TOWARDS HEURISTIC SYSTEMS METHODS FOR GENERATING NEW KNOWLEDGE IN POST-INDUSTRIAL BUSINESS

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"*The systems approach begins when you first see the world through the eyes of another.* Another way to say the same thing is that the systems approach begins with philosophy, because philosophy is the opportunity to see the world through the eyes of a Plato, a Leibniz, a Kant. The reading of philosophy is not an abstract study; the serious student takes on the burden of becoming convinced that each important philosophical position is right, absolutely right. He relives the intellectual vitality of the past. He feels to the utmost that the real world is the modeled world; that the real world is the experienced world; that the real world is dialectical, and so on. He does all this without losing his own individuality." (Churchman 1968, p.231)

ABSTRACT

Jackson (1991, p.299) argues that: "The response of systems thinking to the post-modern challenge has so far been, with the exception of Flood's (1990) contribution, to largely ignore it". The contribution of the current work is to appropriate aspects of post-modern philosophy into systems methods that support new knowledge creation in post-industrial business.

The author has developed a three-part model of the organization as a knowledge system: The first component is the formative system, which enables or regulates what can be expressed and thought by individuals within a specific business situation. The second component is the individual subject, who has a set of *a priori* concepts and systems ideas that guide his or her thoughts, utterances, and actions. The last component of the model is the conversation system, which describes the interface between the formative system and the individual subject.

Three heuristic methods, which support interventions aimed at specific areas of the model, are developed: Firstly, a framework (Knowledge Systems Diagnostics) is developed for inquiry into and the mapping of the relevant formative system in operation within a business. This is achieved by appropriating Foucault's (1972) work. Secondly, a set of heuristics is proposed for the support of generative conversations that aim at developing new knowledge in a business. These heuristics have their basis in Lyotard's (1988) philosophy of discourse. Thirdly, a framework is presented that develops the ideas that emerge from generative conversation into a systems story. The method makes use of recent practice in narrative therapy (Freedman and Combs, 1996) and the systems work of Bateson (1979), Churchman (1979) and Vickers (1970).

Initial practical illustrations of the three heuristic methods developed in this work are presented and analyzed. The differentiating characteristics and limitations of the methods are then discussed. The thesis concludes that a post-modern perspective enables creative

organizational interventions aimed at knowledge creation that are unthinkable from a traditional modernist systems perspective.

Acknowledgement

The author would like to acknowledge the latitude, support and critical feed-back provided by Dr. Johan Strümpfer and Prof. Tom Ryan without which this thesis and the learning process it represents would not have been possible.

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PREFACE

The aim of this section is to introduce and explain the thesis as a whole. It defines the context, assumptions and argument of the work. It is a macro-map, enabling the reader to position him or herself for the detailed chapters that follow. The structure of the section is appropriated from Lyotard (1988) in which he constructs his preface as a 'reading dossier' that synthesizes the essence of his position, its logic and presentation structure.

TITLE

Systems methods are methods that are based on the systems idea. The systems idea contends that it is useful to view complex situations *as if* they are systems constituted of parts and relations. Systems methods use the notions of parts, relations, co-production and wholes to organize thinking about complex situations. The systems methods developed in this work are 'heuristic' for two reasons. Firstly, they serve as guides to the discovery of new knowledge. Secondly, as guides they cannot be 'proved' because they become *a priori* and constitutive of experience (see Chapter One). Business knowledge exists when organizations employ concepts that guide human action in the service of business goals. New knowledge is created when new concepts are formed that direct and regulate new human actions. Post-industrial businesses are those in which knowledge, as know-how for the production of services, products or other knowledge, is seen as the key business resource. The title of this work suggests the lack of, and need for, heuristic systems methods that support the creation of such knowledge in contemporary business.

OBJECT

The primary focus of this work is knowledge as a guide for human action: how to create, maintain and develop it in post-industrial business.

SITUATION

This work arises out of twelve years of experience in attempting to change business organizations. The frustrations of this period led the author to study in the field of systems thinking and practice. Contemporary systems methods such as the Viable Systems Model (Beer 1985), Soft Systems Methodology (Checkland 1981), Critical Systems Heuristics (Ulrich 1983) and Intervention Identification Process (Strümpfer and Ryan 1996) were used in practice by the author during this time. These methods were effective in enabling groups to construct shared maps of action. However, the actual projects and actions that arose out of these interventions were often met with subtle systemic resistance. At first, this resistance was naively explained by the author as individual resistance to change or political maneuvering. Recently, the author has had the opportunity to work with organizations that are attempting to create new knowledge about new processes and systems. The problems faced in such creative design work are similar but more pronounced, than those of organizational change. New ideas are easily smothered in day-to-day business conversations. Subtle systemic forces limit and curtail emerging concepts and themes. The *a priori* and regulatory goals of everyday conversation starve new ideas of the circulation they require in order to develop into business knowledge. A new idea – like change – seems to emerge and survive within a business only under certain enabling conditions.

The organizations from which the current work was seeded can be viewed as "post capitalist" (Drucker, 1994). The sources of knowledge within these businesses are becoming more differentiated and specialized. Within the relatively limited complexity of industrial organizations it is possible for few to have knowledge, and to realize the benefits of it through the clear direction and control of the actions of others. "The knowledge-based organization, by contrast, has to assume that superiors do not know the job of their subordinates." (Drucker 1994, p.107). The new *knowledge-based* businesses need to build competence in creating new knowledge and increasing the productivity of existing knowledge. It is no longer possible for one person to have all the knowledge required to develop and produce new products and services. New ways of collective

working will need to be developed. These approaches will be collaborative – they will respect individual differences while supporting the formation of shared pragmatic understanding.

Advances in personal computers and communications, and the internet and email revolutions are some of the factors that are increasing choice and complexity in previously contained businesses. The levels of complexity inherent in current business and social environments are of a different order to those, which organizations developed during the industrial age, were designed to cope with. In a society where one can watch a war live on television, converse electronically with individuals on the other side of the planet, and obtain information instantly on any subject one wishes, it becomes increasingly difficult for systems managers to operate in a totalitarian manner. Systems management is challenged by the rise of the knowledge worker, a situation in which knowledge, not machines, becomes the prominent means of production.

- This age of complexity and difference is reflected in contemporary philosophy where the post-modern movement has questioned the legitimacy of the grand unitary narratives of the industrial era. Post-modernists argue against any context-free final answers or truth. Instead Lyotard (1984, p.xxiv) declares that "The society of the future falls less within the province of a Newtonian anthropology (such as structuralism or systems theory) than a pragmatics of language particles. There are many different games – a heterogeneity of elements. *They only give rise to institution in patches – local determinism*" (my italics). These patches of institution emerge around competing conversations (each with its own *a priori* end or goal). An individual in a post-capitalist business may be part of many such local institutions within a single day. The impact of local determinism is apparent in a containing society in which subcultures, special interest groups and worldviews proliferate. Traditional business has reacted to this pluralism with a parallel proliferation in management approaches and fads (Jackson, 1993). Businesses are overrun with interventions that attempt to re-order the post-industrial diversity by forcing it into industrial methods and structures.

CONCERN

The author views post-modernism not only as a new and different way of viewing the world but as a condition, a situation in which knowledge-based businesses find themselves. No systems-based methods specifically address the challenges this condition presents to post-industrial businesses. Flood (1990) constructs an argument for complementarism in the face of diversity, but does not provide any practical heuristics or methods in support of this. Jackson (1991, p.299) argues that "The response of systems thinking to the post-modern challenge has so far been, with the exception of Flood's contribution, to largely ignore it".

QUESTION

What heuristic systems methods could be developed to support the creation of new knowledge in post-industrial business? In what way might the systems idea be useful in organizing one's thoughts and actions in post-modern situations? Jackson (1991, p.299) argues that there are issues raised by post-modern philosophy (and the author will argue by the emergence of post-industrial knowledge-based businesses) that have "important implications for systems thinking and practice".

Four specific issues are highlighted:

Logic and order – The feasibility of these in systems is questioned by post-modernism.

Progress – Performance and emancipation are considered potentially dangerous traps.

Power – Is central to a post-modern view, but is ignored or simplified by systems thinking.

Language – Is assumed transparent by systems thinking, but is assumed deceptive by post-modernist philosophy.

These issues will guide the effort to develop heuristic systems-based methods to support new knowledge creation in post-industrial businesses.

CONTEXT

The following circumstances surround this work:

1. Actual systems practice within business organizations – the author's suspicion of systemic resistance.
2. The four issues raised by Jackson above.
3. The lack of systems methods to address the post-modern condition in contemporary business in a practical way.
4. The need to ground any new systems methods for knowledge creation in post-industrial businesses in an appropriate philosophy.

PRETEXT

Given the above context, the author intends to approach the question by appropriating aspects of post-modern philosophy into new systems methods and practice. This approach is motivated by Churchman's (1968) *The Systems Approach.* In concluding this definitive work Churchman (*ibid.* p.230) describes the nature of systems as a "continuing perception and deception, a continuing re-viewing of the world of the whole system and its components". This thesis participates in such a systems process; it is an episode that re-views knowledge systems from a post-modern point of view. As with any perspective it will be "terribly restricted" (*ibid.* p.231) by definition. *The contribution of the current work to systems thinking will be to explore, articulate and appropriate some of the aspects of the post-modern framework into the systems approach.*

Churchman (*ibid.* p.231) provides the rationale and inspiration for the approach taken in this thesis when he contends that: "*The systems approach begins when first you see the world through the eyes of another.* Another way to say the same thing is to say that the systems approach begins with philosophy". He challenges us when reading philosophy to climb into the philosopher's skin and to believe – to see – the world as she or he does. This challenge is one that has spurred the author on during work on this manuscript. It lies as a pretext to all that may be said and stated in the pages to come. The author has

been convinced by the philosophy of Kant, Lewis, Foucault, Gadamer and Lyotard. All the aspects appropriated from these philosophers add perspective and insight to our understanding of knowledge systems. Churchman challenges us to occupy the philosophical positions of others in order to appreciate the limitations of our current view. If the author meets this challenge, it is through the synthesis of the philosophical viewpoints and his practice into the model and heuristics proposed below.

THESIS

A pragmatic position is assumed in regard to knowledge. Knowledge in business is viewed as guides for human action. Businesses build knowledge that is used to steer members' actions in managing, developing, coordinating, producing and implementing processes that produce products, services or further knowledge. New knowledge, as guides for action, emerges in business conversations. Two main forces precipitate this emergence: the individual subjects and the formative system they find themselves in. The utterances that make up conversation are emergent phenomena whose occurrence enables or regulates further utterances. There are three sub-systems within any organization as a knowledge system:

1. *The formative system*: This is the system that enables or regulates what can be expressed and thought by individuals within a specific business situation. It is an *a priori* matrix of concepts, procedures, patterns, and systems ideas that are in circulation and used to guide members' actions within the business.
2. *The individual subject*: As a system the individual has a set of *a priori* concepts and systems ideas that guide his or her thoughts, utterances, and actions.
3. *The conversation system* where the formative system and the individual subject meet. These conversations are either regulative or generative in nature. Regulative conversations have *a priori* elements that govern how the utterances of individuals are articulated and linked to one another. Generative conversations have as their stake the creation of new knowledge. They seek the development of new concepts, procedures, patterns and stakes.

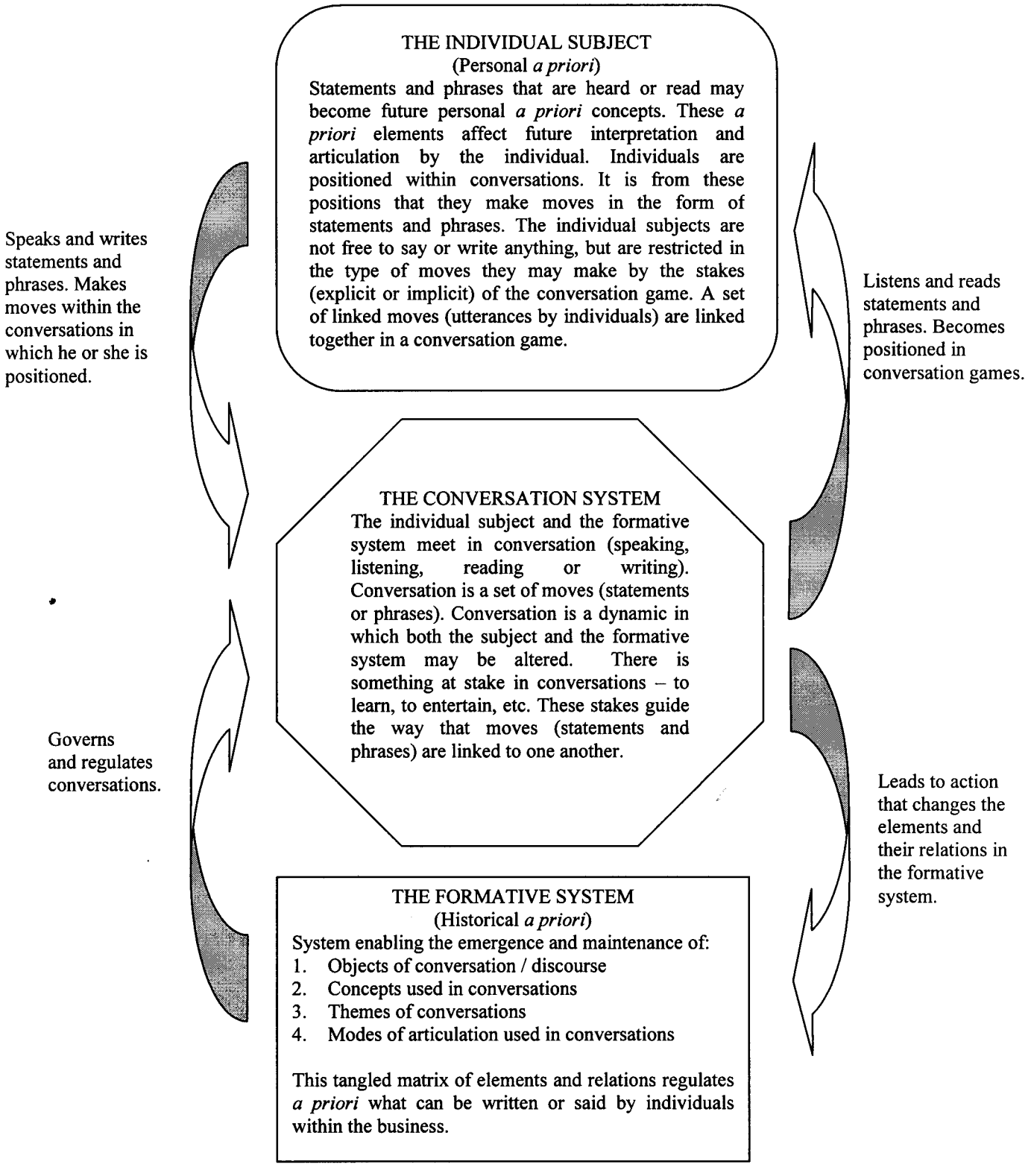

Figure 1: Conversation, individual subjects and the formative system

This system of elements that guide human actions and the human actions that in turn shape it are ultimately uncontrollable at a micro level. However, interventions can be made into the system with the aim of regulating and governing the conversations that guide the system of human actions. In appropriating aspects of post-modern philosophy into new systems methods for knowledge creation in post-industrial business, this dissertation will argue for the relevance and usefulness of the above knowledge system model and develop heuristics to support interventions aimed at specific areas of the model. Three heuristic methods are proposed.

Firstly, a framework (Knowledge Systems Diagnostics) is developed for inquiry into and the mapping of the relevant formative system in operation within a business. This is achieved by appropriating Foucault's (1972) work into a set of critical questions. The inquiry is aimed at developing a description of the elements and relations that enable the formation of the objects, concepts and themes that occur within a business's conversations. The formative system positions individual subjects within a matrix that enables them to say and think certain things at specific times and places within the business. By mapping this system of formative elements and subject positions one can develop an understanding of how knowledge (as concepts, objects and themes which guide action) emerges and is maintained within a business. Conducting such an inquiry also provides a mapping of how the position of individuals influences their perspective, and how these emergent perspectives regulate what individuals say in business conversations. Armed with such an understanding one can then develop designs to facilitate generative conversations that aim at developing new knowledge within the business.

Secondly, a set of heuristics is proposed for the support of generative conversations. Generative conversations are those that aim at the emergence of new concepts, systems ideas and themes that may guide future action. This thesis will argue that most conversations that occur within business today are regulative. In regulative conversation ends and stakes that are *a priori* (either historical or personal) govern the utterances of

individual subjects. Only certain things can be said within a regulated conversation; there are unwritten rules and laws governing the event. The heuristics provided to support generative conversations have their basis in Lyotard's (1988) philosophy of discourse. The systems work of Vickers (1970) is used to develop the notion that one becomes trapped in business conversations that limit the possibility of saying new things. If successful, generative conversations lead to concepts and systems ideas that are new within the business.

Thirdly, a framework to support the construction of a new business story is provided. Generative conversations are not enough to ensure change. Somehow, the concepts, systems ideas and themes that emerge from generative conversations need to be developed and crafted so that they can survive and prosper within or alongside others that are currently circulating in the business's conversations. The construction of a new systems story makes use of recent practice in narrative therapy (Freedman and Combs, 1996) and therapeutic conversations (Gilligan and Price, 1993). These approaches move from the systems to a story paradigm. The approach has deep links to systems and particularly to Bateson (1979). The author's framework synthesizes the above and contemporary systems approaches into a method to support the group construction of a systems story. This constructed narrative takes the new concepts, systems ideas and themes that emerge during generative conversations and, by deconstructing the business's current narrative, finds a place to fuse the two. A new narrative, which includes the new guides for action implicit in the new themes, is then constructed.

MODE

The mode of this work is philosophical, systems-based and pragmatic. It begins with philosophy and works through systems ideas towards pragmatic heuristics that can be used in post-industrial business. The structure of the thesis reflects the 'individual subject – formative system – conversation system' model advocated above and is as follows:

Preface.

This current section's purpose is to provide a "reading dossier" (Lyotard 1988, p.xi) that forms a macro view of the whole thesis, its argument, context and parts. It aims to make the reader aware of the position of the author and the essence of the thesis. It sets out the starting position of the author in regard to the object of study and the systems field.

Chapter One: The individual as knower.

This chapter explores the philosophies of Kant (*The Critique of Pure Reason*, 1787), Lewis (*Mind and the World Order*, 1929) and Skolimowski (*The Participatory Mind*, 1994) in order to construct a model of the individual subject as a knower. Kant's foundational ideas in regard to systems, individual subjects, the limits of knowledge and *a priori* frameworks form the basis of the model. This basis is developed using Lewis's ideas of conceptual pragmatism, the pragmatic *a priori* and the notion of knowledge as guides for action. Finally, the continuously evolving nature of individual knowledge is explored using the work of Skolimowski. The chapter describes 'the individual subject' component of the knowledge systems model as described in the thesis section above.

Chapter Two: Systems of knowledge formation.

This chapter interprets the philosophy of Foucault (*The Archeology of Knowledge,* 1972) in order to develop a model of the knowledge formation system at work within a business. It provides a radical opposition to the individual-centred view presented in Chapter One. The formation of the objects, concepts, themes and modes of articulation used in business conversation are described. An inquiry framework is developed which helps map the elements and relations that make up a business's system of knowledge formation. The chapter describes 'the formative system' component of the knowledge systems model as described in the thesis section above.

Chapter Three: Conversations as systems.

This chapter appropriates the philosophy of Lyotard (*The Differend,* 1988) in order to develop a model of conversation. Conversation is seen as the meeting of the formative

system and the individual subject. The ideas of regulative and generative conversations are proposed, contrasted and explored. A micro perspective is adopted, in which Lyotard's 'phrase' is used as the unit of analysis. The idea of business conversations as games that position individual subjects is developed. Each utterance is seen as a pragmatic move, with moves being linked to form a conversation game. In regulative conversations some (explicit or implicit) stake governs this linking. In generative conversations such stakes are permitted to emerge freely out of a dynamic of creative moves. Guidelines and rules for generative conversations are provided. The chapter describes 'the conversation system' component of the knowledge systems model as described in the thesis section above.

Chapter Four: Systemic story.

This chapter uses recent theory and practice from the fields of narrative therapy and systems in order to develop a method for the group construction of a systems story. Bateson's (1979) ideas of story, relevance and the difference that makes a difference are appropriated into a process aimed at transforming the new stakes and themes into narratives of meaning and action. It is argued that story is a useful medium for the development and connection of new knowledge into current local knowledge. Freedman and Combs's (1996) model for narrative therapy is used as a skeleton around which the notions of formative system, conversation and individual meaning are woven. The basic structure of the systems story building process is:

1. Deconstruction of dominant regulative conversations that represent the local current knowledge (guides for action) operating in the business;
2. Identifying potentially new knowledge concepts, systems ideas and themes from generative conversations. These are seen as exceptions and possible turning points in the current dominant story;
3. Construction of an alternative story that allows the development and incorporation of the new themes into the current regulative conversations.

Systemic story makes use of all components of the knowledge systems model as described in the thesis section above.

Chapter Five: Heuristic practice.

This chapter provides initial application illustrations of the three heuristic methods developed in this work. The methods are designed as stand-alone devices or can be used in sequence. The logic of such a sequence would be first to use knowledge systems diagnostics to identify the key formative systems elements influencing the business. The next step would be to arrange that the individuals who best represent these participate in practising a generative conversation. Lastly, the new themes that emerge from the generative conversation would be developed into narratives of meaning and action using the systemic story framework.

Chapter Six: Critical reflection and conclusions.

This closing chapter draws conclusions from the preceding work and takes a critical view of the methods constructed. It explores the limits, risks and practical applicability of the three heuristic methods. The methods are evaluated against the four post-modern implications of logic and order, progress, power and language as identified by Jackson (1991, p.299).

INTRODUCTION

This chapter aims at developing a descriptive model of the individual subject as a knowing system within contemporary business. This will be done by first describing the *a priori* nature of knowledge and the synthetic functioning of the individual subject. Kant's (1787)[1] knowledge model containing sensibility, understanding and reason is explored and appropriated for individual subjects within contemporary business. The function of Kant's systems ideas and ideas of reason are described. Secondly, the pragmatic nature of *a priori* concepts is described by appropriating ideas from Lewis's (1929) conceptualistic pragmatism. Lastly, the participatory nature of personal knowledge is highlighted using the philosophy of Skolimowski (1994).

KANT'S INDIVIDUAL AS A KNOWLEDGE SYSTEM

Kant is interested in the *a priori* concepts that enable us to have knowledge: the principles that allow a synthesis of particulars so that we may know. In this sense he takes a systems approach and builds a descriptive model of the components and workings of an individual as a knowledge system (see figure 2 p.27). There are three fundamental components of this system that interact and in so doing enable individuals to produce knowledge. *Sensibility* allows one to receive initial representations as objects. *Understanding* enables one to think about the objects sensibility has provided as concepts. *Reason* makes use of principles to arrange and organize understanding's concepts. Firstly, the focus will be on how individuals are able to know things as objects. Secondly, the role of reason in knowledge will be examined.

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[1] For ease of reading, all references to Kant's *The Critique of Pure Reason* will be denoted by (b + original page number). If they occur only in the 1st edition they will be denoted by (a + original page number).

SENSIBILITY

Kant (b35) begins by describing how it is possible for an individual to perceive sense objects as separate things. He does this by isolating the sensing process in order to discover any *a priori* elements that may be involved in it. A four-step logic is followed:

1. Isolate sensibility by removing any concepts (produced by understanding) from it;
2. What remains is empirical intuition, from which all sensation should be removed;
3. What are left are pure intuitions, which are *a priori* forms of sensible intuition;
4. Two such pure intuitions will remain: time and space.

Kant uses metaphysical explanations to argue for space (b37) and time (b45) as pure intuitions. Metaphysically, space and time are not empirical concepts; we cannot know them from our external experience and five senses. Instead, they are *a priori and are necessary as a basis for any individual to experience empirical intuitions.* In order for one to experience any object one has to locate it in space and time. Without the preconditions of space and time, one would be unable to know anything.

UNDERSTANDING

The process enabling the connection of sensible intuitions (givens) to concepts of understanding is labeled *synthesis*, which explicitly indicates "that we cannot represent anything as connected in the object without having previously connected it ourselves" (b129). Where does the capacity for connection and synthetic unity come from? An individual's self-consciousness is the component that enables ultimate connection and unity in appreciation; "All the manifold of intuition, has, therefore, a necessary relation to the *I think*, in the subject in which this manifold is found" (b132).

This 'I think' is a spontaneous act and is labeled "pure appreciation" to differentiate it from the empirical appreciation of sensibility (b132). In essence, Kant (b132) is arguing that the ultimate unity and wholeness of our experience is synthesized in "the

transcendental unity of self consciousness". This "faculty of connecting" (b134) is *a priori* and is the foundation of the individual knowledge system. Kant considers this principle of the primary individual synthesis of sense data as "the highest in all human knowledge" (b136). The argument for the individual self-consciousness as the primary source of the connections without which thought would be impossible is analytic and purely logical in nature. Kant (b137) recognises this in clarifying that "it states nothing more than that all my representations in any given intuition must be subject to the condition which alone enables me to ascribe them".

Kant's key contribution to the understanding of the individual knower is the idea that in order to have knowledge one requires *a priori* pure concepts that synthesize the raw representations provided through sensing in space and time. The fundamental point is that some *a priori* synthesizing concepts are required to transform naked sensory input into understandable representations.

The figure on the following page illustrates Kant's knowledge process in which "All our knowledge begins with sense, proceeds thence to understanding, and ends with reason" (b355).

