain activity that make it clear that human survival owes more to the logical process of abduction than to those of deduction and induction.

The "balancing act" between reliability and design thinking that Martin insists upon, has hidden demons that we must bring to the surface and into the light since they cannot be dealt with unless they become better grounded in the historical evolution of the world, since the legacy that resides in the notion of "reliability" has deep roots as we have seen in other chapters. A broader understanding of the balancing

act can be seen in the *EvoDevo* world –as portrayed by John Smart (2008)–. As we migrate from one of these worlds to the next, logic may do a complete flip and we may find ourselves in an Amazon.com world, an eBay world, or a Patrimonio Hoy type world, entirely or in large part devoid of material processes, although networked with partners that do move "things" as well as bits and bytes. In the world where traditional "assets" create value, the "Devo" world, the balance may swing way to the left. This is a shrinking world as globalization and network integration eliminate boundaries and constraints. Balancing is more necessary in that middle world of *both/and*. There are worlds, however, increasing in number and magnitude, the "Evo" world, composed entirely of intellectual capital and networking, *liabilities* that, in the old world of traditional accounting, destroy capital. In this world, *reliability* is virtually non-existent and value is produced by *net work*. One thing is to mine ore efficiently, another thing is to understand the deposit and design the most profitable and sustainable extraction process, ensuring, at the same time, the most beneficial life of the mine, balancing the interests of all stakeholders. The latter is where greater magnitudes of value are added.

Behind the notion of reliability, articulated so coherently by Martin, is the pervasive (often perverse) common sense of *shareholder value* which has become embedded in a state of extreme unawareness of its own embodiment of assumptions that tangible assets create value, and that, as such, the growth of value should be predictable, and these predictions can and should be validated quarterly. In this world of "exploitation" versus "exploration" the former might be characterized as the world of investment capital, the latter of venture capital, one married to legacy assumptions about business, the other flirting with the emerging future.

The mention by Martin of Charles Sanders Peirce signals a shift in logic to match the shift in common sense from the mechanistic world of bits, bytes and things that accumulate value as they pass through material or information processes to possible desired worlds that emerge through speculative conversations about possibilities and actions among agents in a network, one world characterized by deduction and induction (Big Data/Analytics), the other world by the simple question: *why not?*

We have seen how organizations have evolved through different historical epochs and how the creation of value has migrated from manufacture to mindfacture, from machines to net work involving ever more coordination, collaboration and applied knowledge competences, often virtually, supported by information and communications technologies. This chapter will examine the inherited framework and its logic, and then contrast it to the framework of the visionary world of desired futures and its intrinsic logic. It will then elaborate in considerable detail a business case involving the transition from the former common sense to the latter, and demonstrate how "waste" is seen and managed in these logically different worlds. Our intention

is to disclose what is behind Martin's view of business design and the balancing of these opposing worlds as they struggle to assert themselves within a business, creating tensions that threaten the coherency and sustainability of the organization.

Our inherited logic does not show up until it is confronted by the need to change. It does not show up because it is automatic. It becomes necessary for us to speak about change, understand the essential components and then to extrapolate the logic behind change, that which is quantitative and that which is qualitative. The former seen more as continuous improvement, the latter in terms of "creative destruction" or disruptive change.

BACKGROUND

Accelerated Change

We have mentioned the accelerated rate of change taking place at a global level due to the explosion of advances in technology, especially information and communications technology, and the elimination of barriers and constraints, as witnessed by the increasing number of trade agreements, the European Union, the emergence of China as a world player, etc. The world is accelerating and is imposing its pace on today's enterprises, often causing a state of overwhelm. The core competences for today's enterprise are heavily tilted towards agility, flexibility, integration and innovation (Ashkenas, Ulrich, Jick, & Kerr, 1995). The demands for change are unprecedented and more and more organizations and executives are concerned with the need for double-loop learning, communities of practice, process design and re-design, cultural change techniques, participative leadership styles, innovation, "bottom-up" interventions and styles more suited to make coordinated responses to chaotic environments. Successful organizations must have the flexibility to adapt rapidly to changes in their environment or be faced with failure.

Today's environment is a far cry from the business environment of the last half of the 20th century, where strategic planners sought to position their companies with inflections that could produce advantages for a period of at least five years. The gap between the specialized view of the strategists and the practical need to internalize required changes helped popularize a discipline called *Organization Development*. Throughout the sixties and seventies, OD facilitators worked with business functions and inter-functional groups to facilitate team building efforts and the translation of authoritative declarations into shared concerns over how the business should achieve strategic positioning in a cooperative and coherent way. Throughout these decades there was an internal legacy reaction to the "touchy, feely" aspects of OD

as they strove to create intimacy and trust among team members, an effort viewed by functional overlords as a waste of time that merely interfered with task performance and had nothing to do with meeting the budget. By the end of the seventies, many companies had decentralized their planning efforts and were striving to get more input from the trenches.

During the 1980's the business environment changed dramatically for many companies. International agreements on tariffs and trade, privatization of state-owned companies, the consolidation of industries, the de-regulation of many industries and the rapid development of powerful technological enablers, were some of the factors that introduced rapidly shifting competitive changes into the world of business and forced companies to respond rapidly to an evolving environment; either that, or risk going out of business. Nothing changed so much, however, as the ability of the customer to dictate increasingly the terms of the business relationship: the customer was becoming king. Business planning became even more focused on getting more involvement from those employees and executives closest to the market who were now expected to take substantial responsibility for competitive initiatives. While Organization Development was still struggling to make its point, process engineering was making the point that process effectiveness and efficiency depended on how well a process was designed for process and sub-process team coordination and collaboration, and that such interventions as team-building somehow made sense.

The numbers of contact points through which we enter directly into communication with our customers may be few or many, but they are almost inevitably dynamic. The exploitation of these contact points in order to understand our customers' concerns is vital. They usually take place at the business unit level and are often the best lens to assess both customer concerns and competitor offers. The number and quality of these contact points and the way they are managed can actually open the way to the creation and offer of value propositions that create competitive advantages for our company and substantial profits for our customer, but sometimes these contact points are no more than floodgates for customer recriminations and complaints. This is sometimes viewed as the necessity for "fix-its" but for a customer-centric networked organization customer complaints unveil customer concerns, gold to be mined.

It is during the 80's that TQM and re-engineering come to the fore, aiming at the elimination of quality as a differentiator in the marketplace by reducing defects to near zero, eliminating other relevant variations and streamlining processes to reduce costs. Japanese industry begins to make an important quality differentiation and to take an increasing share of the market. In today's automotive industry, there are no longer any clear cut quality advantages, and the performance of mass produced automobiles made in Korea, a late entrant, compete in quality with automobiles produced by their Japanese, European or North American rivals, differs little from

that of any other historically competent producer of motor vehicles. When quality is no longer a differentiator, customers are attracted to the company that listens best and responds with the most valuable services and relationships.

In the press, we hear stories of companies that are making all the "right moves" advocated by the current common sense total quality, business process re-engineering, learning teams and so on, but are nevertheless in financial trouble. At least one company bankrupted itself after pursuing, and winning, the Malcolm Baldridge award for quality and customer service. These kinds of efforts are still important but they are not enough. What is going on?

MAIN FOCUS: EMERGENT ENTERPRISE

Companies in today's world of globalization must cope with unprecedented change and those companies that have not yet cleaned house have a lot of catching up to do. At the same time, we are seeing that there are different ways of responding to change, some more successful than others. Focusing exclusively on business process mapping and redesign does not by itself produce self-sustaining flexibility for companies. It must be integrated to a powerful interpretation of the identity of the business, a value proposition that supports the interpretation and exquisite coordination throughout the network, end-to-end.

Good companies take for granted that they need to be flexible, to change continuously. They now recognize that they cannot produce lasting and productive change by grafting onto a company the latest effectiveness models. Neither is the answer to be found in the redesign of information systems, although this may play a key role. We believe that in the end, business is a human phenomenon. And just as we focus on how people coordinate their actions through *net work* to invent a new discipline of management, so we look to human phenomena of change as the foundation of a new discipline of permanent organizational flexibility. Change has always implied a system/environment relationship. This being the case, change must be observed in measurable differences in practices, otherwise it is not change; these practices disclose themselves in relationships.

For people, change is usually not instantaneous. Change is an evolutionary process. Over time, people build up their own personal style for dealing with the world and other people. From past experience and immersion in and exposure to cultural, professional and other traditions, they embody a certain *common sense* composed of a set of assessments and interpretations of how to cope with the world and what to expect in the future (an informal and unstructured Big Data/Analytics residing in the brain). Companies also develop a style, inheriting traditions and practices, ways of seeing and doing things from their industries and their surrounding cultures.

Successful, healthy people are always learning and open to new ways of seeing the world. Sometimes, however, both companies and people have to deal with novelty and emergencies. Emergent change requires a rapid shift in corporate and personal style. Agility in today's competitive environment is a must but agility often depends on flexibility.

In a sense, the inherited and embodied past can be a great enemy of this kind of flexibility. If a company does not recognize that it has a style inherited from the past, if it takes its own interpretation of the world completely for granted, it will become static and rigid. We have seen the tenacious character of hierarchical functional organizations passed on for thousands of years, originally designed for situations of limited complexity in which specialization is concentrated and applied in sequential steps, a world vastly different from that of today. We believe that lack of flexibility is one of the principal difficulties facing organizations today. It is especially a concern for large corporations that have been successful until recently. The success itself can be blinding, leading the company to feel it has "found the secret" to growth. This is reinforced by the use of Big Data and Analytics that seem to show that both the future and how to get there can be predicted, quantified and measured, setting the stage for quarterly expectations demanded by shareholders. This produces a rigidity to change and rigid systems. Rigid systems, however, get knocked out of the fitness landscape when the environment changes. They are rapidly displaced by flexible marginal competitors lurking in the shadows.

We have pondered in detail the question of legacies. Conversations about *legacy systems* were especially popular around the turn of the millennium; even today no one really knows the total cost of patching up legacy information systems in time for Y2K. All companies have legacy systems and spend a lot of time and money building on them and attempting to integrate them with newer systems. This can often be maddening, but legacy systems are tenacious, and in most cases, we either cannot get rid of them or get along without them. It is easy to talk about a company's legacy systems. They show up every time there is a breakdown and we can pinpoint their rigidities quite easily. They are part of our past, a necessary part of our present and many of them will likely accompany us in the future, whether we like it or not. But not all legacies are bad since they include many core competencies that can be reconfigured in a vast array of ways to produce new value. *Creative destruction* does not begin from scratch.

We have mentioned agility, flexibility and integration as core competencies. In order to increase agility, it becomes necessary to acquire more flexibility. To acquire greater flexibility, increased integration is often required. This is an iterative process. Increased agility, flexibility and integration all require innovation, and for organizations to build a permanent capacity for innovation they must become sensitive to the particular style they already have and the legacies they are tied to. This is not

easy since companies and people are usually poor observers of how they show up in the day-to-day world. Our interpretations about doing things are embodied in our traditions and show up in our offers, our relationships with customers, the kinds of processes we have and the methodologies we have been using to configure them. They also disclosed in our individual and company styles.

Changing a business interpretation from weak to powerful, or creating a totally new interpretation, will almost certainly require a change in practices, styles, relationships, and value propositions to our customers, the salience and worth of business processes needed to execute our value propositions as well as the way in which these processes are configured and designed (Keen, 1997). All of these changes must rest on the creation of a new sensibility and flexibility.

