Belief-driven Sensemaking: Arguing as Knowledge Creation

by

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DECLARATION:

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Date: 31 December 2011

OPSOMMING

Organisatoriese kennis-skepping is ‘n kern aktiwiteit van Kennis-intensiewe Ondernemings. ‘n Aantal teorieë is ontwikkel in die veld van Kennisbestuur wat handel oor organisatoriese kennis en hoe hierdie kennis ontwikkel en benut word. Die meerderheid van hierdie teorieë deel ‘n taksonomiese benadering tot organisatoriese kennis en beskryf gewoonlik die verskillende soorte kennis wat in organisasies gevind word en hoe hierdie soorte kennis verband hou. Hierdie benadering verteenwoordig die hoofstroom-siening van Kennisbestuur en lei tipies tot ‘n kontingensie argument vir die pas van tipes kennis by spesifieke organisasie ontwerpe, bestuurstyle, of strategieë vir die bestuur van verskillende soorte kennis-inhoude.

Parallel tot die ontwikkeling van Kennisbestuursteorie het daar in Organisasie Teorie ontwikkelinge plaasgevind wat organisasies benader as interpretasie— of singewingsisteme. Kennis staan ook sentraal in hierdie teorieë van organisasie, maar kennis word gesien as ‘n kollektiewe totstandbrenging wat verweefd is met die praktyke in organisasies. Dit is dus duidelik dat die Kennis-skeppingsbenadering en die Singewingsperspektief organisasies met verskillende wêreldbeelde benader.

Die tesis poog om die kloof tussen hierdie twee wêreldbeelde te oorbrug deur die proses van Kennis-skepping te beskryf vanuit die perspektief van Singewing. Dit word gedoen deur die hoofstroom Kennisbestuursteorie krities te beskou. Daarna word Organisatoriese Singewing beskryf deur spesifiek te fokus op die alledaagse konteks van Organisatoriese Singewing en spesifiek op Argumentering as ‘n Singewingsproses. Daar word aangevoer dat Argumentering die proses is waardeur nuwe kennis geskep word.

‘n Singewingsperspektief op Kennis-skepping het ‘n aantal voordele. Die fokus op Argumentering spreek ‘n leemte in Kennisbestuursteorie aan, naamlik die proses waardeur nuutgeskepte kennis geregverdig word om te verseker dat dit robuust is, sonder om die pluralistiese epistemologie van Kennisbestuursteorie te laat vaar. Argumentering is ‘n proses waardeur aansprake gemaak, uitgedaag en verdedig word. Die perspektief op Singwing as Argumentering bied dus ‘n beskrywing van Kennis-skepping wat die regverdiging van kennis insluit. Verder neem die Singewingsperspektief op Kennis-skepping sosiale interaksie as basismodel eerder as die lineêre produk-ontwikkelingsperspektief. Dit is dus nader aan die alledaagse prosesse van inkrementele verbetering as die radikale innovasie-prosesse wat die inspirasie vir hoofstroom Kennis-skeppingsteorie is.

SUMMARY

Organizational Knowledge Creation is a core activity of Knowledge Intensive Organizations. In the area of Knowledge Management, a number of theories have been developed about organizational knowledge and how this knowledge is developed and leveraged. The majority of these theories share a taxonomic approach to organizational knowledge and usually describe the various kinds of knowledge found in organizations and how these different kinds of knowledge interact. These descriptions represent the mainstream view of Knowledge Management and typically a contingency argument is made for matching types of knowledge with a particular organizational design, management style, or strategy for managing the various kinds of knowledge content.

Parallel to the development of Knowledge Management theory is the development of Organization Theory likening organizations to interpretation or sensemaking systems. Knowledge also stands central in these theories of organization, but knowledge is viewed as a collective accomplishment intertwined with organizational practices. It is therefore clear that the Knowledge Creation perspective belongs to a different worldview from the Sensemaking perspective regarding organization.

The thesis seeks to bridge the divide between these two different views of organization by describing the Knowledge Creation process in terms of the Sensemaking worldview. It accomplishes this by critically reviewing the mainstream theories of Knowledge Creation. Next organizational Sensemaking is described, focusing on the context of everyday organizational Sensemaking and in particular on Arguing as a Sensemaking process. It is proposed that Arguing is a process that creates new knowledge.

Viewing Knowledge Creation through the lens of Sensemaking as Arguing addresses a perennial issue in the mainstream Knowledge Management theory, namely the justification of newly created knowledge to ensure that it is robust, without giving up on a pluralist epistemology in favour of an objective view of knowledge. Arguing is a site where claims are made, challenged, and defended. The Sensemaking process of Arguing therefore provides a description of the Knowledge Creation process which includes knowledge justification. In addition, a Sensemaking view of Knowledge Creation takes as its model social interaction, rather than linear product development and is therefore much closer to the everyday process of innovation as incremental improvement than the radical innovation process that inspired most theories of Knowledge Creation in the Knowledge Management literature.

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Introduction

1 Introduction

The saddest aspect of life right now is that science gathers knowledge faster than society gathers wisdom.

~Isaac Asimov 1988

Economic survival in the knowledge economy is determined by a bewildering number of variables which are by no means empirically certain. One factor that is unquestionably part of every economic success however, is creating and applying new knowledge, whether this occurs through incremental improvement or by radical innovation. New knowledge embodied in innovation is often created accidentally, in Nonaka's words, discovered in "information and knowledge born of the development process that did not sequentially follow the innovators' original intent."[1] Similarly innovation, described by Philip Scranton in the 2005 Momigliano Lecture is seen as "…problem-solving at the edges of the known, where solutions (designs, procedures, practices envisioned) stretch past present capabilities, embrace uncertainty, and generate, after iterated failures, both workable outcomes that are poorly understood and unintended consequences whose implications are unimaginable."[2]

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[1] Nonaka, I. 1990. Redundant, Overlapping Organization, 27.

[2] Scranton, P. 2005. *Technology Science & American Innovation*, 195: "This does not refer to yearly model changes, but operates more in the realm from which came the Wankel rotary engine and the intermittent windshield wiper. Beyond innovation lies improvisation, where virtuoso teams and individuals grapple with urgent demands for creative, time-critical responses to crisis situations (think Apollo 13 or Chernobyl). This is the terrain of Max Weber's charismatic legitimacy, where all the rules and routines of authority and hierarchy are suspended, for a time. Innovation is thus a form of situated action, like variation, novelty and improvisation; it is not well-described by positioning it, in a linear fashion, between invention and diffusion, as has been the custom."

Organizations or individuals that are aware of this inherent and apparent randomness, who strive to master the ability to create new knowledge by determining and solving problems, are most often, better positioned not only to survive but to attain economic and financial success. It stands to reason that if the organization or the individual could develop and apply skills which foster this kind of innovation, these skills would be invaluable.[3] Since such innovation occurs relatively infrequently,[4] rather than relying on luck or fortuitous accidents, organizations and individuals should perhaps consider ways in which to acquire and refine these skills in an effort to actively foster Knowledge Creation, thereby enhancing their competitiveness.

Creativity, the backbone of innovation, is an essential and undeniably human characteristic that has been around since the dawn of time; consider the first person to have imagined he could make a hand axe out of a formless stone? Over the ages of human history such originality has seen for example: hunter-gatherers settle and develop revolutionary agricultural techniques; metal working in the Bronze and Iron ages, printing in the Middle Ages and ultimately the Industrial Revolution that paved the way for the present day Digital Age and the Knowledge Economy. The current digital revolution thus is simply a continuation of technological progress that has roots stretching back in history to the first tool making, farming and trading individuals.

It is no accident that these changes have been designated as 'Revolutionary' since in Mokyr's words: "marginal changes do not an Industrial Revolution make."[5] In contemporary times, changes have been no less revolutionary. It has become accepted that although industry forms the basis of the global economy, its nature has changed fundamentally. The products and manufacturing processes of the industrial economy have been supplanted in importance by information and services in the knowledge society.[6] Few economically active individuals can claim to be untouched by the effects of this digital revolution that has changed the face of business and organizations alike. Globally or on the macro scale, the proliferation of technologies has resulted in more solutions but conversely also generated more challenges. No sooner are challenges addressed, for example the eradication of major infant diseases,

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[3] Earl, M. 2001. Knowledge Management Strategies: Toward a Taxonomy, 215.

[4] Mokyr, J. 1992. Technological Inertia in Economic History, 328:
"Yet in free market economies, too, technological creativity has proved rare and ephemeral."

[5] Mokyr, J. 1992. Technological Inertia in Economic History, 327.

[6] Nonaka, I. Toyama, R. 2002. A Firm as a Dialectical Being: Toward a Dynamic Theory of a Firm, 995.

than the unintended side effects of similar or other technologies result in greater economic interdependencies and marked environmental distress. Similarly on the micro scale, while individuals enjoy the benefits of food security, improved transport and Information and Communication Technologies (ICT), they are not only exposed to the waste products of the industrial processes, but also feel the acute consequences of information overload.

Technological progress is a familiar and repetitive pattern that can be traced through the common thread of human history. In the post-modern era, the growing spiral of technological advance forms the refrain that has become the backbeat rhythm of the inexorable march, paradoxically termed both Progress and Retrogression.[7] Silent hands shuttling a spindle and distaff in the mists of time have made way for the quiet click and whir of a foot-pedal-driven spinning wheel. And so in its turn, with an ever louder clamour, each technology has made way for successive incremental improvements, as well as radical innovations. The spinning wheel was superseded consecutively with the spinning jenny, the spinning frame, ring spinning and, currently in use, open-end or rotary spinning. It is hard to imagine that the roar of mechanized, computerized industrial scale rotary spinning has much in common with the original spindle and distaff, besides the fact that both are technologies used to manufacture textiles. However, it can be argued that each of these consecutive adaptations was based on, or built out of, the successes or limitations of their predecessors. How? What is the process whereby new technology and by implication, new and useful knowledge, is created, and why are things different in the post-modern 21st Century?

Like the changes that occurred after the Industrial Revolution, since the 2000s a further quantum shift has occurred which has resulted in a new digital economic scaffold where the emphasis has shifted to interconnectedness and where information and knowledge are the chief assets. Friedman describes this global phenomenon as:

> a web-enabled platform for multiple forms of collaboration. This platform enables individuals, groups, companies, and universities anywhere in the world to collaborate – for the purposes of innovation, production, education, research, entertainment, and,

[7] Rifkin, J. 1980. *Entropy A New World View*, 46: "It is strange indeed that we in the modern world are willing to see the history of the universe as beginning with a perfect state and moving toward decay and chaos and yet continue to cling to the notion that the earthly history follows the exact opposite course, i.e., that is moving from a state of chaos to a "progressively" more ordered world."

> alas, war-making – like no creative platform ever before. This platform now operates without regard to geography, distance, [and] time….[8]

Human development with regard to technology is no longer constrained in geographic concentrations or demarcated by national boundaries and currencies. This observation is echoed by Carr who further emphasizes the digital nature of this revolutionary shift:

> We find ourselves today between two technological worlds. After 550 years, the printing press and its products are being pushed from the centre of our intellectual life to its edges…the mainstream is being diverted, quickly and decisively, into a new channel. The electronic revolution is approaching its culmination as the computer – desktop, laptop, handheld – becomes our constant companion and the internet becomes our medium of choice for storing, processing, and sharing information in all forms.[9]

As mentioned, this ever advancing creation and destruction has always and undeniably been central to all aspects of human life. Where creation and destruction pertain to knowledge and precipitate incremental or radical innovation or obsolescence however, value grows or diminishes. This ebb and flow of knowledge is the mainstay of amongst other things, economic growth and technological progress and whoever best adapts to this fluidity will be better poised for sustained participation and long term benefits. As Mokyr aptly put it, "Understanding the political economy of technological change is necessary to understand the larger forces at work that determine which societies become technological leaders and how long such leadership lasts"[10] so too, this reflection can be applied in an organizational context. Organizations that can create and apply new knowledge successfully tend to become industry or domain leaders. Alternately, failing to create knowledge is most assuredly one of the factors leading to loss of competitiveness, decline and ultimately demise.

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[8] Friedman, T.L. 2006. *The World is Flat*, 205.

[9] Carr, N. 2010. *The Shallows*, 77.

[10] Mokyr, J. 1992. Technological Inertia in Economic History, 326.

1.1 Purpose

Commerce driven by technology rather than craft has major implications for economically active participants. While crafts have been traditionally acquired, practised and refined over extensive periods of time, the groundswell of ever advancing technology has swept away the measure of time established through the generations – time itself seems to have suffered from inflation and devaluation, but nonetheless has become a relentless master.[11] And even as society focuses on knowledge and invents or re-invents itself, it leaves behind it a wake of obsolete technologies, as embodied in organizations, products, learning and skills, in ever greater frequency and rapidity. Essers and Schreinemakers describe this inexorable acceleration and the relevance of managing the process as follows:

> …the last couple of decades have shown how the economic life-cycle and the required time-to-market of new products have rapidly shortened to the point where [Research and Design] and innovation departments can hardly keep up with the pace of change. This is one of the main reasons why organizational Knowledge Creation requires active management efforts to ensure increased efficiencies of the innovation cycle.[12]

The aforementioned constantly accelerating spiral of innovation or creative destruction[13] is significant since its consequences affect not only general economics when it comes to organizations and products, but also the environment and society alike. It is also the distinguishing characteristic that differentiates the changes being experienced in present time from those in the past. In an environment of accelerating complexity bordering on chaos, Knowledge Management theories provide useful concepts to not only cope with obsolescence and creative clutter, but with which to actively promote innovation. These theories and models can also provide a functional and practical method for initiating new knowledge.

This thesis explores and analyses a selection of theories, with the emphasis on Knowledge Management theory and Sensemaking in organizations, in an effort to isolate a repeatable process that can be applied organizationally to generate knowledge. Sensemaking is a

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[11] Landes, D.S. 2000. *Revolution in Time: Clocks and the Making of the Modern World,* as quoted in Carr, N. 2010. *The Shallows*, 43:"By continually reminding its owner of time used, time spent, time wasted, time lost, it became both prod and key to personal achievement and productivity. The personalization of precisely measured time was a major stimulus to the individualism that was an ever more salient aspect of Western Civilization."

[12] Essers, J. Schreinemakers, J. 1997. Nonaka's Subjectivist Conception of Knowledge in Corporate Knowledge Program, 27.