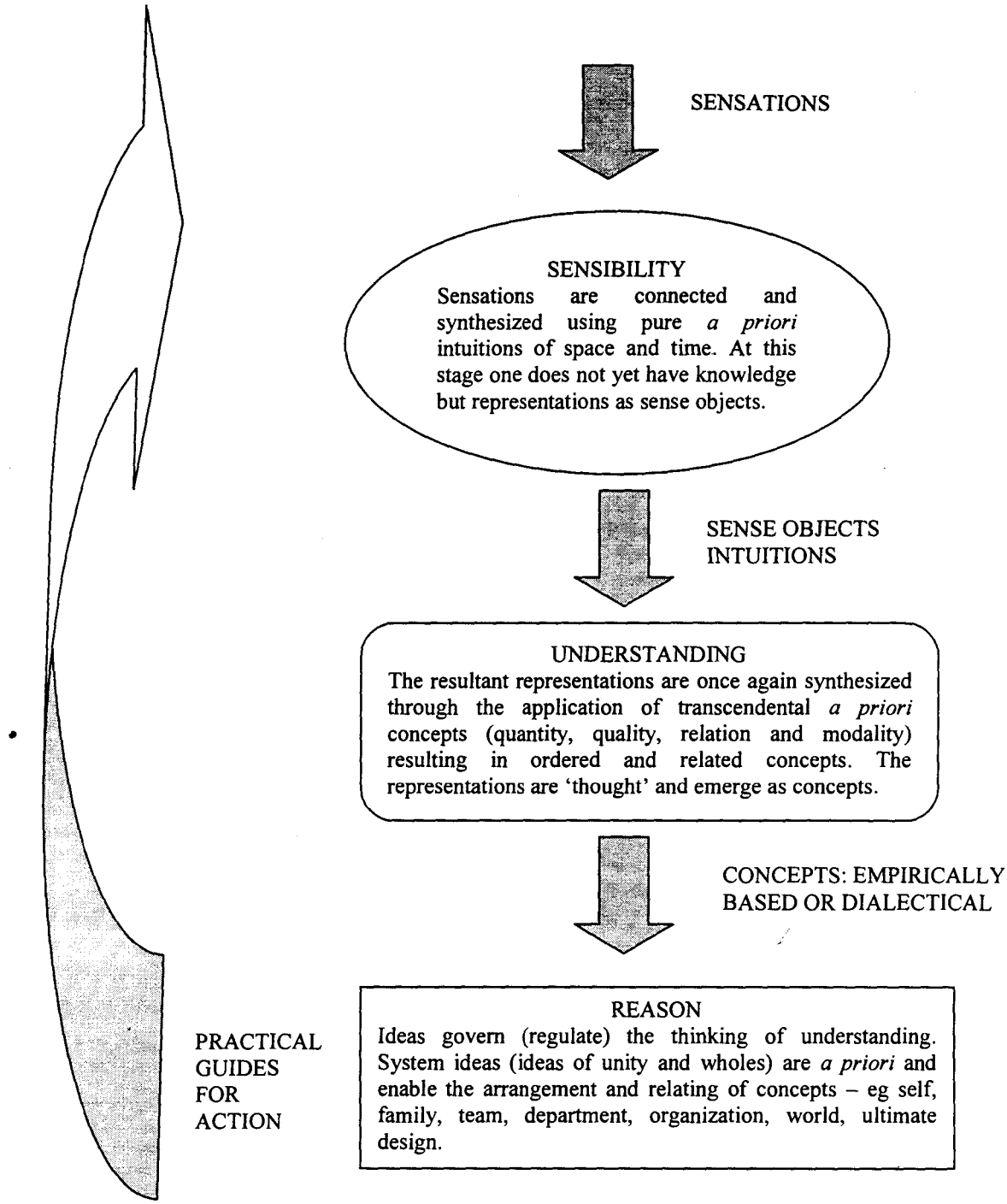

Figure 2: Kant's knowledge process

All sensible input must be subject to one's base ability to connect in order to produce a synthesized whole, but in order to understand these representations the *a priori*

synthesizing concepts need to be applied. Kant (b104) calls these *a priori* concepts "categories". These enable one to think of one's initial sense intuitions as objects. Thus, Kant (b142) links the pure synthesis of appreciation to the application of the categories, for to 'think' and to 'know' an object are different. Kant (b146) defends this by arguing that "in knowledge there are two elements: firstly, the concept, where an object is thought (the category); and, secondly, the intuition, whereby the object is given". Knowledge implies the application of thought to "objects of the senses" (b146). Knowledge in this sense is a process linking concepts and intuitions, the individual and sensory inputs from the environment. Concepts alone do not afford one any knowledge; it is in the process of synthesis between concept and empirical intuition that knowledge arises. Kant (b288) makes it clear that "the categories are not in themselves knowledge but mere *forms of thought* for the construction of knowledge from given intuitions".

The table of pure concepts used in the synthesis of understanding is deduced from the logical forms of judgement. Kant divides the table into four and provides *schema* for each concept. These *schema* are general rules that mediate between the concept and the intuition.

Division	**Category** (concept)	***Schema*** (mediation between concept and intuition)
Quantity	Unity Plurality Totality	Number, enables the synthetic unity of quantity, thereby facilitating the generation of time itself.
Quality	Reality (being in time) Negation (not being in time) Limitation	Intensity, as the permanence in time and space enables the synthetic unity of quality.
Relation	Inherence and Subsistence Causality and Dependence Community	Permanence, in time. Succession, subject to a rule that consequence follows ground in time. Co-existence and reciprocity of action.

Modality	Possibility – Impossibility	The representation of an object at any time.
	Existence – Non-existence	Being of an object at a certain time.
	Necessity – Contingence	Being of an object for all time.

Table 1: Pure *a priori* concepts of synthesis

Understanding produces concepts of objects out of the sense intuitions passed to it, enabling individuals to think of things as objects. It is important to note that Kant does not consider the above table to be the only *a priori* concepts required in understanding. He does however regard them as the "true primitive concepts of the understanding" (b106). Some examples of derived *a priori* concepts are given to illustrate his point. From the category of cause and effect, the concepts of force, action, and passion are derived, and presence and resistance are derived from the category of community. *A priori* concepts are "predicables" (*ibid.*) in that they assert something in the process of synthesis.

Understanding for the individual occurs between the processes of sensing and reasoning. It entails the application of the *a priori* concepts of synthesis (see table 1) to raw sense input, enabling the individual to think of sense objects as concepts. In a broader sense, understanding arises out of the application of any *a priori* synthesizing concept to the sensory given. Understanding can however move beyond the sensory input to "judge synthetically, to affirm and decide regarding objects in general" (b88). This dialectic process needs however to be guided by reason.

REASON

"All our knowledge begins with sense, proceeds thence to understanding, and ends with reason" (b355). A clear distinction is made between understanding and reason. Understanding enables "the unity of appearances by virtue of rules"; reason enables "the unity of rules of the understanding under principles" (b358). Reason is not applied directly to sense data as understanding is, but attempts to arrange the concepts produced

by the understanding into an *a priori* rational unity or system. The systemic nature of reason is highlighted by Kant's claiming that "If we review our knowledge in its entire extent, we shall find that the particular business of reason is to arrange it into a system, that is to say to give it connection according to a principle" (b672). The task of reason is to provide systems principles through which the concepts of understanding may be connected and organized into wholes. It allows the individual knower to make sense of the multitude of different concepts of objects that are produced through the *a priori* conditioning of the understanding.

Since reason is a "knowledge to which no actual experience ever fully attains", its principles "enable us to conceive", whereas the *a priori* concepts of synthesis enable us to understand our sense perceptions (b366). The principles of reason are labeled 'transcendental ideas', in the platonic sense of being "archetypes of things themselves" (b368). The ideas of reason are most useful in things practical where we may be successful in "actually bringing about that which its concept contains" (b385). Once we conceive of situations as systems we can then act in such a way as to produce effects that are removed in time and space.

THE SYSTEMS IDEAS OF REASON

The ideas of reason are necessary for reason to be able to guide understanding in "dealing with experience in its totality" (b378). They cannot be empirically presented and no empirical object can be found for them. One can view the ideas of reason as the three key systems abstractions (totalities) that reason requires. The supreme idea of reason includes the three and aims to "collect into an *absolute whole* all acts of the understanding with regard to every object" (b383). Kant defends these ideas of reason by referring to their practical use and arguing that they are an "indispensable condition of all practical employment of reason" (b385). Our practice of any of the ideas of pure reason should be of a critical nature since it is "always limited and defective", occurring within "indeterminable boundaries" of an absolute whole, yet still guided by the concept of "absolute completeness" (b385).

One's representations can contain three general relations. Firstly, they can relate to one as a subject, secondly to objects as appearances, and thirdly to objects of thought in general. For each of these relations reason requires an unconditioned idea (whole) representing the "synthetical unity of all conditions" (b390). The idea of pure reason containing the unity of relations of representations in the subject is the "soul" (psyche) and "is the concern of *psychology*" (b391). The "world" as an idea of pure reason represents "the sum total of all appearances" and is "the concern of *cosmology*" (*ibid.*). Finally, Kant (*ibid.*) argues that the idea of pure reason containing "the possibility of all that is capable of being thought", is "God" and "is the concern of all *theology*".

How do these whole systems ideas relate to individual subjects working in a contemporary business? Individuals may have and use the idea of a whole self that is continuous from day to day. This idea of reason will guide their actions and the actions of those around them. They may have and use the idea of a team or a department and act according to such notions. Finally, the notion of some final design or god may guide the way they act. These systems ideas are so common that they are not appreciated as pure ideas of reason. One can never have knowledge of an object that corresponds to any ideas of wholes that are used day to day. However, one possess "a problematical concept" for each idea (b397). *This is the crux of Kant's critical approach to reason and knowledge.* Kant argues that there are "inferences that contain no empirical premises, and by means of which we infer from something that we do know, to something of which we do not even possess a concept". We infer to problematic concepts (ideas of pure reason) for which we have no objects and then, "by an unavoidable illusion, ascribe objective reality" to them (b397). These systems abstractions are necessary by the very nature of reason. "They are sophistications, not of men, but of pure reason itself, from which the wisest man cannot free himself" (b397).

THE REGULATIVE NATURE OF SYSTEMS IDEAS

The pure ideas of reason (the individual subject, the system, the ultimate design) should not be used in a "constitutive" manner since they "cannot be concepts of objects" (b672). They cannot be used to describe reality as this would lead to dialectical illusions, which are far removed from empirical reality. However, without these systems ideas a useful understanding of experience as a whole set of objects would not be possible. Such a unity of understanding "as a mere idea – is in fact merely a unity *projected*" (b675). Kant (b673) argues that the systems ideas should be "regulative ideas" and "are not derived from nature; on the contrary we employ them for the interrogation and investigation of nature, and regard our knowledge as defective so long as it is not adequate to them". The ideas of pure reason are *critical principles for inquiry*, since they are general ideas, which are "admitted as *problematical* only" (b674). The universality of the ideas "remains a problem" (b674); the only solution is a critical one, in which we reflect on our use of the systems ideas to guard against illusion. The systems ideas provide one with the highest (most general) guides for rational inquiry into any situation. Any *reasonable* inquiry should "regulate its procedure according to these ideas" (b698).

"The order and regularity in appearances, which we call nature, are, then, something which we ourselves supply, nor would we encounter them if we, or the nature of our mind, had not originally supplied them" (a215). This could be rephrased as: "The order and regularity in appearances, which individuals call *system or business*, are, then, something the individual knowers themselves supply, and they would not encounter them if they had not first *organized their thoughts as a system*".

THE PRAGMATIC *A PRIORI*

Lewis (1929, p.227) follows Kant, but argues against *a priori* knowledge that is absolute and limits all possible future experience. Instead *a priori* knowledge is viewed as principles, to which all truthful ("veridical") experience must comply. When an individual interprets the given, if it does not fit into his or her *a priori* concepts and

systems ideas then "so much the worse for the experience" (*ibid.* p.224). Concepts and systems ideas are *a priori* because they are the criteria against which things are judged by the individual to be real or unreal. Lewis (1926 p.234) argues that there are three elements in knowledge which are inseparable in the process of thought but can be distinguished in analysis:

1. The 'given', which is comparable to Kant's sensible intuitions;
2. The 'concept', which is *a priori* and influenced by the individual's need or interest;
3. The interpretative act, which applies the concept to the given.

A pragmatist approach to knowledge focuses on the interpretive act and its practical consequences. Appropriating Lewis's (1926 p.234) basic model of the pragmatic approach results in the following:

- Knowledge is constructed by the mind;
- Knowledge is directed to some practical situation;
- A practical situation implies external elements, something given to the individual;
- A practical situation implies an individual with needs and interests;
- Without the 'given' the practical problem of need satisfaction would not occur.

Lewis (1929 p.228) argues that *a priori* concepts and principles can be transformed and even altered abruptly as evidenced in social history. The developing individual is testimony that although continuity of categorical principles is a feature of personality these may change with the necessary supporting rationale. Lewis (*ibid.* p.233) is critical of the "rationalist prejudice" which promotes unalterable, absolute and universal *a priori* concepts and systems ideas. He believes that this approach limits the usefulness of the *a priori* conception. Particular categories such as cause and effect are admitted to have longevity and general occurrence. However, Lewis (1929, p.235) points out that the labels given to categories are often stable, but the ways of classifying and interpreting that they prescribe are constantly developing.

The *a priori* concepts and systems ideas that an individual uses are always accountable to some pragmatic measure arising out of their "needs and interests" (*ibid.* p.239). The individual knower is continually involved in the following six-step iterative process:

1. The individual has a need or purpose;
2. The purposeful assumption of concepts and attitudes;
3. Action guided by the assumed concepts;
4. Disappointment or satisfaction in the ends realized;
5. The consequent alteration of concepts, attitudes;
6. New actions guided by the altered concepts.

Lewis argues that knowledge is created when the individual "can frame the data of sense in a set of concepts which serve as guides for action" (1926 p.243). The *a priori* concepts that are used by an individual to frame the sense data given to them are influenced by their need or interest at that time. Individuals have the potential to reflect on the usefulness of the *a priori* concepts they have assumed, and to assume new concepts. Knowledge is constructed through a process of trial and error learning, in which individuals interpret situations through one pattern of concepts and systems ideas after another. Their practical success or failure leads them to adapt their concepts, which then guide them to act in ways that are more likely to best serve their purposes. Lewis (1929 p.267) is critical of pragmatism that is used in the justification of belief by superficial individual desire. He argues that important ends, which are required for long-term satisfaction of needs, should take precedence over individual desires. Such overriding ends include: intellectual consistency; economy; completeness of comprehension and simplicity of interpretation.

The process of creating and improving knowledge is not simple since "any set of basic concepts has vested interests in the whole body of truth expressed in terms of them, and the social practices based on them." (*ibid.* p.269). An individual's knowledge needs to fit into the network of external concepts and systems ideas that are in use within their work or social situation. Lewis argues that for two minds to understand each other they

"absolutely must" have concepts in common (1926 p.238). He disputes the assumption that individuals can understand each other if their sensible intuitions are the same. There are endless examples to illustrate this, one being when two minds communicate about physical things. Communication is impossible if the two do not have the same concepts of feet, pounds and inches. In sensory terms, a mind's understanding of a foot rests in some "immediate image of so-long-ness" and "movements which I make when I put my hands so far apart" (*ibid.* p.238).

KNOWLEDGE AND THE 'WORLD'

Lewis rejects the traditional demand that reality should be orderly. He points out that "failure of a certain type of order is the criteria which excludes the given from reality (of a certain type)" (1929 p.349). One's concepts and systems ideas are all inclusive so that any given that does not fit into an individual's classification will be classified as 'unreal' for later sorting and reflection. The key question for Lewis (*ibid.* p.351) is "how much of experience will be reality, and how much illusion". The answer depends on the intellect and conceptual power of the individual. When one expected order fails, the individual has to detect another one which is more definite. Lewis (*ibid.* p.351) notes that just as our empirical knowledge is probable, so is the order that we demand of reality. There is a probability that reality is orderly, for in a world where there is absolute order in reality – "whatever could be learned would not be worth knowing, because nothing could be done about it" (*ibid.* p.355). There is a reciprocal relationship between the individual's knowledge and the order of his or her world.

> The mind will always be capable of discovering that order which is requisite to knowledge, because a mind such as ours, set down in any chaos that can be conjured up, would proceed to elicit significance by abstraction, analysis and organization, to introduce order by conceptual classification and categorical delimitation of the real, and would, through learning from accumulated experience, anticipate the future in ways which increasingly satisfy its practical intent (*ibid.* p.391).

Rosenthal (1976, p.94) warns that it is easy to confuse metaphysics and epistemology when discussing Lewis's concept of a world. The world is an epistemological concept whereas the concrete process of reality is a concept of metaphysics. A 'world' is an "encompassing structure which emerges from the application of an abstract conceptual system to the concrete process and which, as the logical interaction of both, is identical with neither" (*ibid.* p.95).

PARTICIPATORY KNOWLEDGE

Henryk Skolimowski presents a new theory of knowledge in his 1994 book *The Participatory Mind.* Participatory philosophy argues that knowledge evolves and in so doing constantly recreates the 'world'. This approach continues a tradition started by Heraclitus, for whom there was an "identity of structure between the operations of the mind, as expressed in thought and language, and those of the reality which it grasps" (Honderich 1995). One's ways of knowing and 'reality' co-define one another. Individuals are constantly articulating the world and in so doing co-creating it. For Skolimowski, "*Reality is always given together with the mind that comprehends it*" (1994 p.16). It is naïve to speak of reality without recognizing that there is always an individual in which it is conceived. Skolimowski labels his ontological stance 'Noetic Monism'. The label 'monism' is used with some hesitation. Skoliwoski notes that the Sanskrit term *advatia*, meaning "neither this nor that but both at the same time", is more appropriate, but it would be odd to the western ear (*ibid.* p.384).

> Noetic Monism is a different kind of monism. It claims that both bodies and ideas (spirit) exist. But that their existence takes different forms. What unifies these different forms is *the evolutionary matrix,* which explains both the unity of all existence – hence monism – and also the difference within the underlying unity. All forms of existence come from the same evolutionary barrel. Yet they represent different stages of the transformation of evolution. *The different stages of evolutionary becoming are responsible for different forma of existence* (*ibid.* p. 27).

This standpoint does not deny reality, but is opposed to reality being asserted as obvious. It rejects the naïve assumption that reality is simply 'out there' for us to explore. Rather, individuals are constantly within a process of 'reality-making'. They are interacting with the universe and, through articulation, are configuring a world. Skolimowski (*ibid.* p.31) argues that "the organism receives from reality as much as it puts into it". In the process of reality-making, the mind fuses an individual's "sensitivities and the primordial stuff 'out there'". This process-biased philosophy has the individual and his or her world in a continuous state of mutual becoming. In an evolutionary process, mind shapes reality as reality shapes the mind.

Skolimowski (*ibid.* p.29) rejects his traditional education (Ph.D. in philosophy from Oxford), arguing that the history of western metaphysics and classical Newtonian science is one of 'being', in which we "think of reality as 'that object out there'". Western education and conditioning produce concepts and systems ideas that enable individuals to make worlds that seem static and structured. In contrast, participatory philosophy focuses on becoming and views reality as a continuous flux, an emergence from mind, knowledge and world. Mind, knowledge and world are the primary systems ideas employed by Skolimowski and are analogous to Kant's use of the systems ideas of self, ultimate design and world.

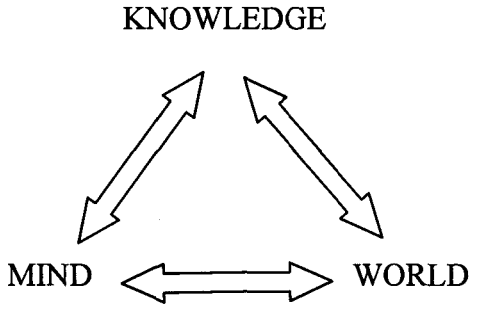

Figure 3: Co-defining ideas: mind, knowledge and world

The deep unity between our minds, our knowledge and our worlds is illustrated by contrasting classical and current physics.

Mind	Knowledge	World
Tabula rasa	Classical Physics	Mechanistic Newtonian
Co-creative	New Physics	Evolutionary becoming

(Adapted from Skolimowski 1994 p.35)

The subtle difference between participatory philosophy and critical philosophy or pragmatism is that in participatory philosophy the individual knower not only interprets but also transforms. So "the nature of our mind is the nature of our knowledge is the nature of our reality" (*ibid.* p.37). Language and articulation are key in this approach. By articulating, individuals process, transform and create their world. Knowledge allows us to articulate reality, a systemic and detailed knowledge enables rich interconnected articulation and therefore a whole and meaningful world. Knowledge drives an individual's spiral of understanding, a personal "organizing logos", that enables the emergence of his or her reality (*ibid.* p. 117).

THE SPIRAL OF UNDERSTANDING AND THE IDEAS OF REASON

Participatory philosophy asserts a circular mutual relationship between knowledge and the world, where our theory of knowledge affects our theory of reality and visa versa. There is always a match between one's 'reality' and one's ways of knowing (the application of *a priori* concepts and systems ideas): "The universe is always given to us with our mind contained in it" (*ibid.* p.79).

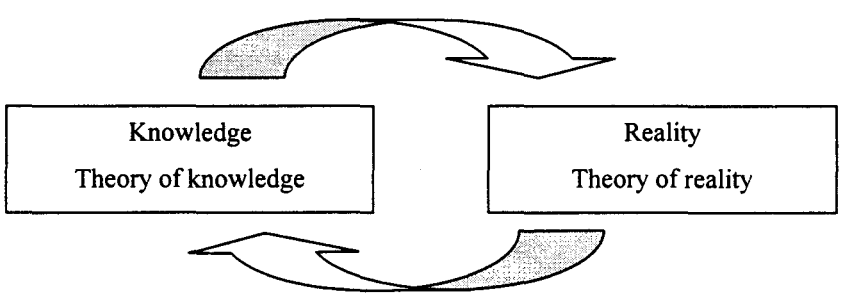

Figure 4: The reciprocal nature of knowledge and reality

The boundaries of an individual's world reflect the boundaries of his concepts, systems ideas and sensitivities. The image of a cone (*ibid.* p.80) is used to depict the boundaries of an individual's world. This metaphor allows the boundaries to expand as knowledge is attained.

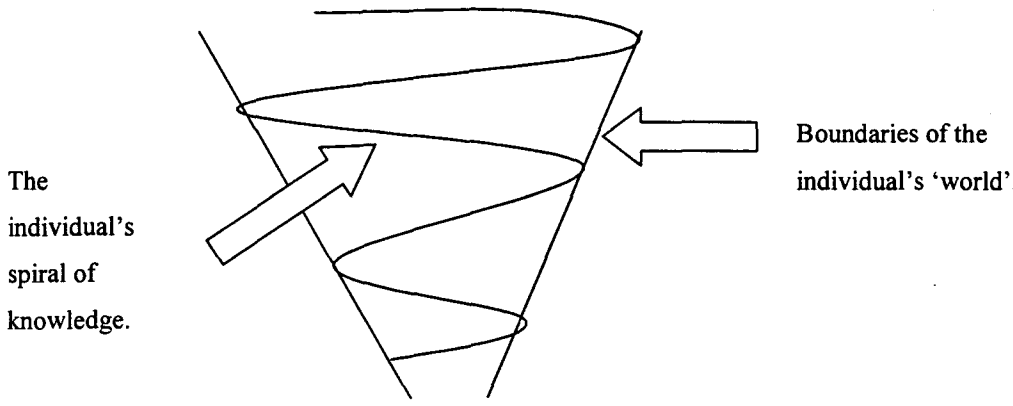

Figure 5: The spiral of understanding

- There is a vital and creative interdependence between one's world and one's spiral of understanding. This is essentially a Kantian view that sees the categories of understanding and systems ideas of reason continuously evolving. As one's knowledge evolves, so does one's world or reality. This idea corresponds with Kant's idea of reason as pertaining to cosmology. The 'world' as an idea of pure reason represents "the sum total of all appearances" and is "the concern of *cosmology*" (b390). In participatory philosophy, the appearances we appreciate are limited by our knowledge (concepts and systems ideas) and sensitivities (mind, curiosity etc.). *Knowledge as guides for action is built up assuming some 'final design'. Guides for action are predictive about and develop from the actions of a 'self' within a 'world'.*

SIMPLICITY AND COMPREHENSION

Building on Teilhard's (1959) thesis of complexity and consciousness, Skolimowski adds an epistemological dimension to the evolution of complexity. Evolution of matter is a growth in complexity and the mind has managed to evolve ways of managing this

exploding complexity. This is possible "because the mind intervenes and subdues these complexities to the imperatives of its understanding" (Skolimowski 1994, p.102). What is difficult to grasp is that the mind and the complexities are in some sense one, and that what is perceived incorporates mind. Individuals organize the stuff of the cosmos into manageable entities.

The mind deals with increasing complexity by imposing new systems ideas of order. These new ways of arranging simplify the chaotic reality in more and more powerful ways. Skolimowski (*ibid.* p.103) expresses his thesis in ancient Greek terms: "Logos is continuously organizing the chaotic cosmos". This is analogous to the idea that systems ideas are continuously organizing an individual's reality. An individual's reality-making process continues using certain systems ideas and the frameworks they imply until these arrangements are unable to cope with the ontological complexity. At this point new systems ideas emerge, which have more powerful ways of arranging.

- Four key historical ways of ordering our thoughts and therefore our worlds have been identified (*ibid.* p.138):

1. *Greek logos* emerging from the Mytho-poetic cycle.

This way of knowing emerged in the sixth century BC out of a mytho-poetic era, in which people made sense of the cosmos through gods who intervened in their lives from Mount Olympus. The primary reasoning was one of mythos. This was transformed to a reasoning based on logos, in which the world is seen to have a prevailing harmonious order.

2. *Medieval Theos* emerging from the Greco-Roman cycle.

The classical Greek culture (shared logos) was assimilated by the Romans and was spread through their empire. When the Roman empire collapsed in 410 AD a new logos began evolving. The monastéries of Western Europe produced a new reason based on

God. This medieval systems idea was a way of ordering reality in which man was required to fit into the plans of God. This was a divinely ordered cosmos with God at the top, the bishops in the middle and the peasants at the bottom.

3. *Modern Mechanos* emerging from the Medieval-Christian cycle.

As the church grew more powerful and corruption began, so discontent grew. After many centuries of influence the power of the church was widespread and the emergence of the new mechanical logos was slow. After the Renaissance, a new way of organizing reality became prevalent. Here the key systems idea used was of a large mechanical clock having clear deterministic laws. If one knew these laws nature could be controlled and managed. Francis Bacon (1561-1626), Rene Descartes (1599-1649) and Isaac Newton (1642-1727), were some of the important minds behind the mechanistic logos. It was based on a reductionist-analytic strategy that hoped to understand reality by breaking it up into small parts. The hope was, and still sometimes is, that by understanding the smaller parts we can understand the larger problems they make up. The mechanistic logos with its corresponding science and technology have accounted for many benefits, but have also contributed to many ecological disasters.

4. *Evolutionary Telos* emerging from the Modern-Mechanistic cycle.