Evolution can be viewed as something that occurs within fitness landscapes, although fitness landscapes are like never-ending concentric circles. In the face of environmental change, the systems that dominated the previous central landscape become less "fit" to survive than formerly less dominant systems that held their own at the margins. This means that flexibility exists in a number of our marginal styles, practices, processes and systems. When environmental change threatens the dominant players within a fitness landscape, some marginal systems find themselves more fit to compete and to occupy the new landscape. We are often insensitive to these marginal practices, processes, systems, styles and traditions as a resource for innovation and flexibility and continue to look for answers in our legacy way of thinking and acting.

The entire set of constituents in what has been inappropriately called "the value chain", whether customers, vendors, allies, and other stakeholders, possesses a style and legacy different from that of our own. However, even though organizations may have a single dominant style, individual people and groups in the company have their own "marginal" styles that can become more important as circumstances change. To remain flexible, a company will pay close attention to these marginal practices, as well as developments in other companies in its industry, in related industries, and in relevant professional fields. This could be argued as well in terms of left-brain/right-brain theory.

This perspective –that a company has a legacy style and organizational change is an emergent process– affects how we mobilize ourselves for innovation in all aspects of the company, from training and hiring practices, to business process design/redesign, to product development decisions and the formation of strategic alliances. Training and hiring not only bring new skills to a company, they put the company in touch with new styles, new resources. Competitive interpretations of the value proposition and their concomitant business processes not only satisfy customers,

they also articulate the company's style from moment to moment. Process design, new offers and new alliances can introduce new practices and shift the history not only of the company, but of its industry as well.

Seeing a company as an evolving enterprise can also shift how we interpret the role of information technology in organizations. More and more we are beginning to interpret computers as communications tools rather than calculators. As people begin to manage the developing traditions of their organizations, they will find that information technology can play a strong supporting role, sometimes create competitive advantages. For example, information tools can be developed that help customer representatives, quality staff and development teams work as a unit to turn the complaints and requests of customers into new products and services. And as our companies become more interconnected, and online data services become more commonplace, more and more of our listening to other styles and traditions takes place over computer networks.

Information technology can also connect us to our customers and suppliers in unique ways, often creating the possibility for the supplier of detecting a customer need and addressing it even before the customer himself has seen it. More and more companies are sharing information systems with customers and suppliers. Dell's suppliers, for example, have direct access to data bases that allow them to anticipate component consumption, especially helpful for Dell direct sales. The components, once entering the production process, trigger the purchase order and trigger the payment at the same time. This relationship, supported by information technology, eliminates much of the cost of purchasing and the management of receivables and reduces the need for intermediate warehousing, creating additional profits for both partners. Newell Corporation operates in much the same way with Wal-Mart, accessing inventories store by store, and, through its direct IT link to Wal-Mart, has enough knowledge about Wal-Mart's business to create new offers to Wal-Mart before being requested, contributing to the Wal-Mart's success in unexpected ways. It is important to note that while networking plays an important role in both of these cases, it is more focused on operational and administrative efficiencies and business effectiveness than strategic in nature. For Wal-Mart, Newell helps avoid stock-outs and this, in turn, increases sales for both. In the case of Dell, it helps achieve negative working capital and delivery promises, achieves administrate efficiencies, and helps suppliers manage their planning and logistics more effectively and efficiently, reducing costs for both.

Strategic applications of information technology will continue to be the backbone of coordination in which a company continually reinvents itself, whether in the day-to-day or in creating more disruptive futures.

Coming to Terms with Our Past

We identify three different ways in which our historical legacies constitute our world. We will refer to these as "fitness landscapes", "mind-sets" and "styles". The first way, our landscapes, or surroundings, are the most encompassing, the most taken for granted, and, consequently, the most invisible.

We inherit many of our concerns about the future and predisposition for thinking, feeling and acting from our existence in a particular culture, country, and historical age. For example, we are now entering an age in which our world is confronting the effects of technology on the environment, whether global warming, submerged mountains of plastic floating in the sea, depletion of non-renewable resources and disasters such as Chernobyl and Fukushima. This is becoming an inescapable concern for all of us. Our children are being raised in households using computers as a normal part of everyday life and manipulate handhelds with blazing speed. Often homework and reading assignments are assigned through web sites. Oftentimes the moods of chaotic change and restlessness that many of us feel are not exclusively a derivative of our individual history; rather they are inherited from the general moods of our historical epoch.

Fitness Landscapes

What we call fitness landscapes (or surroundings) is simply how the world we find ourselves in really is for us. It does not "show up" to us as a particular interpretation. Rather, we take all the interpretations, moods and practices of our landscape for granted. But if we study the histories of other cultures and our own past history, we can see clearly that people have not always lived in the same world that we take to be the objective truth. Sometimes world events rapidly change our landscapes, such things as wars or economic depressions. More often than not, landscapes change slowly and there can be moments of creeping crises in which the practices of an old landscape simply no longer work and new practices and traditions arise. We are living such a moment right now.

A landscape shifts when our most basic understanding of ourselves, our business thinking, our competitive environment, and often the way the local or global social fabric fits together is called into question. It is also a time in which entire industries can rapidly arise and disappear, a time of great shifts in power, a time of great loss and enormous opportunity. Often, these shifts are paradigm shifts in which logics are dramatically changed, even shifted 180°. The shift from manufacture to mindfacture is one of these.

What is it that makes a shift of landscapes survivable? The most important aspect is that a landscape is not a monolithic, universal set of interpretations and social

practices that all people in a culture share in the same way. Landscapes can shift because inside of any one landscape, there are always people at the margins of the landscape who have unusual interpretations and practices.

When there is a shift in the landscape, the most viable "marginal" practices become more central, even focal. For example, instead of the marginal "conservation of nature" movements of the sixties and seventies, opposed to common and widespread utilitarian technological and industrial practices, we have an increasingly dominant environmental movement that is beginning to change entirely how the industrial world sees man's relationship to nature, seen not only in organizations such as Greenpeace but in recycling and other similar movements. The presence of different variations and traditions in a landscape what we call different *mind-sets* is a kind of "historical resource" for evolution and change in our common understanding of ourselves and our relationships to others. There are many likenesses to the Darwinian view of evolution.

Mind-Sets

What we refer to as a *mind-sets* is a kind of pool or string of practices that together constitute an interpretation of some aspect of the world revealed to us by the landscape we share. The most familiar examples of mind-sets are the professions. We readily recognize chemists, engineers, computer specialists, doctors, lawyers, and so on as people who share common moods and attitudes, common skills and a common orientation to the world. With a profession, such as chemistry, it is easier to see the historical nature of human life. For even though we usually interpret a chemist as a person who has acquired certain information about the world, we still recognize to a greater or lesser degree that chemistry is an established set of practices that we must learn before we can begin to "think like a chemist". Bruno Latour (1986) carries his "anthropological observer" skills into a laboratory to observe the details of scientific activity: "…the ways in which scientists produce order from disorder…". Unless we have participated in this tradition, there are certain kinds of actions we cannot perform and assessments about the future that we simply cannot make. And even within these mind-sets there are marginal mind-sets. Many discoveries in science are the product of marginal ways of looking at things from within a given professional mind-set.

Mind-sets can be good or bad. To the degree that they enable us to move around in different contexts and carry a useful and productive shared understanding and common sense, they are good. To the degree, however, that they keep us from seeing even more valuable possibilities and make us rigid to the survival value of change, they can be deadly.

The rock bottom of history and evolution for people is that we each inherit the different practices of the landscapes and mind-sets to which we have been exposed. And when we come together for some common concern, we bring those practices together to develop a new landscape.

These are important distinctions because they help us to rid ourselves of the notion that there is an objective reality, and that change and innovation happen when we gain more knowledge or solve problems. *We can see that before we can innovate, we need to be sensitive to the history and tradition that makes us see the world in a certain way, and to be aware that our inherited views, if not challenged and changed, can sometimes lead to dangerous rigidities. We must understand our own common sense.*

For these distinctions to become operational, we as people and companies must design our own history. For this, we need a way to observe and *intervene* in landscapes and mind-sets that exist in the minds, bodies and conversations of people, functions and businesses. This is why the notion of *style* is so important.

Style

Landscapes and mind-sets are human phenomena. They are embodied in people and so they are concrete in one sense. We can put our finger on them. But in another sense, they are social abstractions that we describe with phrases such as "ways of looking at things" and "collection of practices". Style, however, is a very different kind of distinction. Style is a shared assessment that accounts for our identity in the eyes of others. Our style is how others see us. Our style is pervasive. We are in it all the time but seldom aware of it explicitly. It is "like snow for polar bears" as might be seen by some variation of a Latour type "anthropological observer". Fortunately, we are not polar bears, and we can learn to become aware of our styles, cultivate them and shift our identity in the eyes of others.

We can understand *style* better, perhaps, by using a literary analogy. Characters in novels draw us in when there is a consistent pattern that pervades all of their actions and makes sense of their relationships to other characters. The blunt determined detective, for example, is curt and sarcastic, oriented to results and not concerned about whose toes he steps on or even an extreme bending of the rules. This style of a person with a single focus and driven by obsession is, more often than not, a hidden prerequisite for solving the case, and shows up in a number of incidents, creating unpleasant nicknames, carting off files for homework, showing up late for meetings, sarcastic remarks to superior officers, and being a kind of jerk in any number of ways. When the detective leaves his colleagues or lady friends, waiting for him for an agreed upon late evening drink, so that he can check out a lead, his response is an insincere apology or lame excuse. The density of the style creates an identity that

allows the reader to anticipate the breakdowns with colleagues, authorities, people interviewed and other key characters and make predictions about breakdowns that are likely to happen and about the tensions that will be created as he forces himself to solve the case, plenty of friction caused by the bull in the china closet. Style links the individual embodiment of social practices and the larger social world of roles and identities. Processes involving cultural change invite employees to ask others about how they see their individual styles and that of the organization, what that style produces in terms of opportunities and/or constraints.

Style is all encompassing. We don't usually say that a person is a Quixote or a Lone Ranger. We attribute styles to people on the basis of very brief observations; each behavior is like a reflection of the whole style. We can identify several aspects of style that we observe in establishing relationships.

Style has been defined as an individual's relatively consistent inclinations and preferences across contexts. A "sweet talker" would have a style that we might characterize as "cordial hypocrisy", he or she would have a pleasant way of dealing with others, move carefully with their moods, comforting or agreeing with them to gain their confidence and ever so gently manipulate or influence a desired action or result. Style, like a vacuum cleaner, draws in practices from the varied social ambient with which the person has interacted. Useful practices are assimilated or tailored to make the style more robust. The home printer industry shares a common style, for example, making customers captives to their own ink supply, often giving the container a special fit so that it will not function with generic products. This historical tradition has not been lost on companies such as Microsoft.

Another aspect of style we may refer to as *mood music*. Scottish author Ian Rankin's character, John Rebus, is an obsessed hard-nosed detective whose only interest resides in solving the case, especially if it means dealing with some kind of background injustice. Rebus is a jerk, a bull in a china closet, whose hobbies consist in marginal tastes in music, usually on the dark side, and drinking, alone if possible, in back alley pubs. He is admired by a few close colleagues who empathize with his iron resolution to solve cases, even if it means stepping on a thousand toes, since they appreciate his determination to override bureaucracy even at the risk of his own career and his basic honesty and integrity which does not protect him from damaging anyone who gets too close through his clumsy actions and lack of social awareness (or the lack of respect for the same). The Rebus style constrains the availability of moods. There is no peace of mind, no happiness, no tranquility nor compromise.

Yet another aspect of style has to do with the automatic assessments which styles produce in us and trigger the social characterizations we make based on these assessments. We know that John Wayne characters are solid as a rock but often lack subtlety, social grace or coziness. We know that Bat Man is committed to social order and justice but has a neurotic and dangerous down-side. We know that the

"sweet talker" is good at making deals but is insincere and lacking in integrity. We make these same assessments in the styles we attribute to Iran, Russia, Mexico, France and Brazil or in the attributes we make about ethnic groups, revealed often in ethnic jokes.