[13] Schumpeter, J.A. 1975. Capitalism, Socialism and Democracy, 82.

cognitive theory applied to the process of organizing. Whilst it is not traditionally associated with knowledge management, Sensemaking combines the concepts of Actions and Beliefs as two ways of imposing order on the ongoing flow of experience, thereby encompassing two of the main definitions of knowledge as justified true belief and the capacity to act. When applying Sensemaking in an organizational context, there are at least two distinct perspectives from which Knowledge Creation can be facilitated, namely through Actions and Beliefs. Belief-driven Sensemaking, in turn, is characterized by two context-specific processes, Arguing and Expecting, which can potentially be applied and utilized to create knowledge.

Belief-driven Sensemaking as a perspective on Knowledge Creation has a number of advantages over the mainstream view of Knowledge Creation. It makes provision for the environmental challenges, such as informational overload and complexity, faced by individuals and organizations and characterizes the social interaction that takes place when individuals and groups meet. In this thesis, a number of examples are given where Knowledge Creation either in the form of incremental improvement or radical innovation is established through Arguing or Expecting, indicating that Sensemaking is a theory that can be applied in an organizational context to create knowledge.

1.2 Design / Methodology

This thesis conducts a conceptual analysis of the intersection between two bodies of theory, namely the mainstream view of Knowledge Creation and Organizational Sensemaking. In particular it embroiders on the Belief-driven Sensemaking process of Arguing as the social context for Knowledge Creation. Chapter 1 summarises the context, purpose and design methodology of the thesis. Particular emphasis is placed on why the current economic status quo is any different to past historic contexts. Several and varied attempts have been made to address the fundamental challenges entrenched in the economics of the day, since the rewards are so enticing. Government funding, directly or through tax breaks, venture capitalists, and angel investors all lure the individual and organization alike to attempt riding and conquering the dragon for the benefits of the undiscovered.

Superficially one problem of the post-modern 21st Century Knowledge Economy seems to be information, or more particularly information overload. Prominent efforts have been made to create industry applicable information management systems that facilitate the storage, retrieval and application of information. In some instances these systems may even generate new information. For example there are numerous offerings such as: Enterprise Resource Planning (ERP), Supply Chain Management (SCM), or Customer Relationship Management (CRM) systems. However, while these systems process data and provide information, they do not invent, innovate or create new knowledge.

Chapter 2 examines definitions of data, information, and knowledge within the domain of Knowledge Management theories as bound by the context of the Knowledge Economy in the Digital Age. Particular emphasis is placed on two prevailing definitions depicting knowledge as justified true belief *and* the capacity to act, since these concepts are mirrored in the underpinning notions of Belief-driven and Action-driven Sensemaking. Whilst Knowledge Management and Organization theories abound, this document will focus on, and compare *only* the following: The SECI process, Knowledge Management Solutions (KMS), The I-Space, The Knowledge Management Life Cycle (KMLC) and the Cognitive Theory of Sensemaking. SECI, KMS, I-Space and KMLC have been selected for analysis since they are foundational and mainstream in respect of knowledge management. However when focusing on Knowledge Creation within organizations, Sensemaking provides a novel and practical approach to the creative process, not specifically found in the aforementioned theories.

In this bewildering 'informationally-laden' digital age, Sensemaking is a particularly useful and unique Cognitive Theory that can be applied in an organizational context. Sensemaking is not only about organization, but also individual experience, acknowledging the interaction between the individual, the organization and their respective environment.

Chapter 3 surveys the theory of Sensemaking with the accent on the processes of Action-driven and Belief-driven Sensemaking, as means that afford individuals and organizations the opportunity and/or ability out of not seeing the wood for the trees. Sensemaking's usefulness and value lies in it not only being a Cognitive Theory for administering organization, but that within its model it actually also provides a perspective on how new knowledge is created.

In Chapter 4 the inherently human characteristic of truly dynamic technological invention and innovation is investigated within the framework of Arguing. Various contexts of Arguing are defined and the concept is explored as a natural and social process that can be applied create

new knowledge. Specific attention is paid to identify how the creative output of an Argument is not only radical innovation, but also incremental improvement encountered on a daily basis when social interaction results in the refinement or sharpening of any number of existing ideas, concepts, and/or business processes.

Chapter 5 locates Arguing as an effective organizational process that can be applied strategically and pragmatically to stimulate Knowledge Creation and furthermore, notes the useful implications and value within an organizational context.

Chapter 2

Creating Useful Knowledge in the Digital Age

2 Creating Useful Knowledge in the Digital Age

There are known knowns. These are things we know that we know. There are known unknowns. That is to say, there are things that we know we don't know. But there are also unknown unknowns. There are things we don't know we don't know.

~ Donald Rumsfeld

Characterizing the process of Creating Useful Knowledge in the Digital Age, requires some fundamental definitions, principally of knowledge, (particularly knowledge distinguished by its value), and to a lesser extent of the nature of the post-modern 21st Century. Given the complexity of 'knowledge' as a concept, however, it is inevitable that there appears to be limited to no consensus on its nature,[14] and some disagreement as to the taxonomy, topology and ultimately epistemology of this term, carried through to Knowledge Management[15] as an emerging discipline.[16] In its broadest sense, useful knowledge can be "any natural phenomena that potentially lend themselves to manipulation, such as artefacts, materials, energy, and

[14] Firestone, J.M. 2001. Key Issues in Knowledge Management, 9:
"There is no consensus on the nature of knowledge."

[15] Ale, M.A. Galli, M.R, Chiotti, O. 2005. A Distributed Knowledge Management Conceptual Model for Knowledge Organizations, 29:
"Despite the recognized importance of KM, there exists no consensus on what KM means."

[16] Sutton, M.J.D. 2007. Accepting Knowledge Management into the LIS fold, 1.

living beings."[17] Such a general definition provides a context but lacks enough specificity to be of practical value. However, defining knowledge in more specific terms creates polemic. For example, several writers differentiate knowledge in functionally distinct conceptual delineations[18] as the following two sample characterizations illustrate:

- Tacit Knowledge as opposed to Explicit Knowledge,[19] and
- Propositional Knowledge as opposed to Prescriptive Knowledge.[20]

This has led to some authors remarking sardonically that "In the domain of knowledge management there are almost as many definitions of knowledge as there are practitioners."[21] Regardless of the approach, specific focus or distinct discipline, there can be little argument about the inherent significance or value of knowledge. There may be disagreement on how to measure the value, but the intrinsic value of knowledge is undisputed.[22]

Besides knowledge and the nature of the post-modern 21st Century as mentioned in Chapter 1, there is also alternately lively debate or wilful silence on how knowledge is brought into being. Some models simply start from the premise that knowledge exists ipso facto.[23] Others approach knowledge management from the point of Knowledge Creation with a specific definition of knowledge as basis, stressing it as the axiom of the concept.[24] The value of each method lies in its practical applicability within the user's context and as such, no one designation has yet been elevated to industry-accepted or justified truth status.

Chapter 2 will first look at two major and distinct schools of thought[25] reflected in the literature regarding the definition of knowledge and its constituent terms. Building on this understanding, the following sections will deal with the concept of the Knowledge Economy,

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[17] Mokyr, J. 2002. *The Gifts of Athena*, 3.

[18] Schwartz, D. 2006. An Aristotelian View of Knowledge Management, 10.

[19] Nonaka, I. 1994. Dynamic Theory of Organizational Knowledge Creation, 16.

[20] Mokyr, J. 2002. *The Gifts of Athena*, 4: "Omega Knowledge: Propositional "what" Knowledge – beliefs about natural phenomena and regularities. Lambda Knowledge: Instructional "how" or Prescriptive" – applied propositional knowledge; techniques."

[21] Vines, R. Hall, W.P. Naismith, L. 2007. Exploring the Foundations of Organisational Knowledge. 3.

[22] Boisot, M.H. 1999. *Knowledge Assets*, 2: "Prompted by the rapid spread of the information economy, we are only just beginning to think of knowledge assets as economic goods in their own right."

[23] Becerra-Fernandez, I Sabherwal, R. 2008. *Individual, Group, and Organizational Learning A Knowledge Management Perspective*, as quoted in in Becerra-Fernandez I. Leidner D. eds. 2008. *Knowledge Management An Evolutionary View*,14: "Knowledge is said to reside in people in all organizations."

[24] Nonaka, I. Toyama, R. Konno, N. 2000. SECI, Ba and Leadership: a Unified Model of Dynamic Knowledge Creation, 6.

[25] Two schools of thought: those who base their definition of knowledge on *Belief* and those who base their definition on *Action*.

alluding to the Digital Age to characterize why the concept is principally relevant and different in the current era. The final section of this chapter then uses the context built up in the preceding sections to review Knowledge Management Theories in general with some specific examples of existing models.

2.1 Definitions of Knowledge

"Where is the wisdom we have lost in knowledge?

Where is the knowledge we have lost in information?"

~ T.S. Eliot Choruses from 'The Rock'

In order to determine a workable definition of Knowledge and more specifically, Knowledge Management,[26] the literature shows that beyond the obvious contrast between the 'known and unknown,' there are also further related[27] and relational terms or concepts that are either mutually exclusive or oftentimes used interchangeably. For example: "data and information," "knowledge and know-how," or "knowledge and information," and "Tacit" as opposed to "Explicit" Knowledge. Inevitably terms such as "data," "information" and "knowledge," have leant themselves to be modelled in metaphor into some form of logical order. These metaphors have permitted authors cross some of the intermediate gaps between the concepts of 'Knowledge,' 'Knowledge Types,' and 'Knowledge Creation' to finally reach 'Knowledge Management.' The simplest representation that appears relatively frequently is the Knowledge Pyramid as given in Figure 1. Joseph Firestone uses this depiction to clarify and describe the nature of 'knowledge' in terms of "data," "information" and "wisdom."

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[26] Earl, M. 2001. *Knowledge Management Strategies: Toward a Taxonomy,* 216: "Example frameworks include those that distinguish knowledge from information and data or those that distinguish explicit from tacit knowledge"

[27] Müller-Prothmann, T. 2006. *Leveraging Knowledge Communication for Innovation,* 16: "In the field of information science, knowledge is often defined with regard to its relation to data and information."

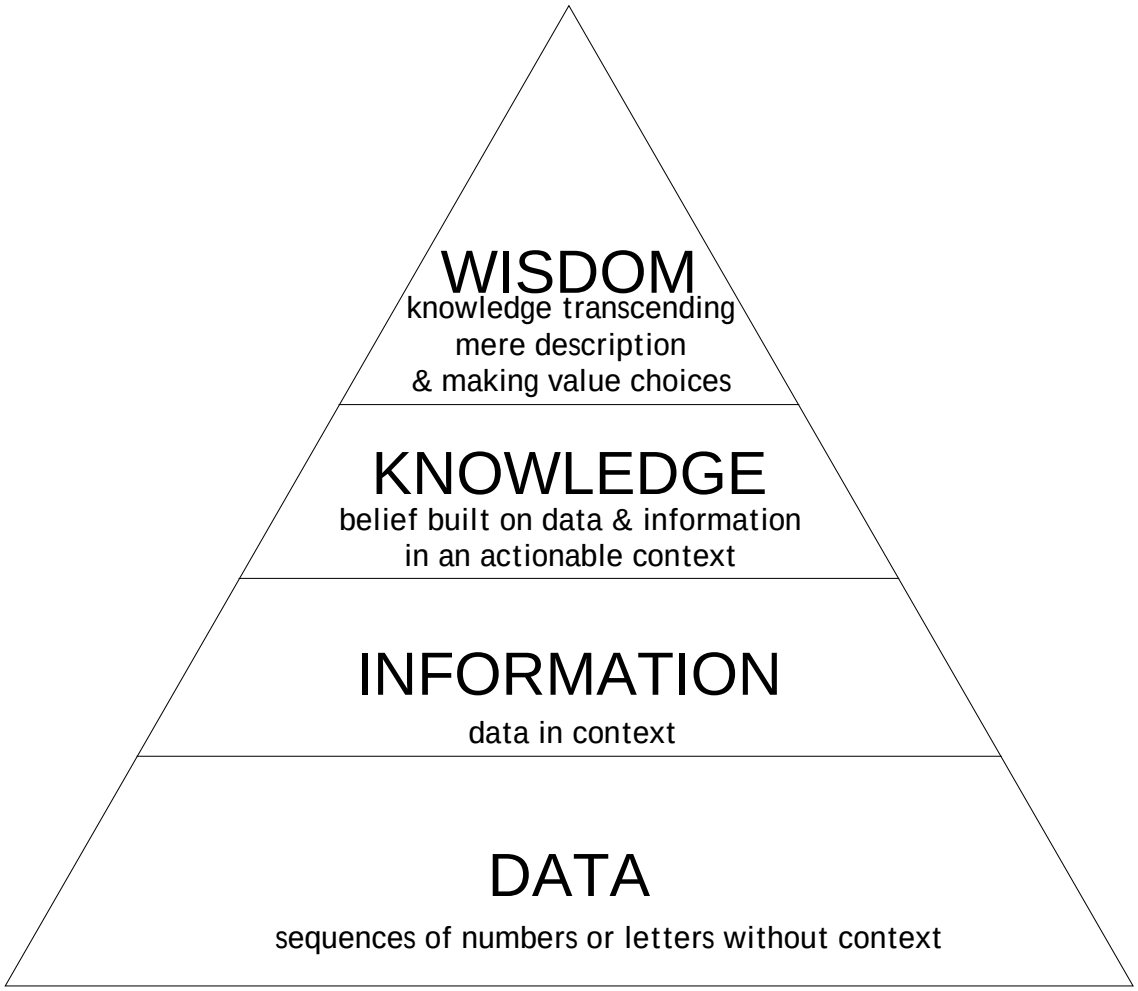

Figure 1: Firestone's Pyramid View of Knowledge [28]

The above annotated illustration appears to be the most common representation of 'knowledge' described in graduating terms to include the concepts of 'data,' 'information' and 'wisdom.' The more detailed but less frequently occurring portrayal of knowledge, which can be useful as a point of reference, is knowledge as represented in a ladder format. For example, Klaus North compares a greater range of terms in graduated steps starting with the purely abstract concept 'Symbol,' moving through successive additions and ending with the relatively concrete concept of 'Competitiveness.' Refer to Figure 2 for the steps and explanatory annotations of such a representation.