Skolimowski (*ibid.* p.141) argues that a new epistemology and ontology of "wholeness and connectedness" is currently emerging. Ecological science with its organic systems ideas has been a forerunner of holistic thinking. However, these new systems ideas of wholeness and connection are comfortable with the idea of an open and non-deterministic universe. We are currently in the process of shifting between the systems ideas of 'machine' and 'open non-deterministic emergent wholes' and therefore find ourselves surrounded by experimentation in the midst of "things falling apart" (*ibid.* p.143).

The above historical rendition serves to show that:

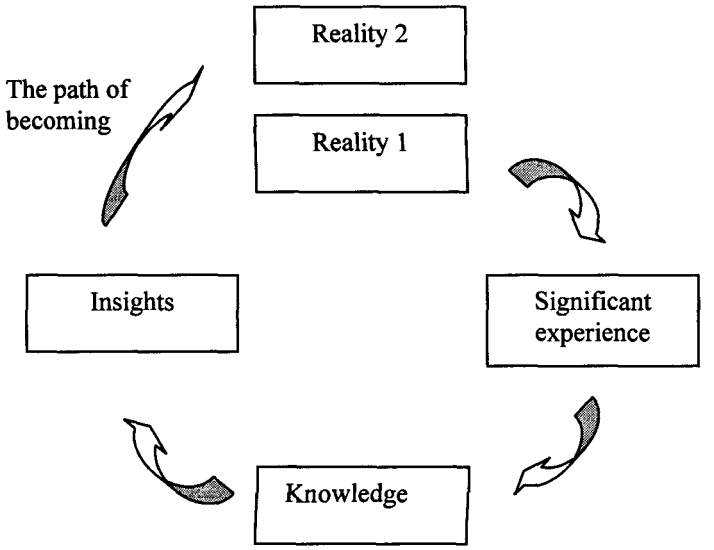

Figure 6: Skolimowski's circle of knowing

A distinction is made between insignificant and significant experiences. Insignificant experiences are those that occur in familiar contexts. They are mundane, reflex in nature and forgettable. They fit easily into an individual's *a priori* framework of concepts and systems ideas. On the other hand significant experiences are articulated and recalled over time. They touch the individual in a way that leaves them somehow changed. They are significant in that they lead the individual to articulate, rearrange and alter his or her *a priori* concepts and systems ideas. This re-arrangement leads to insights that alter an individual's reality.

MODEL OF THE INDIVIDUAL AS KNOWER

It is now possible to construct a model of the individual as knower (see p.45). The model appropriates notions from Kant, Lewis and Skolimowski. These philosophical insights are integrated into a configuration that describes the processes involved when an individual constructs knowledge. From Kant the notions of *a priori* concepts of understanding and the systems ideas of reason are taken as the basic elements of the individual's knowledge system. The systems ideas used by an individual have a considerable effect on how that individual subject constructs and makes sense of his or

her world. Also inherent in the model is Lewis's argument that knowledge is constructed when an individual frames the data of sense into concepts that serve as guides for action. The individuals who operate in contemporary business are continually interpreting situations in order to decide which actions will best serve their purposes.

In addition, Lewis's idea of a 'world' is appropriated. The world of an individual emerges out of the application of his or her abstract *a priori* framework of concepts and systems ideas to the concrete process of reality. The resulting world is by definition real and makes sense to the individual. Individuals' needs and interests drive them to develop new *a priori* concepts and systems ideas, which, when applied to concrete reality, co-produce a different world. This world is also by definition real and explainable by the individual.

Skolimowski's notion of significant experiences and their resulting insight is synthesized with the above foundational concepts, resulting in the idea that individual *insight occurs when the implications of new systems ideas and concepts are expressed as guides for action*. These actions place individuals in contact with aspects of concrete reality that they will experience through their systems ideas and concepts resulting in a new 'world'. Insight will not always occur, since reflection may simply lead to the accommodation of concepts within the individual's current knowledge, without the emergence of any new guides for action.

There are three possible processes that can occur when an individual acts. Firstly, the individual may simply *react* to the experience without reflecting on how it fits into his or her *a priori* framework of systems ideas and concepts. In this case, no learning takes place and the individual is either satisfied or frustrated, depending on the circumstances. Secondly, the individual may after reflection *accommodate* results of his or her actions and concepts encountered in the experience into his or her framework of *a priori* system ideas and concepts. This accommodation reinforces the individual's existing *a priori* framework but does not alter its arrangement. Thirdly, after reflection on his or her experience the individual may *realize* insights. These insights are in the form of the implications for their future actions of the changes in their *a priori* systems ideas and

concepts. These implications when realized as new guides for action constitute new knowledge for the individual.

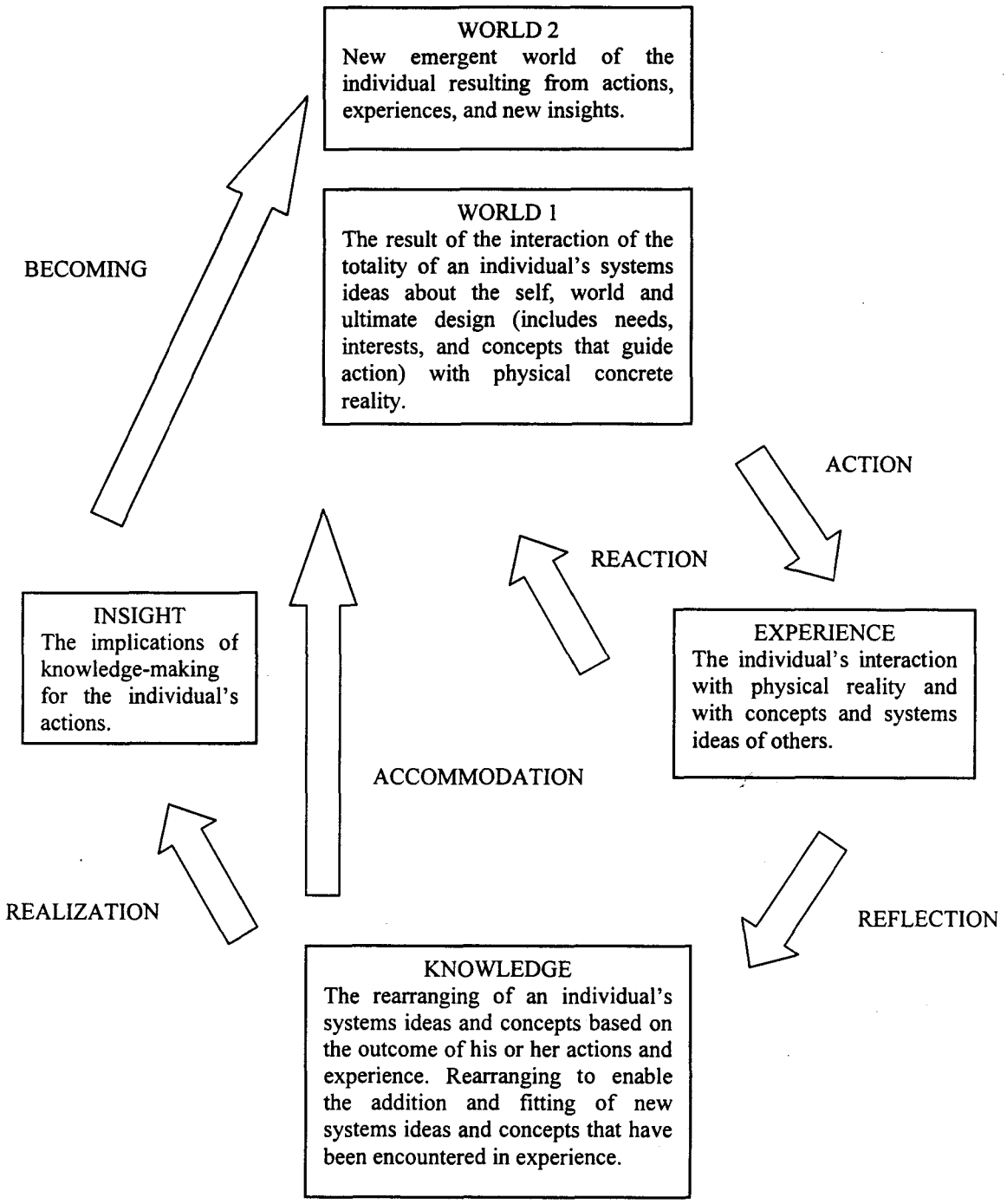

Figure 7: The individual subject as a knower

CONCLUSION

The explicit approach of this thesis is to build descriptive models and systems methods from philosophical readings. The aim of this chapter is to present a descriptive model of the individual subject as a knower. When considering the individual within post-industrial business, the following conclusions may be drawn from the model:

1. In order to operate successfully, individuals need to posses *a priori* systems ideas and concepts of a business, its markets, products, purposes etc.
2. Systems ideas and concepts are necessary but problematic in that the wholes they represent cannot be fully presented in concrete ways. Individuals need therefore to reflect critically on the concepts and systems ideas they are employing.
3. In order to acquire new knowledge, individuals must have a significant experience that they are able to articulate. It follows that in order to increase the rate of his or her new knowledge acquisition, an individual must be open to and seek significant experiences.
4. A business's knowledge lies in the articulated concepts and systems ideas that guide human action in ways that serve the organization's purpose.
5. The abstract commonalties across individuals' *a priori* systems ideas and concepts enable them to act *as if* there is a similar unity called 'organization' or 'business'.
6. Individuals' needs and interests affect the *a priori* concepts and systems ideas that they utilize.
7. The practical implications of the systems idea 'organization' can be appreciated when coordinated action between different individuals occurs. Individuals' actions arise from guides that have their source in similar *a priori* systems ideas and concepts.
8. The particular history of each individual will be unique, resulting in different mixes of systems ideas and concepts and therefore different individual worlds. The meeting of these worlds through the exchange of concepts and systems ideas provides a fertile context for significant experiences.

The next chapter will focus on how the formative system enables (or limits) the individual knower in thinking and articulating certain concepts and system ideas.

CHAPTER TWO: SYSTEMS OF KNOWLEDGE FORMATION

"One cannot speak of anything at any time; it is not easy to say something new; it is not enough for us to open our eyes, to pay attention, or to be aware, for new objects suddenly to light up and emerge out of the ground." (Foucault 1972, p.44).

INTRODUCTION: DECENTERING THE INDIVIDUAL KNOWER

This chapter interprets the philosophy of Foucault (*The Archeology of Knowledge,* 1972) in order to develop a model of the knowledge formation system at work within a business. It provides a radical opposition to the individual-centred view presented in Chapter One. The formation of the objects, concepts, themes and modes of articulation used in business conversation are described. An inquiry frame is developed that helps map these elements and relations, which make up a business's system of knowledge formation. The chapter describes 'the formative system' component of the knowledge systems model as described in the preface.

The inquiry framework is labeled Knowledge Systems Diagnostics (KSD) and aims to uncover an organization's "rules of formation" (Foucault 1972, p.38). These rules make possible the creation and maintenance of knowledge within an organization. Foucault (1972) approaches knowledge from a position which sees discourse (a group of statements) as having regularities and patterns which enable or constrain the emergence of new ideas and concepts. This view is radically different from the individual-centred approach of Chapter One, which focuses on the individual mind as the primary component in knowledge creation. This chapter argues that individuals occupy certain positions within a matrix of rules, which enable them to articulate statements. This knowledge matrix contains the rules of formation of objects, concepts, and themes, as well as the positions which individuals may occupy in conversations. Appropriating Foucault's (1972) approach allows us to view organizational change as a shift in the knowledge matrix rather than the shifting of individual minds.

The motivation behind KSD arose from ten years of practice within organizations that had been attempting to change or create new knowledge. Years of frustration led to the suspicion that there was some sort of systemic resistance operating in the organizations. Some practitioners have ascribed this resistance to 'culture', but ultimately this explanation is too abstract to be of practical use in the business situation. Blaming political interests for the failure of new ideas and change initiatives, has seemed more

realistic, although this too is a simplification. The idea that power is vested in individuals may be comforting to those with anthropocentric assumptions, but is it merely individual politics that is stalling change and smothering new ideas? The argument that in order to change organizations one requires a mind shift in a critical mass of individuals often, in practice, meets with unidentifiable resistance. The search for a useful way of conceptualizing the system that regulates thought and action within businesses led finally to Michel Foucault. By de-centring the individual subject, Foucault (1972) challenged the author's untested, and now seemingly simplistic, assumption that organizations are merely systems of individuals. The implicit assumption that individuals within organizations are free to think and say what they like has been exposed and consequently discarded. Foucault's (1972) critique attacks the heart of approaches that view organizational change and new knowledge creation as a shift of individual minds. Instead of focusing exclusively on the *a priori* concepts and systems ideas of individuals one needs to understand the formative elements that make it possible for them to say and think new things within specific business contexts. How is new knowledge created or adopted by an organization? Where are the sources of the generation or regulation of knowledge? What rules underlie such generative or regulative processes? Why are some concepts and systems ideas adopted and circulated within conversations, while others are discounted and never established as guides for action?

DISCOURSE, STATEMENTS AND KNOWLEDGE

In order to understand and appropriate Foucault's (1972) approach one needs to clarify his use of certain key terms. Foucault (*ibid.* p.107) describes *discourse* as "the group of statements that belong to a single system of formation". There is a system of elements and relations that enables statements to come into existence; a discourse is a group of statements that share the same formative system. This focuses the analysis of knowledge specifically at the formative level, that is at the level just before the individual says something. At the level, that enables individuals to think, talk or write about, this or that. The concern is not with what things said may mean, but with how statements are able to come into existence and remain in circulation and disappear. There is not one single

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discourse but many, depending on specific contexts and systems of formation operating within a business.

A statement is "the modality of existence proper" to a group of signs (*ibid.* p.107). Foucault makes it clear that statements are *not* to be viewed as units of grammar (sentences), or units of logic (propositions). His approach does not replace such analysis; rather it is "another way of attacking verbal performances, of dissociating their complexity, of isolating the terms that are entangled in its web, and of locating the various regularities that they obey" (*ibid.* p.108). Statements are seen as articulations that exist because of a series of conditions that function at a certain time and place. It is from this perspective that the usefulness of Foucault's ideas in organizational knowledge diagnostics can be appreciated. *What are the conditions that enable certain statements (spoken or written) to be articulated and to survive within a business, while others are smothered or never articulated?*

- Foucault (*ibid.* p.15) distinguished between two types of knowledge 'connaissance' and 'savoir'. In this work these are referred to as first and second order knowledge. First order knowledge concerns "the relation of the subject to the object and the formal rules that govern it" (*ibid.* p.15). It is at the level of concepts and systems ideas that an individual's actions are guided, at the level of a discipline or body of know-how. Second order knowledge refers to "the conditions that are necessary in a particular period for this or that type of object to be given to connaissance [first order knowledge] and for this or that enunciation to be formulated" (*ibid.* p.15, brackets mine). KSD provides a framework for inquiry into the second order knowledge that is operating within an organization. This inquiry produces a description of the system of formation that enables the emergence and articulation of statements of know-how (first order knowledge) by individuals within an organization. Business knowledge is seen as a system containing two key components: a system of formation and bodies of knowledge. KSD's term 'body of knowledge' is synonymous with Foucault's 'discourse', and depicts a group of statements (things said or written) that share a common system of formation.

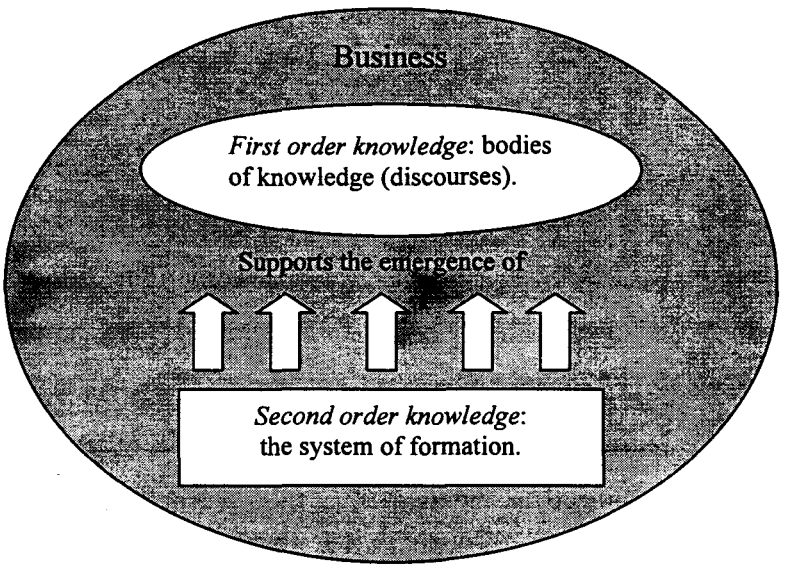

Figure 8: A business knowledge system

SECOND ORDER KNOWLEDGE: SYSTEMS OF FORMATION

Foucault (*ibid.*) approaches first order knowledge by probing what makes a body of knowledge a unity. He does this by shifting his inquiry to the second order and searching for common rules of formation that give rise to it. KSD follows this and assumes that the unity that makes up a body of knowledge within an organization does not rest in its coherence at the first level, but in the system of second order conditions that enables statements to be made within it. Foucault (*ibid.* p.38) defines *rules of formation* as the "conditions of existence (but also of coexistence, maintenance, modification, and disappearance) in a given discursive division" (body of knowledge). Foucault (1972) divides systems of formation into four interrelated areas:

1. The formation of objects;
2. The formation of statement modalities;
3. The formation of concepts;
4. The formation of strategies or themes.

Each of these divisions is organized into three elements that interact in the formation process. KSD inquires into each of these in order to develop a map of the rules of formation that are supporting a business's first order bodies of knowledge. A framework of questions that focus on the three elements and their interrelations within each formative area is provided to guide inquiry.

1. THE FORMATION OF OBJECTS

In mapping the objects of conversation within a body of knowledge Foucault describes three elements:

1.1 The surfaces of object emergence;
1.2 The authorities of delimitation;
1.3 The grids of specification.

- It is important to note that there are relations between these elements. It is the relations between "authorities of emergence, delimitation, and specification" that make the emergence of new objects possible (*ibid.* p.44). The mapping of the second order knowledge system is an iterative process, which identifies elements of formation and their relations. Foucault (*ibid.* p.45) makes it clear that the relations do not define the objects "internal constitution, *but what enables it to appear*" (italics mine). Foucault does not define exactly what he means by the word *object*. The author's interpretation is that the objects of conversations are the things people talk about – the items and entities that they speak of *as if* they were empirically real. Objects as things, items, and entities are named, labeled and described. They are compared, classified and analyzed within and across other systems of objects.

1.1 The surfaces of object emergence

The surfaces where new objects emerge into an organization's conversations are specific to that organization within a certain period. New objects emerge into business

conversations within social groupings. These groupings may be formal (departments or teams) or informal networks. Foucault (*ibid.* p.41) argues that these social contexts are all normative, with their own social rules that affect the emergence of new objects of conversation. These are underlying rules governing what can be spoken about. Thus, within a business, 'participation' as an object of conversation may emerge from within a specific department that is concerned with management autocracy. KSD is concerned with the surfaces of emergence, which are the source of objects which become part of an organization's first order knowledge. When inquiring into the second order knowledge system at work within a business one should ask:

What social groupings serve as sources of new object emergence within the organization?

One should first list the new objects of conversation that have emerged into the business's conversations over the last year, the new 'things' that are being spoken about. Examples of such objects are 'learning organization', 'workflow', 'team reviews', and 'performance indicators'. These need not be objects that have survived. Next, list the social groups from which these objects have emerged. Finally, search for a pattern that may indicate the source of new objects within the business. This dispersion pattern may reflect different types of objects (in different bodies of knowledge) emerging from different areas.

1.2 The authorities of delimitation

When objects emerge within an organization they may be smothered or supported by groups (or individuals) who in the eyes of the organization's members are recognized as having authority within certain fields of know-how. This authority need not be hierarchical, and may stem from qualification, personality or experience. When investigating the second order knowledge system at work within a business one should ask:

What groups, individuals or professions represent the organization's 'authorities of delimitation'?

One should list the professions involved in information or knowledge formation in the organization under investigation. For example the life insurance industry relies on actuaries and the construction industry on engineers and project managers. Are there a small number of individuals who are qualified within the organization? Do they act as authorities of delimitation? Companies that are reliant on a few individuals for their information technology systems may find that these individuals are influencing the emergence of new objects into bodies of knowledge.

1.3 The grids of specification

Each new object that enters into conversation will find itself under pressure to fit into a grid of specification of one of the existing bodies of knowledge. These are the systems ideas within which objects are "divided, contrasted, related, regrouped, classified, derived from one another as objects" of a body of knowledge (*ibid.* p.42). There need not be a documented grid. Often the linking or fitting of a new object of conversation into a body of knowledge entails a sense-making process, consisting of reading, writing and conversation. The grids may be tacit and ill-defined. When seeking to map the second order knowledge system of an organization one should ask:

What grids of specification operate within and between bodies of knowledge?

One begins by listing the main first order bodies of knowledge within the business. A functional or process breakdown may help to begin the list. This list can be compared against the list of professions. Any new object of knowledge will have to link on to a body of knowledge. It is important to view the bodies of knowledge as practices, conversations, habits of saying and doing; they are often not clearly delimited or documented. How have some of the new objects identified in 1.1 been linked, fitted into

or assimilated by existing bodies of knowledge? By answering this, one gets some idea of the grid of specification that is operating.

2. THE FORMATION OF STATEMENT MODALITIES

In mapping the grouping of statements that constitute a body of knowledge Foucualt (*ibid.* p.50) focuses on "the place from which they come". Three elements are highlighted:

2.1 Individual speaker status;
2.2 Institutional and technical sites;
2.3 Subject positions.

The relations between the status of individual speakers, the institutional or technical site from which statements are made, and the position of the speaker as "perceiving, observing, describing, teaching, etc," enable or sustain statements made within a discourse or body of knowledge (*ibid.* p.53). Foucault (*ibid.* p.54) makes it clear that his inquiry is not focused on "*the* synthesis or *the* unifying function of *a* subject", but on the "various statuses, the various sites, the various positions that he can occupy or be given when making a discourse". It is this system of relations that enables an individual to articulate concepts and systems ideas within a body of knowledge.

2.1 Individual speaker status

The status of an individual within an organization affects his or her ability to make statements within bodies of knowledge. One's qualification, job position, position in the information network, and competence give one a right "to practise and extend one's knowledge" (*ibid.* p.50). Within a business, making a statement involves relations "with other individuals or other groups that also possess their own status" (*ibid.*, p.50). When attempting to build an understanding of the second order knowledge system at work within an organization one should ask:

Who in the organization has the right to make statements within the various bodies of knowledge?

The aim is not to name individuals, but rather to identify the different statuses of individuals or groups. These statuses operate within and between the bodies of knowledge at work in the business. Are there certain rights afforded to specialists, managers, or consultants in regard to the articulation of statements? What are the relations between these roles? How do these affect the business's knowledge?

2.2 Institutional and technical sites

Statements within a body of knowledge tend to originate from certain locations: the information technology area, the product development team, the customer service area. The functions performed at these sites enable access to specific data and information that is used when making statements. Knowledge as guides to action is applied in these areas and this application enables the measurement of objects and processes of verification. The sites that support statement articulation may be outside of the organization; as in international benchmarking organisations, universities, or professional societies. The 'truths' that originate from these sites have effects on the first order knowledge system at work within the business. There are also libraries or a "documentary field" (*ibid.* p.51) that store models, processes, case studies and guidelines, which regulate the kinds of statements possible within a body of knowledge.

What are the institutional sites from which individuals make statements within or across bodies of knowledge?

Begin by listing the sites associated with each identified body of knowledge. Once this is completed, the various statuses of individual speakers can be linked to the sites. Often individuals in management are expected to make statements that cross or relate sites to

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one another. It is important to recognize the sites as sources of practices and patterns of statements.

2.3 Subject positions

Within organizations, individual subjects occupy positions in relation to bodies of knowledge. These positions affect the breadth, depth and organization of the individual's "perceptual field" (*ibid.* p.53). Within and across bodies of knowledge individuals may occupy positions such as interrogators, listeners, measurers, observers, etc. The instruments and methods used in these positions affect the individual's perspective and subsequent capacity to speak within a body of knowledge. The inquiry in this regard is guided by the question:

What positions is it possible for individuals to occupy within a body of knowledge?

- For each body of knowledge operating within the business, one should list the possible positions that subjects may take up, positions such as: teacher, expert, leader, follower, observer, commentator, practitioner, measurer or judge. What methods are used in these positions? How do these methods and systems of classification affect the individual's field of perception?

3. THE FORMATION OF CONCEPTS

In this third part of the inquiry one does *not* attempt to place the concepts used within a business into "a virtual deductive edifice" (*ibid.* p.56). The aim is to "describe the organization of the field of statements where they appeared and circulated" (*ibid.* p.56). Three aspects of concept appearance and circulation are investigated:

3.1 The ordering and succession of concepts;
3.2 The coexistence of concepts;
3.3 Procedures for intervention applied to concepts.

Foucault (*ibid.* p.60) warns against being seduced into a classification and description of the concepts themselves. One should instead focus on describing "the conceptual network on the basis of the intrinsic regularities of discourse" (*ibid.* p.62). The purpose is to map how the patterns within conversation and documentation affect the emergence and use of concepts in the various bodies of knowledge.

3.1 The ordering and succession of concepts

The arrangement of statements and concepts often follows tacit rules of presentation and articulation. Reports are structured in certain ways (either for historical or logical reasons). Meetings have a certain structure. Conceptual anchors (e.g. profit and efficiency) guide conversations. Concepts emerge and are distributed among this "obligatory set of schemata of dependence, of order, and of succession" (*ibid.* p.57).

- *What schemata of dependence, of order, and of succession are regulating individuals' articulations within bodies of knowledge?*

One should search within the bodies of knowledge for patterns of presentation. These may occur in the structure of reports, notices, workshops, meetings, information distribution or training documents. How are these regularities affecting the emergence and maintenance of concepts?

3.2 The coexistence of concepts

Forms of concept coexistence also govern the configuration of the field within which statements are articulated. Foucault (*ibid.* p.p.57, 58) argues that there are three areas of coexistence: the field of presence, the field of concomitance, and the field of memory. The field of presence for concepts includes all statements formulated elsewhere that are taken up in a body of knowledge. This acceptance of concepts may be based on tradition, repetition, verification, commentary or authority, and may be explicitly or implicitly

related. One needs to focus on how concepts are included and excluded within a body of knowledge. The field of concomitance operating within a body of knowledge concerns statements that originate from other domains but are used as analogies, models, general principles, or as a higher authority. The field of memory operating in the business consists of lingering implicit concepts that filter and transform the current concepts in use. Concerning the coexistence of concepts, the inquiry is guided by the following questions:

What criteria of inclusion or exclusion are visible in the practice of a body of knowledge? (Field of presence).