Style, as we have seen, is at the core of our identity in the eyes of others. It is behind the curtains as we are on stage and has a lot to do with how we will be perceived, how credible we will appear, whether we can be trusted as colleagues, partners or allies. It will determine whether conversations are possible or not, within what frameworks, with what degree of difficulty and even how they should be structured. Conversations, in some cases, may even require mediation.

Organizations as well are perceived, in the eyes of internal and external stakeholders, as moving in a certain kind of style. This identity predetermines, often to a great extent, the kind of relationship others would like to have or not have with that particular organization. Most if not all companies also inherit a style that characterizes their industry. The mining industry has a style, often ill perceived by nearby communities, sometimes a lack of credibility with environmental agencies who see the industry sometimes as cognitively blind to certain deep concerns and unable to shake historical legacies. They are often seen as transactional in their dealings and unable to see themselves for what they are, essentially an elongation of industrial era thinking. The petroleum industry also shares a style that often shows up at the pump and recycling bins.

Any organization that desires to network successfully with stakeholders must have the ability and desire to perceive and understand its own style and understand the opportunities and constraints posed by that style in leveraging its competences to strengthen itself, given the competitive environment in the fitness landscape in which it participates and in the mind-set of the industry or group. Nokia and Blackberry have demonstrated how shareholder fixation can become a vice and trigger the emergence of new styles that blind initial vision. To be able to change a style, individual or organizational, the individual or the organization must first observe it and understand its strengths and weaknesses. Identities can be changed when styles are re-configured or invented anew.

Change

We have talked about *fitness landscapes* and how they co-evolve creating a kind of intangible DNA that shows up in their ongoing wake creating new realities, imprinted with historical traits and characteristics. When we look at the *now world* that is creating the wake, it is a formidable evolved *fact*, programmed to keep on moving, renewing itself, doing what it knows how to do even if that means chewing up and spitting out rainforests, burning up fossil fuels, storing nuclear waste until

it becomes a problem too big to ignore, turning the ocean into a plastic cesspool, contaminating the atmosphere and creating global warming. The *now world* is in motion. It doesn't think too much about what the arrival point should look like, but assumes that there must be something behind that need to keep moving ahead, because moving behind does not fit into the built-in logic of the machine.

We will call this world the Matter-of-Fact world, the world of the here and now composed of facts: it is real. Changes within this world do not change it in any essential way, they refine the machine. As this Matter-of-Fact world chugs forward, it sometimes breaks down or runs into constraints and asks itself *why?*, even five times. The *why* question is necessary to discover what it is that the past has not foreseen, so that it can adjust the machine to take into account the breakdown, making it more efficient and effective as it chugs off into some kind of future. This world is practical and pragmatic.

We know, however, that there are other kinds of changes, often called "disruptive", that turn the Matter-of-Fact world on its head, at least in some aspects or domains. They disrupt part of the Matter-of-Fact world but have not, as yet, derailed the real machine with its real monster engine. This Matter-of-Fact world lives in all of us, in our culture, our style, our mind-sets and artifacts, often invisible despite its enormity, it lives in the obviousness of our everyday lives. The Matter-of-Fact world copes with breakdowns, not always oriented towards outcomes (Lazarus,1984).

Disruptive changes are not changes *in* the world, but changes *of* the world. They reveal new possible worlds. They are the still absent worlds whose possibilities are only revealed by the question *why not?* For lack of a better word, we will refer to this world as the Visionary World, although the word "visionary" is tainted by the Matter-of-Fact World as a World of Wistful Thinking. The Matter-of-Fact World cannot see it any other way until the Visionary World emerges disruptively into the world of facticity. How could a light bulb reconcile itself with the possibility of a laser, Newtonian with Quantum physics? Visionary changes do not improve the existing style, they disrupt and reinvent it.

Let us now look into these two worlds, understand their underlying logic and the tensions produced by the increased tension facing the Matter-of-Fact world as global acceleration and the explosion of technological innovations, increasingly threaten the dominant paradigm. We will correlate the new visionary logic with the abductive reasoning of Charles Sanders Peirce, mentioned by Martin and draw parallels between his vision of the world of *exploitation* (Matter-of-Fact) and the world of *exploration* (Visionary). We will then review a CEMEX case currently in use in many MBA programs around the world to illustrate the power of visionary logic.

The Matter-of-Fact World

Business as Usual

The everyday world is a world of recurrence, the Matter-of-Fact World, Martin's world of exploitation, a world of reliability, the goal of which "…is to produce consistent, predictable outcomes." (Martin, 2009, p. 37). Business as usual means following standard practices, protocols and procedures. Reliability focuses on variation and seeks to drive it out of the process so that process outcomes will be the same, time after time. In the business world, this means sticking to our knitting, producing standard offers, products and services that meet customer expectations now and forever.

What is central to seeing these everyday tasks and activities as part of our present fitness landscape is recognizing that all of this activity happens inside of a single understanding of the world that is taken for granted. In the everyday world of business as usual people are acting habitually around practices, protocols and procedures. Lazarus (1984) discusses coping as a process having three main features: "stress, appraisal and coping" (pp. 142-143), concerning what the person really does versus would do or should do, the specific context and dealing with change. Individuals and organizations find themselves coping with everything that may interfere with business as usual, every kind of breakdown. Individuals and organizations reveal their styles in the way the cope with things. There are learning styles, management styles, administrative styles, and leadership styles.

This style shows up in the day-to-day, the organizational focus having to do with the operation and administration of the business. Organization goals tend to the improvement of existing metrics, such as, market share, continuous improvement, improved cash flows, turnaround times, reduced costs, efficiency, and so on. What drives the business is historical data, analysis, leveraging knowledge and skills and the need to improve numbers. The future is short term, often driven by the need to meet shareholder value expectations. Progress is seen as incremental improvement in relevant historical domains. Risks are to be avoided and assets kept current and cared for. Customers must be satisfied and key stakeholders kept on the radar. Internal and external interactions strengthen and propagate the style and produce an identity, hopefully one that produces positive organizational climate survey results and consumer confidence. Customers will finally decide whether they are captive or trust their supplier. Again, when breakdowns show up, the question is *why?*

Legacy

A legacy is something that is handed down from one period of time to another. "Legacy is a similar concept as *inheritance* and *heritage*. It is something we inherit from past generations and pass to our future generations. Usually *heritage* refers to material and economical inheritance, while *legacy* refers to immaterial and cultural inheritance" (Wikipedia, n.d.). Legacies may consist of traditions, measures, standards, judicial decisions that make up "case law", policies and controls, wheels, axels, accounting systems, Euclidean geometry, food recipes, and democracy. Legacies have to do with traditions and standards from the past that are carried into the present and normalized or legitimized through systems, procedures, policies and protocols that create "reliability". Legacies introduce rigidity into the system with up-sides and down-sides. While these rigidities may reduce variability, they inhibit adaptation to changes in the environment.

Both legacies and legacy thinking are rooted in the past and embodied in the present as what to do and how to do it. They can be seen in maintenance philosophies and practices, sales techniques, accounting practices, organization design, compensation policies, traffic control, company measurements (EBITDA, ROI, ROA) as well as professional conduct in organizations and bureaucratic practices in government agencies. The way legacies are lived becomes a major component of individual and organizational style.

Innovation in the midst of legacies means reflecting on inherited traditions and questioning the common sense. We mentioned in a previous chapter that Taiichi Ohno looked at automobile production within the legacy of the cost of real estate instead of accepting the inherited legacy of automobile making that cycle times and labor costs should be the focus of attention. This produced a legacy conflict of sorts that ended up with an initial seven "muda" or sources of waste, all more focused on how space is arranged and used than on the western legacies of the automobile industry. Deming and Juran, of course, were able to have a greater influence on incipient industries in Japan than in questioning the legacy thinking of their own countries.

LEAN looks at wastes associated with space, orderliness and time, observable practices that add no value and/or reduce value. Again LEAN concentrates on identifying the root causes of waste, whether associated to 5S or other aspects of "muda" and concentrates on eliminating everything that adds no value or is a constraint on the addition of value. LEAN is an interpretation of "waste" associated with existent legacies. It does not question the legacies as such but the related practices that either add no value or destroy value. At first look it appears to be a powerful interpretation of waste. Seen in terms of the Visionary World of the future, there are much more powerful interpretations of waste that are not visible to the Matter-of-Fact World of the here-and-now.

Business as usual in the Matter-of-Fact World in all industries looks at continuous improvement, higher standards, same-industry comparisons, etc., aimed again at the here-and-now. Both LEAN and Six Sigma are rooted in the this world, asking the question *why?* five times that will lead to the root causes producing variations and breakdowns in the present. That is, constraints to improvement come from the past. Since the present is a derivative of the past, it is really not a "past" but a "past of the present". This means that taking action on root causes will improve the "present of the present"; the "future of the present" can be visualized as a kind of Six Sigma world free of breakdowns and variations. This is Martin's world of "reliability."

Novelty

Novelty has to do with adding to what is, improving it in different ways, making it run better. Its scope includes improving, adding to, integrating and improvising. In the same way the Japanese leveraged their traditions within the automobile industry to create very successful improvements in the here and now, people in general, within their organizations, are seeking to exploit their own marginally differentiated traditions and standards into what is and to leverage their practices in new opportunity areas. This inclination continues to generate new ways for companies to improve and re-vitalizes existing mind-sets, creating new ways to respond to market changes, to create new products and services and to improve levels of customer satisfaction and improved relationships. Organizations are always seeking new ways to improve the day-to-day and strengthen their competitive advantages, but innovations in legacy driven organizations still tend to show up as extensions of their current style.

It came as a shock to many readers of Tom Peters' *In Search of Excellence* (1982) to witness the tumble of half of the companies mentioned within the next decade. They were, according to the characteristics delineated by Tom Peters, "excellent" companies. The problem is that the characteristics mentioned may make a company successful in the Matter-of-Fact World of the here and now, but coherence and sustainability are not necessarily horses of the same breed. Work horses do not enter the Kentucky Derby but they do produce reliable results in the shrinking world in which work horses are still used to plough fields. Excellent companies of today can become failures tomorrow, often following the legacy practices that produced their excellence in the first place. Martin (2009) cites Blackberry as his choice to exemplify the "exploration" type company, another example of how the inertia of legacy thinking can create rigidities or reliabilities around the process of exploration and end up "exploiting exploration", as it were. This discloses something about Blackberry that Samsung, Google and Apple have so far been able to avoid, although Steve Jobs had to rescue Apple from drifting the same way. Martin's funnel, from "Mystery" to "Heuristics" to "Algorithms", don't quite predicts the

demise of Blackberry since algorithms calculate innovation within the framework of the predictable world of Matter-of-Fact. Predictability is part of the world of exploitation. Who could have produced a statistical prediction of quantum theory based on the data of Newtonian physics?

While it is generally true that organizations innovate in their ongoing style, variations of the same with different features or advantages, the emergence of events can sometimes shake them out of the rut. We have mentioned earlier that requests by clients for customized products and services can often trigger the need to see things in a new way and provoke a shift in style. Lafley took the reins of Procter and Gamble after a dramatic plunge in shareholder value and knew from the start that more of the same was no longer an option. Fortunately, from both himself and his company he focused on breaking key aspects of legacy thinking, surrounded himself with other competent like-minded actors and created a new style in some important domains, open innovation among others.