[28] Firestone, J.M. 2006. Reducing Risk BY Killing Your Worst Ideas, 14.

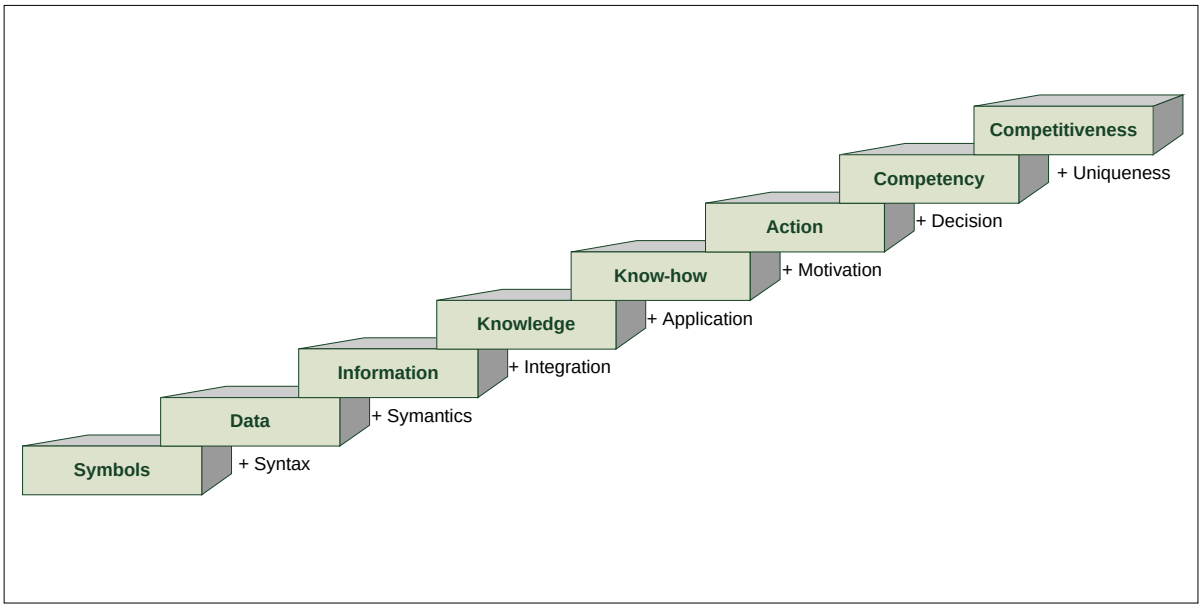

Figure 2: North's Knowledge Ladder[29]

While one could certainly debate whether such a Knowledge Pyramid or Ladder can be scientifically proven and empirically justified, its value lies in cogently illustrating possible relationships and differentials between the common terms of reference often used when knowledge is defined. This distinction is indispensable further because, according to Nonaka, not only is knowledge intangible, but the process of creating it is dynamic and dialectical, in essence a process of synthesizing.[30]

The abstract intangibility of knowledge has led to two major schools of thought regarding the concept of 'knowledge' emerging within published literature, namely: Knowledge as Justified True Belief and Knowledge as the Capacity to Act. Traditional epistemology adopts a definition of Knowledge as "justified true belief."[31] In Knowledge Management circles, this view is termed by Cook and Brown to be the "epistemology of possession,"[32] but it is by no means universal however. There is an epistemological discomfort perhaps most aptly summarized by Spender and Scherer who state that: "the contrast of epistemologies opens up a space for agency and sets up a critique of any narrowly rational analysis that presumes but a

[29] North, K. 1999. Wissensorientierte Unternehmensführung. Wertschöpfung durch Wissen. Wiesbaden: Gabler, as quoted in Müller-Prothmann, T. 2006. Leveraging Knowledge Communication for Innovation, 17.

[30] Nonaka, I. Toyama, R. 2002. A Firm as a Dialectical Being: Toward a Dynamic Theory of a Firm, 995.

[31] Chisholm, R.1982. "Knowledge as Justified True Belief" The Foundations of Knowing, 43.

[32] Cook, S.D.N. Brown, J.S. 1999. Bridging Epistemologies: The Generative Dance between Organizational Knowledge and Organizational Knowing, 382.

single epistemology."[33] Epistemology of practice[34] on the other hand, rather than focus on the immutability of knowledge, emphasize its dynamic nature, pointing out its utility. Most definitions also have two notions in common: *agency* and *action*. Knowledge is said to derive its utility from its potential ability to set something or someone in motion. For example:

- Knowledge is information that facilitates action,[35]
- Knowledge lives in the human act of knowing… and is a socially constructed human act, [36]
- Knowledge is a disposition to act in a particular way that has to be inferred from behaviour rather than observed directly, [37]
- That human action is knowledge-based might even be regarded as an anthropological constant,[38] and
- Knowledge is an activity which would be better described as a process of knowing.[39]

Stehr best characterizes this fluidity in his explanation that:

> knowledge as capacity for action strongly indicates that the material realization and implementation of knowledge is open, that it is dependent on or embedded within the context of specific social, economic and intellectual conditions. Inasmuch as the realization of knowledge is dependent on the active elaboration of knowledge within specific networks and social conditions, a definite link between knowledge and social power becomes evident because the control of conditions and circumstances requires social power. [40]

The various Knowledge Management Theories as presented in section 2.4 demonstrate that both characterizations of Knowledge are persuasive in their respective contexts and that in spite of the distinct dialectic there is also evidence that authors accept both as valid

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[33] Spender, J. C. Scherer, A. G. 2007. The Philosophical Foundations of Knowledge Management, 24.

[34] Cook, S.D.N. Brown, J.S. 1999. Bridging Epistemologies: The Generative Dance between Organizational Knowledge and Organizational Knowing, 383.

[35] Becerra-Fernandez, I. Gonzalez, A. Sabherwal, R. 2004. *Knowledge Management Challenges, Solutions and Technologies*, 13.

[36] Müller-Prothmann, T. 2006. Leveraging Knowledge Communication for Innovation, 25.

[37] Boisot, M.H. 1999. *Knowledge Assets*, 12 & 19.

[38] Stehr, N. 2007. Societal transformations, globalisation and the knowledge society, 143.

[39] Sveiby, K-E. 1996. Transfer of Knowledge and the Information Processing Professions, 381.

[40] Stehr, N. 1999. *Knowledge Societies*, 2.

characterizations of knowledge.[41;42] In the context of this thesis, the definitions of Knowledge as Justified True Belief and Knowledge as the Capacity to Act are particularly relevant since Sensemaking can described in terms of the structures of Beliefs and Actions as per section 3.3.1 and section 3.3.2. These concepts of "Belief" and "Action" are inseparably part of each other when examined in the context of Sensemaking. Weick illustrates this intertwined relationship as follows:

> In matters of Sensemaking, *believing* is seeing. To *believe* is to notice selectively. And to *believe* is to initiate *actions* capable of lending substance to *belief.*[43]

This implies that "Knowledge" can be embedded in both "Belief" and "Action" and as a consequence originate in structures of "Belief" and "Action." Since knowledge appears to emanate in these structures, a closer examination of their core definition is warranted.

2.2 Relevance of the Digital Era in the Information Age

The digital revolution is far more significant than the invention of writing or even of printing.

~ Douglas Engelbart

As has been mentioned, knowledge and technology have been around since the dawn of human history, however, what has changed significantly over the ages is the way in which knowledge is shared and applied, its global reach and impact[44]. This change is ironically seated within the realm of technology itself and is sometimes referred to rather loosely in popular discourse as the Digital Era in the Information Age and/or Society. WordNet Search -

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[41] Boisot, M.H. 2004. Exploring the information space: a strategic perspective on information systems, 4: "these two views of knowledge are not actually incompatible."

[42] Nonaka, I. Toyama, R. Nagata, A. 2000. *A Firm as a Knowledge-creating Entity,* 2: "We define knowledge as 'a dynamic human process of justifying personal belief towards the "truth." We do not view knowledge as something absolute and static…We view knowledge as context-specific, relational, dynamic and humanistic. *Knowledge is essentially related to human action*." (My emphasis in italics).

[43] Weick, K. E. 1995. *Sensemaking,* 133-134 (my italics for focus, linkage and emphasis).

[44] Rifkin, J. 1996. *The End of Work,* 5: "Life as we know it is being altered in fundamental ways. While earlier industrial technologies replaced the physical power of human labor, substituting machines for body and brawn, the new computer-based technologies promise a replacement of the human mind itself, substituting thinking machines for human beings across the entire gamut of economic activity."

3.0, an online lexical database application of Princeton University, defines the Information Age as: "a period beginning in the last quarter of the 20th century when information became easily accessible through publications and through the manipulation of information by computers and computer networks."[45] The Digital Era is about virtual networks that span the planet across continents and oceans, rather than physical networks that encompass family and colleagues and reach only as far as the neighbourhood home and business.

Communication is no longer discrete and limited to a single action in analogue format with one, or at most two, participants; it is distributed multimedia in a digital format with a multiplicity of contributors and participants[46]. With the introduction of the mobile (smart) telephone, personal computer, the Web (especially Web 2.0),[47] and Internet and increased economic wealth, most households in the developed world now have a mobile telephone per person in addition to the fixed line.[48] This remarkable proliferation of Information and Communication Technology (ICT) penetration and coverage over time is illustrated in Table 1 below.

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[45] Princeton University "About WordNet." WordNet. Princeton University. 2010. Enter Search Term: 'Information Age' http://wordnetweb.princeton.edu/perl/webwn?s=information%20age 2011/02/27

[46] Lallana, E.C. Uy, M.N. 2003. *The Information Age*, 5-6: What is the digital revolution? Technological breakthroughs have revolutionized communications and the spread of information. In 1875, for example, the invention of the telephone breached distance through sound. Between 1910 and 1920, the first AM radio stations began tom broadcast sound. By the 1940s television was broadcasting both sound and visuals to a vast public. In 1943, the world's first electronic computer was created. However, it was only with the invention of the microprocessor in the 1970s that computers became accessible to the public. In the 1990s, the Internet migrated from universities and research institutions to corporate headquarters and homes.
All of these technologies deal with information storage and transmission. However, the one characteristic of computer technology that sets it apart from earlier analog technologies is that it is digital. Analog technologies incorporate a combination of light and sound waves to get messages across, while digital technology, with its system of discontinuous data or events, creates a "universal mode" to represent information that is expressed by almost anything using light and sound waves.
To use an analogy, a digital world is a world united by one language, a world where people from across continents share ideas with one another and work together to build projects and ideas. More voluminous and accurate information is accumulated and generated and distributed in a twinkling to an audience that understands exactly what is said. This in turn allows the recipients of the information to use it for their own purposes, to create ideas and to redistribute more ideas. The result is progress.

[47] Anderson, P. 2007. *What is Web 2.0? Ideas, technologies and implications for education*, 14: Anderson outlines or recognizes six 'big' ideas behind the Web 2.0: (1) Individual production and User Generated Content; (2) Harnessing the power of the crowd; (3) Data on an epic scale; (4) Architecture of Participation; (5) Network Effects, Power Laws and the Long Tail; (6) Open-ness.

[48] Roberts, S. 2008. The Global Information Society: a Statistical View, 27.

Level of Development and Region	Year	Fixed Telephone Lines (A1)	Mobile Cellular Telephone Subscribers (A2)	Computers (A3)	Internet Subscribers (A4)	Broadband Internet Subscribers (A5)	Internet Bandwidth per Inhabitant (bits) (A6)	Population Covered by Mobile Cellular Telephony (A7)
		Number per 100 Inhabitants						
Developed Economies	1995	50	8	19	na	na	na	na
	2000	57	50	37	14	1	606	98
	2006	51	92	62	24	19	4755	99
Transition Economies	1995	15	0.1	5	na	na	na	na
	2000	19	3	5	0.3	na	12	76
	2006	23	77	10	3	2	223	88
Developing Economies	1995	5	0.4	3	na	na	na	na
	2000	9	6	3	0.9	na	5	71
	2006	15	33	5	4	2	177	74
Least Developed Economies	1995	0.3	0	0.3	na	na	na	na
	2000	0.5	0.3	0.3	0	na	0.2	34
	2006	0.9	10	0.7	0.2	0	7	59

Table 1: Information and Communication Technology Indicators

The implication is that not only is the opportunity to generate information 'freely' available to all digitally connected participants, but new content can also be distributed instantaneously on multiple platforms to the furthest reaches of the digital network, technology has 'shrunk the globe.'[49]. This can be done collaboratively, repeatedly, and in a manner where the only form of control, other than access and service provision, is self-regulation. This is one of the significant ways in which the Digital Era can be seen as distinct and different from earlier communication revolutions. Capurro points out that if one examines the "question of knowledge representation within today's context of digital networks [one] become[s] aware of basic metaphoric change with regard to the concept of 'circle of knowledge' or 'encyclopaedia' that was predominant in theory and practice, particularly in the library world, since Enlightenment."[50] In Capurro's view the Information Age has forced an order change in knowledge from encyclopaedic to 'endictyopaedic,' in other words he further elucidates: "Not only documents but also human beings are linked within a digital and global endictyopaedia that is at the same time an information as well as a communication medium."[51] Put simply, the medium is the message and vice versa.

Besides the ubiquity and prevalent use of technology and the spread of information in the Digital Era, there are still fundamental questions about how knowledge is created and the

[49] Heilbronner, R. Milberg, W. 1998. *The Making of Economic Society*, 169.

[50] Capurro, R. 2002. Skeptical knowledge management, 8.

[51] Capurro, R. 2002. Skeptical knowledge management. 9.

answer does not seem settled even after 2000 years of the debate. Digitizing and spreading content is not equivalent to creating new knowledge. For example, while Amazon.com can provide any number of books in Kindle format, and iTunes of Apple.com can provide any number of albums in .m4a format, neither of these internet commerce giants create the original novels or music. Although they have created an innovative way of spreading the content, they are beholden to the creative genius of individuals or groups who do string words and notes together into desirable objects. In the digital era the question then of 'How To' innovate, create and/or generate novelty, in marketable product form is even more important than ever before, precisely because these new ICT and practises form the basis of commercial value, our economic interaction, and very survival economically.

2.3 The Knowledge Economy

I'm struck by the insidious, computer-driven tendency to take things out of the domain of muscular activity and put them into the domain of mental activity.