What statements from other domains are used as analogies, models, general principles, or authorities within the bodies of knowledge? (Field of concomitance).

What implicit historical statements are filtering, guiding, and transforming the current bodies of knowledge? (Field of memory).

In attempting to map these fields one should concentrate on what is actually said within the conversations that make up these bodies of knowledge. The purpose is not to map the *a priori* concepts and systems ideas of the speaking or writing individuals, but rather the patterns of statements actually occurring within conversations.

3.3 Procedures of intervention applied to concepts

The last area of investigation concerning the concepts in use within a business focuses on "*procedures of intervention* that may be legitimately applied to concepts" (*ibid.* p.58). Foucault (*ibid.* p.59) identifies seven such procedures, which may be used:

1. Techniques of rewriting descriptions (e.g. linear to table form);
2. Methods of transcribing statements into more or less formal language;

3. Modes of translating qualitative statements into quantitative statements and *vice versa*;
4. Means of increasing the approximation or exactitude of statements;
5. Means of delimiting the domain of validity of statements;
6. Methods of transferring a statement from one field of application to another;
7. Methods of systemizing statements into systematic wholes.

The inquiry into the second order knowledge system of a business needs to discover which procedures are being practised, and to estimate the effect of such practices on the bodies of knowledge. The guiding question in this regard is:

What procedures of intervention and transformation are being practised on statements within the bodies of knowledge?

These practices may be different in different discourses. The body of administrative know-how will have different regularities to those of project management or product development. Within these bodies of knowledge it is the group of relations between the elements of succession, coexistence and procedures for transformation that "constitutes a system of conceptual formation" (*ibid.* p.60).

4. THE FORMATION OF STRATEGIES OR THEMES

This is the fourth and last component of the second order knowledge system. It is concerned with how the organization of statements form "themes or theories" (*ibid.* p.64). Foucault labels these "strategies" (*ibid.* p.64). The strategies or themes that are implicit in organizational bodies of knowledge guide the alternatives open to individual speakers. The theoretical choices open to individuals are governed by three elements:

4.1 The possible points of diffraction within a body of knowledge;
4.2 The economy operating between bodies of knowledge;
4.3 The function that the body of knowledge performs.

Strategies or themes can be recognized by the "degree of coherence, rigor, and stability" in the organization of statements. This organization emerges from the second order knowledge system of formation, not from the individual participants in conversations.

4.1 The possible points of diffraction within a body of knowledge

Within a business's conversations there are points which, depending on the direction taken, affect the structure of whole bodies of knowledge. These points of diffraction consist of points of incompatibility, points of equivalence, and link points of systematization. Points of incompatibility occur when contradictory objects or concepts appear in the same body of knowledge. These may become points of equivalence if they are at the same level and present alternative ways of arranging statements. If these arrangements develop into fully-fledged theories then they are regarded as link points of systemization, which enable "various mutually exclusive architectures to appear side by side or in turn" (*ibid.* p.66). When inquiring into the points of diffraction within bodies of knowledge one should ask:

What incompatibilities are evident in the active body of knowledge?

What alternative approaches and theories are evident within the bodies of knowledge?

Have the alternative approaches developed into coherent theoretical options?

In KSD an attempt is being made to map an organization's second order knowledge system. This system of formation will have patterns in the way that strategies and themes emerge. If one can describe these patterns then one can begin to understand the way in which the business's first order knowledge is created.

4.2 The economy operating between bodies of knowledge

The second area of investigation regarding the formation of themes within bodies of knowledge concerns economy. Foucault (*ibid.* p.66) argues that "all the possible alternatives are not in fact realized". Within a body of knowledge there are sets of alternative coherence that never develop beyond the initial points of incompatibility. There is a certain economy at work within and between bodies of knowledge. Any single body of knowledge belongs to a larger constellation of conversations within a business. This constellation of related bodies of knowledge affects the one under study by providing specific "authorities" that guide choice at diffraction points (*ibid.* p.66). The relations between bodies of knowledge may be of the following types:

- A formal system related to fields of application;
- A concrete model applied to other bodies of knowledge at a high abstraction level;
- Analogy, opposition, or complementing other bodies of knowledge;
- The mutual delimitation between bodies of knowledge.

In the inquiry into the business's knowledge formation system one should ask:

What economy is at work between the various bodies of knowledge within the business?

One should describe the relations between the bodies of knowledge identified so far. Then check for the above four relations and note how these affect the choices made within the bodies of knowledge. It is necessary to focus on the relations as they manifest themselves in everyday conversation practice.

4.3 The function that the body of knowledge performs

There is another authority that determines the choices made at diffraction points. This authority is characterized by the function that the body of knowledge must perform, the access to a body of knowledge, and interests affecting a body of knowledge. The project

management body of knowledge plays a focusing and organizing role and is expected to support certain modes of decision-making. Its themes are influenced by the function it is expected to perform. With respect to the function performed by a body of knowledge in the business the guiding question is:

How is the expected function of the body of knowledge affecting the theoretical choices made within it?

The theme or strategy of a body of knowledge is also influenced by who has access to it. This confines the ownership of and focuses the influence applied in a body of knowledge. In the investigation into a business's knowledge formation system one should ask:

What individuals or groups have access that allows them privileged influence within a body of knowledge? How does this affect the choices made within the discourse?

- There are also personal and group aspirations within the organization that may influence the choices made at diffraction points within a discourse or body of knowledge. These non-discursive forces may influence choice within a body of knowledge. The inquiry concludes with the question:

What individual or group desires affect the choices made within a body of knowledge?

Foucault argues that these elements of function, appropriation and desire are not external to a body of knowledge but are genuine "formative elements" (*ibid.* p.68).

CONCLUSION

The appropriation of Foucault's (1972) approach facilitates the mapping of the second order knowledge system at work within a business. Armed with such a map and the understanding it produces one would be better equipped to design organizational interventions aimed at developing or transforming first order knowledge. Figure 9

represents a pictorial mapping of the formative components, their elements and primary relations. This representation is presented in order to help conceptualize the system of formation at a simple level. It should be used in this context and is not meant to detract from the complex tangle of relationships that occur in practice.

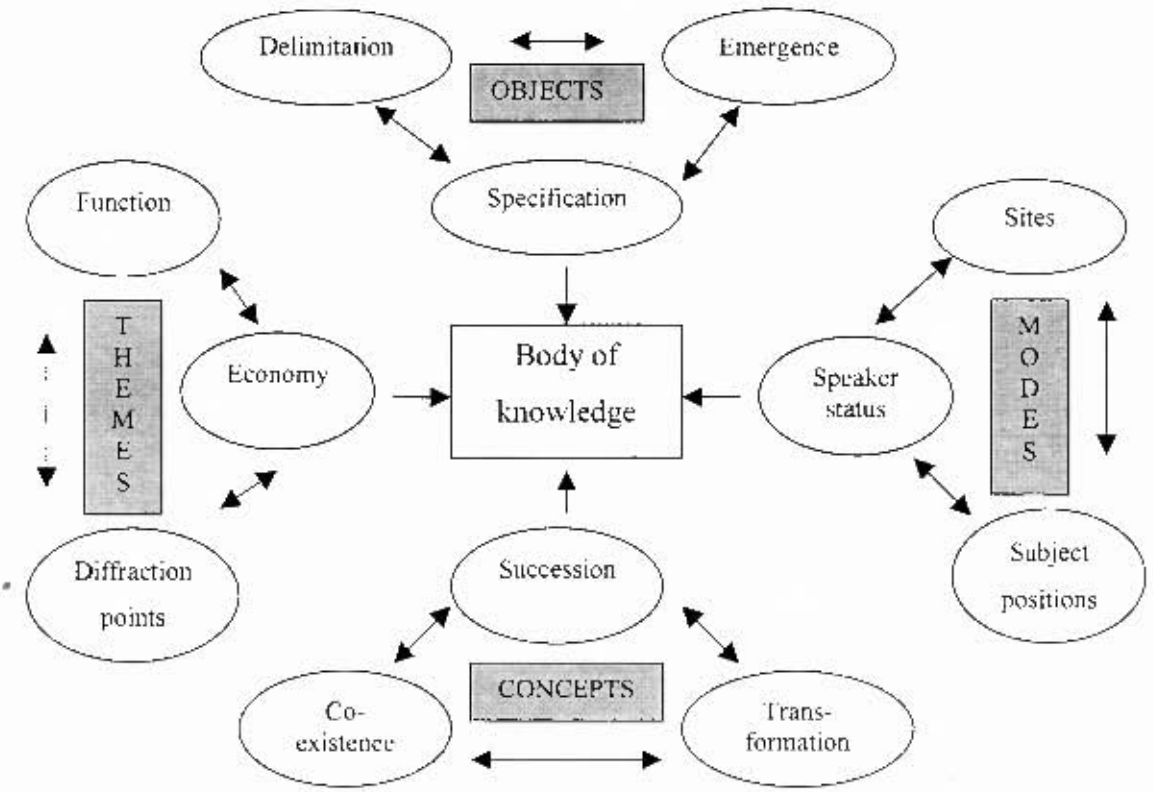

Figure 9: Primary components and relations of the knowledge formation system

Note: Only the primary relations are shown, relations also exist between the elements of the different components.

The inquiry framework presented in this paper is designed to produce a high level mapping of the knowledge formation system at work within a business. As such it provides an alternative approach to organizational knowledge and business development. This approach de-centres the individual subject and facilitates viewing organisational

change as a shift in the knowledge formation system, rather than a shift of individual minds.

An understanding of the individual knower and the formative system has now been built. In the next chapter the focus will be on the conversation system as the place where these two elements meet. Specific attention will be given to the process of knowledge creation within conversations as systems.

CHAPTER THREE: CONVERSATIONS AS SYSTEMS

"I don't think there is any discourse without efficacy." (Lyotard 1985, p.52).

INTRODUCTION

Conversation is the medium in which the individuals as knowers (Chapter One) meet the formative system (Chapter Two). The current chapter describes conversation as a system consisting of individuals in certain positions, their utterances, and the stakes that make the flow of utterances meaningful. In keeping with the appropriation of post-modern philosophy into systems methods, the description appropriates a conversation model from Lyotard's (1984, 1988) works. The meeting of individual worlds and the formative system is a dynamic that integrates the intentions of individuals and the local rules and relations guiding the formation of concepts and systems ideas. What is at stake in the conversation regulates these two forces. This stake limits the possibilities of what individuals can say at any point in the conversation. However, individual utterances are only reasonable against the current flow of utterances. The flow of utterances forms the theme of the conversation. Any utterance has to link to this theme or run the risk of being judged irrelevant. In most business conversations, the formative system provides the stakes and themes that regulate the range of possible utterances available to any individual knower. Individuals can however change the stakes and themes of conversations by linking new systems ideas and concepts into the conversation. Individual utterances are moves within a game. The stakes and themes regulate the game. Conversations as systems are complex because individuals both play, and are played by, the game.

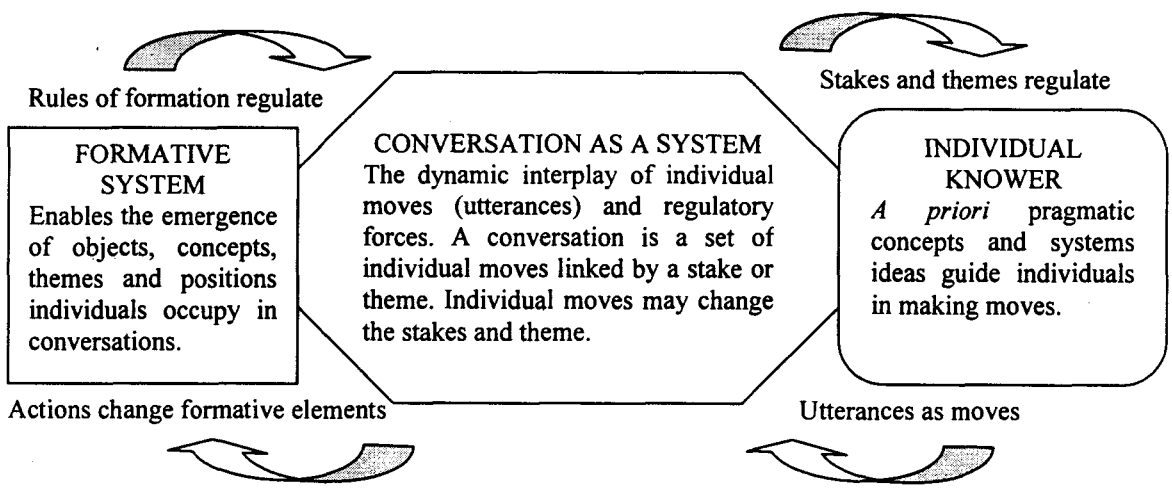

Figure 10: Conversation as a system

This chapter has two purposes: firstly, to describe conversation as a system and, secondly, to develop heuristics that enable generative conversations. Generative conversations aim to create new stakes, themes, concepts and systems ideas that may be developed into new knowledge as guides for future action. The majority of business conversations are regulative. They limit what can be spoken or written by any individual. In contrast, generative conversation attempts to escape the regulatory forces of the formative system by encouraging creative individual moves that link concepts and systems ideas in new ways, thereby enabling the emergence of new stakes and themes. In pursuing these purposes, this chapter is motivated by the issues of post-modern philosophy that have been identified by Jackson (1991, p.299) as having "important implications for systems thinking and practice". Jackson highlights four issues:

- *Logic and order* – Post-modernism questions their feasibility in systems;
- *Progress* – Performance and emancipation are considered potentially dangerous traps;
- *Power* – Is ignored or simplified by systems thinking, but central to post-modernism;
- *Language* – Is assumed transparent by systems thinking, but is assumed deceptive by post-modernist philosophy.

CONVERSATION AS A GAME

Lyotard (1984, XXIV) adopts a post-modern perspective by arguing that: "The society of the future falls less within the province of a Newtonian anthropology (such as structuralism or systems theory) than a pragmatics of language particles. There are many different games – a heterogeneity of elements. *They only give rise to institution in patches – local determinism*" (my italics). His analysis of the condition of knowledge in post-industrial society emphasizes the pragmatic effects of utterances. Lyotard (*ibid.* p.10) appropriates and radicalizes Wittgenstein's (1953) idea of language games. Wittgenstein makes it clear that language games are pragmatic and systemic: "I shall also call the whole, consisting of language and the actions into which it is woven, the 'language-game'" (1953, p.5). The pragmatic nature of conversation is highlighted when

Wittgenstein states that "the term 'language-*game*' is meant to bring into prominence the fact that the *speaking* of a language is part of an activity or a form of life" (*ibid.* p.11).

In a later work Lyotard (1993, p.21) positions himself against "an ultimately empiricist notion of language use in Wittgenstein's writings. In these terms people make use of language. They play at it". The argument against such instrumentalist assumptions is the fact that people "do not know all the rules of the language games" (*ibid.* p.21). Lyotard (1985, p.51) suggests that it is not only that people play language games, but also that games "make us into their players". He provides a balance against anthropocentrism that assumes individuals are in control of conversations. Individuals are constrained by their positions within language games (1984, p.15). It is only from these positions that they can make moves (utterances) in the game. Conversations have stakes and "when the stakes are attained we talk of success" (Lyotard, 1988, p.137).

In using language games to analyze contemporary knowledge, Lyotard (1984) defines two balancing principles. Firstly, playing and being played falls into the "domain of general agonistics" (*ibid.* p.10). If one is to understand social relations (and generative conversations as social relations) one require "not only a theory of communication, but a theory of games that accepts agonistics as a founding principle" (*ibid.* p.16). In this way, Lyotard recognizes the force of individuals. Although individuals are positioned in language games they are still "behavioral or strategic – in other words, agonistic" (*ibid.* p.57). In a note on the above, Lyotard (*ibid.* p.100) references Gilles-Gaston Granger (1960, p.142) as stating that "probability reappears here, no longer as the *constitutive* principle of an object, but as the *regulating* principle of a structure of behavior" (my italics). Balancing the force of the individual is the second principle that "the observable social bond is composed of language 'moves'" (Lyotard, 1984 p.10). Individual moves (utterances) further position participants in conversation games. The games, their regulatory stakes and moves are "the minimum relation required for society to exist" (*ibid.* p.15). Inquiry into the social bond is itself a game since "it immediately positions the person who asks, as well as the addressee and the referent asked about" (*ibid.* 15).

Lyotard (*ibid.* p.10) points out the following about language games:

1. Language games have rules that are "the object of a contract, explicit or not, between the players". However these rules "do not carry within themselves their own legitimation" and are not necessarily invented by the players;
2. Language games are defined by their set of rules: "...if there are no rules there is no game, that is even an infinitesimal modification of one rule alters the nature of the game, that a move or utterance that does not satisfy the rules does not belong to the game they define";
3. Conversations are games: "...every utterance should be thought of as a "move" in a game".

Conversations have three pragmatic poles and can be thought of as a "pragmatic triangle" (Lyotard 1985, p. 71). There is a *sender*, who says something, an *addressee*, who listens or receives, and a *referent*, that which is spoken about. The ways in which the pragmatic positions (poles) can change define the language game. Each conversation has a "specific pragmatics", meaning that any utterance (move) in context has a necessary "effect on the world" (*ibid.* p.52). The effect is primarily in the repositioning of the participants: an addressor becomes an addressee, or *vice versa*. A move (utterance) may keep the addressor and addressee positions the same but change the referent and thus the content direction of the conversation. A common conversation pragmatic in business is the manager – subordinate positioning that expects the subordinate to occupy the position of addressee while the manager decides the referent.

THE 'PHRASE' AS A CONVERSATION SYSTEM-STATE

Lyotard's key philosophical work is *The Differend* (1988). He reconceptualizes conversation by focusing on the phrase as a unit of analysis. This is essentially a move against Wittgenstein's (1953) humanistic assumptions that give individuals the power to dominate games. Lyotard balances the power of the individual by focusing on the pragmatic nature of the phrase. *This thesis interprets a phrase as a conversation system-*

state. Over time, conversations move through a series of phrases. Phrases present a universe consisting of instances: an addressor, addressee, a referent and a sense. The addressor and the addressee are not independent of the phrase – it is not a message passing between them. The phrase is a system-state, a constellation that "is defined by – as it, in fact, defines – the situating of its instances (addressor, addressee, referent, sense) with regard to one another" (*ibid.* p.193). The phrase is "is not a grammatical – or even linguistic entity . . . but a pragmatic one" (*ibid.* p.193). Phrases, "which are moves in language games" (Lyotard 1993, p.21), may include gestures, music and signals. The system of instances that a phrase indicates is as much context as it is text. When considered this way any differentiation between text and context is meaningless. The instances of a phrase are simplified as follows (Lyotard 1988, p.14):

- Referent: what a phrase is about, a pointer to 'reality';
- Sense: what is conveyed, expressed and signified about the referent;
- Addressee: that to which the sense of the referent is addressed;
- Addressor: that from which or in the name of which, the sense is addressed.

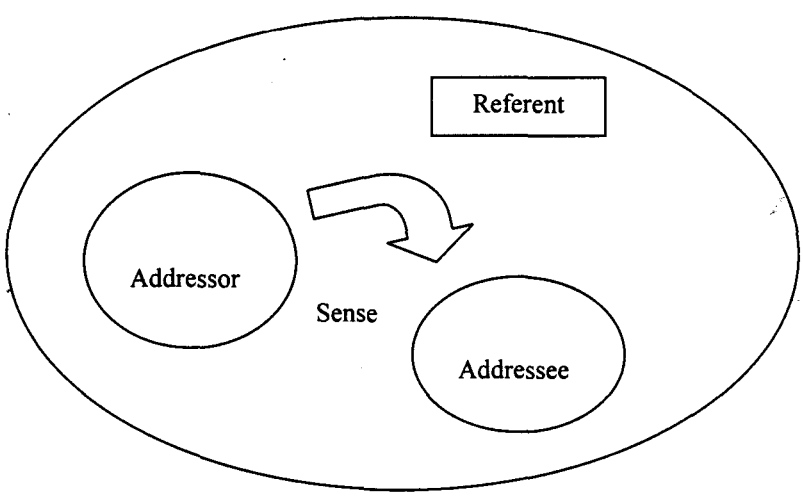

Figure 11: The phrase universe and its instances as a conversation system-state

The interrelationships of the instances are arranged in the phrase universe. There may be none, one or many of each of the instances in a phrase. In presenting his thesis, Lyotard (1988, xii) outlines a structure in which a phrase – as a constellation of instances – is

constituted according to rules. These rules make up regimens such as "reasoning, knowing, describing, recounting, questioning, showing, ordering, etc". One cannot translate a knowing phrase into a questioning phrase. However, phrases from different regimens can be "linked one onto the other in accordance with an end fixed by a genre of discourse" (*ibid.*). These stakes link phrases as pragmatic conversation system-states in teleologies. Different conversations have different stakes – "to know, to teach, to be just, to seduce, to justify, to evaluate, to rouse emotion, to oversee" (*ibid.*). Phrases are linked in terms of these ends. The conflict and agonistics of language games now occur "not between humans or between other entities; rather, these result from phrases" (Lyotard, 1988, p.137).

For Lyotard, silence qualifies as a phrase. Silence as a conversation system-state is worth exploring here, as it highlights the fact that the phrase is not a message but a pragmatic state of the conversation as a system. As a conversation system-state, it may reflect the addressor's or addressee's competence concerning a certain referent. It may indicate that the referent does not exist or cannot be signified (*ibid.* p.13). Silence does not indicate which instance or instances of a phrase (addressor, addressee, referent or sense) are lacking ability and negated. If one applies Lyotard's (*ibid.* p.14) notion of silence as a phrase, to silence as a system-state in the business conversations, one or more of the following can be recognized:

1. The addressee lacks the competence required in order to be spoken to about the referent;
2. The addressee is not considered worthy of being spoken to about the referent;
3. The referent does not exist;
4. There is nothing to say about the referent since the referent is senseless or inexpressible;
5. The addressor lacks the competence to talk about the referent;
6. The addressor is not considered worthy to talk about the referent;
7. The addressee does not recognize the authority of the addressor.

Now, the possibility of creative linking of conversation system-states (phrases) over time will be explained. The aim is to escape the regulatory pragmatics inherent in business conversations. One needs to recognize the traps that position individuals practically within conversations. The stakes and themes inherent in regulative conversation support the continuity of these positions. This continuity depends in turn on how conversation system-states link to one another.

CREATIVE LINKING

Phrases have to be linked, "...to link is necessary; how to link is contingent" (*ibid.* p.29). The necessity of linking is ontological; the necessity of there being a next phrase "is a presupposition for 'objects', for their 'witnesses' and so on" (*ibid.* p.66). This is the cornerstone of Lyotard's approach to discourse: one must link phrases – human reality depends on it. A 'differend' occurs where phrases cannot be linked, where individuals' worlds encounter one another. It often occurs when different language games or bodies of knowledge meet. It is "a case of conflict, between (at least) two parties, that cannot be equitably resolved for lack of a rule of judgement applicable to both arguments. One side's legitimacy does not imply the other's lack of legitimacy" (*ibid.* p.xi). The differend is that state where feelings are not yet communicable. This may demand the creation of a new link across conversation system-states. It is important that the differend is not 'smothered' by litigation; we should rather search for idioms that can express them (*ibid.* p.13). In organizations the differend may be a creative source of new knowledge. This source of new idioms and knowledge is wasted if it is not respected, and if strangled could lead to alienation of people and mere compliance, such as in businesses where there is a "monopoly on procedures for the establishment of reality (*ibid.* p.4).

Generative conversations are an attempt at differend resolution through the generation of new links that fuse normally incompatible conversation system-states. In generative conversation, the bringing together of different authorities and expertise makes fertile ground for differends. The challenge is to find ethical ways of linking phrases so that new themes and stakes can emerge. Paradoxically, some structuring (domination) needs to

occur in order to ensure that no stake dominates. New knowledge is at stake in any generative conversation. The associated domination manifests itself in the heuristics presented below. These heuristics reflect the fundamental paradox of the post-modern condition expressed as "the justice of multiplicity: it is assured, paradoxically enough, by a prescriptive of universal value" (Lyotard 1985, p.100). This tension will underlie any appropriation of post-modern philosophy into systems methods. It is present in all of the methods developed in this thesis.

GENERATIVE CONVERSATION HEURISTICS

Lyotard argues that even in modern institutions "the limits the institution imposes on potential language 'moves' are never established once and for all (even if they have been formally defined)" (1984, p.17). He identifies two different kinds of progress in knowledge: firstly, "a new move (a new argument) within the established rules" and secondly, "the invention of new rules, in other words, a change to a new game" (*ibid.* p.43). These are comparable to the notions of first and second order change (Watzlawick *et al*, 1974). First order change emanates from solutions that are logical within the current context of rules. Second order change occurs when the context of rules itself is changed. In order to support the creation of new knowledge within organizations one needs to escape the limits of regulative conversation that assume certain stakes and restrict the kinds of moves (utterances) allowed. Such an intervention must free individual subjects to collaborate in the formation of new stakes, patterns and themes. In providing structural support for generative conversations, the purpose is to increase the probability of participants making creative moves. This bottom-up approach lets the links and relations emerge into themes and stakes. It focuses on relations between utterances and allows new concepts, systems ideas and stakes to emerge. This is in contrast to traditional regulative systems approaches that start with the systems purpose and logically deduce the required parts and relations. This open, bottom-up approach encourages participants to explore "the possibility of no longer being, doing, or thinking what we are, do, or think" (Foucault, 1984, p.46). The heuristics are arranged here into five steps.

Step one: Becoming aware of games

The strategy, goals, and objectives that govern organizations also regulate phrases and linkages. Participants become trapped in regulated conversations, which to some extent shape how they think, speak and act. There is a way out of this trap. When attempting generative conversations, it is first necessary to explain the idea of conversation as a game. This enables participants to see the nature of regulative conversation and to avoid becoming trapped in it. Watzlawick *et al* (1974, p.99) identifies Wittgenstein (1956, p.100) as the first to point out the fact that once one becomes aware of the game one is in one "can no longer naively go on playing". Once there is an awareness of the regulative nature of normal organizational conversation, steps can be taken to free oneself.