In the Matter-of-Fact tradition, evolution tends to be Darwinian. The problem is that Darwinian evolution is not only "slow learning", it can also be "dumb learning". The survival rate for businesses is probably quite similar to the survival rate for the species. Most don't. When we ask "Why don't they", the reasons are not complex. Legacy thinking is habitual and automatic, moving forward with its own inertia, and doesn't sense changes in its surroundings until it is jarred by a major disruption and forced to realize it has come to a dead end. Legacy thinking in business is rewarded by the myth of shareholder value, a toxic carrot on a stick, not real value but value in a cloud.

Related to the "predictability", important to shareholders to be validated quarterly, the legacy of statistical analytics applied to Big Data is good at looking at symptoms and suggesting prescriptions, although not equipped in any way to understand etiologies which lie at the level of the code, rather than that of the message. Big Data Analytics focuses on messages –historical–, not on codes –origins–. When codes change, worlds change and Big Data Analytics comes crashing to the ground. Until then it helps shareholders lay their bets on what is more predictable and encourages business organizations to continue to do more of the same with continual improvements in the current indicators of success. When indicators begin to fail, shareholders cash in their chips at "Casino in a Cloud" or change tables. In the Matter-of-Fact world, relationships tend to be transactional, networks of information exchange rather than networks of collaboration for the co-creation of new futures. Stocks not stakes.

Visionary World

Design Thinking

Design thinking has been defined as "a discipline that uses the designer's sensibility and methods to match people's needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity" (Martin, 2009). This definition bears the similarities of construction blueprints derived from the legacy world of the Matter-of-Fact World, that is, it gives the impression that everything is already there and that all one has to do is find it. Martin's chapter on his book is thoughtful and revealing, but he gets caught in the "reliability" trap unwittingly by insisting that design must be matched to what is technologically feasible. This sounds like common sense until we realize that what is or not technologically feasible probably depends a lot on our own inherited common sense. This should not be interpreted as encouragement to ignore the constraints of existing technology, rather to question why possible technologies cannot be brought into existence. Again, this has to do with contrasting the *why?* thinking of the Matter-of-Fact World, with the *why not?* world of the Visionary World of design. If we ask the question "why doesn't this kind of technology exist?", the reason may well be that there has never been a need articulated for it. Whether technologies are possible or not is an assessment grounded in the evidence available in the here and now of the Matter-of-Fact World, not a fact in and of itself. Martin's advice is practical, however, if one's new offer is framed in the short term but should not keep us from exploring the possibilities of automobiles fueled by water even if it is not now technologically feasible.

Nonetheless, Martin's presentation of design thinking rescues the brilliant contribution of America's so-called "pragmatic philosophers", especially Charles Sanders Peirce, who introduced the concept of *abductive* thinking as opposed to the deductive and inductive concepts of reasoning that we have had drilled into us in the legacy thinking that pervades our culture. The pragmatists detect and declare the limits to this kind of reasoning. Peirce argues that new ideas cannot be proved deductively or inductively on the basis of past data but emerge by way of "logical leaps of the mind" (as cited by Martin, 2009, p. 64).

Design thinking takes place in the initial phase of the five step Relational Commitment Loop, listening for concerns and envisioning what the world would have to look like for these concerns to be remedied. One cannot design an offer without asking the right kind of questions. The question *why?* inexorably points us in the direction of the existing code. *Why?* assumes a code. The question *Why not?* by-passes existing codes, it breaks away from the logic of legacy thinking; design thinking requires a "leap of logic". The question *why not?* may even identify legacy codes

as one of the existing constraints to an otherwise possible future. It may identify the gaps in existing technologies and question why they cannot be filled in. It may point to presences, absences or, in Lacanian thinking, the presence of absences. Abduction plays an important role in this process as it supports pattern recognition, the world of ties, visible, partial or missing that might be pulled into existence and brought together in such a way that a desired possible world could be created and assembled. The world of abductive reasoning challenges the Matter-of-Fact World of deductive and inductive reasoning and questions all of the legacy tenets. Not a world for the weak of heart.

Design thinking questions the existing interpretation of a business or organization with its existing offers in contrast with new and more powerful interpretations of a possible future and what is missing for it to emerge. Design thinking searches for a value proposition to customers that will eliminate concerns even beyond their expectations and the constraints involved in creating a win/win offer that would be affordable and profitable. Design thinking does not abandon existing practices, it shifts marginal practices to the center, re-configures existing practices and invents new practices, exemplified, for example, in the emergence of 'Patrimonio Hoy'. The business offer must make business sense. Design thinking moves in all directions. Why can't this be done? Why can't it be profitable? Why can't it be sustainable? The question *why?* triggers deduction and induction. The question *why not?* triggers abduction.

Listening to concerns is by no means a passive process. It is a deeply interactive process in which an organization puts its identity at risk, first assuming the responsibility to be a credible and reliable partner in the co-creation of an offer, and to make and keep one's part of the mutual promises required to strengthen relationships within the value creating network, often creating the need to integrate business processes and administrative systems and link data bases. This may require restructuring the organization, creation of new policies and procedures, new business processes and integrative software, even the business model itself with implications regarding financial structuring and governance. Design thinking increasingly looks at a broader range of stakeholders and the entire supply chain from end to end, often with new alliances, even joint ventures.

Generic Core Competences: Agility, Flexibility, Integration and Innovation

Two important books made it to print in 1995, *Agile Competitors and Virtual Organizations* (Goldman, Nagel & Preiss) and *The Boundaryless Organization* (Ashkenas, Ulrich, Jick & Kerr), among the first to underline the core competences required by business organizations to compete in today's accelerated world of

global enterprise, charged with uncertainty and filled with ever more competitive and specialized offers to discerning customers. *Agility*, as used by Goldman, Nagel & Preiss, encompasses more that quick response: it actually deals with the issues of flexibility, integration and innovation, although not as carefully delineated as in *The Boundaryless Organization*. Both books were timely, both spotting the crisis of legacy thinking that has plagued organizations faced with the need to respond with a new logic and a new sense of time.

Goldman et al. (1995) see agility "as the ability to thrive in a competitive environment of continually and unpredictably changing market opportunities" (p.8). The forces behind this alteration of the environment are market fragmentation, production to order in arbitrary lot sizes, information capacity to treat masses of customers as individuals, shrinking product lifetimes, convergence of physical products and services, global production networks, simultaneous intercompany cooperation and competition, distribution infrastructures for mass customization, corporate reorganization frenzy, and pressure to internalize prevailing social values.

Although *agility* is not seen only as quick response, in a sense, responding to these emergent forces goes beyond the legacy strategic planning process. They do require a quick response and this requires a spiral-like iterative process. Agility as the ability to coordinate competitive responses cannot take place without flexibility. Flexibility is not only restricted to the need for rapid changeovers in production lines as orders come in but deal in a coordinated way across boundaries, organizational, internal and external, vertical and horizontal, local, regional, national and global. Lack of integration, whether through networking, logistics or systems, is a major constraint to flexibility and, therefore, to agility. Innovation, then, must discovery the *why nots?* that constraint the kind of agility that ought to be possible, many of which are related to domains of rigidity, whether in operations or administrative, even internal and external policies, and this leads to a questioning of the *why nots?* regarding flexibility and on to integration. Generative innovation then looks for a new kind of waste, vastly different from the time and space orientation of LEAN and the root causes of Six Sigma. Waste in the world of critical core competences has to do with the what-should-be-possible world of the future and the here and now, especially in terms of agility, flexibility and integration. The question *why not?*, as we have suggested, triggers potential domains of innovation that can take place through invention, reconfiguration, carrying marginal practices from within or without to the center, creating, structuring, and so on, taking a myriad of shapes and forms. The world of integration is not only of information but an increasing number of specific "projects" undertaken through networks of relational commitment loops. These "projects" are both internal and external, and the "net" effect is *net work*. Net work is increasingly how work gets done in the Visionary World. Behind the configuration of this work is *design thinking*.

Configuration

We have argued throughout our narrative that as organizations migrate from traditional assets to intellectual capital and relational networks of action, so-called "intangible" assets begin to produce an increasing amount of the total value. However, in the dynamic world of change, these resources must be continually reconfigured to manage change and to create new offers. Curiously, the military establishment that has for so long characterized the hierarchical world of command and control has been a leader in its ability to create and leverage the core competencies of agility, flexibility, integration and innovation, not necessarily yet throughout the system, but increasingly in areas involving special operations.

Disruptive changes not only affect industries, they affect nations and the security of nations. Who would have thought 15 years ago that we would have to take off our shoes at airports, be ex-rayed and body-searched. Cavity searches are no longer the exclusive domain of dentists. As we have mentioned, globalization and the concurrent explosion in technology, especially information technology, have changed forever the way businesses must compete in order to survive. It has changed the fundamental rules of the game not only for business but for the military as well. Any military that underestimates the nature of change in today's world will certainly be at risk and will put its country at risk as well.

We will use the ready-mix case of CEMEX to demonstrate how leveraging core competences through action committed relational networks can produce competitive advantages. They have produced them as well in situations in which network centric warfare has been required. This requires the ability to configure and reconfigure physical, knowledge and information assets rapidly to acquire competitive advantages. An organization that kind find a sustainable way to be faster, more flexible, more creative and more coordinated than its competitors will possess powerful competitive advantages. This means innovative business process design which views all coordination networks of promises in time, not as material flows, although these can also be made more agile, flexible and coordinated. More and more both industry and the military are understanding that developing a set of key competencies that will in many ways eliminate the need for future strategies.

CEMEX ready-mix strategy was to invent new ways of designing coordination processes that were web-based and net-centric, and using these to bundle and iterate key competencies that could reduce the need for traditional planning strategies. To say this in another way, the strategy was to develop an overpowering bundle of competencies that would always sense and respond in strategic ways within a networked environment.

The CEMEX case has its equivalent in military thinking. Call it Network Centric Warfare, Effects Based Operations or Power to the Edge, they constitute notions of how to compete on the basis of speed, flexibility, integration and innovation.

In order to develop a new interpretation about how to do something in a different way, pass from the Matter-of-Fact World to the Visionary World. We cannot do this if we cannot look at the present interpretation of how we are doing things. When we are able to stand back and suspend our assessments, we discover that our present interpretation is largely inherited, that is, we move within the boundaries and constraints of our legacy systems, whether they are organizational, policy based, cognitive, or technological systems. They come to us ready-made to produce results, but for a world that is no longer the one we live in.

The legacy systems of Industrial Age businesses and armies come mostly from Frederick the Great of Prussia. His organization and logistics model were state of the art and ready-at-hand at the beginning of the Industrial Age, and, since it was a model developed for sequential activities, it was well suited for businesses specializing in mass production. It was a powerful model and was successful for most industries until the 1980's. By the 1990's it was an obsolete model and rapidly becoming dangerous.

Globalization for business and armies means rapidly growing worldwide connectivity of people, knowledge, techniques, equipment, information, skills, research, design, and innovation. It means that any business or country can be attacked rapidly from anywhere, with little or no warning. It means that small enemies with little means can project themselves into the world arena and produce enormous effects. The 9/11 attack on the World Trade Center was an example of effects based warfare carried out by a network centric organization with trust-based control systems and power distributed to the edge. This has become the enemy of the future, both for business and the military. It is also the way we must organize and operate for future success.

Neither in business nor in the army are we likely in the future to face symmetric struggles again, in which there is time to plan, time to prepare, time to train and time to deploy. In today's highly connected world, peace and war are perpetually joined. How long ago was the term "frenemies" coined? How many lawsuits has Apple waged against its supplier, Samsung? The 21st century security environment is qualitatively different from that of previous centuries, just as it is for the business environment. Military and business organizations today have a wider and less predictable range of threats. They operate in more complex environments with less tolerance for collateral damage and therefore must be more precise and careful in the effects they produce.