~Brian Eno, Wired, January 1999

There has been much discussion on the shift in economics from capital intensity to knowledge intensity.[52] This debate is almost as furious and agreement as sparse as in the case of accepting a definitive description of knowledge. It can be argued, as already stated, that, since knowledge and technology have been part of human history since its inception, commercial development has always been based on knowledge. Once again, it must be argued that although this is true, the designation of Knowledge Economy reflects a perceptual change based on changing values. Drucker, however, was a pioneer in highlighting that it is the landscape of work that has changed profoundly, giving knowledge pre-eminence: "The

[52] Stehr, N. 1999. *Knowledge Societies*, 2: "Until recently, modern society was conceived primarily in terms of property and labor. Labor and property (capital) have had a long association in social, economic and political theory. Work is seen as property and as a source of emerging property. On the basis of these attributes, individuals and groups were able or constrained to define their membership in society. In the wake of their declining importance in the productive process, especially in the sense of their conventional economic attributes and manifestations, for example as "corporeal" property such as land and manual work, the social constructs of labor and property themselves are changing. While the traditional attributes of labor and property certainly have not disappeared entirely, a new principle, "knowledge", has been added which, to an extent, challenges as well as transforms property and labor as the constitutive mechanisms of society."

most valuable assets of a 20th Century company were its production equipment. The most valuable asset of a 21st Century institution, whether business or non-business, will be its knowledge workers and their productivity."[53] Nonaka and Toyama state the change simply as follows: "society has turned into a knowledge economy [and] the importance of knowledge as the inputs and outputs of firms' activities have increased."[54]

However, there is more to the Knowledge Economy than an increase in the importance and intensity of knowledge inputs and outputs. Spender and Scherer highlight a further issue associated with the status quo: "Globalization's widening, geography and 24/7 nature means vast amounts of information must be collected and passed around organizations, for no single mind can grasp the manifold complexities of the modern firm."[55] In other words, the growing volume and complexity of information is placing a greater but different burden on economically active participants. Sutton interpreting Drucker sees this as the "individual [spending] much of his/her time processing symbols with the intellect, not manufacturing anything with the hands."[56] This is perhaps more comprehensively described in Horton's definition: "A knowledge economy [is] one where success depends more on knowledge than on labor and capital. It is the unique knowledge of the company that is most important in determining its success. Knowledge in many ways is the new gold standard."[57] Besides the change in emphasis from the physical to the intellectual, there has also been a more obvious change in the individuals' participation and contribution to society, in economic as well as other spheres. Stehr mentions this as: "We are witnessing a change from social realities in which 'things' at least from the point of view of most individuals simply 'happened' to a social world in which more and more things are 'made' to happen."[58]

Introducing the Knowledge Economy into nomenclature is thus of more importance than simple semantics. The term has its origins and relevance in the notion of the information society, mentioned in the preceding section 2.2. The term reflects the increased complexity of economic circumstances, but at its heart it is also an attempt to identify the means to adapt to

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[53] Drucker, P. 1999. Management Challenges for the 21st Century, 135.

[54] Nonaka, I. Toyama, R. 2002. A Firm as a Dialectical Being: Toward a Dynamic Theory of a Firm, 995.

[55] Spender, J. C. Scherer, A. G. 2007. The Philosophical Foundations of Knowledge Management, 6.

[56] Sutton, M.J.D. 2007. Accepting Knowledge Management into the LIS fold. 1.

[57] Horton, W. 2001. Knowledge management: A practical, evolutionary approach, as quoted in Sutton, M.J.D. 2007. Accepting Knowledge Management into the LIS fold, 2.

[58] Stehr, N. 2003. A World Made of Knowledge, 1.

the changing milieu by characterizing it and acknowledging its uniqueness. [59] The Knowledge Economy is also a means to explain and exploit the discrepancies between book and market valuations of companies, where appraisals of successful organizations have been well in excess of fixed and moveable assets. It widens the scope of how knowledge is seen and can be utilized. Within this perspective, knowledge relevant to business organizations would include facts, opinions, ideas, theories, principles, models, experience, values, contextual information, expert insight, and intuition. [60] The following sections will examine various theories that try to explain where this new knowledge comes from and how one could plan for it organizationally. It will be shown that these theories share a common view of knowledge creation, basically predicated on new product development and hence fit radical innovation better than incremental improvement.

2.4 Knowledge Management Theories and Models

Knowledge must come through action; you can have no test which is not fanciful, save by trial.

~ Sophocles (496 BC - 406 BC), Trachiniae

Assuming the change in emphasis and value of knowledge in the Knowledge Economy, Knowledge Management becomes an essential element of every company. Given the

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[59] Müller-Prothmann, T. 2006. *Leveraging Knowledge Communication for Innovation*, 13-14: "We can distinguish between (1) complexity of action and (2) complexity of knowledge. Complexity of action results from the interplay between increased scopes for action and a lack of corresponding models of action that guarantee safety in an insecure world. Complexity of knowledge results from a combination of various facets: technical, organizational and cultural interrelations, general complexity of the world—that has not necessarily increased in fact, but without doubt, we have become more conscious about it—, the individual situation between knowledge and the unknown, and last but not least, the loss of instruments to reduce complexity that have previously been perceived by our senses (like spirits, gods, myths and stories) and are cold, rational and not sensually perceptible anymore due to our scientific conception of the world. The conceptualization of information society was still connected with the hope to reduce and overcome complexity through extensive knowledge production and means of information and communication technologies. The same was true for the early drafts of knowledge society. If we do not want to turn the visions of a knowledge society to being useless, we should try to clearly integrate the recognition and acceptance of complexities as its integral basic characteristics. Then, knowledge society does not aim at the reduction and overcoming of complexities, but at dealing and living with them through individual, organizational, technological, and societal strategies and processes of adaptation."

[60] Mitri, M. 2003. A knowledge management framework for curriculum assessment, 15.

polemical debate regarding the definitions of Knowledge, the Information Age and the Knowledge Economy, it is inevitable that contradictory views will exist too regarding the concept of Knowledge Management. Firestone even goes as far as saying:

> Most definitions suffer from the lack of careful treatment of 'management' as well as 'knowledge.' It's almost as if [Knowledge Management] experts think that 'knowledge management' is not a form of 'management' and therefore doesn't have to be defined or characterized in a manner consistent with well-established meanings of that term.[61]

Several authors provide diverse definitions, depending on various epistemologies, for example:

- If we assume that we can indeed manage knowledge, the aim of the organization must be to manage knowledge as an object as well as to manage the processes of knowledge;[62]
- Knowledge Management [can be] seen as consistent with resource-based theories of the firm, namely building and competing on a capability that could be quite difficult for others to imitate;[63]
- Knowledge Management is human activity that is part of the Knowledge Management Process (KMP) of an agent or collective;[64] and
- Knowledge Management is the deliberate and systematic coordination of the communications, people, processes, structure, and technology of an organization in order to produce sustainable competitive advantage or long-term high performance for the organization. The value and utility in the management of knowledge accrues to the organization through innovation, reuse, and Organizational learning. The process of coordination is achieved through the convergence of personal, group, and enterprise action on a knowledge life-cycle. The knowledge life-cycle integrates the identification, creation, acquisition, capture, securing, production, publication,

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[61] Firestone, J.M. 2001. Key Issues in Knowledge Management, 21.

[62] Müller-Prothmann, T. 2006. Leveraging Knowledge Communication for Innovation, 28.

[63] Earl, M. 2001. Knowledge Management Strategies: Toward a Taxonomy, 215.

[64] Firestone, J.M. 2001. Key Issues in Knowledge Management, 22.

sharing, leveraging, and eventual disposal of knowledge resources and assets within an Organizational memory.[65]

Begona Lloria, in her attempt to connect different perspectives on the creation and management of knowledge has emphasized the following key concepts:

- Knowledge management is related both to business practice and to research;
- Knowledge management goes further than technology management or information management;
- Knowledge management is a broad concept, and is made up of different activities, all of which are related to the asset of knowledge;
- Knowledge is principally found in people and is developed through learning. Effective knowledge management implies that such knowledge goes from being a human asset to being a business asset; and
- Knowledge can be managed with the aim of developing new opportunities, creating value for the customer, obtaining competitive advantages or improving performance.[66]

This definition forms a comprehensive context within which the various Knowledge Management Theories and models can be examined. A more detailed but older typology with a very practical purpose has been put forward by Earl to take the academic definition of knowledge management and place it within the grasp of corporate executives.[67] Earl proposes Schools of Knowledge Management and broadly defines three types in much the same way that knowledge types have earlier been defined (see section 2.1). Each of these types relates to or is grounded in different epistemology. For a summarized view of the three types of Knowledge Management refer to Table 2 below.

SCHOOL	TECHNOCRATIC			ECONOMIC	BEHAVIOURAL		
ATTRIBUTE	Systems	Cartographic	Engineering	Commercial	Organizational	Spatial	Strategic
PHILOSOSPHY	Codification	Connectivity	Capability	Commercialization	Collaboration	Contactivity	Conciousness

Table 2: Earl's Schools of Knowledge Management (abbreviated)[68]

[65] Becerra-Fernandez, I. Gonzalez, A. Sabherwal, R. 2004. *Knowledge Management Challenges, Solutions and Technologies*, 30.

[66] Begona Lloria, M. 2008. A review of the main approaches to knowledge management, 79.

[67] Earl, M. 2001. *Knowledge Management Strategies: Toward a Taxonomy*, 216: "Therefore there is a need for models, frameworks, or methodologies that can help corporate executives both to understand the sorts of knowledge management initiatives or investments that are possible and to identify those that make sense in their context."

[68] Earl, M. 2001. Knowledge Management Strategies: Toward a Taxonomy, 217 and 219.

Besides providing a practical starting point for corporate executives in their efforts to realize value from knowledge management, it also provides a pedagogical framework for the comparison of different knowledge management models.[69] Contextually, these Schools of Knowledge Management not only highlight the differences between Knowledge Management models as discussed in sections 2.4.1 through 2.4.4 following, they also provide practical suggestions for possible starting points and identify processes critical for successful Knowledge Creation and management.

2.4.1 The SECI Process

The SECI process uses and comes from the following definitions and terms of reference:

- Knowledge is "a dynamic human process of justifying personal belief toward the 'truth.'"[70]
- "There is very little understanding of how organisations actually create and manage knowledge. This is partly because we lack a general understanding of knowledge and the knowledge-creating process. The 'knowledge management' that academics and business people talk about often means just 'information management.'"[71]

It is thus significant that Knowledge Management in the SECI process is inextricably linked to Knowledge Creation . Nonaka et al. describe this contextually as:

> The organisation is not merely an information processing machine, but an entity that creates knowledge through action and interaction. It interacts with its environment, and reshapes the environment and even itself through the process of Knowledge Creation . Hence, the most important aspect of understanding a firm's capability concerning knowledge is the dynamic capability to continuously create new knowledge out of existing firm-specific capabilities, rather than the stock of

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[69] Earl, M. 2001. Knowledge Management Strategies: Toward a Taxonomy, 229.

[70] Nonaka, I. Toyama, R. Konno, N. 2000. SECI, Ba and Leadership: a Unified Model of Dynamic Knowledge Creation, 7.

[71] Nonaka, I. Toyama, R. Konno, N. 2000. SECI, Ba and Leadership: a Unified Model of Dynamic Knowledge Creation, 6.

> knowledge (such as a particular technology) that a firm possesses at one point in time.[72]

Social processes, specifically **S**ocialization, **E**xternalization, **C**ombination, and **I**nternalization[73] together all form a framework for Knowledge Creation and transcendence[74] within an individual and group context. Additionally knowledge is characterized into two types: "Through the SECI spiral of continuous Knowledge Creation and utilization, tacit and explicit knowledge expands in terms of quality and quantity, from the individual to the group, then to the organizational level."[75] As an outline or model of Knowledge Creation, it stresses order or coherence[76] to overcome the intangible nature of knowledge in an effort to aid knowledge management. Furthermore, it argues that new knowledge is not created solely from combining existing explicit knowledge, but also proposes conversion of tacit into explicit knowledge takes place through accepted inter- and intra-active human processes to create knowledge.[77] The Knowledge Creation spiral and interactions between tacit and explicit knowledge with the four conversion processes can be visually represented and summarized as follows in Figure 3.

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[72] Nonaka, I. Toyama, R. Konno, N. 2000. SECI, Ba and Leadership: a Unified Model of Dynamic Knowledge Creation, 6.

[73] My emphasis in bold to indicate the origin of the acronym *SECI.*

[74] Nonaka, I. Konno, N. 1998.The Concept of "Ba": Building a Foundation for Knowledge Creation, 42.

[75] Nonaka, I. Toyama, R. 2002. A Firm as a Dialectical Being: Toward a Dynamic Theory of a Firm, 996.

[76] Nonaka, I. Toyama, R. 2002. A Firm as a Dialectical Being: Toward a Dynamic Theory of a Firm, 997.

[77] Nonaka, I. Toyama, R. Nagata A. 2000. *A Firm as a Knowledge-creating Entity*, 10: "An organization creates knowledge through the interactions between explicit knowledge and tacit knowledge. We call this interaction between the two types of knowledge 'knowledge conversion'. Understanding this reciprocal relationship is the key to understand the knowledge-creating process. Knowledge is created through interactions among individuals with different types and contents of knowledge. Through this 'social conversion' process, tacit and explicit knowledge expands in terms of both quality and quantity. Knowledge creation is not merely combining existing (mostly explicit) knowledge as suggested by Schumpeter."