Step two: The linking rule

- The strategy is to replace one game with another. Generative conversation is a game in which one's ability to link phrases is the stake. Instead of letting traditional business goals unconsciously govern the linking process, one can consciously link in any desired way. Generative conversation attempts to create new knowledge. It is creative and divergent, and it builds new relations between previously separate bodies of knowledge. There is only one rule in generative conversation and that is *always link to the previous phrase*. This stops the occurrence of phrases that link to some higher regulatory business stake. It is possible to link to any of the four instances: the addressor (AD), the addressee (AS), the referent (R) or the sense (S). Some examples of linking are:

  - applying another S to the same R;
  - applying the same S to a different R;
  - linking a new R to the current R;
  - unpacking the detail of a S or R;
  - describing the containing R;
  - describing the history or future of a R;

- linking the R to the history or future of an AD or AS;
- re-describing a S or a R through metaphor;
- Switching a S from a R to an AD or AS.

Step three: The guides

The following guides are presented to participants before beginning a generative conversation. Each is in italics, followed by a supporting explanation.

Generative conversation is a game in which we play with ideas, not against each other. This aims to reduce the amount of competition between players and focuses participants' attention on concepts and systems ideas. If the conversation is playful then there is less chance of defensive and limiting moves by participants.

Appoint a facilitator at the start to monitor the application of the rule. The facilitator only points out when a phrase is not linked directly to the previous phrase. This keeps the participants vigilant against using some higher level stake as a linking medium. It keeps the linking fresh and open to possibility.

There is no rush; regulative conversation occurs at speed. The regulation of conversation seems just to 'happen'. One has to slow the conversation system in order to become conscious of the regulative trap. One's first thought is usually a regulated one. Discarding the first thought enables creative linking.

Allow at least three seconds of silence between each phrase. This facilitates two things. Firstly, it breaks up reactive jostling between any two participants by allowing others to utter a link. Secondly, it allows for a listening to and respecting of the last phrase.

Watch the pull of habit and pattern. Be aware of the tension to link in a certain way. One can only escape the trap of regulation when one becomes aware of it. Stepping back allows participants to feel the tension of regulation.

Keep a notebook to jot down ideas so that they are not forgotten. Conversation only allows one out of many possible links to occur. Participants may be unable to make their linking utterance because someone else has already linked. Unless their thought can be directly linked to the one that has 'stolen' the slot it will be lost. Noting it down frees participants to concentrate on the current link. It also keeps a record of possibly useful concepts and systems ideas.

Questions can form part of the conversation but must obey the linking rule. This stops participants from using questions to judge the last phrase against some higher-level stake. A question is only valid if it links directly to the last phrase.

Make use of creative misunderstanding. This supports a free interpretation of phrases. If a participant misunderstands the sense of a phrase, he or she may make a creative link. In this case, the game continues with the next link even if it arose from a misunderstanding.

Listen, take a few breaths, think, link. This sequence allows the participant to realize the current conversation system-state before linking. Taking a breath after listening to a phrase makes it difficult for a participant to make a purely reactive link since it is unlikely that they will be able to talk while breathing in.

Remember, silence is a phrase. This is to remind participants that it is acceptable to have periods of silence. Silence as a phrase does present the theoretical difficulty of having to link to silence! Practically someone usually comes up with a link (see Chapter Five for illustrations of this). If a group is totally stumped and remains in silence for longer than three minutes, present a new phrase as a starting point.

Try to link multiple previous phrases. By linking the last phrase to multiple earlier phrases, participants can create new concept and systems idea combinations. As the conversation develops, this combination of the last phrase with previous phrases becomes easier.

The following '*LINKING*' acronym serves as an overall guide for generative conversations: ***L***isten to the whole phrase; ***I***nhale, take a few breaths; ***N***urse the current theme; ***K***erb your initial reaction; ***I***nvent ***N***ew moves ***G***ently. The only part of the acronym that needs further motivation is the 'nursing of the current theme'. This is to allow the emergence of new themes. New themes can emerge even when participants strictly respect the linking rule. This occurs when a referent or sense is present through a series of phrases (conversation system-states). The label of the referent or sense need not be the same, as different phrases may provide varying explorative re-descriptions.

Step four: Setting a broad context

Goals and focus regulate conversations. Generative conversation begins with linking and lets themes and stakes emerge as they may. It is a process of relating that supports the possibility of thinking and saying something new. It can be used as an underlying practice for any creative group process. A systems method may guide the group but all interactions are based on the linking rule. When generative conversation is attempted as a stand-alone approach, the starting context of the conversation needs to be as broad as possible. Being too specific in defining the issue of concern may exclude possible phrases and linkages.

Step five: Capturing new stakes and themes

If generative conversation supports other systems methods, then themes may emerge from the structure of the containing approach. In pure generative conversation, themes and stakes should be identified in later analysis of the conversation transcripts (see Chapter Five for an example). The initial stake of any generative conversation is the ability to link to the previous phrase. In practice (see Chapter Five), the conversation develops lives of its own as themes first emerge and then begin to regulate further linking. *It is within these themes that the seeds of new knowledge reside, in the form of new objects, concepts and systems ideas*. Re-describing the themes and stakes as systems

purposes enables the application of contemporary systems methods. They may then be explored using Checkland's (1991) idea of a root definition (a system to do *x* by *y* in order to achieve *z*) and accompanying activity system. The new theme could also be modeled as a viable (Beer, 1985) or dynamic system (Forrester, 1961). Describing the new themes and stakes as systems purposes helps to build a richer understanding of the new knowledge and its implications for human action.

THE LINKING MATRIX

The essential point about generative conversations is to escape the regulative forces of the formative system and thereby enable new and creative linking of concepts and systems ideas. As an alternative to generative conversation a more structured generative linking method has been developed. This method searches for business synergies by concentrating the unusual linking of concepts and systems ideas. The method has the following steps:

1. Each participant generates what he or she considers the three to five essential elements of the situation. Elements may be structural, procedural or directional. They may reflect the market, product, process, resource or any other category important to the business. The elements, because of their importance to participants, tend to be systems ideas.

2. Together participants decide the essential elements they wish to work with. They list these as column headings in a matrix. There may or may not be an order inherent in the way the columns are presented. For example, in a fast food business the columns may be customer order, grill order, packaging and hand-over.

3. Each participant generates, for each element, as many new concepts or ideas as possible. The duplicates are removed and the concepts listed under the relevant column headings. The result is a matrix of possibility (see table 2 below).

4. Participants are assigned to groups that reflect a spread of competence across the column headings. The concepts from the first column are divided among the groups. They then have to link combinations of concepts across the matrix. This linking of concepts across elements is done in a spirit of possibility with as little judgement as possible.

5. Groups present their new potential synergies and select candidate combinations for further development.

Element 1	Element 2	Element 3	Element 4
Concept possibilities related to element 1	Concept possibilities related to element 2	Concept possibilities related to element 3	Concept possibilities related to element 4
Concept 'A'	Concept 'B'	Concept 'D'	Concept 'E'
Concept 'C'	Concept 'F'	Concept 'E'	Concept 'I'
Concept 'G'	Concept 'H'	Concept 'J'	Concept 'O'
Concept 'K'	Concept 'M'	Concept 'N'	Concept 'S'
Concept 'L'	Concept 'P'	Concept 'Q'	Concept 'X'

Table 2: The linking matrix

The combinations of concepts represent new synergies that may benefit the business. The argument for this approach rests in the fact that the linking of these possibilities is unlikely to emerge out of regulative conversations. Chapter Five contains an example of the application of a linking matrix.

CONCLUSION

This chapter has explored the context of conversation as set up by the individual knower (Chapter One) and the formative system (Chapter Two). This has been accomplished by

appropriating some implications of post-modern philosophy into a heuristic systems method. The heuristics developed help us to engage some of post-modern philosophy's important implications for systems thinking and practice, as identified by Jackson (1991, p.299). By realizing that phrases as conversation system-states position the pragmatic efforts of individuals, one can address the issues of *power*, *language* and the emergence of *localized logic and order.* This reasoning supports the process of generative conversation and its use of (open) systems ideas. In supporting the paradoxical ethic that no language game should dominate or limit a conversation one recognizes and addresses *power* at a micro level. Defining *progress* as new moves within a game or the establishment of new games and stakes avoids the potential traps of prescribed performance or emancipation.

In the next chapter, systemic story construction is explained as a method of developing the new concepts, systems ideas and themes that emerge from generative conversations.

CHAPTER FOUR: SYSTEMIC STORY

"Many scientific and mathematical hypotheses start their lives as little stories or metaphors, but they reach their scientific maturity by a process of conversion into verifiability." (Bruner 1986, p.12).

INTRODUCTION

This chapter describes a process designed to develop the themes that emerge out of generative conversations into systemic stories. In order to develop a method to support the group construction of a systems story, the author has appropriated recent theory and practice from the fields of narrative therapy and systems thinking. The method synthesizes Bateson's (1979) ideas of story, relevance and the difference that makes a difference into a process aimed at integrating the new concepts, systems ideas and themes into narratives of meaning and action. It is argued that story is a useful medium for the development and connection of new knowledge into current local knowledge. The method makes use of Freedman and Combs's (1996) model for narrative therapy as a framework to support and integrate the ideas of formative system, conversation and individual worlds. Systemic story makes use of all components of the knowledge systems model as described in the preface. The process of group story-building is conversation-based and brings together individuals who occupy significant positions as identified in a KSD inquiry. The outputs of a knowledge diagnostic can also serve as a starting point for the deconstruction of phase one. Generative conversations form a foundation to all the group work involved in systemic story construction. Phase two of the systemic story process uses the new concepts, systems ideas and themes that emerge from stand-alone generative conversations.

In keeping with the overall aim of exploring and appropriating post-modern philosophy into systems methods, the author follows Lyotard (1984), in the sense that there is no longer a belief in the absolute truth of grand narratives. Following Gadamer (1976) a hermeneutic approach is adopted that focuses on the interpretive nature of all understanding and opens the possibility of continual re-interpretation of systems and narratives. Interventions into post-industrial business are not opportunities to apply universals. This post-modern systems approach focuses on the local and particular. The process of generating new knowledge affords one a chance to conduct "a historical investigation into the events that have led us to constitute ourselves and to recognize

ourselves as subjects of what we are doing, thinking and saying" (Foucault 1984 p.46). Through the deconstruction of current business stories and the reworking of them with the new concepts, systems ideas and themes that emerge from generative conversations, we are able to explore "the possibility of no longer being, doing, or thinking what we are, do, or think" (*ibid.*).

In seeing the world through the eyes of Lyotard (1985) the systems methods developed must ensure that no narrative dominates others by eliminating them or disallowing elements of them. This position respects the multiple business stories that make up post-industrial business. Yet one remains aware that every perspective is extremely restricted (Churchman, 1968). In being biased towards the generation of new knowledge (while respecting the need for regulative productivity of existing knowledge) it is considered within the post-industrial organization's interests to support local narratives, as alternatives to dominant regulative narratives. Generative conversation forms the foundation of the story approach. The meaning and direction of stories should emerge from free and constructive conversation. As bricks build a house, so creatively linked phrases build new knowledge.

The following points outline the argument for adopting a story approach:

1. Grand, ultimate narratives no longer motivate post-industrial businesses. We need to take responsibility for "our own stories and such new stories as we invent to encompass the clash between chaos and control that seems central to life these days" (Parry 1993, p.430).
2. Organizations contain many positions that produce diverse perspectives. A story approach to new knowledge creation is adopted because "there is a privileging of narrative in the assemblage of the diverse" (Lyotard 1988, p.230). By using a systems story approach the narrative (story) genre is placed into the position of "governorship of phrases" (Lyotard 1988, p.200).
3. Story is a "pattern which connects" (Bateson 1979, p.13). It connects people (characters), action, and meanings across time. Story is therefore inherently systemic.

When knowledge changes in a business it is a change of shared local story (the pattern that connects). Successful business development occurs when new knowledge is adopted, resulting in a change in the pattern of action and not just a change in isolated individual actions.

4. Given the above, the ability to rework and create (deconstruct and construct) stories is an important competence in post-industrial knowledge-based business.

STORY THINKING

Bruner (1986, p.11) argues that there are two basic modes of thought, the logo-scientific and the narrative.

Logo-scientific mode	**Narrative mode**
Formal and mathematical	Informal, metaphoric
Abstract, universal	Particular, local
Concepts and categories	Human actors and intentions
Tests for empirical truth	Constructs believability
Cause and effect	Experience and meaning
Defining pattern	Emerging pattern

Table 3: Comparison of logo-scientific and narrative modes

The narrative mode employs two landscapes simultaneously. The first is a "landscape of action, where the constituents are the arguments of action: agent, intention or goal, situation, instrument, something corresponding to a 'story grammar'" (*ibid.* p.14). The second is a "landscape of consciousness: what those involved in the action know, think, or feel, or do not know, think, or feel" (*ibid.*). This is one of the reasons why story is able to capture and include a rich diversity of perspectives. Bruner argues that: "Many scientific and mathematical hypotheses start their lives as little stories or metaphors, but they reach their scientific maturity by a process of conversion into verifiability" (1986, p.12).

Different approaches to inquiry produce different stories out of the same context of inquiry (Churchman 1971, p.177). The Lockean form of inquiry produces a "consistent story" that contains the data about which all the experts agree. A Kantian inquirer produces a story with multiple perspectives. This emphasizes subjective content; "what is put into the story by the internal mode of representation is not given from the outside" (*ibid.*). The Hegelian inquirer will produce a story that synthesizes two opposing views. Churchman approaches such stories from a teleological perspective and asks "which method of telling the story will produce the optimally informed citizen, when each is constrained by the same cost and time resources" (*ibid.*). Our question in new knowledge creation is – which way of inquiry and story construction will best enable systems characters to explore "the possibility of no longer being, doing, or thinking what we are, do, or think"? (Foucault, 1984, p.46). What method of group inquiry and story construction will best support the members of the business in changing what they do and think?

Bateson (1979, p.13) argues that: "We have been trained to think of patterns, with the exception of those of music, as fixed affairs. It is easier and lazier that way but, of course, all nonsense. In truth, the right way to begin to think about the pattern which connects is to think of it as *primarily* (whatever that means) a dance of interacting parts and only secondarily pegged down by various sorts of physical limits and by those limits which organisms characteristically impose". Pattern connects the characters, statements and actions in a dance. What the characters need to understand is the pattern that currently connects and regulates them. The pattern that connects is similar to the story that connects. Bateson (1979, p.13) argues that "a story is a little knot or complex of that species of connected-ness which we call *relevance*". Relevant patterns are those identified by the humans themselves. Bateson's (1979, p.13) premise is that "any A is relevant to any B if both A and B are parts or components of the same 'story'". The second level of connected-ness is that if A and B are humans, then *in order for any A to be relevant to any B, A and B need to be a component of B's story and vice versa.* This reasoning underlies the group construction of systems stories.

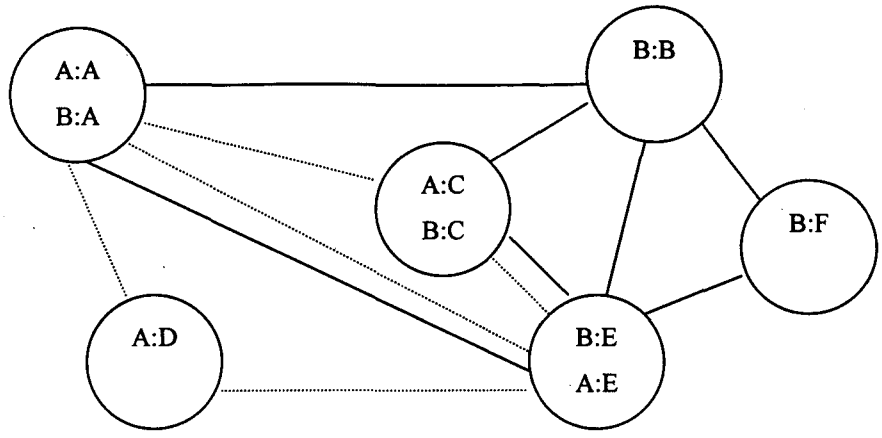

Figure 12: Pattern, story and relevance

Key:

- The first letter denotes whose story contains the component.
- The second letter is a label for the component.
- The dotted line represents the pattern which connects components in A's story.
- The thin solid line represents the pattern that connects components in B's story.

The map does not include components C, D, and E's stories. These may be considered as non-human components. Although A, C, and D are components of both A and B's story, *they are parts of different patterns and therefore probably have different relevance and meaning.* A's (and B's) behaviour ("those stories which are projected into action" (Bateson, 1979, p.14)) will not be systemic in relation to each other because of their different stories. In order to increase systemic action in A and B one would need to build a *new story that contains a pattern which connects the same components in similar ways.* One would have to construct new shared meaning and relevance.

STORY: PATTERNS OF CONVERSATION AND ACTION

Berger and Luckmann (1966) argue that over generations humans have settled into patterns of distinctions and meanings that were originally soft and tentative. As time passes, the habits, distinctions and meanings move from a status of useful to constitutive.

Instead of being aware of concepts, systems ideas, and patterns as tools, people now see these as real and actual reflections of concrete reality. Similarly, most of their business worlds (concepts and systems ideas meeting concrete reality) have been learned and constructed within conversations. Conversations recruit them into certain patterns of arranging and applying their concepts and systems ideas. Their actions emerge from these constructed worlds. People make sense of reality by using stories as patterns that connect the concepts and systems ideas of their worlds. People tell stories and stories tell them.

The concept of 'pattern' is used within systemic stories to denote a "pattern which connects" (Bateson, 1979, p.13). This concept is particularly useful for three reasons. Firstly, a business's formative system influences characters to act in certain ways. It is as though the characters are merely parts of a pattern. The pattern is arranging human thoughts, actions and reactions in a certain way. The same stories are being played out again and again. Secondly, pattern is used as an alternative word for story. In this sense *stories are patterns we have recognized* and describe to each other. Using 'pattern' as a synonym for 'story' is useful when focusing on stories within stories. It is easier to refer to (or look for) the 'pattern' than the 'story' when in the process of constructing a story. Thirdly, the technique of externalization (White and Epson 1990, p.38, Freedman and Combs 1996, p.47) is used within systems story-building. This requires that one focuses on problems not people. Problems are seen as patterns outside of but affecting people. The problem is objectified as a pattern external to any individual. In group-based processes human utterances, actions and reactions are construed as parts of a pattern. Using 'pattern' avoids presupposing a problem, and allows for patterns that are not problematic. When characters are trapped within a pattern they cannot see it and often believe that the situation is wholly a product of other individual actors' intentions. Often an outsider (the reader of a story, the watcher of a film) can see the pattern and feels frustration because the characters are blind to it. Once one is aware of the patterns that can entrap, there is the possibility of freeing oneself.

Vickers (1970, p.100) argues that "the expectations which order our appreciated worlds are rules derived from regularities which we abstract from our experience". Our

abstraction of rules from regularities "is an example of that capacity for *pattern recognition* on which we rely not only in everything we do but in building the representation of our manifold contexts within which we live" (*ibid.*). We recognize and impose pattern. The danger in this is that we can become trapped by our dominant patterns. In this state "we the trapped tend to take our own state of mind for granted - which is partly why we are trapped" (*ibid.* p.15). We are creatures of habit, whose appreciation and action is according to pattern. Vickers argues that only if we understand the trap (understand the patterns we think and live in) will we be "better able to see the relevance of our limitations and to question those assumptions about ourselves which are most inept to the activity and experience of being human now" (*ibid.*). Our purpose in constructing systems stories is to examine the patterns we are trapped in, so that we may create new knowledge by taking hold of "the possibility of no longer being, doing, or thinking what we are, do, or think" (Foucault, 1984, p.46).

Michael White pioneered the technique of externalization of a problem (White and Epson 1990, p.38). In this approach, a problem is externalized, objectified and named. This allows separation of the person from the problem. White argues that in externalization "the problem becomes the problem, and the person's relationship to the problem becomes the problem" (*ibid.* p.40). Externalizing *problems* has proven its use in individual contexts. When working with a group of people, the author argues for externalizing *pattern*. 'Pattern' is less value-laden than 'problem' and allows for instances that are not problematic. In reflecting on ten years of systematic practice of this technique in therapeutic situations White (*ibid.*, p.39) has identified the following benefits:

1. There is a decrease in conflict between people, with less focus on who is responsible for the problem.
2. People's sense of failure is limited.
3. People are encouraged to cooperate in a struggle against the problem.
4. Possibilities are created for people to retrieve themselves and their relationships from the problem.
5. It allows people to take a lighter approach to serious problems.

6. It encourages dialogue rather than monologue about the problem.

CHARACTER AND STRUCTURE

The characters of a systemic story are appropriated from Churchman's (1971) nine necessary conditions for the conception of human populated systems. There are four types of characters: clients, executives or decision-makers, experts, and those affected by decisions. The client is the person (or group of people) who should be served by the system under consideration. They are the customers, the users, of a product or service. If the system is performing well these characters are happy. The executive or decision-maker has the power to apply resources (financial or human) to parts of the system so that it performs better. Decision-making is done by the executive, which may be a group of characters. The 'expert' character has knowledge of how to arrange actions and components so that the system serves the client better. The expert (systems designer, process designer, product designer etc.) attempts to convince the executive to apply resources in a way that increases the client's satisfaction. The affected are those characters who have to perform the actions that enable the client to be served. These characters do not have the power to apply resources or to redesign (change) the way things are done.

Another aspect of a systemic story is the *pattern that connects the actions that produce the system's outcomes.* This is the arrangement (structure, form) that produces actions by the characters and connects such actions in a manner that delivers certain outcomes. This pattern is not necessarily a consciously designed way of working. Sometimes the pattern determines the actions of the characters and sometimes the characters design the pattern. Often the characters believe they have designed the pattern, while the pattern is in fact regulating their actions. There is something at stake that guides the conversations and actions within a business. In healthy systems the client's needs are the stake, in that phrases and actions should ultimately support the client being served better. However, in real life, what is at stake may not reflect the needs of the client at all. There is a reciprocal relationship between the pattern that connects and the stakes of a system. They are

defined by and define each other. The actual stakes that are driving a pattern may be implicit. A third aspect of systemic story is the setting and context over which none of the characters have any power. Elements of this environment may influence the pattern and the stakes of the system. The above elements (characters, pattern, stakes, and environment) are liberally appropriated from Churchman (1971, 43) and Ulrich (1983). The key differences are that firstly, instead of components that co-produce the performance of the system the author uses the notion of the pattern of concepts, systems ideas and actions. The focus is on patterns of phrases, linking, action, thinking and meaning. Secondly, Lyotard's (1988) notion of stakes is used instead of Churchman's measures of performance because it allows for non-intentional performance and is also suitable for application to conversations as systems.

The three-step process for the development of systemic stories is a synthesis of Rubie (1996, p.13), Druxman (1997, p.22), Churchman (1971) and Freeman and Combs (1996). The process is not prescriptive and provides a series of options and combinations within each phase. The phases themselves are not necessarily sequential. The basic process and structure of the systems story-building process is:

- Phase 1: Introduction of the characters and deconstruction of dominant regulative conversations that represent the local current knowledge (guides for action) operating in the area of focus;
- Phase 2: Identifying and selection of new concepts, systems ideas and themes from generative conversations. These are seen as exceptions and possible beginning points of new knowledge;
- Phase 3: Construction of an alternative narrative, which allows the development and incorporation of the new concepts, systems ideas and themes into the current regulative conversations.

It is possible to begin with a new theme, then conduct a KSD, in order to understand how the formative system will attempt to regulate it. Once this is done, a new pattern that links the new theme into the current knowledge may be developed. Alternatively, one may

begin at phase one and obtain new concepts and systems ideas through the deconstruction of the current pattern. Another approach could be to build a new story and determine the differentiating themes by comparing it to the current pattern. Jerome Bruner (1986, p.19-p.21), in reviewing the views of prominent literary theorists, has identified the following deep structure in stories: *steady state, breach, crisis, and redress*. This sequence is reflected in the above process and resulting structure. He argues that "what one seeks in story structure is precisely how plight, character, and consciousness are integrated" (*ibid.*). This dynamic is at the heart of human-populated systems. The above three-phase structure reflects a movement from deconstruction through a new insight to construction as illustrated in the comparative table below.

Construction phase	**Story structure**
Phase 1: Deconstruction	Steady state
Phase 2: Exploring new beginnings	Breach, crisis
Phase 3: Building new patterns	Redress

Table 4: Story construction phase and structure

PHASE ONE: DECONSTRUCTING THE CURRENT PATTERN

The group construction of a systems story uses generative conversation, guided by inquiry questions. The principle of *linking* (see Chapter Three) is applied as much as possible. The aim is to let the story emerge from the questions and resulting generative conversation. Freedman and Combs (1996, p.67) suggest a mapping of the influences that keep the current *problem* working. In systems stories this takes the form of an exercise that maps the effects of the current *patterns* on the system's characters (client, executive, expert and affected). The story shows how these regulating patterns keep current concepts and systems ideas in circulation. As a group describes the trapping pattern, the group externalizes, objectifies and labels it. From this perspective, people do not have problems; rather patterns have people. For example, instead of labeling characters as 'autocratic' it can be asked how 'the autocratic pattern' affects knowledge and action in

the business. In this way, the current knowledge (concepts and systems ideas that guide action) is placed outside of the systems actors in the form of regulating patterns of conversation and actions.

The group performs the following tasks during the deconstruction phase:

1. Identify and describe the systems characters;
2. Map the current conversation patterns, their stakes, and effects. Use the deconstruction questions as triggers;
3. Capture a point-form description of the characters, situation, and workings of the named patterns.

Conducting a KSD leads to a better understanding of the regulatory elements and their relations. Therefore it may be useful to conduct a KSD on areas of the business within which new knowledge is to be created or introduced. Insights gained from the KSD provide a rich background to the above tasks. In constructing a set of questions to guide the group inquiry the author has freely adapted Freedman and Comb's (1996, p.122-p.124) questions and added knowledge- and systems-relevant questions that aim to map the landscape of the current regulating pattern. It must be remember the pattern *is having the actors.* The story *is having them.* The pattern is a regular arrangement of concepts, systems ideas, phrases, linkages, and conversation practices. The group that is attempting to create or introduce new knowledge is trying to understand the pattern that connects (and possibly traps) the systems characters into conversations and the resulting actions and reactions of these characters. All of the following questions focus on the current situation within a business. Initially, the pattern must be viewed as simply the current way of conversing and interacting.

Describe the history of the character's relations with the pattern.

1. How does the pattern recruit the characters into certain ways of conversing?
2. Where can one witness these ways of reacting and responding to the pattern?
3. What experiences have the characters had that support their current actions?

4. When and how did the current pattern of interaction emerge?
5. What historical systems ideas and concepts are guiding conversations?

Investigate contextual influences.