Today's army must collaborate with a greater variety of partners, military, governmental, non-governmental and civilian. They may be tomorrow in Haiti engaging in peace maintenance functions where a great deal of self-control is required, and

the next day find themselves involved in multiple agency efforts to help tsunami victims some place in Asia. This has a similar equivalent in extraction industries that must now partner with government agencies and communities in entirely new ways and can no longer take hydrological and energy resources for granted.

The greatest threats today come from religious, political and social instability, the widening gap between haves and have-nots, the impoverishment of neighboring countries, popularly shared historical resentments, the inability of countries to control volatile segments of their populations, the emergence of multi-national and global narco networks, narco terrorism and ideological terrorism, all of this combined with a high degree of global connectivity and the ability to organize and act across time and space with sophisticated technology which becomes cheaper and more available day by day. The way some or many of these threats are managed has become increasingly more complex and with less room for error.

Industrial Age organizations are poor at managing and adapting to complex environments. They do not coordinate well; they are slow, bureaucratic and wasteful. They do not adapt well and their decision cycles are slow and complex. They push information and materials through the system and have antiquated views of logistics. They are not trust based but rule based; their planning is threat-based not capability-based. These organizations are increasingly out of sync with the current environment in which they must operate and poorly prepared for the challenges of the tomorrow's world.

Both military and business live in the same world of explosive technological change, global connectivity and rapidly changing environments, that is, they are subject to the same systemic phenomena and must adapt rapidly to change taking place in the surrounding socioeconomic and political context by moving often in similar ways. Both must seek strategic advantages in four important domains: the *information* domain, the *cognitive* domain, the *physical* domain and the *relational* domain, all within the context of an asymmetric threat environment in which global networks have changed the face of how organizations must sense and respond. Strategic applications of information and coordination technologies are part of the key, but understanding the limitations of the present Industrial Age legacy is a vital pre-requisite. In all domains, network centric focus and applications hold important advantages over Industrial Age approaches.

Industrial Age thinking is still prevalent in the way present defense establishments look at their Armed Forces. Armed Forces are still divided around discretely defined physical spaces, "Air, Ground, Sea and Space", a way perhaps of viewing symmetrical warfare but not a helpful way to confront a world where speed, flexibility, integration and innovation produce competitive advantages and the key to success. The overall command structure must be managed in a different way both within and among the overall defense organization structure to achieve seamless

connectivity and interoperability for any army of the future. Command will become less of a structural role and more of an effects focused process to leverage strategic system-wide intent to produce desired effects in information, cognitive, relational and physical domains. This parallels the need for business and other organizations to eliminate vertical and horizontal boundaries, to produce a *boundaryless organization*, a heterarchy rather than a hierarchy.

Both armies of the future and business organizations of the future will be designed to enjoy seamless connectivity and interoperability. All human, information and physical assets and their capabilities will be easy to identify, configure and reconfigure within hours or minutes. Control will be seen as a way to synergize human, material and information resources to enable command, but not necessarily as part of a functional role. Control will move closer to the edge of the organization where interoperability is taking place to produce synergized and synchronized effects. This means more and better quality of information on demand, reconfiguration of resources upon demand and logistics upon demand. "Demand" will continue to take place, let us be clear, within the scope of command, a person with a first and last name, especially within relational networks, will be held accountable for promises made. The control process, however, migrates closer to where the action is taking place where agility, flexibility, integration, and innovation will magnify effects. This part of a heterarchy committed to commit, self-direct and audit, and to be held accountable.

In the action world of relational networks, strategic applications of information technology, business design and real time logistics produce competitive advantages. All existing assets, human, information and physical, must be transparent, visible and net ready. All platforms must be integrated for joint operations and assets shared, especially intangible. Firm policies must be in place to define obsolescence and ensure the sustainability of assets, especially intellectual capital. When we speak of logistics, we see it redefined as the coordinated identification, appropriation and sharing upon demand of all tangible and intangible assets from where available to where needed, synchronized on-line in real time. This is where the Visionary World is headed, agility, flexibility, integration and innovation are key competences as well as the ability to configure and reconfigure upon demand, a design competence.

CEMEX: Ready-Mix upon Demand

In the early 90's CEMEX was under increasing pressure from its competitors, Holcim had recently built a plant in CEMEX' backyard near Monterrey, the birthplace of CEMEX. Most cement companies are integrated to ready-mix because it is an important and stable outlet for its main business: cement. CEMEX is no exception. Sales revenues for the Ready-Mix Division of CEMEX were close to $500 million

dollars per year. CEMEX had 175 plants in 65 cities throughout Mexico. The Ready-Mix industry, in larger urban centers, is characterized by a few very large plants, usually on the outskirts of the city. While these plants have a large capacity, they can only load one or two trucks at a time and demand peaks during certain hours of the day for the construction industry, with construction plans contemplating labor availability and logistics in the day-to-day scheduling. These large plants can often have as many as 30 or 40 trucks waiting in line. CEMEX was no exception, it even had rooms where drivers could sit down and relax, drink coffee and watch television as their trucks stood in line.

CEMEX service was poor, but, then again, so was that of the industry as a whole, not only in Mexico but worldwide. The industry leader, a Malcolm Baldridge Award winner, had a window of some four hours in its delivery promise. CEMEX was obviously far worse and demanded that its customers place their orders a week ahead of time so that delivery could be scheduled. While construction projects always and everywhere are rigorously planned, it is unrealistic to think that a larger project of any kind can predict a week ahead of time the hour at which it can begin to pour. There are numerous details that can interrupt a schedule, not all of them controllable. Constructions projects are subject to inspection by government departments in order to enforce building standards and codes, and government employees expect everything to be ready before they are advised, so that they are not kept waiting or forced to return to make their inspection. Bureaucrats being bureaucrats, they may not show up at all at the time agreed upon, delayed by some contingency or another. When the inspection is made, inspectors often declare a number of details to be out of specification and demand that they be taken care of and another inspection programmed, so even if the schedule indicates that the completion of advance and the "pour" can be scheduled for a given date, this still requires that no important interruptions of any kind take place, even such things as thunderstorms or extreme temperatures.

The CEMEX Ready-Mix Division had been losing market participation and did not want to enter into a price war with its competitors, a zero sum game for all, with greater repercussions for CEMEX against its competitors, who were among the largest cement companies in the world and were in a much better position to spread their losses.

The Business Process Center of CEMEX, created and managed by this author, was aware of the coordination weaknesses of the industry as a whole and decided to ground new design thinking around the critical concerns of customers, discovering the myriad of events that could emerge to deter a scheduled pour. It discovered, as well, that the costs of cement are not a principal concern, but that project advances depend on the pour since subsequent advances require that the concrete poured "sets" before work can continue, so the "pour" often affects the advance of a project,

and a delay may cost a bonus or trigger a penalty. When asked, project managers declared that they were only 99% certain of the time of the pour an hour or so in advance, since any number of small details could interfere. When asked how a "one hour order-to-delivery promise" would influence their purchasing decisions, they uniformly laughed bitterly before stating that they would pay extra for that kind of service but didn't expect to see it in this life or the next.

There was no industry benchmark that even came close to this declared need, but companies like Dell and Fedex made promises to customers that required exquisite logistics. It came to the attention of this author that Houston 911 was perhaps the most reliable response to emergency machine in the United States, with an average time of response to any kind of emergency in close to five minutes. If there ever was a good "order-go-delivery" benchmark, it must be them. The Business Center Design Team visited Houston 911 and saw that it was indeed possible to coordinate persons and equipment with a sense and respond capability that made the industry-best a laughing stock.

The CEMEX Design Team returned to Monterrey and locked itself into a meeting group to envision a possible future, abductively. It was clear that emergency vehicles have certain privileges allowing them to have greater rights to the road and to ignore the status of traffic lights, even ignore speed limits. It seemed possible that a ready-mix revolving truck should be able to get to a destination in 6 times the time it took an emergency vehicle. So, the team concluded that it should be possible to make a 30 minute delivery promise; after all, Domino's Pizza had arrived at the same conclusion.

As we have seen, the Matter-of-Fact World focuses on *why* and *how to*. Chaotic environments don't lend themselves to this kind of logic and no person would be able to surf a stormy sea based on deductive and inductive logic. CEMEX, however, to shock and awe its customers, must learn to surf the edge of chaos (Pascale, 2000).

The team papered the walls of the meeting room and began to ask *why not*. It was obvious that CEMEX was unable to make an order-to-delivery promise equivalent to Domino. The question was, *why not?*. The team came up rapidly with dozens of reasons why it was not able, then invited people from ready-mix operations and administration to add to the list, finally truck-drivers and workers. The final list consisted of almost 400 *why nots*. These were bundled into domains of similarity and it became clear that the elimination of some of them would automatically eliminate others, so some kind of hidden order was operating among in the midst of chaos. From the bundling exercise certain patterns began to emerge, a new common sense was beginning to shape itself.

An example of some of those almost 400 *why nots* follow: queues, few plants, distance of plants, sand or gravel of varying quality and humidity making it necessary for each load to come from the same plant, different collective bargaining

agreements, both with the most powerful union in the country, one managed by the union leader's son-in-law, no inter-plant communication, different administrative systems and software, no way to track trucks, different granulometry of gravel from plant to plant, corporate credit process takes five days, traffic congestion at different times, customer recipes require the dosing of different additives, inability to design routes, drivers know only certain routes and get lost with route changes, programming recipes for individual customers takes a lot of time, orders must be taken by vehicles to plants distant from the main plant, linear programming takes more than half an hour, radio communication is congested, frequencies limited, drivers disconnect their radios, some drivers deviate from their routes for no known reason (bathroom breaks, visit their girl friend?), and so on.

All of these constraints were ordered in different ways, some of which were "agility" constraints, others had to do with "flexibility", others had to do with "integration". The question was asked: "Which of these *why nots* might be technically impossible to solve or would be so expensive that the cost could not be recovered?" The surprising answer was that all of these considerations ought to be able to be solved, and doing so would easily cover the costs of the investment.

Some of the key domains for action would be: number of plants and distances between them, routes, sand and gravel, dosing recipes, collective bargaining agreements, credit policies, communication among plants and vehicles, coordination of people and equipment availability, to mention a few.

Actions Taken

Total Network Integration

- **Communications**: Fiber optic, satellite, V-sats.
- **Data Availability**: Through fiber optics receiving a call opens an existing customer data base and focuses on key data
- **Universal Dosing Capabilities:** That sense and account for granulometry and humidity of raw materials in the mix, allowing adjustments for a homologous recipe from plant to plant.
- **Ecological Mini-Plants:** That can be relocated and re-integrated in 24 hours.
- **One Sole Business Process**: Order-to-delivery, and all administrative and material processes designed to support it.
- **Integration of Equipment and Persons:** Through use of electronic agendas and reservations.
- **Electronic Credit**
- **Re-Negotiation with Union:** And integration to one collective bargaining agreement, most favorable to flexibility.

- **Massive Education of Drivers:** (Many illiterate) in conjunction with the Ministry of Education.
- **Use of Genetic Algorithms:** To anticipate orders and design routes.
- **Introduction of GPS:** And real time route changes aboard.

Number of Plants and Distances

- Environmentally friendly mini-plants movable upon demand in 24 hours and instalable in vacant lots.
- Process to obtain rapid permission through municipal authorities.
- Process to identify and rent vacant lots.
- Genetic algorithms to analyze data and predict best locations for placement of mini-plants.

Routes

- Substitute linear programming for dynamic programming using genetic algorithms.
- Dynamic tracking against analytic "best guess" updating estimated time against real time.
- Use of acquired experience of taxi drivers to estimate best routes and times for the original data base, taking account for days of the week and time of day.
- Use of GPS not to "track" but to validate real time against promised time and update data base.
- Visible route indicated on screen for drivers in which drivers can report traffic congestion and request alternate routes with time estimates.