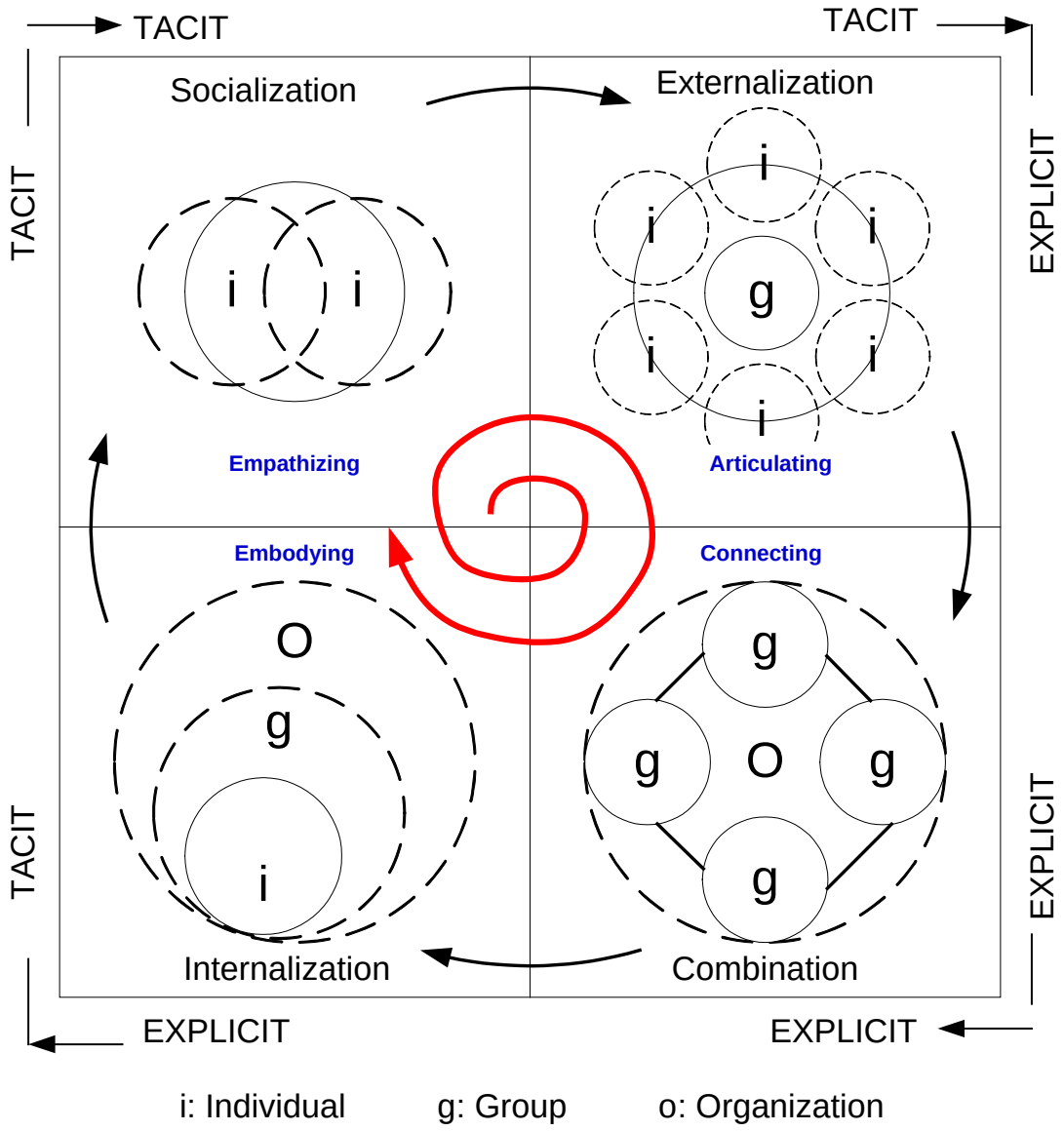

Figure 3: Nonaka and Takeuchi's SECI Process (expanded) [78] [79] [80]

This model has been criticized for example by Cook and Brown because: "Building on Polanyi, we argue that explicit and tacit are two distinct forms of knowledge (i.e. neither is a variant of the other); that each does work the other cannot; and that one form cannot be made out of or changed into the other."[81]

[78] This figure is an expanded view of the original SECI process as published in 1995 by Nonaka and Takeuchi. It is a combination of the Spiral Evolution of Knowledge Conversion and Self-transcending Process (see Footnote 79) and the adapted SECI process as proposed in Footnote80.

[79] Nonaka, I. Konno, N. 1998.The Concept of "Ba": Building a Foundation for Knowledge Creation, 43.

[80] Nonaka, I. Toyama, R. Nagata A. 2000. *A Firm as a Knowledge-creating Entity*, 10.

[81] Cook, S.D.N. Brown, J.S. 1999. Bridging Epistemologies: The Generative Dance between Organizational Knowledge and Organizational Knowing, 56.

McElroy and Firestone in their generational view of Knowledge Management, assume SECI is a tool or method that was created in a particular time frame, and applied rather narrowly[82] in Snowden's Second Age. Furthermore, they are quite severe in their criticism of the SECI process on fundamental grounds regarding information, misinformation and implicit knowledge saying: "…the SECI model is only about knowledge and not information. And never mind, for that matter, that the SECI model, since it too does not address this question, could just as easily be seen as a way of converting "misinformation" or "falsified knowledge" from one party to another. Or that it could be seen as a model for generating unvalidated knowledge claims rather than knowledge. Or that it fails to make the distinction between tacit, explicit, and implicit knowledge, and not just between tacit and explicit knowledge."[83] While the SECI model does indeed exclude information, misinformation and implicit knowledge, this does not invalidate it entirely. A model is a scaled or simplified representation and Nonaka quoting Machlap earlier, recognized a difference between knowledge and information;[84] and while purposefully emphasizing 'belief' and 'justification' he still acknowledged the importance of 'truth' accepting that Knowledge is Justified True Belief as expanded on in section 2.1.

2.4.2 Knowledge Management Solutions

The Knowledge Management Solutions model uses and comes from the following definitions and terms of reference:

- "We define knowledge in an area as justified beliefs about relationships among concepts relevant to that particular area."[85]
- "Knowledge Management can be defined as performing the activities involved in discovering, capturing, sharing, and applying knowledge so as to enhance, in a cost-effective fashion, the impact of knowledge on the unit's goal achievement."[86]

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[82] Firestone, J.M. McElroy, M.W. 2002. *Generations of Knowledge Management,* 13.

[83] Firestone, J.M. McElroy, M.W. 2002. *Generations of Knowledge Management,* 14.

[84] Nonaka, I. 1994. *Dynamic Theory of Organizational Knowledge Creation,* 15: "Although the terms 'information' and 'knowledge' are often used interchangeably, there is a clear distinction between information and knowledge."

[85] Becerra-Fernandez, I. Gonzalez, A. Sabherwal, R. 2004. *Knowledge Management Challenges, Solutions and Technologies,* 13-14.

From this point of origin, the various active social structural mechanisms involved in knowledge generation and processing are examined within a cost-benefit justification framework to produce a model. The model therefore recognizes that even though knowledge may be intangible, in a business all activities' effectiveness alone is not enough – efficiency is also pre-requisite. In summary the model (see Figure 4) proposes:

- Knowledge Management Infrastructure *supports* Knowledge Management Mechanisms/Technologies;
- Knowledge Management Mechanisms/Technologies *are used* in Knowledge Management Systems;
- Knowledge Management Systems *enable* Knowledge Management Processes; and
- Knowledge Management Infrastructure *benefits from* Mechanisms/Technologies and Progress.[87]

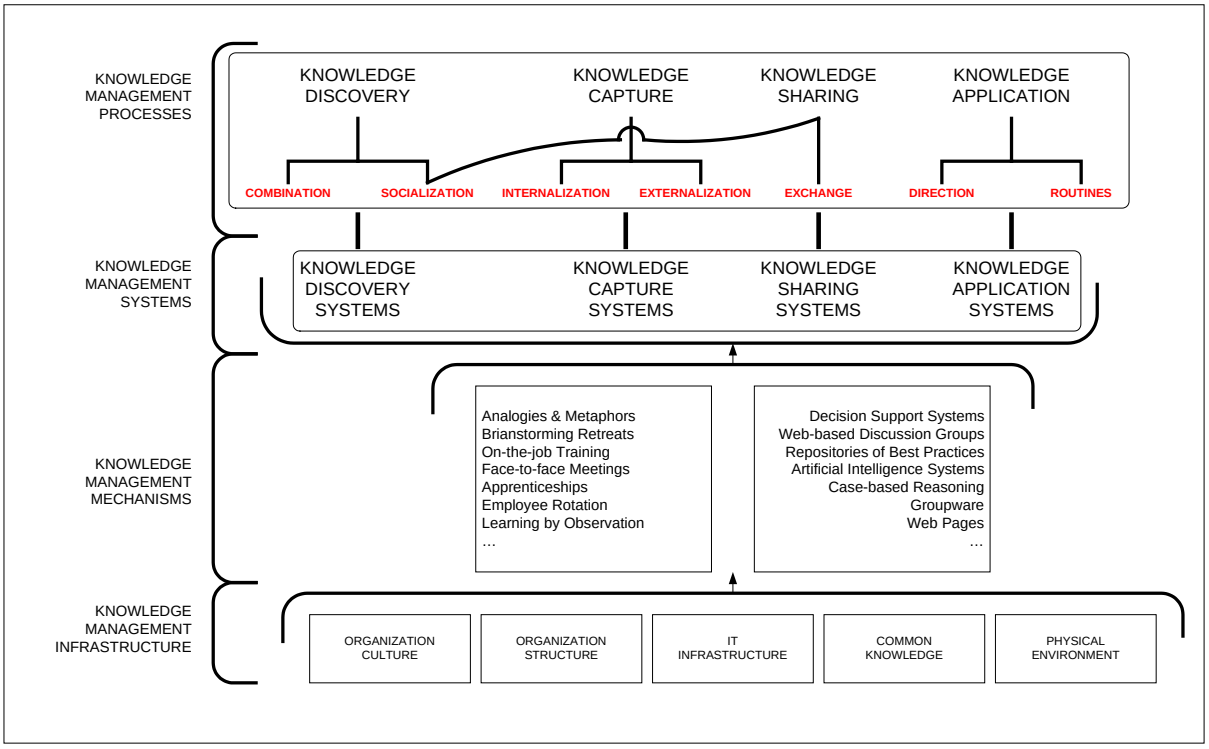

Figure 4: Becerra-Fernandez et al. Knowledge Solution

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[86] Becerra-Fernandez, I. Gonzalez, A. Sabherwal, R. 2004. *Knowledge Management Challenges, Solutions and Technologies*, 31.

[87] Becerra-Fernandez, I. Gonzalez, A. Sabherwal, R. 2004. *Knowledge Management Challenges, Solutions and Technologies*, 32. (My emphasis added in italics.)

In this model knowledge management processes imply the different knowledge types (tacit and explicit) mentioned in SECI but far greater emphasis is placed on organizational systems, mechanisms, infrastructure, and information technology enablers. One of the model's strengths is that it takes knowledge from the abstract realms of thought and makes it the central focus of concrete business process that can be evaluated on a cost-benefit basis. This strength can also be considered inadvertently a weakness: being more of an information management model rather than a knowledge management system. Nonetheless, this model provides a very comprehensive view of knowledge generation and management in an operational as well as organizational context.

2.4.3 The I-Space

The Information Space hereafter referred to as the I-Space uses and comes from the following definitions and terms of reference:

- "Knowledge is a set of expectations that an observer holds with respect to an event. It is a disposition to act in a particular way that has to be inferred from behaviour rather than observed directly."[88]
- A knowledge asset is "a subset of dispositions to act that is embedded in individuals, groups, or artefacts and that has value-adding potential."[89]
- Knowledge is part of the evolutionary production function, more specifically: "Knowledge assets are embedded in things, documents, and in people's heads, and these in turn are configured to produce organizations, technologies and products."[90]
- Knowledge and entropy production stand in some inverse relationship to each other.[91]

Boisot's epistemology thus makes room for the fluid dynamic nature of knowledge, while also acknowledging one's need to be able to validate its effectiveness. Indeed, his biggest criticism levelled at other Knowledge Management models is that they are too general and

[88] Boisot, M.H. 1999. *Knowledge Assets,* 20.
[89] Boisot, M.H. 1999. *Knowledge Assets,* 20.
[90] Boisot, M.H. 1999. *Knowledge Assets,* 164.
[91] Boisot, M.H. 1999. *Knowledge Assets,* 11.

abstract to be easily testable.[92] The I-Space is based on an "intuitively plausible premise: structured knowledge flows more readily and extensively than unstructured knowledge," and that "Human knowledge is built up through the twin processes of discrimination and association."[93] Boisot's I-Space model context is not necessarily organizational, but rather actively informational and social.

The I-Space is summarized as follows:

The relationship between the codification, abstraction and diffusion of knowledge is illustrated by the diffusion curve of Figure 5. The more codified and abstract a given message, the larger the population that it can be diffused to in a given time period. Codification, abstraction, and diffusion, make up only one part of a social learning process. Knowledge that is diffused within a target population must also get absorbed by that population and then get applied in specific situations. When applied, such knowledge may not fit in well with existing schema and may trigger a search for adjustments and adaptations a process of assimilation and accommodation and we shall refer to as scanning. This social learning process forms a cycle in the I-Space indicated by the directional curve.[94]

In the I-Space, the value of knowledge, its utility, is achieved by moving up the space towards the apex of codification and abstraction. Scarcity is achieved by keeping the knowledge assets created located towards the left hand side of the diffusion curve.[95]

The biggest asset of the I-Space is that it has been successfully tested and validated in operational settings.[96]

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[92] Canals, A. Boisot, M.H. MacMillan, I. 2004. Simulating I-Space (SimISpace): An Agent-based Approach to Modeling Knowledge Flows, 2.

[93] Boisot, M.H. Canals, A. 2003. Modeling knowledge-based economic processes, 3.

[94] Boisot, M.H. Canals, A. 2003. Modeling knowledge-based economic processes, 4-5.

[95] Boisot, M.H. Canals, A. 2003. Modeling knowledge-based economic processes, 5.

[96] Canals, A. Boisot, MacMillan, I. 2004. Simulating I-Space (SimISpace): An Agent-based Approach to Modeling Knowledge Flows, 31.