1. In what kind of situations do you expect the characters to revert to pattern?
2. Are there certain places where the pattern predominates?
3. What organizational positions support the pattern taking over?
4. Who of the systems characters benefit from this way of doing things?
5. What theme is being played out by the characters?

Review the effects and results of the pattern.

1. What effects is the pattern having on the lives of the characters?
2. How has the pattern influenced the characters in their relations?
3. How is the pattern influencing people in other systems?
4. How does the pattern affect the relationships between characters?
5. If the pattern were to intensify how would it affect the future of the business?
6. What does the pattern promote in relationships?

Appreciate the web of beliefs, practices and attitudes that support the pattern.

1. Do characters believe that things should be this way?
2. How are the characters' actions guided by concepts and systems ideas?
3. What conclusions does the pattern suggest to the characters?
4. What ideas, habits and feelings feed the pattern?
5. How do the pattern's effects match up to the characters' hopes?
6. Does the pattern team up with other problems?

Realize the tactics or strategies of the externalized pattern.

1. How does the pattern worm its way into dominance?
2. If the pattern were a person, how would he or she present themselves and at what times?
3. How does the pattern manage to convince the characters?

4. What ways of life does the pattern piggy back on?
5. What jargon is the pattern using?

As soon as the group has a feel for the patterns operating within the business, it can name them. This allows further externalization of the pattern, allowing the pattern itself to become an object of conversation. The label is then used in further inquiry. The group needs to document a point-form description of the characters, situation, and workings of the named patterns.

PHASE TWO: EXPLORE THE BEGINNINGS OF NEW KNOWLEDGE

Deconstructing the current pattern has produced a description of the setting, characters and dominant patterns. This situation is now explored in search of exceptions to the pattern that may lead to new knowledge (guides for action). The group co-constructs exceptions and different outcomes using the questions below. These questions focus on openings that "if taken may lead to an alternative story" (Freedman and Combs, 1996, p.125). The questions are triggers that guide an inquiry-driven form of generative conversation. Alternatively, the group may simply practise pure generative conversations (see Chapter Three) and capture the themes that emerge. Themes from pure generative conversations link to the current patterns as exceptions or beginning-points of new knowledge. In both cases, the following questions serve to prompt the initial identification and development of theme and beginning point descriptions. A person must be designated to capture the exceptions, preferred developments, and new themes that emerge during the conversation.

Identify pattern exceptions that have occurred.

1. Have there been times when the pattern has not regulated conversation and actions?
2. Have the characters ever stood up against the prescriptions of the pattern?
3. In what situations do the characters make their most free decisions?
4. Does the pattern only allow certain contributions and ways of linking?
5. What type of language does the pattern use?

Explore other points of view.

1. How do the characters' significant others view the pattern?
2. How do the outsiders view the pattern?
3. What characteristics of actors is the pattern smothering?
4. What possible new conversations and actions has the pattern smothered?
5. How do the characters view the situation when intoxicated?
6. Have characters left the system to escape the pattern, what was their view?

Recognize different contexts.

1. Does the pattern regulate the characters in out-of-work situations?
2. Is the pattern strongest in meetings? In what situation is it weakest?
3. Does the pattern emerge when only certain characters are together?
4. How is the pattern built into business systems, and procedures?
5. Does the pattern affect all areas of action within the system?
6. What environmental changes might weaken the pattern?

Explore time.

1. Was there a time when the pattern was not prevalent? What was different?
2. What was the best time in the recent history of the business?
3. During what periods are the characters least susceptible to the pattern?

Check that exceptions are preferred.

Freedman and Combs (1996, p.130) suggest that there are checks that ensure that the exceptions that emerge are in fact preferred. The following questions can be asked of the new concepts, systems ideas, themes and exceptions that have emerged.

1. Could the new knowledge lead to useful practice? How? Why?
2. Do the systems ideas behind the exception suit the characters? How? Why?
3. What new knowledge would be most preferable as new patterns?

The aim of this second phase in the story construction process is the production of a short list of about seven beginning points of new knowledge in the form of concepts, systems ideas, themes and stakes, that are preferred exceptions.

PHASE THREE: BUILD NEW KNOWLEDGE INTO NEW PATTERNS

Exploring new themes and beginning points of new knowledge (phase 2 above) helped in the identification of a short list of concepts, systems ideas, exceptions, preferred outcomes and new conversation themes. In phase 3, these are developed into a preferred pattern. The strands of new knowledge are woven into a story. This is a phase of synthesis, connection and construction. The author again follows Freedman and Combs (1996, p.102) except in the omission of their aspects of story development that are history focused. In systems story construction, the historical pattern forms the present situation, characters and pattern that were deconstructed in phase one.

The new pattern is constructed by developing exceptions from the current pattern. These "unique outcomes are experiences that would not be predicted by the plot of the problem saturated narrative" (Freedman and Combs 1996, p.67). They are instances of new knowledge (guides for action) that would not have been foreseen given the pattern of current concept and system idea usage. Each theme, preferred outcome or exception from phase two is developed into a new pattern, using the guiding questions below.

Understand the context.

1. Where did the exception occur? When?
2. What circumstances support the exceptional actions?
3. Is the know-how that supports the exception shared?
4. What kinds of contexts are appropriate for the application of such know-how?

Develop the exception process.

1. What implications for action follow from the new concepts, systems ideas or themes?
2. Is there a sequence to such actions, if so, what?

3. How did the system characters make exceptional decisions?
4. What kinds of things do the actors say to one another in order to support the new pattern?

Describe the details of the exceptions.

1. What particular things would an observer have noticed during exceptional events?
2. What effect did the event have on the system characters?
3. How did the rest of the day go after the exception?

Articulate the exceptional know-how.

1. What kinds of competence did the characters display during the event?
2. If one had to attempt to recreate the event as a pattern, what would one do?
3. What seemed to be at stake during the exception?
4. What rules of thumb could one infer from the exception?
5. What principles seemed to govern the characters' interactions during the event?
6. What did the characters learn from the exception?

Explore the meaning of the exceptions.

1. What did the exceptional actions mean to the characters?
2. What did the new perspective tell the characters about themselves?
3. What was significant for the characters?

Re-describe the characters and their relationships.

1. How would you describe the relationships in the emerging new pattern?
2. What qualities are evident in the characters as they develop the pattern?
3. How do these qualities support the new pattern?

Appreciate motivation, hopes and goals.

1. What motivates the system characters within the new pattern?
2. What goals are reflected in the system characters' actions during exceptions?
3. How are the system characters' goals reflected in the stakes of the new pattern?

4. What do the characters value about the new pattern?

Stretch the story into the future.

1. If these new actions were a trend, what would one expect next?
2. Predict the pattern of actions in one year's time.

The aim of this phase is the production of a point-form description of the new (named) pattern of action and meaning.

CONCLUSION

This chapter has described a three-phase inquiry process that enables the group construction of a systemic story. Each construction phase supports structural components of the story. The reasoning behind the three-phase process is as follows: Firstly, if one is hoping to create new knowledge within an organization, then it would be useful to understand how the current knowledge is maintained and preserved within the organization's conversations. Conducting a knowledge systems diagnostic will bolster the deconstruction of the current patterns of conversation and action that is performed in phase one. The diagnostic will also identify those subject positions that have regulatory importance within the formative system. Decisions can then be made as to whether to include the individuals who occupy such positions in the group attempting to create new knowledge. Once an understanding is reached of how the current patterns of systems ideas, concepts and themes regulate conversation, then the search for new systems ideas and concepts can begin.

There are two ways of generating these new beginnings of knowledge. One can engage in pure generative conversation or search for exceptions to the current regulating pattern. Once new themes, systems ideas and concepts emerge, they are checked to make sure that they are in fact preferred to the current pattern in use. These preferred elements represent the seeds of new knowledge and are taken forward into the last phase. The task then is to build the new themes, concepts and systems ideas into a story that is *relevant* to

the systems actors, to explore the new ideas in terms of action, meaning, relationships and motivation. The ramifications of the new pattern are stretched into the future so that the actors understand the consequences of the new knowledge (guides for action) that they have created. Systemic story uses both KSD and generative conversations, while adding structure and relevance to new themes, concepts and systems ideas. By moving through a structure of steady state, breach, crisis and redress, the systemic story allows participants to explore the implications of the new knowledge within the organization.

CHAPTER FIVE: HEURISTIC PRACTICE

"Evolution of a word:

heuristic: hyu-ris'-tic, adjective or noun.

Derived from Indo-European *wer* (I have found); in Greek *heuriskein* (to discover), from which was derived Archimedes' cry "*Eureka!*" (I have found it!)
From LEWIS THOMAS, *The Lives of a Cell,* 1975.

Today's definition (Webster's):

Heuristic:
general meaning: serving to guide, discover, or reveal;

specific meaning: a rule valuable for research but unproven or incapable of proof."

(Andrews, 1995, p.43).

INTRODUCTION

Firstly, this chapter describes the author's recent systems practice within industry. It recounts the frustrations that led to a return to philosophy and the development of the heuristic methods covered in this thesis. Secondly, the chapter illustrates initial applications of KSD, generative conversation and systemic story. These three applications are not continuous and are included in order to illustrate the emerging heuristics under discussion. As stated in the title, this thesis represents a movement towards new heuristic systems methods. The previous four chapters develop the philosophical foundations and reasoning behind the methods. The crux of their justification lies there. The highly formative, conceptual, and *a priori* nature of the knowledge means that justification of methods developed to support knowledge creation has to be philosophical. This follows Churchman's (1968, p.231) argument that "the systems approach begins with philosophy". This chapter illustrates initial applications, initial illustrations of "seeing the world through the eyes of" a Kant, a Foucault, a Lyotard (*ibid.*). *The applications represent first heuristic attempts to engage concrete reality from these perspectives.* These attempts led to the following realizations about post-modern practice:

1. Any post-modern method that aims to support *new* knowledge creation is by definition heuristic. This is because of the constitutive nature of *a priori* concepts and systems ideas. The method itself is *a priori*. The approach a particular method supports forms future experience. Applying models, guides and inquiry frameworks actively affects participants' experience and helps constitute their worlds (see Chapter One).
2. The methods are heuristic in the sense that they are an aid in enabling new knowledge creation but are "unproved or incapable of proof" (Andrews, 1995, p.43). It is impossible to prove them because they are *a priori* and constitutive of experience, their value may however be tested in the implications for new actions within the business.

3. Given the above, all knowledge (as guides for action) is heuristic. Guides for action are *a priori* (historically or individually); they cannot "carry within themselves their own legitimation" (Lyotard, 1984, p.10). No human knowledge can escape this condition. Therefore, there can be no human knowledge that can act as ultimate litigation.
4. Even a critical systems approach ultimately rests upon *a priori* commitments to emancipation, critique and complementarism (Flood and Jackson, 1991, p.7).
5. A post-modern approach does not escape this problem, but is at least aware of its own internal paradox. The post-modern strategy is to strive to ensure that no set of concepts and systems ideas dominates. Lyotard (1985, p.100) makes a telling point about the "justice of multiplicity: it is assured, paradoxically enough, by a prescriptive of universal value". This conscious irony is the primary differentiating characteristic of post-modern practice.

The above reflections are presented here in order to better frame the examples that follow. The applications are the first steps in a continual heuristic practice and development cycle. Development here means finding concepts and systems ideas that enable one better to embrace and celebrate the multiplicity inherent in post-industrial business. Given the above, there is not, and cannot be, any pretence of the examples presented being scientific modernist tests of KSD, generative conversations or systemic story construction. To attempt a scientific value-free proof or justification of the methods would be in direct contradiction of the philosophies appropriated. It would weaken the integrity of the appropriation effort by returning to the scientific grand narrative. The methods can however be judged by their ability to enable and support new knowledge creation and development within specific business contexts.

REGULATIVE SYSTEMS PRACTICE

The author has more than ten years of experience in the field of business development, spending the last five primarily in modernist systems practice. Modernist systems practice assumes current system performance as a stake. This has taken the form of

consultation and facilitation within industry in South Africa and on occasion in the United States. The range of industries within which this practice has occurred includes financial, chemical, service and health. The work usually takes the form of facilitating the group formulation and resolution of business problems. The workshops usually last two days and have the following generic structure: On the first morning the author presents the systems method that is to be learned and used. The methods practised regularly are Critical Systems Heuristics, Soft Systems Methodology, Viable Systems Modeling and Intervention Identification Process. Once an initial appreciation of the systems method is acquired, the participants form groups and spend the next one and a half days applying the systems method to their area of concern.

These workshops have received good evaluations by the participants. They are effective in enabling a group to organize their thoughts about an issue or problem, and increase the probability that the group members will act in a coordinated manner when implementing their 'solutions'. These modernist applications of system frameworks guide the linking of phrases by making the effective performance of the system in focus the stake of conversations. The system's efficiency and effectiveness become the objects of the conversation and, in so doing, limit the range of possible 'reasonable' moves.

Some of the dominant referents that occur within these phrases are 'measures of performance', 'components', 'system', and 'structure'. Even a critical systems approach presupposes the systems idea 'system', which then guides and regulates phrases and linkages in the subsequent conversations. The ability of modernist systems methods to guide and regulate conversations is exactly why they are so useful to business managers. Participants build a common 'world', using systems ideas as organizing frameworks (see Chapter One). Future individual actions then become more coordinated and better support the system's goals. This is necessary for the effective and efficient operation of any business. Using systems methods in this regulative way has a legitimate place within the organization. *However, in terms of creating new knowledge, the application of modernist systems methods in this way can at best only produce new moves in the same game.* In all the author's experience (over fifty such two-day workshop applications within

businesses) there has never been an emergence of new stakes. On the contrary, more effective ways of attaining the traditional stakes are discovered. One can attempt to create new stakes by critically reviewing the stakes of the current system. Both Churchman (1971) and Ulrich (1983) include critical inquiry about purpose in their approaches. The subtle trap here is that participants are caught in patterns of conversation and systems idea usage that presupposes the possible clients and stakes of the system. Recently, the author has had the opportunity of working in situations where the aim is to create or introduce new knowledge. The frustrations leading from the regulative effects of modernist systems methods led to the return to philosophy and the development of the heuristics illustrated below.

A KNOWLEDGE SYSTEM DIAGNOSIS

This example takes the form of a reflective diagnosis. During the period 1993 to 1995 the author was involved in project managing re-engineering efforts within Southern Life (see Topp 1995a, 1995b). Within these projects, systems methods such as critical systems heuristics and multiple perspectives were used to guide inquiry and design. The following historical diagnosis takes a post-modern perspective of the situation and attempts to map some of the elements and relations of the knowledge formation system at work within Southern Life at that time. During the period 1993-1995 the Southern Life Association Limited was the fourth largest life assurer in South Africa. It had branches nation-wide and had two head offices, one in Cape Town and one in Johannesburg. The context of this diagnosis is within Life Customer Services in the Cape Town head office. Life Customer Services designs life and investment products, administers life policies and contains the field staff who sell life assurance and investment products.

Mapping formative element relations

The inquiry does not focus on a single body of knowledge within the situation, but rather attempts to build a high level map of the formative structures operating within different bodies of knowledge. Conducting a knowledge system diagnostic can be overwhelming.

The sheer complexity of the tangle of elements and relations within and between bodies of knowledge can produce a feeling of helplessness. The initial mapping of the formative system revealed six bodies of knowledge (see appendix A for detailed diagnosis). This illustration will focus on the elements and relations operating within the 'product design' body of knowledge within Life Customer Services at the time. The table is a synthesis of the results of the 'product design' inquiry presented in appendix A. There are the expected strong relations between the elements that make up the categories of object formation, statement modalities, concept formation, and theme and strategy formation. These are not reflected; rather the less obvious (but forceful) relations are noted.

#	**Formative Element**	**Description**	**Related**
	Objects of conversation	*(expected relation between 1, 2, 3)*	
1	Social surfaces	Young bright actuaries and MBAs	4
2	Authorities	Qualified actuaries and systems designers	9,16
3	Classification framework	Premium / cover ratio, risk, investment portion	8,15,13
	Statement modalities	*(expected relation between 4, 5, 6)*	
4	Subject statuses	Actuaries and information systems designers	1
5	Sites	Access to or interface with the broker market	9
6	Positions & perspectives	Product designers and software designers	7,11,12
	Concept formation / usage	*(expected relation between 7, 8, 9, 10, 11)*	
7	Presentation schemata	Benefits offered, profit, cost (risk and administration)	6
8	Spectra of inclusion	Includes marketing, excludes after-sale administration	
9	Outside analogies	Concepts from marketing and advertising	2,5,12
10	Historical guides	"We design and sell insurance products"	17
11	Transformation procedures	Product specification layouts and logic	
	Themes and strategies	*(expected relation between 12, 13, 14, 15, 16)*	
12	Incompatibilities	Life vs. investment products, product flexibility vs. simplicity	
13	Alternative approaches	Customized products that combine different benefits	3
14	Coherent options	Life insurance, pensions and unit trusts	
15	Expected function	Profitable, marketable products	3
16	Access to appropriate	Access to actuarial conversations and statements and competitor conversations	2
17	Individual desires	Idealism about a totally flexible product	10

Table 5: Element–relation map of 'product design' body of knowledge

This level of diagnosis illustrates the complexity of knowledge formation systems. The subtle complexity is appreciated when one applies a post-modern framework that de-centres the individuals. Not only are there relations between elements within the four categories, but also key relations between elements of different categories. These relations may be dynamic, in that the direction of influence between elements may oscillate over time. For example, the classification framework (3) will initially influence any alternative approaches (13) that may emerge. However, once an alternative becomes an object of conversation, it begins to influence the classification framework.

If one were attempting to create or introduce new knowledge into product design where should one focus to increase the chance of success? From the above mapping it would seem that the formative elements to focus on would be 'positions and perspectives' (6) and 'outside analogies' (9). The incompatibilities (12) that one wishes to create are related to both of these elements. New knowledge by definition implies some initial system idea or concept incompatibility.

In focusing on 'positions and perspectives' (6) it can be seen that these influence, and are influenced by 'presentation schema' (7) and 'transformation procedures' (11). The following tactics concerning 'positions and perspectives' may be possible:

1. Move one or two product designers or software designers into a marketing function for a six-month period. If these individuals are also 'authorities', so much the better.
2. Redesign the 'presentation schema' for the next product. An example hierarchy may be: 1– Ease of access, 2 – Profit, 3 – Benefits, 4 – Cost.
3. Critically review the current procedures of transformation by carefully checking how the structure and logic of the existing product specification layout limits the perspectives involved in the design process.
4. Appoint a person with a marketing perspective to run the next new product design project.

5. Conduct generative conversations with the key actuaries, young MBAs, product designers and systems designers. Capture the new themes, systems ideas and concepts for explicit inclusion into the next new product.

Focusing on 'outside analogies' (9) it is apparent that in this case they influence and are influenced by the 'authorities' (2) and 'sites' (5). The following tactics are possibilities concerning 'outside analogies'.

1. Increase exposure to possible analogies by having talks presented on the design process used in other industries. Make sure that such analogies have links into the existing classification frameworks and that they do not intimidate the current authorities of delimitation.
2. Investigate which analogies are favoured by the different authorities of limitation and introduce similar but strategically different analogies to stretch the regulative system.
3. Increase the spectrum of sites to which authorities have access.
4. Develop one's own literal site. Design an Intranet site that has information and links to other sites that may support new knowledge creation within the product design body of knowledge.
5. Challenge the authorities by having the design process go through a benchmark against world-class opposition.

The above examples illustrate how, with the aid of KSD, one could intervene into the second order knowledge system that was operating within Life Customer Services at the time. Most importantly, a KSD reveals which elements one needs to engage in generative processes. It reveals where the most leverage is within a formative system. It is unlikely that a modernist individual centric diagnosis would have revealed such systemic leverage elements and relations. Similar mapping could be done for each other body of knowledge. Once this is done the relations between elements across the bodies of knowledge can be mapped. The insight gained from such an exercise would enable the identification of key leverage elements and relations for any intervention aimed at creating or introducing new knowledge in Life Customer Services.

GENERATIVE CONVERSATION

In the following example of a generative conversation there was no pre-agreed topic of conversation. Owing to the verbatim nature of the transcript, some of the text may initially seem odd but this is preferable to any editing and the risk of reinterpretation that accompanies it. The following procedure preceded the conversation.

1. As suggested in Chapter Three the participants were first presented with an explanation of the idea as a game.
2. The linking rule and generic examples were shared.
3. The participants each read through a copy of the guides.

The transcript below contains boxes of commentary relating how the actual conversation fits the theory of generative conversations presented in Chapter Three. Linking is illustrated by the use of italics and underlining. The rest of the conversation transcript appears in appendix B.

The moves

In this example, all the participants are involved in issues of organizational management or design.

J I am interested in the future of *consulting*.

T The future of *consulting* is <u>past.</u>

(silence)

W Why do you say it is <u>past?</u>

T In the sense that it is <u>past</u> because we are going to be swamped with consultants.

J I think it is <u>passed</u> in a different sense in that the mental model behind the word *consultant* is past. There has got to be a different concept. I don't know what it is – co-worker, collaborator, something like that.

T So the idea of a *consultant* as an expert has <u>passed</u>?

W I think the thing that has passed is that there are few *experts*. I think you are going to get more and more consultants and in fact more and more niche experts that are out-sourced and work together.

The first phrase sets the stakes as 'consultancy'. One of the risks in generative conversations is that the initial move can set up a referent that becomes a theme and then regulates further phrase linking.

T And how do we deal with that in a systems context, that there are no *experts*? So they will be non-systems consultants?

W Well, you may have a larger need now for systems consultants that put together manifolds of *experts* – that synthesize manifolds of experts that are being out-sourced. And it is a different field of expertise to a consultant who was one of few, who consults to a company, and now consults on what is the most effective way to put together all these many experts that I buy in off the shelf every now and again.

T It is interesting that the Aristotelian concept architechtronic is exactly that – like an architect who manages a building brings in many *experts* but he creates the system in which they operate.

The previous move ends the 'expert' theme and introduces 'building' as a metaphor that begins to govern further linking.

F And also the end product which is the building.

(silence)

J I think the 'building' is really key here. I equate it with 'organization' as a verb and it is the relation of building a large number of experts into an organization in the sense that they work together.

The previous move introduces the concept of organization as a verb. However, the concept is not taken up, but counted in the following move because of the force of the 'building' metaphor.

F The building itself, with the expert that is available, I think, is the departure point. The organization gives a brief of what the building should look like, and the role of the consultants would then be to source the experts which would add the individual building blocks, if you like, when needed, where required, until the final end product is created. In that sense, the consultant could play a facilitation role or could play a role where they collate, compile, get all the experts together, or could play a role where the consultant has got this contractual agreement with the organization, the owner of the end product – who is obviously either going to decide to pay or not for the quality of the input.

W The building is different for me, the building is not something we build in a business. The building is the place that enables out-sourced experts to come in and link in to find the 'gestalt' of this business – link in, add value, and get out. What I am wondering about is how do you design a building, how do you design an organization that is ninety percent out-sourced on experts?

Potential new knowledge emerges here in the 'link in, add value, get out' concept. It raises the systems idea of a 'plug and play' organizational design.

T Your concept of building is not unlike J's concept of *shared space.*

W Yes – something like *that* – but how do we structure this thing that these many consultants plug into and ensure that we can get the most value and that we can synthesize?

T In a sense, the '*systemic consultant*' – let us call him that for lack of another word – is still someone who creates that building and allows that synthesis, facilitates that synthesis of the different experts.

W Yes.

F Does that mean that the role of the *systemic consultant* will change or that he will become a new kind of consultant?

The consultant stake raises its head again, a good example of the regulatory powers of the formative systems the participants emerge from.

T What is interesting to me if I understand it correctly is that this *systemic consultant* is traditionally a role played by the CEO or senior manager – you know who sat there and brought these things together.
(silence)

The previous move illustrates a link to the addressee ('me') of the preceding phrase. It also sets up the referent 'CEO', which then governs the next series of links.

F Which I think is still very much a part of today's business, except that the CEO does not have all the expertise and knowledge anymore and therefore has to pull in consultants, experts in the organization or outside to help him create that synergy.

T Does the CEO have the conceptual capacity to do that?

W Yes. The nature of the CEO changes as well. I meant, what value? My question is: if we are getting partial value 'parts' in a system from experts, the systems design synthesizes those parts into more than the sum of the experts that we sourced – what is the value added by the CEO?

J The CEO is an organizing verb 'facilitator' and my sense is that that role is being taken over more and more by what have been traditionally referred to as consultants – I think a better label is 'building facilitators'.

The previous two moves lead to the emergence of a potentially new systems idea: that of the CEO as a 'value facilitator'.

W If he is just facilitating, my question: is what is he facilitating about? I have got a feeling that the added value is there – 'What are we going to do?' Then you can have generic builders or systems designers to get the experts in. The good CEO in that scenario would be the one that picks the *right things to do.*

J That seems to almost transcend and go to a level where picking the *right things to do* is picking the right people to actually say what the core of those ideas should be – the core of the plan is being out-sourced. Designing that plan is being out-sourced.

The potential is enhanced as the concept is developed with the CEO now selecting the individuals who then decide what the core ideas or value chain should be.

W Till the whole thing becomes *virtual*?

J Yes.

T Well, to me the *virtual* or the whole, the picking, is not so much picking the right thing to do as identifying the right patterns, the appropriate patterns, the good patterns, the useful patterns. The value is there – but the patterns have to be recognized.

The last phrase links not only to the preceding one but also back to the 'value' concept presented in previous phrases.

W So you are saying you *build bottom up*? You map the value, build a synthesis that tells you what to do, or do you find out you outsource what to do, then build the pattern?

F I think it is an *integrative process* where the CEO – being the person who sees the picture – gets specialists, knowledgeable people, integrates them. They bring with them how things are working outside, what is required in the environment in which the business operates and thereby they are actually contributing towards the *CEO*'s picture that he builds – in how it should be as is required by reality.

W So does he have an idea of what should happen and then *he* outsources to develop the idea or does he outsource – put together people to find the ideas what to do – or does he do both?

F I think *he* does both – in the age we are moving into, probably more of the latter. He may not have very strong ideas because of the speed of change and the virtual world we are living in and it is almost becoming impossible for one person to be so knowledgeable with such a large variety of what is happening out there.

J So leadership is becoming a commodity.

There is no direct link here. Leadership or commodity did not directly occur in the previous phrase. An external stake is governing this link, perhaps an interest in the CEO as leader, or the notion of skills as commodities. The new referent immediately shifts further phrase linking along this theme.

F I think we can say that leadership is becoming a commodity.