Control of Mix Ingredients

- Identification of only existing technology in the world for automatic dosing base don granulometry and humidity, acquiring the company and hiring the inventor.
- Capability to access client recipes from any plant and produce a homologous mix.
- Capability to modify recipes at request of customer.
- Capability to create or change a recipe in minutes.

Communication with Drivers

- Route Screens in vehicles.

- Text to voice.
- Voice to text.
- Mobile phones in reserve.
- Extensive training of drivers.
- Reduce need to speak with drivers.
- Compensation for productivity and for identification and communication of future construction sites, etc.

These are examples of emergent design through the systematic elimination of *why nots* in which agility, flexibility, and integration are constituted through the envisioning of what is possible and making it become possible, through innovation, design and the reconfiguration of practices and tangible and intangible assets.

CONCLUSION

It is important, in summary, to mention again that the questions *why?* and *why not?* dwell in the background of obvious, they are too transparent to reveal their historically derived logic. When the Total Quality Movement began many years ago it was accompanied by posters that were to be placed in highly visible places. It was common for these posters to state, among other things, "Don't say why not! Say how to!". The posters themselves reveal a legacy of distrust, the interpretation of "It can't be done" as a negative defeatist attitude, a convenient position for an

Table 1. Results

Before	After
• 72 hour order to delivery cycle	• Order-to-delivery in 30 minutes, world benchmark
• 1.9 deliveries per truck per day	• 8.5 deliveries per truck per day (400% increase in fleet productivity)
• Poor identity with customer, the lesser of evils	• Identity and credibility
• Destruction of value for customers	• Value Creation for customers
–Penalties	–Increased productivity
–Loss of bonuses	–Improved Project completion dates
–Loss of productivity	
	• Large increase in market share
	• Industry high profitability per ton
Each Plant a Silo: People and Equipment belong to each Plant.	**Integrated Net Work:** All assets tangible and intangible configurable in close to real time.

employee to take to avoid challenging work. In a world grounded in trust, rather than distrust, management would assume that if there were an obvious solution employees would have already suggested a "how to" solution or simply done it themselves already. Additionally, the mechanically designed world is a sequential world of cause and effect with physical assets occupying physical space. Taiichi Ohno was a good observer when he looked at the automobile industry in terms of the cost of "real estate", initiating the LEAN movement with its 5S and 7 "muda". Waste in the mechanically designed world has to do with reliability, with pull processes, elimination of wait time, re-work, and other practices that either do not add value but destroy it.

This world continues to be real and LEAN thinking continues to be of enormous importance in the world of work. However, as the world migrates from a mechanistic world to a world in which intellectual and relational capital produce ever more value, the concept of waste must be seen in a different, although additional way. Waste has more to do with the notion of 6 degrees of separation. Any greater separation than necessary, always less than six, must be considered waste. The world of waste implies "cost of opportunity". The total of the differences between the possible Future World and the Matter-of-Fact World can be considered waste. As we have seen in the CEMEX ready-mix case, the difference between 1.9 deliveries per truck per day and 8.5 deliveries per truck per day can be considered waste. All of the more than 400 "why nots" can be considered waste. So, in this world, looking for "causes" can eliminate an important number of wastes but it cannot produce a new possible world, this requires the question *why not?* accompanied by a new logic that has nothing to do with deductive or inductive reasoning: an abductive logic looking for patterns that make sense. Our objection to Martin's reasoning around what is "technologically possible" is "inductive" reasoning and counters his own arguments around new design thinking. If something is not "technologically possible", again the question *why not?* may provoke a sudden breakthrough. We do not know what is possible until we ask that question.

Also, as we migrate from the mechanistic world to the emergent world of possible new futures, agility, flexibility and integration require effective relational networks in which network actors are willing to make and keep promises that can be made and kept, not wistful promises. Not keeping promises in a relational network is a huge creator of waste since each of us makes promises to others based to promises made to us. The incompletion of a promise contributes to a network flash of incompletions that reduce the effectiveness of a network and, if they involve critical nodes, can actually collapse a network. Networks are overall robust but are tied together by

critical nodes. When critical nodes are negatively impacted even a huge worldwide network can become unstable. The importance of agility, flexibility, integration and innovation are not only critical core competences of an organization but of individuals themselves in this new world of possible futures.

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KEY TERMS AND DEFINITIONS

Abductive Reasoning: A term coined by Charles Sanders Peirce in his work on the logic of science. Abduction refers to an intellectual or "logical" process of inquiry and exploration, an attempt to make sense of things, a process similar to pattern recognition. It is a process that precedes theories and the only logical operation which introduces new ideas.

Catastrophe Theory: Created by René Thom, it is a theory that describes how small continuous changes in control parameters (independent variables) can produce sudden and discontinuous effects on dependent variables, producing qualitative changes (water turning to ice, sound waves causing avalanches, rhythmic vibrations causing bridge collapse, dogs becoming angry and so on).

Design Thinking: An application of abductive reasoning or sense-making in which patterns emerge that can lead to innovations, particularly seen as a way to deal with those things whose presence or absence can spell the difference between what now is and what could be.

Disruptive Change: The change of a common sense which causes a notable change in the matter-of-fact world of the here-and-now, producing new directions and ways of doing and seeing things and renders obsolete in some way the traditional world, its processes and practices.

Exploitation: As seen by Roger Martin, an aspect of design thinking that seeks, through analytical reasoning, to create additional value in the here-and-now world through increased productivity, yield, sales and so on.

Exploration: As seen by Roger Martin, an aspect of design thinking that seeks, through heuristics and abduction, to create a new common sense and innovations that create futures not previously available.

Fitness Landscapes: How the world we find ourselves in really "is" for us, automatic, transparent: everything taken for granted.

Generic Competences: Refers to those competences that most, if not all, organizations need to synchronize with a world accelerating in speed and complexity, such as agility which, in turn, requires greater flexibility which, in turn, requires greater integration, all of which require innovation. Generic competences would be such things as agility, flexibility, integration and innovation. Generic competences tend to be strategic in nature since they create competitive advantages in a changing environment.

Heterarchy: A system of organization whose elements are unranked (non-hierarchical) or possess the potential to be ranked a number of different ways, networked, processes, for example, in which each element shares the same "horizontal" position of power and authority.

Mind-Sets: What we refer to as a "mind-sets" is a kind of pool or string of practices that together constitute an interpretation of some aspect of the world revealed to us by a shared landscape.

Style: A set of distinctions that make a person or thing unique and which create an identity in the eyes of observers, distinguishing that person or thing from others, such as the voice of Pavarotti or Sinatra, or the paintings of Tamayo, Van Gogh and Picasso.

Chapter 10
The Sound of the Spiral

ABSTRACT

When we speak of organizations and organization, we necessarily have recourse to the idea of form. Our Judaeo-Christian culture has pressured us towards what is stable, certain, invariant: this to keep from sinning. We drastically need to create objects that remain independent and indefinitely without us, so that we can preserve them and reference them as signs of reality. But what is it that remains, and what is it that changes when we refer to organizations? We are talking in a world of the unseen, the relational process, of which we cannot say anything complete, anything referring to moments of certainty; it appears to us in a ghostly, hidden, and playful way. It is of this world whose condition of uncertainty we have not been able to live, and where nothing is more than the opportunity to know, of this world in a spiral that the authors discuss in this final chapter.

INTRODUCTION

In one way or another, the sense of this book has been centered on the value of intangibles and the shape organizations take relationally. Faced with change, there arises a need to develop new forms of value propagation which will necessarily be those emerging from collaboration, learning and those generating a heterarchical type.

The form we have referred to as an aesthetic interface, that which shows up as a kind of spiral, is a special kind of affective semiotics which allows humans to consolidate structural linkings in their *entorno*. Such an interface, not only produces

a symbiosis of *the inner* and *the outer*, own and not own, but is the matrix where meta-outlines are inscribed. In other words, patterns that arrange or organize other simpler forms, including distinctions –figures– and affects –valorization–: for all of them to be usable by the group and the network, relative stability must be maintained. Until now, the modeling of culture through linguistic coding theory, or informational digital interface, has hindered the development of instruments which operate at the relational level, that is, at the informational analog interface. Digital scientific descriptions have artificially separated the observers from the observed and, while doing this, they have excluded him or her from participating in a connotative or aesthetic semiotics, leaving as remains only their descriptive and explicative possibilities. They begin with the observation that cultures themselves develop as expressive matrices to inscribe in the imaginary group the aesthetic experience of their organization.

The purpose of this chapter is to develop the use of aesthetic interfaces and non-discrete matrices that can be used as analog modelers in order to understand new complex cultural structures.

When the Day is Done

In previous chapters we talked about the spiral of silence as a process in which people who did not accept forms and styles of thought, legitimized by the communications media, were silenced to keep from being excluded from their networks. This trend that we witness day in and day out motivated us to write this book and, as one might hear a mine superintendent say, "when the day is done" we don't want to leave behind a narrative too technical but one yet grounded in the experience of the political domain and management of organizational processes, in which we have had to put up with the unbearable sensation of cowardliness in the justification of what is not justifiable, excused as "renewed". We entered instead into a process of astonishment with a new form of language, being few and crazy enough to create a new kind of verse.

Also, knowing ourselves, we wanted to avoid being another regularity in Gresham's law on cultural evolution. Therefore, given the changes that we have experienced in the last forty years, especially in Chile, where the network disease, schizodemia, foreseen by von Foerster and diagnosed during the 1970's, is rife, there was no way out but to build a cure, at least for the daily process of putting things off. So, if asked about these transformations in the here and now we would have to refer to the effects of our affects. Because, where else could the answer come from if not from our quotidian existence? Moreover, it was never divided between what we think and what we feel, so to speak. When we tell this story we would like the reader to feel what it meant and means to us, not only the dictatorship of medioc-

rity, but a dictatorial goal anchored in the "must be" of reality, or, to say it another way, how scientific knowledge has been imposed on us as the supreme validator of experience. This is the kind of rational, disjunctive, omnipresent way of knowing that has reduced relational processes, which we will mention later, to the idea of transactional objects through which you, as well as ourselves, can be reduced to a just a quantity, foolishly and dangerously called a "human resource".

Therefore, smothered in a world built from generalities as forms of imposition to centralize and obligate, we choose the way of everyday life to argue that our historical possibilities are reduced to encounter the meaning of what has been induced, that is, only where the semiotic key allowed us to constitute ourselves as networks. But without overdoing it, we would like to mention what these changes have meant in our way of seeing things. Hence, when we meet up with you the reader and invite you to read what we are thinking or, better still, to see what attracts your attention about what we are writing, then and only then what you read as a form of co-authoring. Then we can say that we, you and ourselves, have achieved a common meaning, while even then not being certain how or where these equivalences came into being.