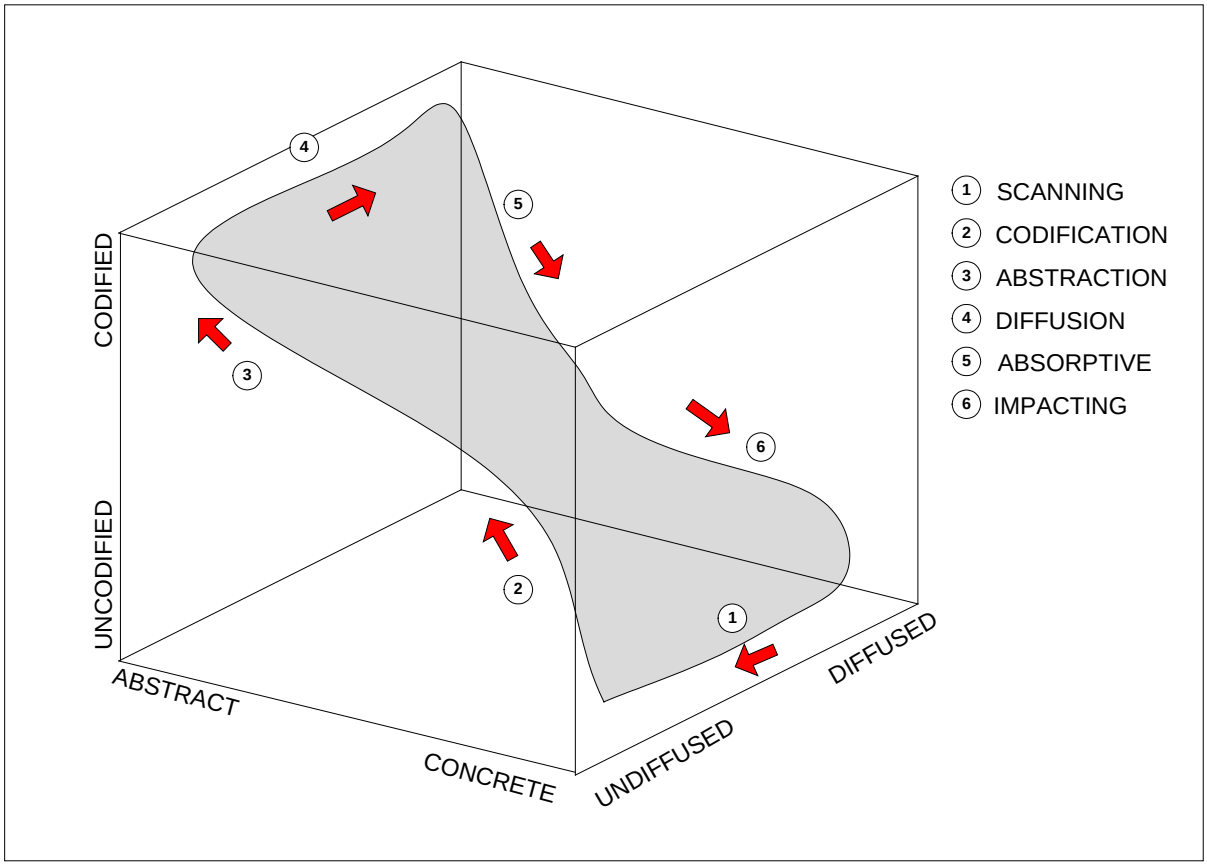

Figure 5: Boisot's I-Space

2.4.4 The Knowledge Management Life Cycle (KMLC)

The KMLC model uses and comes from the following definitions and terms of reference:

- "Knowledge can be seen as beliefs or claims that we regard as true."[97]
- "Knowledge Management is the set of processes that seeks to change the organization's present pattern of knowledge processing to enhance both it and its outcomes."[98]
- "Knowledge Management uses systems thinking to describe a vision of learning. The Knowledge Life Cycle is a systems-thinking representation of how learning happens in human social systems."[99]

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[97] Firestone, J.M. McElroy, M.W. 2003. *Corporate epistemology*, 2.

[98] Firestone, J.M. McElroy, M.W. 2005. *Doing knowledge management*, 3.

[99] McElroy, M.W. 2002. The New Knowledge Management, 19.

Epistemologically, the KMLC is rooted in Complexity theory and Critical Rationalism,[100] with particular emphasis on the body of thought known as Complex Adaptive Systems theory.[101] This makes the model particularly relevant in the realm of the Information Age as described earlier in section 2.2: rapidly changing, complexity on all fronts. As a model, it also claims to address what it sees as the fundamental flaw in all preceding models: they do not in reality create new knowledge but are "primarily about integrating ("supplying") previously created knowledge through knowledge distribution, sharing, and other integrative activities."[102]

The KMLC model brings together not only the value proposition of knowledge, but also how it is created in a business environment in the first place. It acknowledges that knowledge agents as well as organizational systems are complex and dynamic and that Knowledge Creation is a double loop learning process. Summarized it includes the following elements (refer to Figure 6 for greater detail):

1. Knowledge begins in the minds of individuals. Organizations learn through individuals who learn. Individual learning is an early step in the production of new, shared knowledge.
2. As individuals learn, they sense continuities and discontinuities with their experience.
3. Communities, or groups, then engage in an on-going process of knowledge making and negotiation of 'knowledge claims.'
4. Community-made knowledge claims, in cases of conflict, escalate to management. The same community knowledge-making process unfolds, and new knowledge may or may not emerge.
5. Attempts to diffuse or integrate such knowledge into practice follow: the knowledge integration phase of the knowledge life cycle.

    Stage 1: New knowledge propagates across the organization.

    Stage 2: New knowledge embodiment in practice becomes apparent
6. Knowledge infusing practice on a wide scale is an instance of Organizational learning. Each occurrence of Organizational learning can be regarded as an episode of innovation.

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[100] Firestone, J.M. McElroy, M.W. 2003. *Corporate epistemology*, 18.

[101] McElroy, M.W. 2002. The New Knowledge Management, 27.

[102] Firestone, J.M. McElroy, M.W. 2002. *Generations of Knowledge Management*, 2.

7. New knowledge becomes the widespread dominant practice. Its application by individuals in business processes produces experience. This generates feedback to its practitioners, who learn from these effects and form judgments and opinions on the value of the new knowledge.
8. Value assessments lead to alterations in practice and stimulate the production of new ideas and new problems in the minds of individuals. In other words, feedback from knowledge in practice engenders new problems, new learning, and inventive tendencies in the minds of individuals continuously and recursively.[103]

[103] McElroy, M.W. 2000. *The New Knowledge Management*, 45-47.

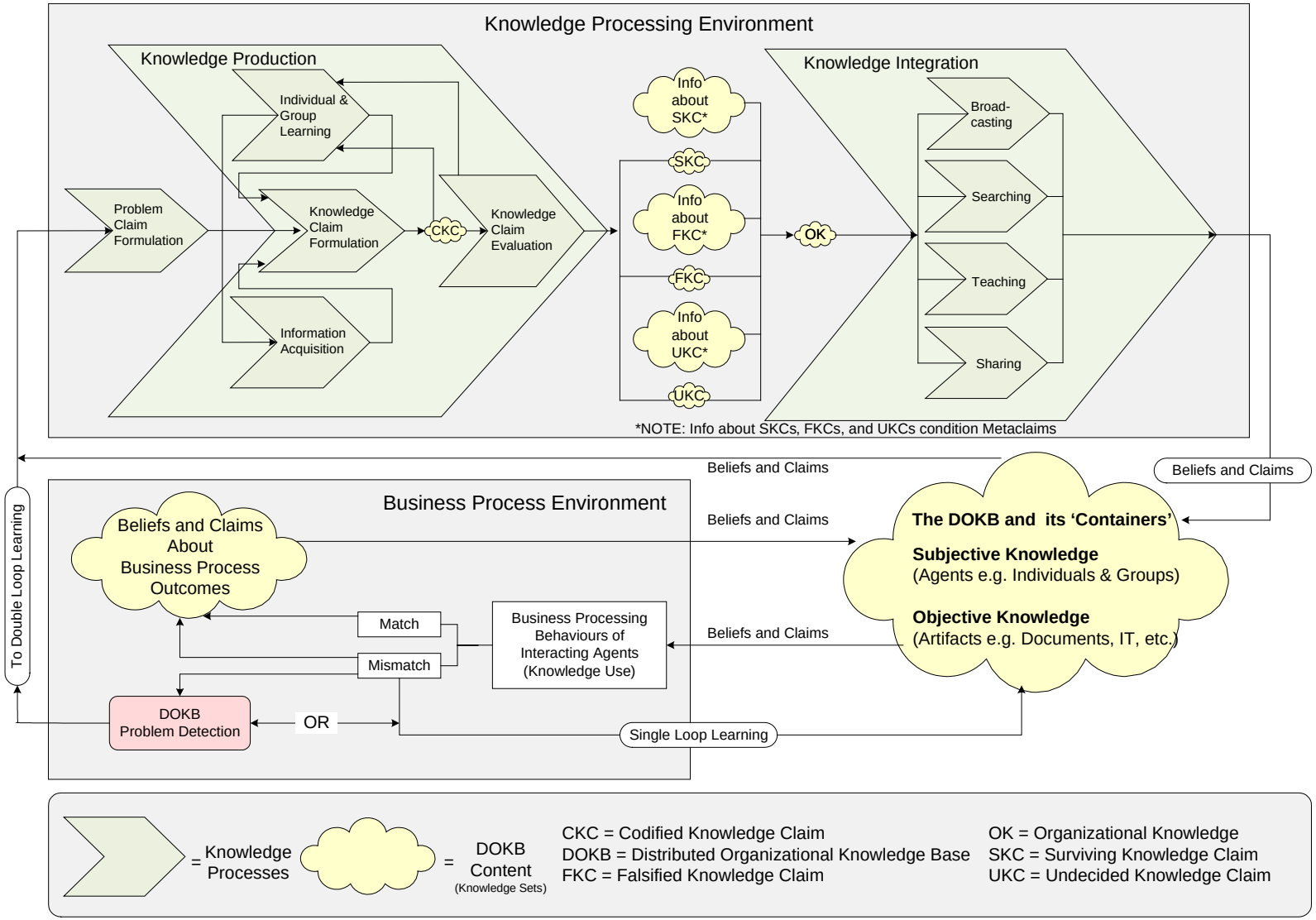

Figure 6: McElroy's KMLC Process

2.4.5 Summary and Critique

As examples of Knowledge Management Models each of the preceding provides valuable and workable definitions which can be applied in a business environment. When Nonaka et al. introduced the SECI process (2.4.1) it was one of the first attempts at profiling knowledge, Knowledge Creation and knowledge management in an organizational setting. The importance of this contribution cannot be overlooked. Researchers agreed that the SECI process proposed a coherent and comprehensive model that took into account the preceding epistemology, the subject's intangible and abstract nature, and it was the first to do so in a manner that was accessible not only in a philosophic context but practical for application in any firm. Similarly subsequent theories and models such as the Knowledge Management Solutions model (2.4.2) and the I-Space (2.4.3) amongst others have much in common and have all built on the SECI process foundations or attempted to address perceived epistemological or Organizational Theory weaknesses or discrepancies.

However, as time has passed, allowing all aspects of the various models to be studied in finer and finer detail and tested practically within both philosophic and economic settings, it is inevitable that some of the initial agreement on their correctness or appropriateness should be lost. For example, specifically with regard to SECI Essers and Schreinemakers point out that:

> Most significantly, Nonaka claims that the quality standards used to test knowledge in organizations "generally include cost, efficiency, profit margin and the like" as well as more aesthetic and "romantic" criteria related to a company's vision of the future and its own development. Nonaka considers the determination of these standards "a highly strategic task of company leaders," ultimately enabling "a truly 'humanistic' knowledge society beyond the limitations of mere 'economic rationality'…"[104]

Thus, by implication, not only is Knowledge Creation a managerial responsibility, its validation is furthermore subjectively relatively determined. Gourley succinctly summarizes some of the failures within Nonaka's theory as follows:

> …Essers and Schreinemakers…praised Nonaka for recognizing that the capacity for corporate action depends on ideas and beliefs as much as on scientific knowledge but concluded that his subjectivism tended towards a dangerous relativism because he

[104] Essers, J. and Schreinemakers, J. 1997. Nonaka's Subjectivist Conception of Knowledge in Corporate Knowledge Program, 28.

> made justification a matter of managerial authority, and neglected to consider how scientific criteria relate to corporate knowledge. Second, he failed to recognize that the commitment of different groups to their ideas and the resulting need to resolve this conflict by managerial authority cannot bode good for creativity and innovation… Jorna…charged Nonaka with overlooking learning theory, earlier discussion of tacit and explicit knowledge, with misreading important Organizational writers, and of not using better accounts of western philosophy. Bereiter… argued Nonaka's model does not explain how new ideas are produced, nor how depth of understanding (necessary for expertise) develops. Further, their model of knowledge work is unconvincing, and they make collaborative work a mystery. These are not the only criticisms, but they are some of the most comprehensive and serious.[105]

The disagreement does not invalidate the SECI and its successors, or processes in their entirety. Each unquestionably retains its value as a model indicating possible process flows within firms trading on their ability to capitalize useful knowledge.

Each of the aforementioned theories and models provide adequate explanation for Knowledge Creation based on existing knowledge and/or information. They also add to our understanding of information and knowledge management in an organizational setting, however, little or no attention is paid to two aspects that are current and particularly relevant:

- Chaotic turbulence and its consequent and unpredictable effects on organizations in the Information Age, and
- The highly subjective, tacit, almost magical process of creating entirely *new* knowledge.

For example, Nonaka et al., Becerra-Fernandez et al., and Boisot all propose to some degree, linear, distinct or discrete steps or stages in knowledge acquisition and processing, starting from the basis that knowledge exists in a tacit form and can be transformed or converted. This has led to major criticism of these models and the birth and evolution of the KMLC model (see 2.4.4). Firestone, one of the contributors to the KMLC, declares:

> SGKM (Second Generation Knowledge Management) is distinguished from TOKM (The Old Knowledge Management) by the assumption that knowledge not only exists, but is continuously created by human agents in response to the adaptive needs of

[105] Gourlay S. 2006. Conceptualizing Knowledge Creation:-A Critique of Nonaka's Theory, 1416.

> organizations. It immediately follows from this that [Knowledge Management] is not just a matter of managing the processes that capture, codify, share, and distribute knowledge, but also is responsible for 'managing' knowledge production (variously described as knowledge-making, Knowledge Creation , or knowledge discovery). That is, KM is concerned with managing the processes that fulfil the 'demand' for knowledge, as well as its 'supply.'[106]

However, while the KMLC model does address the paramount issue of demand for knowledge, it is still locked in a frame of reference that relies on a semblance of order with strong and distinct stages that are process orientated, for example 'Problem Formulation' followed by 'Knowledge Production,' followed 'By Knowledge Integration' (see Figure 6). In agile high technology firms, given the rapidly changing technology, Capture, Codification or Production, for example may simply not be feasible in the formal or traditional sense. Similarly, Application, Impacting and Processing may exist but in linear steps. This deterministic view of Knowledge Creation and management is not commensurate with the environment in which these organizations are constantly challenged for survival.