T That is really post-modernist, *leadership* is a *commodity.* (laughs)

W See, it is everything – that *commodity* thing. I am starting to think synthesis is a commodity. Systems synthesis is a commodity!

J That is the *commodity* that they sell.

W And a leader can buy in systems synthesis, buying in part of leadership *commodity.*

There is a possible new concept here. The preceding moves and linkages enabled a joining of the concepts 'commodity' and 'systems synthesis'.

T So in a sense the idea of *commodity* links back to J's initial concern with what is happening in consultancy. In fact, consultancy is just joining the sea of commodities in that sense and linked to that, it's absolutely terrifying, in that book are scenarios of emerging post-modern organizations. The biggest trend in that is everything becomes commodities.

Identifying new themes, systems ideas, and concepts

This thesis argues that the quality of the above conversation and the new concepts that emerged would have been difficult to attain if approached from a modernist framework. Since what is new is relative to the person doing the analysis there may be more or less potentially new ideas embedded within the conversation. The author identified the following potentially new systems ideas, concepts and themes.

1. Organizations as spaces where individuals "link in, add value, and get out" (p.112). There may be value in exploring the implications of such a plug and play organizational design;
2. The CEO as a facilitator or synthesizer of many different value components (p.113);
3. The CEO as the designer of 'direction-making' teams, but not giving the direction him- or herself (p.113);

4. Systems synthesis as a commodity. Exploring the implications of this idea may realize new knowledge for those involved in management (p.115).

Here are some examples of how one could develop these ideas:

1. Develop the idea into a viable systems model. For example, develop a VSM (Beer 1985) for a 'plug and play' organization.
2. Develop a SSM (Checkland 1981, 1991) conceptual model mapping the actions of a CEO as the facilitator of interdependent value components, or the designer of a direction making team.
3. Design a VSM (Beer 1985) that produces the commodities of 'leadership' and 'synthesis' as its core 'system one' activities.

In contrast to using the above systems methods one could take the new ideas and build them into a systemic story. One would begin by deconstructing the situation as it has existed traditionally. Then a few of the above ideas could be used as potential new seeds of knowledge or turning points. Finally, a story could be developed about the new patterns implied by the new knowledge.

A matrix linking example

The process described below is a form of a linking matrix as used recently in a workshop in the chemical industry. The business process in question spanned four different companies. Each of the companies operated on a different stage of the overall value chain. There were input suppliers, process technology researchers, process operators and output users present. The aim of the workshop was to identify as many potential synergies as possible out of the existing business process. Participants representing the different companies gathered for the two-day workshop. The workshop was one of the rare occasions where participants had the opportunity to interact with one another about the overall value chain. Recent advances had occurred in the input, process, and output sectors of the value chain, and these could have potential impacts on the other companies.

The workshop presented an opportunity to share these advances with participants from the other companies who wre not directly involved in that part of the value chain.

A linking matrix was selected as the primary workshop method for the following reasons:

1. In order to realize new value combinations, participants would have to escape current regulated ways of thinking and conversing;
2. The playful nature of matrix construction would counter the participants' more rigid engineering background;
3. There was a natural sequence of high-level business elements (input, process and output);
4. The purpose was to realize as many potential *new* synergies as possible. These would aim at a twenty year horizon;
5. There was limited time, which meant that the work would have to be structured with tasks spread across parallel working groups.

The first day was spent with participants giving presentations on the current state of developments within their specific fields. This enabled all the participants to get an overall appreciation of the situation. On the second day the following customized linking matrix method was applied: Firstly, participants were arranged in three groups according to their input, process, or output focus within the value chain. Each group then generated a list of concept possibilities. The first group listed any possible inputs or feedstock that could be used in the business process. These were in the form of data, information, or materials. The aim was to generate many possible current and future inputs. At the same time, the second group generated a list of possible transformation processes and sub-processes that might occur or be developed. These were in the form of information or material technologies. In parallel, the third group generated a list of possible outputs. Outputs took the form of products and their markets, or simply data or materials used as inputs to further processes. The three lists of possible inputs, transformation processes, and outputs were then combined in a matrix. There were more than twenty concept possibilities generated in each list.

At this stage of the workshop, the participants were rearranged into six groups. Each group reflected a mix of input, process and output focused participants. The groups were allocated a share of the input concept possibilities. Using their lists of inputs, they were tasked with building descriptions of how different combinations of input, transformation and output might add value to the business. The rule of the game was that the groups had to build a case for every combination. No initial discarding of combinations was allowed. Although the groups did not have enough time to work through all possible combinations a significant number of potential synergies emerged. The group aims to complete the building of cases for unusual combinations of concepts and systems over the next few months.

SYSTEMIC STORY

Systemic story construction presents in practice the biggest challenge of the three heuristic methods developed in this work. Although it enjoys strong structural support from the three phases and the inquiry frameworks within them, it is not simply a case of working through the method. Listed below are a number of practical alternatives for the construction of a systems story.

1. Let one person build the skeleton of the story and then get the system's actors together to hear the first version and build on it. The person who constructs the story uses the inquiry framework to interview different system actors while constructing the skeleton story.
2. Use the transcript of a generative conversation that is guided by the story phases and questions as the initial story content.
3. Use combinations of one and two above, where small teams do the initial inquiry and construct the skeleton story.

An example story

In the example below, option two was attempted with a working group of researchers. The example illustrates the simple and local nature of little narratives that build meaning and a shared view of a situation. This is in direct contrast to the complexity and prescriptive nature of grand narratives. Little narratives "give rise to institution in patches – local determinism" (Lyotard. 1984, p.xxiv). The story construction process occurred during a morning workshop. The following customized process, which combined generative conversations and systemic story construction, was followed.

1. Participants were presented with an explanation of generative conversation as a game;
2. The linking rule was explained and illustrated;
3. The generative conversation guides were presented (see Chapter Three);
4. The story construction phases of deconstruction, exploration and construction were outlined (see Chapter Four);
5. The need to externalize patterns was stressed;
6. The 'research group' was then chosen as the system in focus;
7. The facilitator guided the generative conversation by prompting the group with selected questions from the story construction frameworks (see Chapter Four).

The facilitator, using the flip chart notes recorded during the work session, constructed and distributed the following short story (Commentary on how the example relates to the theory of systemic story construction is provided within boxes):

> Our story begins with a group of individuals interested in organizational change. They all worked in the field, either as consultants or within corporate management. The individuals all had different research focuses: leadership, appreciative systems, information systems design and consumer relations. One member of the group had not yet decided her area of research. The group

coordinator aimed to keep the focus broad. He felt that the traditional approaches to organizational change had missed the boat and that if this research group were to spread the net wide then they would come up with something significant.

The characters are introduced, and the systems measure of performance is identified as learning within a specific field.

The group fell into the pattern of meeting as a group to share ideas and confusions. With great resolve, the group set out to see key sights in philosophy and systems theory. Their approach was each to read important texts and then to meet (about once a month) to discuss their findings. This was most enjoyable since the readings provided content for their conversations, every one could contribute, and no one had to commit to any single philosophical or systems position.

The 'steady state' pattern is recognized and described.

There was much to see and the glimpses of personal relevance that did occur were quickly forgotten by returning to the diverse interests of the group. One or two of the group members wandered off on private excursions into philosophy or systems theory, but soon felt alone with their own thoughts and returned to the comfort of the sightseeing group.

This 'wandering off' reflects the emergence of the first exception to the pattern.

The months passed. The group tried to improve its communication by using email, but soon found that this meant you actually had to sign on and collect your email, read it, and respond. Perhaps it was the element of commitment to a position inherent in textual communication which doomed it to failure. The catalyst in the learning process continued to be the group meetings. Members rarely met outside of the meeting days.

The tension of a possible 'crisis' is alluded to. Time is marching on and the pattern continues to hold the characters in its grip.

As the months passed members of the group began to glimpse things that they felt were relevant to their personal journeys. Like buildings in a mirage, these ideas seemed to disappear as one approached them. Perhaps the individuals needed to construct their own buildings. The travellers felt that they had to begin packaging their perceptions and understandings so that they could start the work of constructing their individual arguments. The myriad of sights was meaningless without some binding thread. As one member commented, "We have to become tour guides."

A turning point is articulated as a preferred alternative to the 'sightseeing' pattern.

They knew that selecting what was relevant for them from the philosophy and systems theory arenas would be difficult for they would have to live by their selections. Instead of being 'interesting', an idea had to become relevant and applicable to real organizational situations, like the difference between being on holiday in a country and living in it.

The implications and meaning of the alternative pattern are explored above.

Reluctantly, the members of the group realized that they would have to free themselves from their pattern of sightseeing and begin to put together their own 'tours'. Their feelings about this development were mixed. One was keen to leave the communal sight seeing bus, but would like to meet for group reflection. Another felt it was time to make his own links, instead of just focusing on the sights. Others recognized the need to go on individual excursions but were not ready to take their luggage and leave the bus. One individual felt lonely, having left the bus, and would have liked to have others around who were in the same position as he was.

In the paragraph below, the resolution is described with the characters exploring the behavioral implications of the new pattern.

The members agreed to begin a new phase of their journey. In freeing themselves from the sightseeing pattern, they would begin to focus on building and telling

their individual stories. The group would still meet regularly but, instead of discussing readings in an abstract way, each person would get a set amount of time to present the relevance of the reading for their focused research. These individual presentations would need to include two perspectives. Firstly, aspects of philosophical standpoint, principles and the main argument. Secondly, there would need to be ideas concerning the practical development and application of a method.

Finally, the new guides for action are expressed in terms of time and process.

The group agreed on a new iterative pattern of individual interpretation, articulation and presentation. In two hours, each group member would present what he or she had constructed so far. The rest of the members would then offer constructive criticism and ideas for further research. These sessions would rotate, with all individuals getting a chance and then beginning again. In this way, an individual would have a regular chance to focus, construct and articulate his or her story.

The end.

Questions from the systemic story process were used to guide the research group. The 'sightseeing' pattern was quickly identified, named and explored. The exception to the pattern, 'we have to become our own tour guides', arose naturally from the generative conversation. All the participants contributed to the building of meaning about the new pattern. All the metaphors contained in the above text emerged during the session. The text above was distributed to all participants. In the above case, the new pattern did take hold, with group members regularly preparing and presenting their individual work.

Participants' reflections

Four months after the session, participants reflected on the experience by answering the following two questions:

1. What if anything did you learn from the exercise?
2. What if any of your approach and actions changed because of the story?

The following are selected comments from participants' reflections. The selections highlight the approach's capacity to embrace the multiplicity of the post-modern condition. The full text of the reflections appears in appendix C.

- It was a long time ago, but strangely, I remember most of the contributions, probably because of the story format.
- The story evolved into something that was a combination of the individuals' thoughts and was different to what it might have been if it was told completely by one person.
- The story handles complexity. It is easier to remember a story than a list – the thread helps remembering.
- I think it (story construction) has tremendous potential in conflict resolution, maximizing memory in limited time, enhancing value in long-term memory recall - a fun way of learning and linking learning with the known or experienced.
- So many conversations are disjointed with people skipping all over the place, just trying to get their thought "out", regardless of its relation to anyone else's thought. Linking changes this – it introduces a flow – ideas and sentences build on one another.
- Today it is easier for me to compare the current stage of my research to the position it was at when we generated the story.
- I always thought the group should become a testing ground for ideas. The story seemed to set this up – and deliver as well.
- If I learned anything, it was about the group as a bunch of learners – we had not previously reflected on what we were like as a learning group.
- The session focused us as a group to making commitments.
- I searched much more actively for the construction outlines of my own building.

The above comments serve to illustrate how a combination of generative conversation and systemic story construction builds shared meaning by embracing multiple

perspectives. Approaching the above situation from a modernist framework would not have achieved the same level of inclusion and shared meaning.

CONCLUSION

The aim of this chapter was to illustrate some initial applications of the heuristic methods developed in this thesis. The methods themselves are still in a maturing phase and continued practice, reflection and reworking will aid in evolving them further. The purpose of the initial application examples has been exploratory and in the spirit of ongoing practice, reflection and heuristic method development.

As stated earlier in this chapter, these post-modern heuristics do not pretend to invalidate modernist systems methods. The argument is that modernist frameworks are effective when the current system's efficiency and short-term effectiveness is at stake, but post-modern heuristics are effective when attempting to create *new* knowledge.

The final chapter describes, differentiates, limits and critically reflects on the heuristic systems methods developed in this work.

CHAPTER SIX: CRITICAL REFLECTION AND CONCLUSIONS

INTRODUCTION

In this concluding chapter the contribution of the thesis in respect to the fields of systems thinking and business knowledge will be reviewed. Critical reflections on the three heuristics are presented. Firstly, the methods will be differentiated from other developments within the systems approach and the broad field of organizational theory and practice. Secondly, the limits and limitations of each method are presented. Lastly, reflections on the practical challenges of applying each heuristic are presented. The chapter concludes with a summary of what has been achieved and relates this back to the original aims of the thesis.

SYSTEMS THINKING: ORDER, PROGRESS, POWER AND LANGUAGE

The contribution of the current work to systems thinking is the exploration and appropriation of some of the aspects of the post-modern horizon into the systems approach. The four issues identified by Jackson (1991, p.299) as having "important implications for systems thinking and practice" have been approached by the thesis in the following ways:

Firstly, the assumption of *logic and order*, which underlies most of modernist systems thinking, has far less importance in the methods developed here. KSD assumes an ultimately uncontrollable formative system, which evolves and mutates in ways that are difficult to predict. This tangle of elements and relations assumes no ultimate logic or design. Generative conversation has an order and logic to it, but is specifically designed to be as open as possible, allowing creative and illogical links as often as possible. Systemic story is a mix between the logic of systems and the metaphor of narrative.

Second is the issue of *progress*: generative conversation's design enables new moves and new stakes to emerge. The performance of the business as a system or the emancipation of individuals is not primary, merely another language game with other stakes.

KSD directly addresses *power* by focusing on the regulative nature of formative systems. This form of power flows throughout the system and is specifically not vested within any individual, but rather emerges in relations between the formative elements. Generative conversations engage power at its most micro level, that of making pragmatic moves within language games. The focus on the phrase as the foundational unit of this approach engages power at the most primary level. Whatever our intentions, language games make players out of us. They position us within pragmatic dynamics that influence and limit our possible moves.

In this thesis, *language* is assumed to be neither transparent or deceptive, but to be the basic stuff through and in which we live. The thesis specifically does not use the systems idea 'language'; rather 'language game' is used. This prohibits the spiraling into a mind-numbing systems definition that attempts to abstract the idea of language to the extent that it becomes useless. In this work, language games are assumed deceptive, as they are a combination of individual interests and formative system effects. They consist of moves and interests, which are either individually or historically motivated.

BUSINESS, NATURAL AND SOCIAL SCIENCE RESEARCH

The contribution of the current work within the tradition of knowledge is in providing a model of business organizations as knowledge systems. This thesis arose out of the frustrations of systems practice within business organizations. The work has been driven within the context of business organizations and how knowledge is created and maintained within these organizations. It is within this context that post-modern philosophy is appropriated to develop models and heuristic methods. New knowledge has value to a business if it ultimately results in changes in individual's actions that result in an improved performance measured against the business' goals. It is appropriate here to explore the potential application of the heuristics in respect of research organizations in the natural and social sciences. One could view such organizations *as if* they were businesses containing human activity systems that produce publications and knowledge for a specific market.

the heuristics to natural and social science research organizations is an area that would benefit from further research.

KNOWLEDGE SYSTEM DIAGNOSTICS

KSD is an inquiry framework that guides the mapping of the knowledge formation system at work in a business. As such, it stands alone in the systems approach. It is heuristic in nature and does not pretend to deliver any context-free truths. However, it does enable a non-trivial mapping of the formative system forces that regulate and influence the conversations occurring within any organization.

The primary limitation of KSD is the complexity of what it attempts to map. The knowledge formation system is a constantly moving web of elements and relations, out of which certain patterns emerge. The system itself evolves as new concepts and systems ideas become active within it and is therefore never totally stable and manageable. What then is the use of even attempting such a mapping? The usefulness of KSD lies in its ability to uncover the more subtle forces operating within a business. These forces quietly regulate the conversations and within them the systems ideas and other *a priori* concepts that guide participants' thoughts and articulations. It is the only systems method that enables the analyst to engage the organization at this deeper formative level. It is the argument of this thesis that the systemic resistance encountered when attempting organizational change emanates from this deeper level.

The insight that results from a knowledge system diagnosis helps identify leverage points within the system. These points occur where there is a robust relation between forceful elements, leading to strong areas of delimitation and regulation. These elements and relations need attention if any new systems ideas and concepts are to enter into and survive within the organization's conversations. Focus on such areas will not guarantee successful new knowledge introduction or creation, but will at least improve the chances of its occurring.

The use of KSD as a systems method is open to the following problems:

1. It is easy to forget that the inquiry is about the formative system and not about the concepts and systems ideas that emerge from it.
2. In order to conduct the inquiry, participants must have some appreciation of Foucault's 'post-structualist' view of the world.
3. It is difficult to keep the individual de-centred. Modernist western culture has conditioned us to see a business as revolving around individuals and their intentions.
4. There is a logical difficulty, in that a body of knowledge both defines and is defined by its formative system. In practice, the inquiry quickly identifies candidate bodies of knowledge and then structures further inquiry around them.
5. The complexity of formative systems can produce a feeling of vertigo and helplessness in the analyst. This may lead to a retreat to a more traditional systems inquiry.

GENERATIVE CONVERSATIONS

- The primary differentiation made here is between generative conversations and the current work around dialogue. The recent work on dialogue by Bohm (1985, 1996) and popularized by Senge (1990) focuses on the development of shared meaning among participants. This trend is continued in the current work of Ellinor and Gerard (1998, p.21) who list the following characteristics of dialogue:

1. Seeing the *whole* among the parts;
2. Seeing the *connections* between the parts;
3. *Inquiring* into assumptions;
4. *Learning* through inquiry and disclosure;
5. Creating *shared* meaning among many.

Although the above are considered as legitimate aims and characteristics of some conversations, they differ in important ways from the aims and characteristics of generative conversations. To illustrate, the following list of generative conversation characteristics contrasts point for point with the above list:

1. Focusing on the linking of one phrase to the other, *one at a time*, in any way possible;
2. Seeing the *regulative pattern* of linkages;
3. *Linking* to the last phrase without concern for individual assumptions;
4. *Creating knowledge* through new themes, system ideas, and / or concept emergence;
5. Generating diverse *possibilities*.

The primary difference between the two approaches is that generative conversation does not aim at creating shared meaning among participants. *It is the regulative nature of shared meaning that blocks the emergence of new concepts and systems ideas.* The direct linking on to the sense or referent of the last phrase reduces the regulative effect of shared meaning.

The biggest limitation to the practice of generative conversations is the persistently strong regulation that occurs in normal conversations. Participants find it hard work having to link only to the last phrase. The lack of unifying theme makes these conversations seem bizarre. The following few moves and links illustrate this point. The links are in italics.

- The *sky* is blue today.
- My daughter's nickname is *Skye*.
- Nicknames are a *form* of poetry, a magical sub-text.
- *Form* is such an illusive thing. As I look for it, it retreats.
- Re-treat as in treat the nicknamed person as a different individual.

A second limitation is that it seems more difficult to practise generative conversations when there are only two participants. The interrogative pattern often emerges with one individual taking on the role of expert, while the other inquires.

The use of generative conversations as a systems method is open to the following problems.

1. Practice is required. As participants learn to apply the linking rule, the chances of different and creative links increases.
2. People are uncomfortable with the silences that often occur and with the slowness of the conversation.
3. Participants do not listen to the whole phrase and jump in with their statements as soon as the last person finishes. This usually results in there being no direct link to the last phrase.
4. The process of new theme, concept and system idea identification can be tedious, entailing the transcription and analysis of the full conversation.
5. As with KSD, generative conversation can lead to feelings of strangeness. At the extreme, generative conversations go through phases of meaninglessness until a new theme emerges.

SYSTEMIC STORY

- Most systems methods can be viewed as devices that help structure the telling of a story. Systemic story specifically aims at supporting the group construction of the meaning and implications of new knowledge. In this, systems story is similar to the dialogue concept discussed above. A story is one of the basic regulative devices used by humans to give meaning to their endeavours. It is important in knowledge creation because it is the package in which guides for action are housed. As a tool in knowledge creation, systemic story attempts to develop *relevance* by enabling a group to identify the regulatory patterns that limit its capacity for new thoughts and actions. Systemic story is designed to support the development of systems ideas and concepts that emerge from generative conversations or any other source.

Systemic story construction is not a mechanistic process. There is in practice some art involved in constructing a story. This is its biggest limitation. Although the process of construction has three clear phases, and each phase has a supporting inquiry framework, it is not simply a matter of going through the motions and answering all the questions. Stories take time to build. Deconstructing the dominant story of a business may take

concepts emerge and are maintained within a matrix of formative elements within the business. The third component, the conversation system (chapter three), partially de-centers the individual by describing how systems ideas and concepts occur in conversations as a result of the interaction between individuals and the formative system.

Three heuristic methods were developed to support new knowledge creation within post-industrial business. *Knowledge systems diagnostics* (chapter two) provides an inquiry framework by which one can map the tangle of formative elements and their relations. Such a mapping will identify key elements of leverage within a knowledge formation system. High leverage elements need to be included in generative conversations. *Generative conversation heuristics* (chapter three) provides a method that enables individuals to hold creative conversations thus increasing the probability of new ideas emerging. Once new ideas are identified they can be developed into shared knowledge by using *systemic story construction* (chapter four). The usefulness of three heuristic methods was practically illustrated in chapter five.

A post-modern approach challenges top-down applications of systems thinking in which the elements of the system are derived from specific system purposes. The switch from top-down systems thinking to a bottom-up linking approach enables one to attempt interventions that are practically difficult using a top-down style of systems thinking. The methods developed in this work go beyond soft and critical systems thinking by, de-centering humans and focusing on the micro forces that make up human systems. A post-modern approach enables one to escape the regulative nature of traditional systems methods by moving the source of regulation away from traditional system performance and towards the micro possibilities of linking. There is still a place for regulative systems methods. However, when attempting to create new knowledge, post-modern approaches are more appropriate. The process of appropriating post-modern philosophy into systems methods has significantly increased the author's appreciation of Churchman's (1968, 1971) systems approach.

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APPENDIX A: A KNOWLEDGE SYSTEM DIAGNOSIS

Objects of conversation

What social groupings serve as sources of the emergence of new objects of conversation within Life Customer Services?

These groupings are specific to a business within a period. The social groups may be formal or informal, each with its own normative rules and values. In the case of Life Customer Services in the late 1980s and 1990s, the following groups served as sources of emergence for new objects of conversation:

1. Young, bright information technology application designers;
2. Travelling general management who bring back new ideas from international visits;
3. Members of special projects who are involved in organizational change.

Examples of new objects of conversation that emerged during this period were 'workflow', 'client-based' and 'customer service teams'.

What groups, individuals or professions define and delimit what is spoken about?

The authority held by such groups or individuals enabled them to judge new objects of conversation as relevant or irrelevant to a specific body of knowledge within Life Customer Services at the time. The following groups or individuals could operate as authorities, delimiting what objects of conversation remain in circulation:

- Chartered accountants;
- Information technology professionals;
- Policy administration managers;
- Underwriters;
- Organizational consultants.

What grids of specification operate within and between bodies of knowledge?

New objects of conversation are under pressure to fit into the existing frameworks of objectified phenomena. These frameworks differentiate and relate objects of conversation. The frameworks may be ill-defined, fluid and often undocumented. The following table represents some of the grids of specification in use within Life Customer Services at the time.

Body of Knowledge	*Frameworks of object classification*
Product design	Premium to cover ratio, risk, investment portion
Policy administration	Branch – client – policy relation, cost, speed, and quality
IT systems design	Programs, functions, data entities, relationships
IT project management	Scope, time, cost, quality, schedule, resource
IT production support	Run sequence, job dependency, load, response time
New business capture	Commission, premium, underwriting acceptance

Statement modalities

Who in Life Customer Services has the right to make statements within the various bodies of knowledge?

The aim here is to focus on the different statuses of groups and individuals. Those statuses implicitly yielded the right to extend knowledge (create new guides for action) within specific bodies of knowledge. The following table lists some of the statuses that were implicitly afforded the right to develop knowledge within Life Customer Services.

Body of Knowledge	*Statuses*
Product design	Actuaries and information system designers
Policy administration	Mature managers and policy calculation experts

IT systems design	Successful experienced application designers
IT project management	Project managers with successful track records
IT production support	Shift leaders and hardware operators
New business capture	Successful insurance sales persons and underwriters

What are the institutional sites from which individuals make statements within or across bodies of knowledge?

The business or research functions performed at these sites enable access to data, information, models and processes. This access influences and forms the statements and phrases articulated by individuals from these sites. The following table represents some of the sites and/or access, influencing conversations within Life Customer Services at the time.

Body of Knowledge	*Sites: institutional, technical or professional*
Product design	Access to or interface with the broker market
Policy administration	Workflow, software suppliers, models and processes
IT systems design	IT systems journals, recent books on IT
IT project management	Project management journals and books
IT production support	IBM standards and publications
New business capture	Underwriting committee of the Life Officers Association

What positions is it possible for individuals to occupy within the conversations that make up a body of knowledge?

The position that an individual occupies affects the focus, depth and breadth of his or her perception. The information systems and technical devices used in these positions affect perspective and thus the individual's articulation of statements and phrases. In this way, the perspective of an administration problem as seen from the position of an information system designer enables the individual occupying the position to say certain things within a conversation. The perspective of the same problem enjoyed from the position of

administrative clerk influences the formation of quite different statements and phrases. The following table illustrates contrasting perspectives within the bodies of knowledge.

Body of Knowledge	*Position or perspective*
Product design	Product designer and software designer
Policy administration	Administrator, software designer and actual client
IT systems design	User, tester, and designer
IT project management	Senior management and affected users
IT production support	Operations manager and isolated user
New business capture	Sales person, client and underwriter

Concept formation and usage

What schemata of dependence, of order, and of successions are regulating individuals' articulations within bodies of knowledge?

This question focuses on the tacit rules and relations that govern presentations and articulations by individuals within the conversations that make up a body of knowledge. The structure of statement collections, such as reports, workshops, meetings and training documents, maintains the current concepts in use within the organization. Hierarchical schema often structure concepts. The following table represents some of the hierarchical schema operating within Life Customer Services at the time.