Let's begin with a central idea that we find attractive because it allows us to evaluate any concept, whatever its source. This may sound like a generalization, but as we stated, it will be a co-construction, so you can be sure that when you read you can classify it within what is already part of your common sense and everyday life. We could assert that of all the readings we have encountered, in relation to knowledge and, specifically, scientific knowledge, it would appear that the central idea is that of *permanence*, that is, something said in relation to something. It is always this way because that something is there, independent of who describes it, but more than independence, permanence is always related to an object or an idea of object. This statement can be corroborated in all domains of knowledge, even taking into consideration concepts such as system, work of art, individual, society and poverty, they are most always defined as external to the observer who speaks about them. Therefore, there can be no artist in science because he who describes, when referring to what describes, avoids saying that he is responsible for what is described, an "I am but I'm not", what we call the syndrome of the of the vanishing author, who never accepts that the paragraph extracted from another text and installed in his/her own as a quote, becomes a co-discourse within his or her own discourse; since it no longer belongs to the first author, it is a new form that takes meaning in the context of the person doing the quoting. Since it was never in what was described, then, what was described is a characteristic outside of the narrative, that is, a property inherent in the object, and, since it was never there, anyone can describe the same thing, because ultimately the observer in this kind of science is a nuisance. Now, let's take another step in this way of looking: if what is in our description has nothing to do with our properties of description as an observer, then

somehow, magically, the properties of the object stayed in our description, something that would allow us to become their representative and inform you of their qualitative and quantitative changes. But I do not think you are naive enough to tell you that, to the degree to which we can represent it as its representative, this transforms us into the owner, and we can read a future for you in relation to it. This would be something, like a soothsayer who makes predictions using tools you cannot question because they are validated in your true story. This domain is cognitive, referring us to knowledge, which begins to change the question for us from what knowledge is to "How do we know?" If you stop at some of the previous statements, you will notice that no one makes explicit how he or she builds explanations, it is as they were already there, as if they might have come, standardized; that's why this game is a "gotcha" for "more of the same" and to more of the same.

Now, you could tell us why you warn us with arguments regarding the issue that concerns us, to which we could respond by saying that concepts are always dangerous because every time we call them up in a conversation it is to close the world we have shaped from our culture. Let us go a bit further and explain why in the preceding sentence we call up culture. What would happen if we were to tell you that, for knowing, the presence or non-presence of the object is irrelevant, that whenever you refer to an object, it is you being referred to, not the object, and that, for referring, you must tell it to someone else, and that when you select the reference you are putting into movement the context so that the reference might mean something to someone else. Also, consider that when you talk about properties, these are always constructed through language, and not only constructed from language but that the form in which you construct them is always part of your repertory of beliefs, what we will refer to as *cognition*, or the process of knowing. We will say additionally that there are various repertories of beliefs, which have enabled you to invent your world and ours. These repertories are always the heritage of your culture.

We return to this word, "culture". Think about it in this way. How do you know which neighborhood, which school, university or job is yours? Or, when do you feel the sensation of belong or that these experiences have been made *yours*? We could resolve this thinking that the way in which one uses words, or whatever other communicational operation, that they act as keys that permit entering and leaving these networks, if and when by referring to whichever of these experiences one is not referring to the sum of the people who make up the neighborhood or job or whatever, that one is experiencing something emergent. Then, let us consider culture as a "something" shared, a co-process, but, of what? Of the relationships that only allow, that only forms exist which ensure that your belonging and your adoption are interchanged with my forms of belonging and adoption, the degree of equivalence of these interchanges being what allows that an emergence be produced, that is, the network that constitutes it. In other words, culture is a conservative process on

the imaginary plane that organizes a network of communication through symbolic exchange, and here please do not get dizzy with the word, but a term that allows us to define a network of culture is *eco-semio-autopoiesis*.

The first *eco* refers to the process being produced through relationality, through the symbolic or semiosis in living or autopoietic unities. We could say that every living unit is an eco-autopoiesis form and not vice versa; this displaces the objectual idea of Biology and classical Ecology to explain that what separates us from other networks of living units is semiopoiesis or production of meanings as signs.

So far, our discussion has enabled us at least to generate an explanation of relational cognition. This school offers the answer to "How do we know?" It is based on a trifferential process of a relational unit, a *culturator*. First, let us approach *trifferential*. Who does not remember the question "What comes first, the chicken or the egg?" For us, the dualities are a type of limited logic, because they force you to think that the world is always in pairs. We think it is of more that, so we can choose our own taxonomy or way to group. If you generate a triadic way of thinking you can add to our hen and its egg a rooster, allowing you as observer to give an explanation to each based on relationships, not the object. Perhaps you can't answer which came first, but maybe you wouldn't need to respond who was at first because, at least the way in which the question is posed: one of the same old dual logical type as the world configured.

We want to insist on trifferentiality because it allows us to conserve and change our reading of Gregory Bateson. Bateson proposed that to make a difference at least a pair of entities is needed. Also, the novelty of this difference should be immanent to the relationship between them, such that it would produce a difference in a processing entity.

For us, what comes to the fore as a difference is a boundary through the specific or context, imposed by the observer on the configurations of meaning that operate from generalization. Difference is the result of a paradoxical relationship in which the cultural (a meta configuration) is limited to a particular domain of meaning by the observer. Only the observer can be aware of his or her own experience and articulate it, what is always an equivalent entering the communication process. Therefore, the difference which Bateson refers to, is a relation within the configuration relationship, or culturator, that acts as a triad, which is the result of a computing operation of fourth order: "eco-semio-autopoietic", as used by von Forester . From this exercise, the relational experience and its construction of configurations allows us to set a limit or border to the general space of territoriality. Every pair of entities are regularly preset, are already enacted in the space of signification so that their relatedness is found significance is established from the configurator, establishing a trifference more than a difference.

Let us take another step. The process that results from the moving of a culturator between his enacting and his belonging, we have called territoriality. Territoriality is how a network of relationships in a human communicational space is organized; this form is supported by its culture. This implies that the network "filters" everything that won't let it conserve its organization –closing in communication– a form of *ipse* type, that is, closed in itself. Maintaining, however, a structural relationship type *idem*, or open to similar, to the same, which allows the interchange of meanings with other networks or with non-constitutive culturators.

All of the above, as a system of relations, we define as a *complex*, that is, a system of relationships whose organization is conserved through the closure of the communication, only allowing codes that have meaning within the network and, at the same time, exchanging meaningful codes as a way to account for its organization based on relations of belonging or identity.

Operations generated in the communication of territoriality –affection– configure arrangements that open up to processes of interchange of relational forms and memories. Under these circumstances, complexity becomes a strategy to pressure the effectiveness of interchange. Strictly speaking, what we are saying is that affects –processes of adoption and belonging– are effective in worlds of networks.

We could return then to the phrase with which we began the conversation and almost call it a day. What I mean to say is that semiopoiesis generates configurations of the network of a schizogenic variety, so that the kind of territoriality diminishes the relationships of reciprocity and confuses relatedness with the transaction of objects, producing alienation and separation within. This reaches its peak when *culturators* are confused with objects of transaction and are treated like merchandise. Then, one begins to distinguish a series of symptoms in the forms under communication. An example is the confusion of the symbol with the object; how many times have you heard the terms "knowledge industry" or "information processors"? This is a perversion of the notion of knowledge. Moreover, another symptom is rupture of cognitive integration that one suffers in his or her day-to-day faced with the impossibility of establishing contextual connections between distinctions across different modalities in communication channels. We can call to mind some typical examples, such as "pacification", meaning complete destruction, "protective reaction" instead of aggression, "incursion" as a substitute for invasion, or "the discovery of America" instead of Spanish Conquest. As we have said, it isn't easy when the transformations of the world directly impact one's affects.

So, if we think about the so-called "society of mass consumption", if we are able to do so, we must admit to a large share of the new relationships imposed by the market that have exacerbated consumption as a means and way of life for men and women; it changed the place of the market in relationships and its independence

from the rest of the social structures, seemingly without other regulatory guidelines. Dethroning the existence of areas of relative autonomy, the market melts differentiated relationships with its dependence on its external form, consumption. Consumption is the most important symptom in today's world of this confusion between relatedness and the transaction of objects. At least as concerns our daily lives, what is closest to us, and that leads, as mentioned, to states of distancing and alienation that are incorporated into everyday life through communication.

Many of the theoretical domains in vogue today have been called "postmodern". These currents, managing different concepts –that may be as confusing as we mentioned initially– mean to distinguish a supposedly new era, paradigmatically different from modernity, in which uncertainty is the hallmark. They still do not explain the existence of a global or world level of change, and are insufficient to clarify that, along with the presence of regularities that are declared practically "absolute", there continue to survive groups, collectives, multiple networks to wit that take over and suffer, but also try to build from within themselves.

Fortunately, there does not exist, despite the foregoing, one single network, but many of them, at least as many as those groups with different values, beliefs and interests can identify. Nor is there such a thing as a unique technology that characterizes a single society. There are many socio-technical networks, multiple mixtures of technological innovation and social actors, real or potential mixtures: past, present and future. This should allow, despite the above, the existence of alternative ways of seeing things that signify culture as a vital improvement of the human being. This book is an effort to find those coordinates.

COORDINATES OF THE TURN TO HETRARCHY

In the last decades of the twentieth century there was an epistemological shift, a new way of looking at organizations involving dismantling of conceptual hierarchies and paying attention at least to two orientations that we want to privilege: the relational and territoriality. Understanding the plot that accompanies the current individual in his aestheticized relations has generated what we have called a *heterarchical turn* in the organization of organizations, something not always taken into account in intervention processes and organizational change.

Vital importance, therefore, must be given to studies aimed at themes germane to the relational as related to economics, the place and role of aesthetic practices, also processes of construction of imaginary horizons and paradigms derived from so-called landscapes of territoriality; those that impact the formation of the individual in organization, forms of political participation in management and the events of

every day. At the same time, technological changes and social mobility have generated transformations in the forms of adoption and belonging that urge us to supplant the traditional connections between culture and territory, and include territoriality as a coordinate from which it is necessary to explain how we build organization.

The different landscapes and tautological maps transformed by the impacts of the media, point to local and emerging forms that intersect with recognized global and homogenizing tendencies in a complex web of simultaneity and divergences. Thus, the organization of the 21st century continues to be trapped in Taylor type forms which confuse the emergence of novelty. Therefore, the displacement of the points of enunciation to what is ours, as a process of organizational creation, coming from a divergent and epistemologically relevant territoriality, ensures organizational viability. The value of what is contextual versus false universalisms and its critical interpretation becomes a necessity to organize organizations of the 21st century.

Today, it is crucial that we understand the aesthetic coordinate from where we configure this world of decisions/actions; this assertion is grounded, because gradually the process of knowing has been located as a cornerstone in the explanatory basis of sociological and economic models globally. This has made manifest a significant conceptual diversity associated with notions such as knowledge society, information society, knowledge-based economies, society of uncertainty, knowledge management, organizational learning and others. However, despite becoming the cornerstone of contemporary paradigms, the process of knowing is still directed from reductionist approaches and object-based representation. The latter has fundamental implications for the operation of organizational systems, since these, in their configuration processes, are epigenetic, implying that relational plot supports the history of viability, which cannot be undertaken from approaches of this kind.

In this context, the narrative about generating organization is influenced by views such as these which means privileging quantitative dimensions over the patterns that are behind it. From a relational approach to cognition, design processes consist of something more than connective mapping and the use of performance indicators; we are facing a transition from "how much," "why" and "how" to *why not* in the design field. In this regard, the processes associated with explaining organizations are forced to mutate from the logic of parts to the logic of patterns: that means finding a form of explanation that meets the particularities of development that subsume the different geneses of organizational framing.

As noted in previous chapters, knowing involves co-figuring, that is, accepting that the mobilization of relatedness implies the semiotic organization of trifferences into distinctions. While trifferences show up in this narrative anchored to the idea of discrete (digital), the configurative world generated is analogue in character the same as the context of meaning when said process is produced.

PRESERVATION CHANGE AS A SPIRAL

We have chosen the spiral form given the possibilities of how to present the change-preservation relationship. The spiral is a geometric figure that helps us understand the process of viability of the organization as cybernetic or morphogenetic positive feedback loops. Morphogenesis is the basic principle to account for processes beyond control, i.e., the processes that continuously generate new situations. Explaining the organizations is a process of this kind, where, as in all evolutionary processes, information is always generated from a pre-existing situation.