The SECI process, Knowledge Management Solutions model, the I-Space and KMLC model thus all present some answers but perhaps fall within Earl's description of the Technocratic and Economic Knowledge Management schools (see Table 2) while what is required is more of a Behavioural School[107] approach to Knowledge Creation and management. According to Earl, the defining characteristic is that this school features communities that "exchange and share knowledge interactively, often in non-routine, personal and unstructured ways as an interdependent network."[108] This description of organization is closer to the Complex Adaptive System in an ambiguous environment. If one is to then assume that a tool for Knowledge Creation can be determined, it is evident that the search should be wider than within only rational knowledge management models.

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[106] Firestone, J. M. 2003. The New Knowledge Management: A Paradigm and Its Problems, 3.

[107] Earl, M. 2001. Knowledge Management Strategies: Toward a Taxonomy, 217.

[108] Earl, M. 2001. Knowledge Management Strategies: Toward a Taxonomy, 223.

2.5 Cognitive Theory in an Organizational Context Applied as a Knowledge Management Model

Given that much has been learnt about managing knowledge from a product development and information technology perspective, perhaps it is appropriate to shift the focus to active promotion of Knowledge Creation in corporate environments. Given the preceding Knowledge Management models mentioned, and their very real criticisms, the emphasis should perhaps be on identifying and using repeatable and sustainable business practices for knowledge generation. In the years following the initial publication of the SECI, Nonaka has himself re-evaluated the theory behind and the practice surrounding the model and has acknowledged, for example, that:

> …innovation requires the interaction between people in a social practice who have been socialized into that practice. However, it also requires the interaction of people from diverse social practices who by their membership in these practices have acquired distinct tacit knowledge. In particular, the idea that externalization and combination of knowledge is valuable hinges on differences in social practices throughout the organization. Thus, social practices may be necessary, but not sufficient, for understanding Organizational Knowledge Creation.[109]

While business practices are in effect social processes that have an economic or fiscal goal, Nonaka and von Krogh have correctly pointed out that social processes alone do not a business make. The problem is tying organizational goals to business practices, while exploiting social processes. Brown and Duguid recognized this in 1991 when they suggested: "The source of oppositions perceived between working, learning, and innovating lies primarily in the gulf between precepts and practice."[110] What is thus required is the application of an academic theory that takes into account not only the individual, but also the organization, not only the manager but also the employee, not only business practices, but also social processes, and as a matter of course does not only deal with knowledge management, but also accounts for Knowledge Creation . Weick's concept of Organizational Sensemaking is a possible candidate to better understand the social process that leads to Knowledge Creation in organizational settings.

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[109] Nonaka, I. von Krogh, G. 2009. Tacit Knowledge and Knowledge Conversion: Controversy and Advancement in Organizational Knowledge Creation Theory, 646.

[110] Brown, J. S. Duguid, P. 1991. Organizational learning and communities-of-practice, 40.

Weick introduces Sensemaking by refering to seven properties, describing them as follows:

> Sensemaking is understood as a process that is: (1) Grounded in Identity Construction; (2) Retrospective; (3) Enactive of Sensible Environments; (4) Social; (5) Ongoing; (6) Focused on and by Extracted Cues; and (7) Driven by Plausibility rather than Accuracy.[111]

He characterizes this listing as "more like an observer's manual or a set of raw materials for disciplined imagination,"[112] which is precisely why Sensemaking is different from the models and theories mentioned earlier. Although the seven properties could be placed into a rudimentary order, they are purposefully left un-ordered: they suggest what the concept is, how it works and where it can fail,[113] something none of the other models entertain. It allows for a novel, imaginative left field approach to the very real problems experienced due to complexity within business environments.

Furthermore, Weick situates his theory within the context of an evolving organizational environment which takes into account the complexities and challenges faced in the world today, whilst accepting that the solutions may yet lie in business practices, exploiting social processes. He describes this as follows:

> …in a changing world, it is not just the old answers that are suspect. It is also the old questions. And once people are uncertain what questions to ask, they are put in the position where they have to negotiate some understanding of what they face and what a solution would look like. Puzzles now represent both threats and opportunities, the same event means different things to different people, and more information will not help them. What will help them is a setting where they can *argue*, using rich data pulled from a variety of media, to construct fresh frameworks of action-outcome linkages that include their multiple interpretations. The variety of data needed to pull off this difficult task are most available in variants of the face to face *meeting*.[114]

Briefly, and as an introduction to Chapter 3, Sensemaking can be described in relation to other Knowledge Management models previously mentioned, as per Table 3 following. Their overlap, commonalities, and distinct concepts are illustrated simply and highlighted. For

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[111] Weick, K.E. 1995. *Sensemaking*, 17.

[112] Weick, K.E. 1995. *Sensemaking*, 17.

[113] Weick, K.E. 1995. *Sensemaking*, 17.

[114] Weick, K.E. 1995. *Sensemaking*, 186 (my italics for emphasis).

example, the SECI process, the Knowledge Management Solutions model, and the I-Space can at the highest level be grouped together. Each share elements of detection, collection and organization, but in their simplicity, they overlook the creative cognitive element which is admitted in the KMLC and Sensemaking. Likewise the SECI process, the Knowledge Management Solutions model, and the I-Space all start with the 'Known, but Tacit,' whereas the KMLC model and Sensemaking acknowledge the 'Unknown and Chaotic.' Furthermore, Sensemaking uniquely makes room for the complexity of time isolating 'Retrospectivety' as well as the 'Ongoing' nature of experience.

In essence, Sensemaking, as a Cognitive Theory brings advantages as a perspective on Knowledge Management Theory, specifically because it operates within the realm of individual actions and beliefs in the social context, capturing the dynamic and evolutionary growth that result from interactive, organizational existence. Kessels makes a point of emphasizing this interdependence of Knowledge Creation, learning, and the corporate context as follows:

> The acknowledgement that firms operate in a knowledge economy assigns a strategic significance to knowledge productivity…Given the vital importance of the learning processes involved, leaving the necessary learning to random opportunity would be imprudent…The feasibility of managing such learning processes is open to question and is hardly possible in the manner in which we are accustomed to running other industrial processes…The corporate curriculum provides the framework for the learning functions that promote the ability to signal relevant information, to create new knowledge and to apply this knowledge to step by step improvement and radical innovation of work processes, products and services.[115]

[115] Kessels, J.W.M. 2001. *Learning in organisations,* 502.

<table>
<tr><th>SECI</th><th>Knowledge Solutions</th><th>I-Space</th><th colspan="2">New Knowledge Management Life Cycle</th><th colspan="2">Sensmaking</th></tr>
<tr><td colspan="3" rowspan="2">← THE KNOWN, TACIT→</td><td colspan="4">← THE UNKNOWN, CHAOTIC →</td></tr>
<tr><td>Problem</td><td>Anomaly</td><td>Anomaly</td><td>Cue</td></tr>
<tr><td>Socialization</td><td>Discovery</td><td>Scanning</td><td>Production</td><td rowspan="3">Context</td><td rowspan="3">Context</td><td>Individual Identity</td></tr>
<tr><td>Externalization</td><td>Capture</td><td>Codification</td><td>Integration</td><td>Social</td></tr>
<tr><td></td><td></td><td>Abstraction</td><td>Processing</td><td>Enacted</td></tr>
<tr><td>Combination</td><td>Sharing</td><td>Diffusion</td><td>Formulation</td><td rowspan="3">Cognition</td><td>Cognition</td><td>Plausible not Accurate</td></tr>
<tr><td></td><td></td><td>Absorption</td><td>Single Loop Learning</td><td rowspan="2">Time</td><td>Ongoing</td></tr>
<tr><td>Internalization</td><td>Application</td><td>Impacting</td><td>Double Loop Learning</td><td>Retrospective</td></tr>
<tr><td>NONAKA</td><td>BECERRA-FERNANDEZ</td><td>BOISOT</td><td>McELROY</td><td colspan="2">(Comparison)</td><td>WEICK</td></tr>
</table>

Table 3: Knowledge Management Theories and Models

Chapter 3
Sensemaking

3 Sensemaking

It's funny what's happened to this word knowing. … The actual act of apprehending, of making sense, of putting together, from what you have, the significance of where you are – this [now] oddly lacks any really reliable, commonly used verb in our language …[one] meaning the activity of knowing. … [Yet], every culture has not only its own set body of knowledge, but its own ways of [knowing].

~ Sir Geoffrey Vickers, 1976

We define in order to clarify, characterize and classify, thereby reducing the composite into its constituents, when finding the aggregate unmanageable. We define knowledge because we want to manage knowledge. We want to manage knowledge because we perceive it to be inherently of value. If we can manage it, we can generate more of it, enlarging existing value or creating new value. Whilst there appears to be agreement over recognizing the importance of knowledge, as demonstrated in the preceding chapters, determining its value, not to mention how to create it is problematic, in no small part, perhaps because there is no unanimity on the primary and derivative definitions of knowledge. Similarly, Knowledge Management models as mentioned earlier, suffer the same fate: their constituents are less than the composite, rendering them if not valueless, then significantly flawed. Sensemaking is different. Sensemaking is both unique and beautiful as a theory; unlike other models or theories, in and of itself it is dynamic and creative as implied in its name alone: Sensemaking. At its heart, Sensemaking is Humanist, Behaviourist, Existentialist,[116] invoking Realist

[116] Weick, K. E. 1995. *Sensemaking*, 14: "Sensemaking matters. A failure in sensemaking is consequential as well as existential."

ontology, while simultaneously and paradoxically suggesting Idealist ontology.[117] It acknowledges the singular experience of the individual, but concurrently offers an explanation that includes the social or organizational nature of singular and/or group experiences. It concedes the thrownness[118;119] of life but also makes room for driven[120] activity. It unifies the complex concepts of sensibility and 'sensability' acknowledging agency and experience thereby simplifying theory it into instantly recognizable, human actions: "Active agents construct *sensible* and *sensable*, events. They structure the unknown."[121] This is what we do and experience, practically, as individuals and as organizations and in this frame of reference, *knowledge is experience*.[122] The strength of the Sensemaking perspective thus is twofold:

- It does not rely on accuracy, and
- Its model is not object perception.

Weick further explains that Sensemaking is about:

- Plausibility,
- Pragmatics,
- Coherence,
- Invention, and
- Instrumentality.[123]

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[117] Weick, K. E. 1995. *Sensemaking*, 55.

[118] Weick, K. E. 1995. *Sensemaking*, 44 and 80: "The world is continuous and dynamic, yet we keep resorting to absolute categories" and "Sensemaking is ongoing and…people are thrown into the middle of things where projects never seem to start even though they always seem to be interrupted."

[119] Weick, K.E. Sutcliffe, K.M. Obstfeld, D. 2005. *Organizing and the Process of Sensemaking*, 410: "To focus on sensemaking is to portray organizing as the experience of being thrown into an ongoing, unknowable, unpredictable streaming of experience in search of answers to the question, 'what's the story?'"

[120] Weick, K. E. 1995. *Sensemaking*, 133: "It is a search for contexts within which small details fit together and make sense. It is people interacting to flesh out hunches. It is a continuous alternation between particulars and explanations, with each cycle giving added form and substance to the other. It is about building confidence as the particulars begin to cohere and as the explanation allows increasingly accurate deductions."

[121] Weick, K. E. 1995. *Sensemaking*, 4 (Italics my emphasis).

[122] Kolb, D.A. 1985. *Experiential Learning: Experience as the Source of Learning and Development*, 38: "Learning is the process whereby knowledge is created through the transformation of experience."

[123] Weick, K. E. 1995. *Sensemaking*, 57.

All of the above indicate a methodology that could conceivably address the two central challenges that other Knowledge Management models mentioned in Section 2.4.5 fail to take into account, namely:

- Chaotic turbulence and its consequent and unpredictable effect on organizations in the Information Age, and
- The highly subjective, tacit, almost magical process of creating entirely *new* knowledge.

Not unexpectedly, this concept also has at least two distinct schools of definition in literature as represented in the writings of the American Dervin and European Weick. Unlike Weick's seven properties of Sensemaking (see Footnote 111), Dervin calls the concept Sense-Making, identifies it as a metaphor,[124] and posits a Time-Space bridge dimension to a Situation-Gap-Outcome triangle best illustrated and explained diagrammatically as in Figure 7:

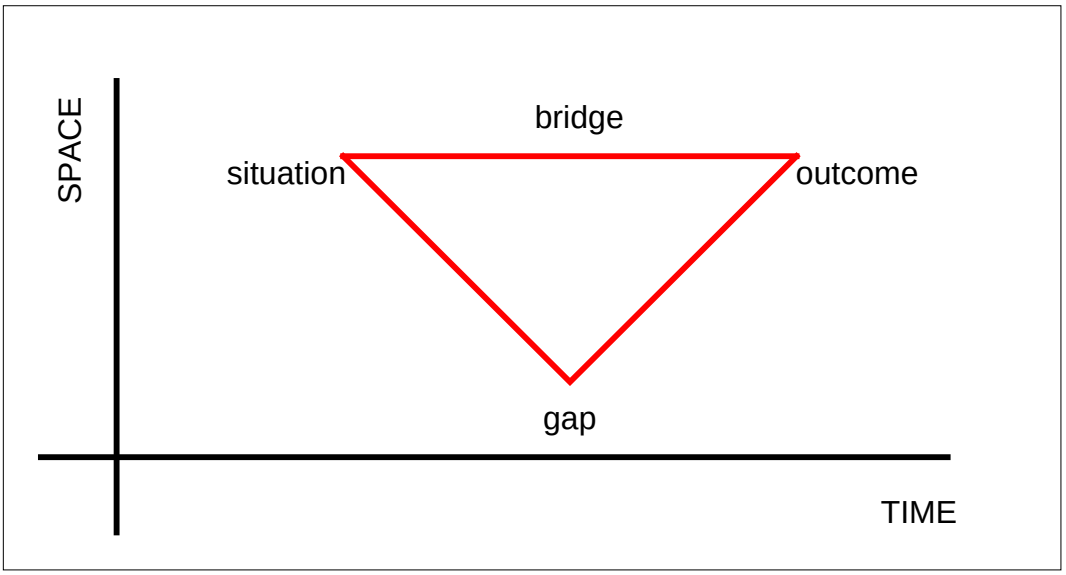

Figure 7: Dervin's Situation-Gap-Outcome Triangle of Sense-Making[125]

Other than acknowledging that the perspective exists, this thesis excludes detailed study of Dervin's Sense-Making in favour of Weick's more complex definition Sensemaking.