Body of Knowledge	*Presentation hierarchical schemata*
Product design	Benefits offered, profit, cost (risk and administration)
Policy administration	Correctness, speed, cost
IT systems design	Conceptual elegance, correctness, workability
IT project management	Functionality, scope, time cost
IT production support	Availability, response time, problems
New business capture	Premium, time to commission payment, customer requirements

What criteria of inclusion or exclusion delimit a body of knowledge?

Concepts used within bodies of knowledge coexist against criteria of inclusion and exclusion. These criteria may stem from tradition, habit, authority or verification. In practice, it is easy to recognize spectra of inclusion and exclusion. The following table lists examples of such spectra, which were operating within Life Customer Services at the time.

Body of Knowledge	*Spectra of inclusion and exclusion*
Product design	Includes marketing, excludes after-sale administration
Policy administration	Includes attention to detail, excludes actuarial notions, like risk
IT systems design	Includes technical elegance, excludes cost
IT project management	Includes IT risks, excludes business risks
IT production support	Includes security, excludes business logic
New business capture	Includes policy acceptance, excludes after-sale service

What statements from other domains serve as analogy, models, general principles or authorities within the bodies of knowledge?

These statements and concepts serve to organize sections of a body of knowledge. Specifically the use of metaphor and analogy result in an often implicit organization of a body of knowledge.

Body of Knowledge	*Concepts, metaphors and analogies from other domains*
Product design	Concepts from marketing and advertising
Policy administration	Input, output and work in progress
IT systems design	Architectural and control systems concepts
IT project management	Construction and engineering metaphors
IT production support	Concepts from the plant and factory environment
New business capture	Sales metaphors and concepts dominate

What implicit historical statements are filtering, guiding, and transforming the current bodies of knowledge?

These historical concepts are no longer the objects of conversation. As a body of knowledge's historical *a priori* concepts, they provide continuity to conversations. Nobody critically questions them. Taken for granted, they gently regulate conversation.

Body of Knowledge	*Historical guiding statements*
Product design	We design and sell insurance products.
Policy administration	Good administration is about attention to detail.
IT systems design	Systems engineering metaphors and assumptions.
IT project management	Our systems and products are unique.
IT production support	IBM mainframes are the only real option.
New business capture	Commission must be paid on a monthly basis.

What procedures of intervention transform statements within the bodies of knowledge?

These procedures include the rewriting, transcribing, translating, approximation, transference and systemization of statements and concepts. The transformations delimit and structurally regulate statements into bodies of knowledge. The following table lists some of the procedures of intervention that were being practised at the time within Life Customer Services.

Body of Knowledge	*Procedures of intervention and transformation*
Product design	Product specification layouts and logic
Policy administration	Operations reports and workflow classifications
IT systems design	Flow charts, entity relationship diagrams, specification layouts
IT project management	Gantt charts, network diagrams, schedule graphs
IT production support	Run schedules and job dependence diagrams
New business capture	Application form layouts and sales support graphics

Conversational themes and strategies

What incompatibilities are evident in the active body of knowledge?

The simplest way to detect points of incompatibility is when they emerge as choices within conversations. They may form points around which individuals polarize. Within the application of any body of knowledge, they may form primary or secondary trade-off options. The historical diagnosis of Life Customer Services identified the following such either/or points of incompatibility.

Body of Knowledge	*Incompatibilities*
Product design	Life vs. investment products; product flexibility vs. simplicity
Policy administration	Correctness vs. speed of service
IT systems design	Robustness vs. elegance of design
IT project management	Functionality of system vs. speed of system delivery
IT production support	Transaction load vs. individual transaction response time
New business capture	Satisfying clients' needs vs. making the sale

What alternative approaches and theories are evident within the bodies of knowledge?

Incompatibilities may develop into alternative approaches. The alternatives themselves become objects of conversation, but are not yet practised as alternative courses of action. At the time under consideration, the following alternative approaches were foremost within the conversations that made up Life Customer Services.

Body of Knowledge	*Alternative approaches*
Product design	Customized products that combined different benefits
Policy administration	Telephone-based servicing vs. traditional paper-based service
IT systems design	Client server architecture vs. mainframe
IT project management	Short (< 6 month) projects vs. grand solutions

IT production support	Mainframe security vs. PC ease of use
New business capture	Computer underwriting vs. human judgement

Have the alternative approaches developed into coherent theoretical options?

If incompatibilities progress to become alternatives, they may further develop into coherent theoretical options. Given time, these sub-groups of concepts and systems ideas may develop into a separate body of knowledge.

Body of Knowledge	*Coherent theoretical options – sub-groups*
Product design	Life insurance, pensions and unit trusts
Policy administration	Functional teams or cross-functional teams
IT systems design	Object-orientated or modular design
IT project management	Small focused teams vs. large-scale efforts
IT production support	Central or distributed databases and operations
New business capture	Head office vs. agent data capture

What economies work within the various bodies of knowledge?

Not all possibilities are realized within any single body of knowledge. The different bodies of knowledge within an organization relate and form a tangled whole. This constellation has an economy that may guide choices made within the bodies of knowledge. In order to appreciate economy one inquires into the relations between bodies of knowledge, specifically cross application, abstract ordering, analogy and mutual delimitation.

The striking thing about Life Customer Services was the clear delimitation between bodies of knowledge. Although common concepts existed across bodies of knowledge, there were few common systems ideas operating between them. The economy at work seemed to be one of competition between bodies of knowledge - a continual

differentiation of knowledge fields. This led to many instances of the differend (see Chapter Three), where communication broke down and development was stifled.

How do functional expectations affect the theoretical choices made within a body of knowledge?

Bodies of knowledge are expected to produce actions that serve certain functions within a business. These expectations act as authorities that guide linkages and choices made within the conversations that make up a body of knowledge. The table below illustrates such expectations for the different bodies of knowledge identified.

Body of Knowledge	*Expected function and effect*
Product design	Profitable, marketable products
Policy administration	Low-cost servicing of existing policies
IT systems design	Fast, accurate data at the right place and time
IT project management	Systems built within time and cost constraints
IT production support	100% up time for production systems
New business capture	Fast, correct data capture

What individuals or groups have access that allows them privileged influence within a body of knowledge?

The access under inquiry is of two types. Firstly, there is access to important conversations that make up the core of the body of knowledge. Secondly, there is access to conversations and sites that are outside the immediate organization, but serve as authorities within the body of knowledge. Both these types privilege the individual involved and enable him or her to say and think different things. These "processes of appropriation" (Foucault 1972, p.68) in turn influence the form of the body of knowledge. The following access elements and relations were present in Life Customer Services at the time.

Body of Knowledge	*Access leading to appropriation and influence*
Product design	Access to actuarial conversations and statements
Policy administration	Access to operational management conversations
IT systems design	Access to industry conversations on latest methods
IT project management	Access to strategic business conversations
IT production support	Access to industry conferences
New business capture	Access to market trends and competitor conversations

What individual or group desires affect the choices made within a body of knowledge?

The last part of this KSD focuses on how individual or group desires may affect the choices made within any body of knowledge. Desire has to do with wishful fantasy and symbolization. These may include an individual's political fantasies. An individual may project symbolic statements as truth and these statements may in turn lead to others, and so the body of knowledge evolves and mutates.

Body of Knowledge	*Subject desire and fantasy*
Product design	Idealism about a totally flexible product
Policy administration	Management aspirations and desire for order and correctness
IT systems design	Desire for elegance and beauty of conceptual design
IT project management	Desire to complete the project
IT production support	Unrealistic striving towards 100% up time
New business capture	Desire to be the most senior underwriter

F Which I think is the way the world is going. It is becoming de-fragmented, and very heterogeneous. Therefore, people specialize in *diversity.* It is possible for the students of Indonesia to overthrow the government. That is what modern society can allow.

J So in that *diverse* modern society there is a greater need for this integrative synthesis. That is the role of the systems consultant. Then that is the commodity. There seems to be two levels of consultant developing. One is the integrative systems role, and the other one is the specialist role.

F I think the role of the systems consultant is moving from a facilitator's role to someone who is providing *knowledge*, and the commodity then becomes knowledge.

W What is this *knowledge* about? There is knowledge about integration. I can buy a process engineer. I can buy a project manager. I can buy an integrator.

F I think the CEO is the integrator.

T I kick against the idea of integration as a commodity. There is integration and there is integration. There are various integrations and what integration is most appropriate for a particular context? Who sets the *context*?

W The *context* is set by the various knowledges or experts that are there at the time.

J But what is true is take different groups through there, and they will set the *context* differently.

F Which depends on the individual agendas of the group, unless the individuals get together to provide a solution or an idea about what the population or the world requires *today* and not what somebody thinks it requires.

W I think that *time is past.* I think the emerging companies create their markets. They create images and markets. They don't look for what is needed. You know what we need to do is feed the starving, stop war. They create markets (laughs) through images.

F I think markets create them. If companies don't link on to the opportunities which are real out there and are designing markets and opportunities which they think are going to work they might miss the bus completely.

T So in a sense what you are saying is that there are markets outside there in search of Nikes and Kelvin Klines. Or do you *create* the Nikes and the Kelvin Klines?

W I tend towards the second . . . we *create* them.

F There is a need out there. How you satisfy that need through your *creativity* determines their success. And that is where I think the specialists interacting with the need out there can come and bring different perspectives and thereby put the solution on the table – with a strategy that could be a Nike or Kelvin Kline.

W Let's link to the example of these systemic consultants we are talking about. I don't think anyone out there at the moment, not many people, recognize the need for this. But if you put this thing together and you market it – it will most probably work. So only by marketing it, only by saying this is what we do – we come in, we integrate for you, this is what integration means. This is the kind of value that this commodity, this service can give you. Then suddenly there is a market there.

J In other words, the market is not out there calling for you for a solution. You have to go out and say, "Did you know you had this need?"

W Or that – "this is the way that things might be".

T That need is what is the interesting thing to me. What appears to me is – moving through the corporate ladder, what it takes to get up the corporate ladder destroys what is needed once you are up on top of the corporate ladder. And there is a sense of that – but not having it. There is a sense of the need to be *systemic* without being able to be systemic. So that's the basis of that need.

W Linking it back to the CEO thing; once you get to the top of that ladder, you suddenly realize that you are the *systems idea* of the company (laughs). That's when you start pulling consultants in the beginning.

T *That's right,* but what has actually happened in the process is that in order to get there you have been blunted.

W Oh, absolutely! Your capacity to be a good systems idea, to be a good organizer.

T You have had to throw that up in order to get up the ladder.

F Which means that organizations who employ people that will not be constrained by the history of the company could lead to the more successful companies.

T It's even more than that. I mean whatever – it does not matter which – corporate ladder you worked up, you are going to be *blunted.*

W I think the successful companies are the ones where the people realize – the CEOs that get to the top realize – they have been *blunted*, realize that their contribution seems to be around this integrative putting separate values together to get more value. And then they start looking for consultants, the ones that know their limitations, then start looking for them. The question is why can't we just have a consultant CEO? Why can't you just buy in the CEO expertise? It's a commodity.

J Somehow involving change, that is exactly what they are.

(silence)

F I think the moment the consultant becomes or starts playing the role of the CEO he does not fulfil the consultancy role any more, because his priorities change from consultancy, adding value, contributing to the responsibility to the shareholders and the staff, profits, etc.

T So in that sense what we are talking about is necessary functions. A change of function sets up a tension which can't be managed. You actually were brought into the system for one particular function, but because of the way things are going your function changes . . . In other words you were brought in to function as a consultant, and suddenly you are functioning as a CEO.

W I don't see much of a difference between the kind of consultant we have been following and developing in the conversation and the CEO we have been developing in the conversation. They both serve as *integrators*. They both put things together to get more value than the things had apart. They are both synthesizers.

T The big problem if I look at Kurt Lewin's learning model and Edgar Schein's application of that argues that sustainable *integration* is 'own' integration. It is not integration borrowed from a consultant. Now Ackoff uses exactly the same ideas. He says development is learning – and you can't learn for someone else therefore

you can't develop someone else. The only meaningful sustainable development is self-development. So what it is – if integration becomes a commodity – it's not sustainable if that dynamic – if Lewin, Schein, and Ackoff's interpretation of that is correct, or is useful.

W Yes, but they are all individual-centric. They are classic modernists. They are like Kant. They believe that the primary synthesis, the key principle, is the synthesis in the individual. Whereas what we are talking about in the post-modern thing is that the synthesis happens to happen structurally and is never sustained. The synthesis is never *sustained.* It moves through phases of synthesis that you get value out of.

J What I am wondering is, what is the value of *sustaining* that level of organization – call it that – where you have synthesized values into a higher level value? Is it meaningful to maintain it? Because it seems to me that organizations go through a kind of barrier and beyond that it is actually better to start new.

W That you now have *sustained* pathologies that led from integration (laughs).

T That surrenders back to Johan's concept of organization as verb or noun. Or would you see it as a noun once you have been through that barrier? You need to start anew. Is that actually because you are stuck under organization as a noun?

J Yes, because the organization I don't see as taking that *noun* and making it into a different noun. I see it as almost better to start completely afresh, and create that systemic synthesis anew. I look at it as a positive but I am not sure. In some instances it does seem to be worthwhile. In other instances I don't know. I guess what I am questioning is the underlying value of saying it must be sustained.

W To me it comes back to Kant so clearly. The post-modernists picked it up as well. Lyotard would say that the ultimate paranoia is when we act on a systems idea as if it is real. That is when you get to the *noun* idea – you start acting as if there is a 'Southern', as if there is this longer sustainable integration. It's just an idea – integration itself is just a systems idea we use for something. The paranoia is when we suddenly start acting as if it is a noun, as if it is an object.

T Even Checkland warned us against that when he said when we talk about systems it is actually in our head. It is not out there. And as soon as we start thinking about out there we actually destroy everything we are about.

W So the problem becomes – if you want the sustainable *integration*, if you want it – which raises a question now for me - or if you don't want it. If you want it where is it sustained? Where is this thing?

T In the head or . . .

W Yes.

T It's just an interesting thought that struck me when you mentioned this *integration*, using Johan's differentiation between integration as verb and integration as a noun. Or as a process as an ongoing process.

F I think if it is used as a verb it will be sustainable. The players could change as long as *integration* in the business or organization or even consultancy group is sustained that will carry on. The function will carry on irrespective of the players.

J I think what W is asking is exactly why, in what form, does that *integration* manifest itself.

W Yes.

F As a verb.

W As a verb as what? As *conversations*? Is there a thing such as a commodity 'value adding conversations'? Is there a commodity 'integrative conversations'? That we bring the addressor and addressee into and the way that we link adds value from the different consultants that we brought in. And that's the thing. That's our core competence, in organization as a verb.

T That's exactly it. Just before you spoke in fact. That is the *conversation* that struck me. Because that is the one thing I have picked up from Keuss Van Haden – the more recent book on scenarios. Where he actually says, he actually kicks planning out of scenarios. He looks at scenarios as creating the basis for an ongoing strategic conversation in an organization and that is what counts, is if you can maintain the strategic conversation. Then it really becomes a core competency. Or a distinctive competency. I don't know, J, that's what I picked up. That comes through very strongly in what he is saying.

J So are the real systems integrators, whether they are CEOs or consultants, not skilled at directing that *conversation* in some coherent, sustainable way?

T Actually it goes back to what J has just spoken about. What he is doing is actually managing *conversations.*

W I kick against the directing. There is some competence there. There is some verb there, some *action* there.

T *One* that is creating the building programmes.

W Yes. To me it is more art than science. There is a reading, there is a . . .

J But they do direct it in the sense of *visualizing the direction* and in that sense regulate that conversation. I do think they do that.

W So you still see that as one of the future CEOs value-adding activities? As *visualizing direction*?

J I don't want to say CEO. I want to say the systems *integrator*, but it can be a role the CEO plays or a systems consultant.

F Is the purpose of that conversation or the structure of that conversation not to facilitate *integration*?

W Yes. Do you *integrate* to a direction like up, or is your direction a content thing?

T An emergent thing.

W Yes. Is it emergent, or is it a content thing?

J It is an emergent thing, but it is a creative synthesis of reading that context. It is creating a direction where there previously was not one, or maybe it was in a different or wrong direction. But there is no doubt that there is that kind of role, a *regulative* role, if we want to talk about organizations as being conversations.

T In that sense, '*regulative*' and your previous distinction between art and science I actually find problematical. Because I think that within art we get the gap between art and science which is craft. In a sense tectonic which this (Generative conversation) is – tectonic.

W Yes.

T That is not art, it's . . .

W It has an *architecture* to it, but a very open architecture.

T Nevertheless, an *architecture*, and unless that is recognized the process does not happen.

W Yes. You see the thing about the regulation for me is, it seems as though you have a curve on regulation, that we have a high value on it in the beginning and it decreases over time. Where it actually becomes a – it becomes a problem for you. So the problem is how do we regulate the regulation and deregulation of conversations that enable value-adding to the market. Something like that. You are able to drop them as quick as you build them.

J I agree with that, but it is not that regulation itself is problematic. It is the regulation around what. And that 'around what' you will have to continue having regulation. It's sticking too long about regulating around a particular (in my terms) direction. So you have got to be able to stop regulating around that *direction* and start regulating around a different one.

W The same skills, the same actions, but now we have changed direction. It's the same kind of regulative competence around a different *direction.*

T Sorry I am sort of getting excited because something has come to me now. Carry on. Carry on.

J I think that is what I said, just breaking up from the earlier one, the sense of organizations being regulated too long around a particular idea. And that it is often better to rebuild around different ideas. But you can probably continue with that organization if you can switch the ideas around.

T It is interesting. It's a thing that Johan has always said that is about managing at different levels. And, certain things can only be managed at certain levels. And you talk about regulating regulators, which means levels of regulation. Different *ideas* of control and regulation have come from Beer and Vickers and things like that, acting on different levels. Now I have picked up an old Chinese saying that I have found incredibly useful over the last couple of months in my teaching. The saying says that the wise man uses a raft to cross a river, and when he gets across the river he leaves the raft, he does not carry it on his back in case he finds another river (laughs). Now I've found that idea pretty useful. Particularly, I have just finished this MBA course, where people fall in love, the Pygmalion thing. You actually fall in love with your model. But I am saying leave that model now. It's done its job and I am wondering if we can talk about that. Leave that raft

behind, leave that regulation behind because that is going to block you. It's going to stifle you now.

W For me there is a strong link when you say '*ideas*'. There is a strong link between systems idea, in a Kantian, pure systems, classical systems sense and regulation. So I am wondering if there is a link between the type of idea we have and the type of regulation we use. One could argue from Kant that there is, because the systems idea regulates the joining of the concepts. So it's maybe not as I was thinking and said before, that we can use this same generic regulative skill. Can we use this same generic regulative skill across different systems ideas, different ways of organizing, different directions, different things to do? Or does the very nature of that systems idea imply a different type of regulation?

F I think the problem is that if we regulate the direction of movement two or three degrees ahead we are in trouble. If we say we hit the point where the regulation must allow 360 degree vision, which means we have to look at every possible idea which could solve that problem right there. As Tom said, when you get to the side of the riverbank the raft does not apply anymore. Maybe you need boots to protect your feet there. And maybe there is a pair of boots under the tree, but if you are not going to look 360 degrees you won't see them. So the regulation I think has become the problem, or the reason for the success or lack thereof in business and consultants today.

T Yup. One thing that has just come back to me is our old model that held us in good stead throughout our work is the philosophy, methodology, and technique level. And what we are saying is we need regulatory techniques. But once we have used that technique we need to go up to the methodological or even when we are changing context, we leave that technique behind, but we take with us the skill to build a raft in case we come to another river.

W Yes.

T So what it means is we must be able to operate on all three levels from a regulatory point of view. On a technique level, where at the end of the day we need a technique to implement a methodological level and a *philosophical* level. And that allows us to deal with the wider spectrum.

J That philosophy level has to have a *philosophy* about regulating regulation.

T About regulating.

W The thing pops back to me on regulation, that there are types of them. Is generation just part of a regulation? It comes back to Intelligence and Control. Control to me is regulation. Intelligence is something else It is more like that philosophy thing. Control is at the methodology and the technique level. But you need incommensurable skills. It is going to be very rare that you find someone competent across the spectrum.

J I think the control and the regulation of intelligence, there is a hierarchy of regulation. And I agree that there is not the type of personality skill – technique in Tom's terms, that is relevant at one level of the organization. Control, if you want to call it that, is not the same that you need at a *different level.* And intelligence and wisdom and so on are words that at the highest level seem to make more sense than about regulating the regulation, or, to put it differently, enabling creative accidents or experiments.

W That is the *second level* of regulation?

F That is it.

W So the systemic consultant, where does most of their competence *lie* if we had to drive for an 80/20 rule? Does it lie 80 in the philosophy thing and 20 in the technique?

J The traditional consultant's role lies in the bottom control of regulation. I think the systemic consultant has got to move higher in that hierarchy up to being a bit wise about regulation.

F Yes. I agree. In practice they do that. Their contribution is normally much more significant and much more sustainable.

J And where we make money is the consultants who go in at the bottom *level* and say we will take ten percent of what we save you at the end of the year. Because when you operate at that bottom level. . .

W You tighten up the regulation in the same game and pull the costs out. But in fact long-term you are decreasing their ability to operate at the philosophy *level.* Decreasing their ability to find out – you know – the right things to do. You're

making them better at doing things right. They are not doing the right things. But what to do – you are decreasing their ability because you almost – their regulatory system becomes stronger if you just work at that level – you can't see anything else.

F Alternatively, I think consultants are being more used in – not saving costs but in generating income and sharing in that as a percentage.

General comments from Participant One.

1. It is quite a long time ago that this happened, so I can only recall the highlights. But it is probably these things that stick in the mind after a long time that are the most interesting to you.

2. The whole idea of linking was interesting. It reinforces the idea that a conversation is a system of linkages with relationships between sentences. This was the big thing that stuck in my mind. It brings a new dynamic into the conversation. Instead of people saying what they want to say, regardless of what anyone else has said, they now have to focus on what someone else is saying and link on to it. So many conversations are disjointed with people skipping all over the place, just trying to get their thought "out" regardless of its relation to anyone else's thought. Linking changes this. It introduces a flow. Ideas and sentences build on one another. I suspect that it is much easier to construct a story, as you have done, from a generative conversation, as opposed to other types of conversation. If people are linking, then by implication there is a thread, and if there is a thread, then there is a story. A disjointed conversation often has no thread, so how can you construct a story?

3. The story is important. This has a specific relation to my feelings about project management. The I.T. industry, for example, thinks that project management is synonymous with Gantt charts and Pert charts. In other words, if you have a glorified list of things to do, then you have "planned" the project. Such a list is similar to a disjointed conversation – there need not be any links or real coherence to it. If I have a shopping list, my shopping expedition can take any form at all. If, however, I tell a story about my forthcoming shopping expedition, then there needs to be a thread to the story. Essentially, the story has one version with logical threads and coherent links to it, whereas the shopping list has any number of versions. When you retell the story, it has to be coherent, otherwise the story makes no sense. You are better off knowing this than setting out on a shopping expedition with a few vague pointers and milestones but no coherent story of what exactly is going to happen. The Gantt chart

charade is dangerous because it does not emphasize the linkages that have to be made. I can hear a chorus of protest going around from the Gantt chart brigade, but I am convinced that, in the majority of cases, if you asked project members who have completed a Gantt chart planning session to then tell the story of what everyone is going to do, you will get a different story from each member. The story also handles complexity. It is easier to remember a story than a list – the thread helps the remembering. I like the story.

4. My overall reaction is that the session and the content were very useful. The main learning was the linking. I do not think that I had ever thought of running a conversation like this. I had thought of the story side of things, but linking seems to provide an excellent way to get to a story. It can be very hard to do otherwise. I have a feeling that linking may have a good effect on group members who would otherwise be fighting with each other to get their disjointed ideas "out". I have a suspicion that this form of conversation may bring out the best in a group, which is in itself useful.

5. When you were running the session, I thought that a problem might be the facilitation of the session, the fact that it may be difficult to run these kinds of sessions. Now that I think about a bit more deeply, I am not so sure that I think this any more. You would know, but it seems no more difficult than any other type of session, and I am starting to think that maybe one of its strong points is that it is simple to facilitate.

Participant Two

It has been a long time ago, but strangely, I remember most of the contributions, probably because of the story format. I also think the story itself is quite common to most that have travelled abroad, therefore the link.

What if anything did you learn from the exercise?

I learnt that people have their own thoughts and ideas about the same thing in a creative/generative situation. Six people could construct six different stories about the same subject. It is easy to wander off into your own, different direction. A facilitator can keep everyone on track, together, at the same pace and stage in the story. Creative minds can add their own colour to the story, for everyone's benefit. At some point the members may be prepared to exit the story to continue on their own view on what should happen (leave the group). The story evolved into something that was a combination of six individuals' thoughts and was different to what it might have been if it was told completely by only one person. The generation of the story was an easy process, probably because of the interesting and relevant topic (very few prompts were required). Each link followed closely to the previous contribution. There were no large jumps ahead, although it was easy to be sidetracked.

What, if any, of your approach or actions changed because of the story?

The story put my own stage of progress in the research process into perspective, relative to the others. It was a nice (better) way of doing so than maybe a direct, analytical comparison with each other. Today it is easy for me to compare the current stage of my research to the position it was at when we generated the story. I do not think any of my actions changed because of the story, other than a clearer indication from where I was, but the fact that I can almost remember each person's contribution is significant. (Probably because of the mental picture created in my own mind of the story, I assume

each will have a different, yet somewhat similar picture.) The picture, as well as the memory thereof may be due to internal links in my own mind. It may even be that my own picture was larger and more colourful than what was verbally expressed by the group. I remember the links with humour more clearly. The end was open-ended, unfinished. I think it has tremendous potential in conflict resolution, maximizing memory in limited time, enhanced value in long-term memory recall, a fun way of learning and linking learning with the known or experienced.

Participant Three

What if anything did you learn from the exercise?

A group, in a story mode, will quite easily discover serious elements of their process. The members of the group found it 'easier' than before to share not only insights but also share on an affective level. It was more obvious than before. Maybe the story supplied a mask with its metaphorical use for the story-makers / tellers to relate to their emotions attached to this research.

What, if any, of your approach or actions changed because of the story?

- The process enabled critical reflection on the group's effect on myself and the way I was doing things.
- I started detaching myself from the group. I began wanting to journey and venture on my own – knowing maybe the group is still there in the background.
- I started viewing the group as individuals and not as a whole anymore.
- I searched much more actively for the construction outlines of my own building.
- I realized that I "sightsee" too much of others in the group, and not necessarily where/what would be "my" tour.