The spiral is a curve that turns around a point indefinitely and that at every turn gets more away from the center. Each turn of the spiral coil is called a spire, and this serves our case to establish the quality between organizational coherence and congruence. Spires have different dimensions, as they become greater as they move away from the center of the spiral, so that the larger strokes subsume the smaller; if the coherence and consistency have been harmonic, this subsuming should be complete denoting strategies of quality feasibility. This leads us to navigate through a continuum where novelty emerges from the history of what remains. If we understand, from the relationship, that the configurability of the *entorno* of the observer is a process of continuous development where the process of knowing is inexhaustible in terms of variability, then this development of the *entorno* involves a game of tensions leading to a network of relationships to be eco-produced to the degree that their tenability and sustainability are harmonized. The spiral shape allows, to the extent that we are recurrent, the sensation of change, configuring countless landscapes, all fruits of the networking experience. This idea of inexhaustibility is possible in knowledge as a configurative process.

What is Preserved? The Spiral Process of the Relation Knowledge-Organization

As noted above, the relational field determines structures, but does not respond to structure for its presentation. By this, we mean that it is not possible to represent it as a structured object. This implies that the beginning of the spiral is a diffuse process without boundaries, that signals a difference with the development of form. This origin or source is a triadic unit configured from an aesthetic of reciprocity, which is defined from politics and affects. The dynamics of interchange in these landscapes allows for semiosis upon which the organization will be based.

The core and the networks or sub-networks will generate, based on this semiosis, a meta network of greater complexity than the nucleus and sub-networks taken separately.

As knowledge is developed in the spiral it generates different forms, which allow for different configurations of coherence and congruence. The history of these configurations is the cognitive heritage of the network of relationships. Moreover, depending on the quality of the fit, based on the sustainability of the relational network, the path of ascent will generate a matter/energy base with a high degree of sustainability.

Given the variability of spiral scenarios, the possibilities for establishing differentiated communication dynamics become highly effective. Also depending on the spire in which we are located we evaluate the quality of reliability, availability, and agile decision-making as related to the political narrative of management. The knowledge-organization relationship will facilitate establishing heterarchical textures according to the degrees of coherence and congruence of the spires.

The Sea Contains the Conch Shell that Contains the Sea: Five Tonal Sounds

On this principle, we will begin the spiral process of *Knowledge-Organization* (KO) seeking ways to enable organizations to organize as a meta-model that takes into account their five constitutive instances, as shown in *Table 1* .

These five general characteristics of KO make it possible to provide a set of guidelines for the construction of a meta-network over the KO obtained.

The following diagram shows a development spiral (*Figure 1*). The starting point of it is represented by the initial configuration of the KO relationship. This configuration is what emerges from political discourse and is crystallized into a triadic fractal, a minimal organizational unit which will be developed throughout the whole process. Once this assemblage is achieved, there is no turning back to the level of the definition of the political; here we move forward to the generation of arguments to weave the fabric of the network. The arguments are taken to decision-making processes that define the viability strategy in the short, medium and long term of the organization. In this process, the differences are extracted in relation to the action that the arguments determine –coherence and congruence– so as to correct the deviations that dismantle the development spiral.

From the viability generated we can make new political configurations, new descriptions and associate new decisional processes. Each *viability spire* is a starting point for new configurations, each argument is a starting point for new decision-making processes and so on, describing, in *Figure 1*, the development in a spiral graph.

Projecting the spiral in three-dimensional system we can explain the five tones related to the process, which go from *configuration* to *viability*.

Table 1. Knowledge-Organization Process' main characteristics

1) The Process Knowledge-Organization is a Generator of Relational Structures
KO in its overall development has generated information and, therefore, increases the complexity in all cases. If we consider that the origin of information is relational, only based on the information generated are we able to talk about the organization. The "added" information that entails KO must be understood by its relational genesis, in terms of a multiplier effect.
2) The Knowledge-Organization Process (KO) is Abductive
In a global sense, every step of the KO, implies an increase in complexity, which reveals to us the pattern associated with each step. This implies that in each instance of KO are extending our ability to generate information and organizational complexity.
3) The Process of Knowledge-Organization is Epigenetic
KO is validated so that each stage should be considered in relation to the previous step. Each stage of KO is connected to the prior: information generated in each phase subsumes the previous diffusing the overall process. Based on epigenesis we can explain the abduction of the process.
4) The Knowledge-Organization Process is Schismogenetic
The term is defined as a systemic process of progressive differentiation from the constituent parts. As we move into KO we generate new configurations, new information: we experience a progressive differentiation at each stage. This organizational schismogenesis, based on the configuration generated at each stage, would imply, referring to the field of thermodynamics, a process of negentropy. Schismogenesis operates as a dissipative factor of entropy or noise –in communicational terms– while generating information.
5) The Knowledge-Organization Process is Morphogenetic
Knowledge-Organization as a whole is morphogenetic in the sense that it operates on the basis of the genesis of new configurations: it has generated an explanation, a design.

Each spire has an abductive mechanism. Each abductive spire, in relation to what comes before, implies an epigenetic development. The entire spiral indicates a development of progressive differentiation (schismogenesis). Finally, as a whole, the morphogenetic spiral is, therefore, the entire process indicated as the Knowledge-Organization process refers to the construction of an organizational fabric of a heterarchical weave.

CONCLUSION

Now, From Here to Where?

As we stated at the beginning of this chapter, our experiences in the field of organizations have taken us, on a fast track, to the questioning of strong epistemologies, those that establish the means as an argument. Lord Kelvin's premise was: "Everything that exists, exists in a quantity and can therefore be measured." Not only is this the manifestation of a deep epistemic pathology, but a religious authoritarian motiva-

Figure 1. A spiral process from initial political argumentation to the assessment of initial viability
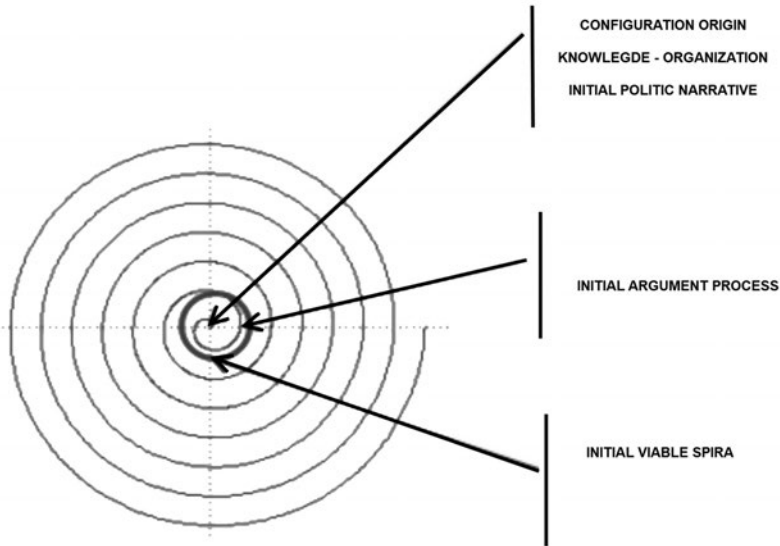
Figure 2. The five tones: each turn of the spiral (from each state of viability to each new state of viability, for example) describes a spire in the diagram
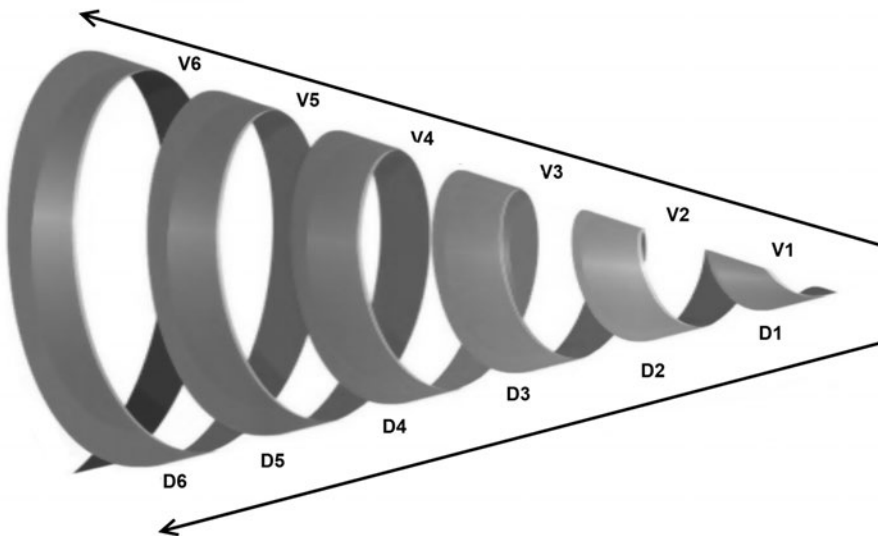
tor for the development of innovative schemes in organizational design inspired by a yet more complex view of organizational learning, the mediations and forms of distribution of a heterarchical network nature.

Derived from the above, the notion of organization is not trivial, since it means taking an irreducible critical perspective aimed at changing patterns of significance and relevance of the ways of knowing generated hegemonically by knowledge systems of postmodernism. From this point of view, the organization of human knowing takes the difficult task of changing old hierarchies to plastic forms, aleatory and uncertain, requiring thinking in a radially relational and complex way. Consequently, the strategies of Organizational Evaluation and Design, from a relational point of view, assume that the phenomenon of knowing, because of its complex and relational character, resists all processes of determination, disjunction, one-dimensionalism and trivial quantification.

In this context, it is vital to declare a process of Knowledge-Organization as an art of relations, where different kinds of limiting or boundary constraints do not exist. Knowledge is ultimately a recreating of practices and guidelines that achieve a cohesion of the ethic-aesthetic with affect-effect. Organizing organizations means returning to the initial game of creating mother and father, a relational game, a ludic game with no boundaries. It definitely means eliminating self-regulation from capitalism and entering directly into the world of relational regulation, imprinting on globalization an emergence of diversity rather than variety. We can, in this way, confront the linearization of thought, which is the genesis of spaces of accommodation, a diet to sustain neoliberalism, things that work when we are unable to question them, through ignorance or lack of ambition, situations that directly undermine common sense.

We are in the era of mindfacture, the realm of the intangible, where there is no first order accounting and where we must accept uncertainty and complexity as bases for knowledge and novelty. This is where we are going as we remind ourselves that neither happiness nor knowledge are negotiable and that not only we, but our organizations as well, depend on our shared commitment to networks of generous reciprocity, a guiding light for human living.

KEY TERMS AND DEFINITIONS

Aesthetic Interfaces: The relational configuration affectively sustainable.

Complex System: A system of relationships in which organization is conserved through the closure of the communication, only allowing codes that have meaning within the network and, at the same time, exchange meaningful codes as a way to account for organization based on relations of belonging or identity.

Culturator: Ecosemiotic process of the observer-entorno unit.

Culture: A conservative process on the imaginary plane that organizes a network of communication through symbolic exchange as an eco-semio-autopiesis process.

Spiral change: One that helps us understanding the process of viability of the organization as one of cybernetic or morphogenetic positive feedback loops. The knowledge-organization relationship will facilitate establishing heterarchical textures according to the degrees of coherence and congruence of the spires.

Territoriality: The network form of relationships in human communication: this form is supported by its culture. This implies that the network "filters" everything that won't let it conserve its organization closing in communication a form of *ipse* type (that is, in itself) maintaining, however, a structural relationship of the *idem* type, or open to similar, to the same, which allows the interchange of meanings with other networks or with non-constitutive culturators.

Trifference: Every pair of entities is regularly preset: they are already enacted in the space of signification so that their relatedness in significance is established from a third part: the configurator. Then, we can say their relatedness is built more from a *tri*fference than from a *di*fference.

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