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[124] Naumer, C.M. Fisher, K.E. Dervin, B. 2008. *Sense-Making: A Methodological Perspective*, 2: "Dervin's Sense-Making is typically explained using the Sense-Making metaphor. A person is seen as embedded in a context-laden situation, bounded in timespace. The person pictured as crossing a bridge is used to metaphorically describe the way that humans are mandated by the human condition to bridge gaps in an always evolving and ever-gappy 'reality.' The person is seen facing a gap (i.e., a sense-making need) that arises out of a situation. Through the process of gap bridging, people seek inputs (sometimes the stuff systems call information) and engage in other activities through the time-space continuum that lead to outcomes."

[125] Naumer, C.M. Fisher, K.E. Dervin, B. 2008. *Sense-Making: A Methodological Perspective.* 3.

Chapter 3 will firstly discuss the substance of Sensemaking in respect of knowledge, then individually review the seven properties of Sensemaking as defined by Weick, and finally characterize two distinct approaches to Sensemaking: Action-driven as opposed to Belief-driven Sensemaking. The purpose of Chapter 3 is to serve as the context for a more detailed analysis of Knowledge Creation in respect of Belief-driven Sensemaking in Chapter 4.

3.1 The Substance of Sensemaking as pertaining to Knowledge

When studying Sensemaking as a concept, one would do well to bear in mind that knowledge is/can be *both* justified true belief *and* the capacity to act, since belief and action are both non-exclusive central characteristics of Sensemaking, as mentioned in section 2.1 and further expanded on in section 3.3.

Based on the preceding definition(s) of knowledge, we can safely say existing knowledge is dynamically encapsulated in Ideologies, Third-order controls, Paradigms, Theories of Action, Traditions and Narratives, characterized as frames and portrayed in cues or words in the theory of Sensemaking. This knowledge is then expressed in or enacted as vocabularies of Society, Organization, Work, Coping, Predecessors and Sequences and Experience.[126] It facilitates an uninterrupted 'flow' of ongoing projects for individuals and organizations alike. Anomalies or interruptions outside of the flow of existing vocabularies that cause ambiguities or uncertainties provide instances for Sensemaking, either by strengthening existing knowledge or by creating new knowledge.

Weick describes an instance of Sensemaking as follows (my italics used for emphasis and to relate it back to the preceding paragraph):

- An individual *notices* something in the form of a surprise in an *ongoing* flow of events;

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[126] Weick, K. E. 1995. *Sensemaking,* 106: "The words that matter to self, matter first to some larger collectivity…Society precedes mind. People pull from several different vocabularies to focus their sensemaking. They pull words from vocabularies of society and make sense using ideology. They pull words from the vocabularies of organizations to make sense using third-order controls. They pull words from the vocabularies of occupations and professions and make sense using paradigms. They pull words from the vocabularies of coping to make sense using theories of action. They pull words from the vocabularies of predecessors and make sense using tradition. They pull words from the vocabularies of sequence and experience and make sense using narratives."

- He looks back over the *elapsed experience* and identifies a discrepant *cue* that does not fit;
- He determines a *plausible* explanation to explain the relative rarity and the cue;
- Out of this speculation, a new and tangible object is *actively created*, previously not part of the *environmen*t, but now, 'out there';
- Initial speculations are individual but become a *social phenomenon* as more individuals notice the tangible object; and
- The *identity* and reputation of the individual are inextricably part of this first private then public interaction.[127]

This instance of Sensemaking can also be viewed as a "thinking process that uses retrospective accounts to explain surprises."[128] In this regard, Weick quotes the Newcomer Socialization process put forward by Meryl Louis. This process with its obvious similarities to Sensemaking can be summarized as:

- Individuals *form* conscious or unconscious *assumptions* and *anticipations*;
- These serve as *predictions* about future events;
- Individuals then experience a *surprise*, an unexpected event;
- Surprises trigger a need for explanation or *post-diction* where interpretations are developed for the discrepancies;
- *Non-concurrent meaning* is then *ascribed* to the surprises as an output of Sensemaking, generating a *new* set of conscious or unconscious assumptions and anticipations, and so on.[129]

Sensemaking can thus be seen as reciprocal interaction of information seeking, meaning ascription and action which includes forms of environmental scanning, interpretation and associated responses.[130] Summarized Weick's theory is:

> once people begin to act (*enactment*) they generate tangible outcomes (*cues*) in some context (*social*), and this helps them discover (*retrospect*) what is occurring (*ongoing*),

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[127] Weick, K. E. 1995. *Sensemaking*, 2-3: "Thus BCS is an instance of sensemaking because it involves identity, retrospect, enactment, social contact, ongoing events, cues, and plausibility."

[128] Weick, K. E. 1995. *Sensemaking*, 4.

[129] Louis, M. 1980. Surprise and Sensemaking: What newcomers experience in entering unfamiliar organizational settings, as quoted in Weick, K. E. 1995. Sensemaking, 4 (my italics for emphasis).

[130] Thomas, J.B. Clark, S.M. Gioia, D.A. 1993. Strategic Sensemaking and Organizational Performance: Linkages among Scanning, Interpretation, Action, and Outcomes, as quoted in Weick, K. E. 1995. Sensemaking, 4.

> what needs to be explained (p*lausibly*) and what should be done next (*identity enhancement*).[131]

The preceding examples delineate the process which serves as a context and allows for a closer look at and analysis of the constituent elements or properties of Sensemaking in the following section.

3.2 The Seven Properties of Sensemaking

One of the immediately noticeable differences between Sensemaking and the models detailed in the previous chapter is that while the processes described in section 3.1 can easily be mapped into a flow diagram, the constituent and definitive properties of Sensemaking cannot easily be represented graphically. Principally this is because its seven central characteristics do not necessarily represent a linear regularity of process steps, each building on the preceding. The seven properties are related but distinct at the same time. Weick goes as far as saying that these seven properties should be considered as focus areas for discussion and collaboration rather than fixed list and that one should: "…use [one's] own experience to anchor these ideas,…spot more data, and more significant data [and] refine the structure."[132] A possible representation then with a combination of symbols can be found in Figure 8 below.

[131] Weick, K. E. 1995. *Sensemaking*, 55 (my italics for emphasis).

[132] Weick, K. E. 1995. *Sensemaking*, 18.

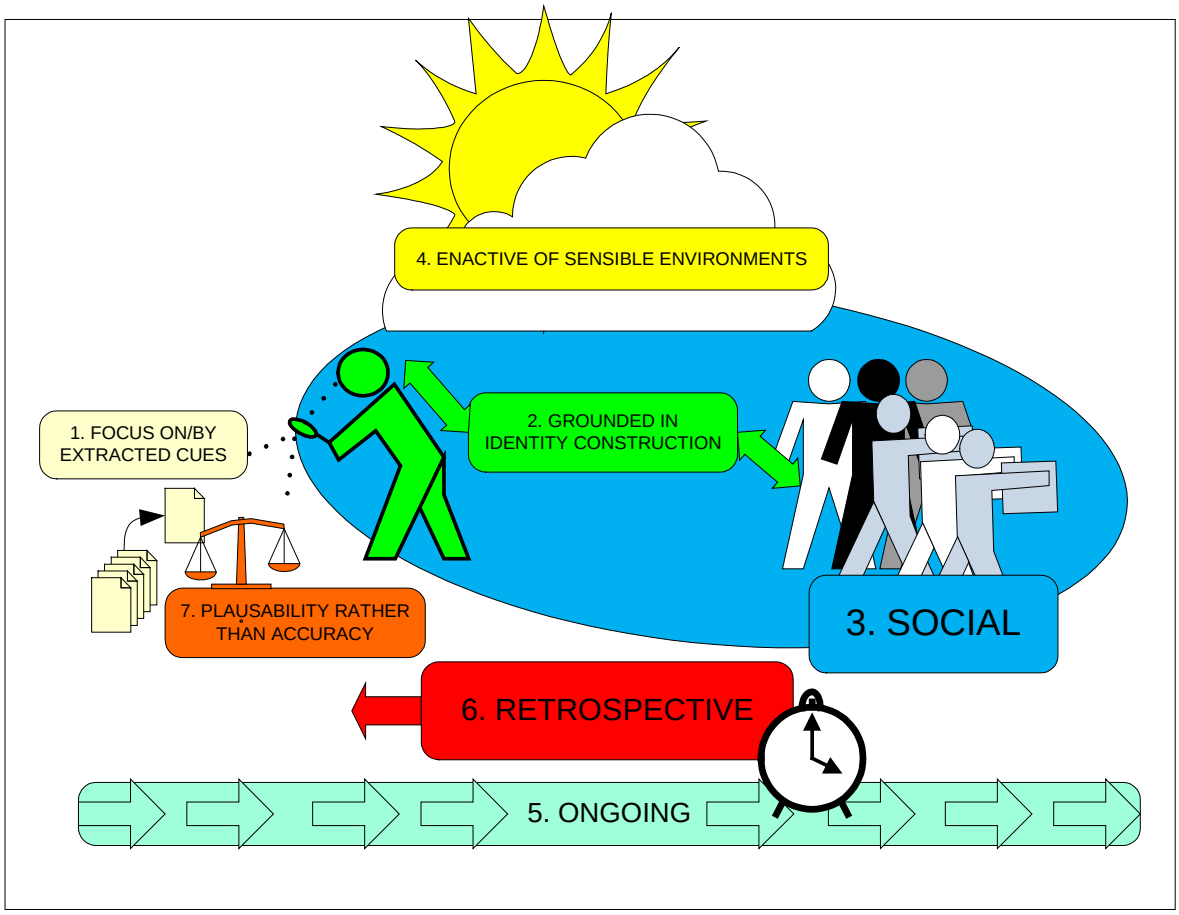

Figure 8: Weick's Sensemaking Model

3.2.1 Focused on and by Extracted Cues

In Sensemaking, a cue is the smallest unit or seed of meaning; it could be the specific word from which the general is inferred. For example: 'oak tree' from 'acorn.' This lexical, code-like property of the cue makes it a powerful focal point. The extracted meaning can be simultaneously universal yet uniquely subjective, even emotive. Weick puts forward that "We need to pay close attention to ways people notice, extract cues, and embellish that which they extract" since Sensemaking is so swift that we "are more likely to see the products than the process."[133]

As a sentient being, every individual is primed for responding to and interacting with his environment; in evolutionary terms, his very life depends on his receiving stimuli via his

[133] Weick, K. E. 1995. *Sensemaking*, 49.

various senses, processing these and responding appropriately: fight or flight. But even in such a primitive sense, the individual is bombarded with more information than he can process intelligently and much of what is sensed, goes 'unnoticed' so to say. In order to retain a sense of normalcy and to function, the individual reduces this information overload by creating a pattern or recognized set of stimuli as a frame. Weick explains it as: "…Sensemaking involves placing stimuli into some kind of framework…" a frame of reference, meaning "…a generalized point of view that directs interpretations…" that enables people to "…comprehend, understand, explain, attribute, extrapolate and predict."[134] Expressed simply, "Frames enable people to locate, perceive, identify, and label occurrences in their lives and world,"[135] in other words, filter experience.

This ability has a twofold significance. Obviously as already stated, it is a crucial ability that enables individuals to deal with information overload. This property immediately makes Sensemaking an attractive theory to apply within the complex organizational environments that individuals experience in the post-modern 21st Century. However, more than providing an explanation of how to deal with sensory overload, it also enables individuals to develop an even greater level of reduction or sophistication. Individuals do not only rely on inherited, learned or self-created frames. They create cues for and from frames. If a frame combines several stimuli into a single concept such as national culture, religious belief, or organizational domain, then the cue could be a single word, action, or interpretation that represents the frame, for example, "Swiss", "Islamic", and "engineer" for the aforementioned. This is an important concept to grasp since there is an almost inseparable bond between the individual and his frames. He is his frames and his frames are him. His individual uniqueness means that even socially shared or recognized frames such as national culture, religious belief, or organizational domain are inimitably his when it comes to cues. Relying on frames in a fight or flight situation may have been paramount where one's very survival depended on it on the savannah plains of Africa of Eurasia. However, in the post-modern 21st Century, survival for the most part is a battle fought on economic grounds, i.e. sustained organizational existence. While an individual is free to choose cues and subjectively apply frames, within an organizational setting, he cedes some of this right to the organization and executive management. When managers choose which cues and frames apply in an organization, they subjectively filter reality, and steer organizational behaviour.

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[134] Weick, K. E. 1995. *Sensemaking*, 4.

[135] Weick, K. E. 1995. *Sensemaking*, 109.

Weick acknowledges as much, quoting Smircich and Morgan's argument: "control over which cues will serve as a point of reference is an important source of power."[136]

Matryoshka doll-style this property of Sensemaking is contextually laden and has within it also further Sensemaking properties. The highly subjective and individual nature of cues already mentioned is a function of unique *Identity*, and identity is reliant on context: "without a supplied context, objects and events have equivocal or multiple meanings."[137] Weick mentions in explanation Kiesler and Sproull's observation: "Our attention also orients us to situationally or personally primed categories."[138] This introduces the *Social* milieu. Weick notes that Leiter describes the social milieu as the context that: "consists of such particulars as who the speaker is (his biography), the relevant aspects of his biography, the setting in which his remarks are made or the actual, or potential relationship between the speaker and hearer."[139] From this perspective then Sensemaking "can be understood as an act of filtering and that beliefs and values are influential filters."[140]

Notionally then, Sensemaking focused on and by extracted cues includes concepts derived from the following understanding:

- Extracted cues are simple, familiar structures…seeds from which people develop a larger sense of what may be occurring;
- The extracted character [cue] is taken as equivalent to the entire datum (*frame*) from which it comes;
- The extracted cue highlights a distinct implication that is invisible in the undifferentiated object;[141] and
- What an extracted cue will become depends on context.[142]

The role of identity as a context is then discussed next in section 3.2.2.

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[136] Weick, K. E. 1995. *Sensemaking*, 50.

[137] Weick, K. E. 1995. *Sensemaking*, 52.

[138] Kiesler, S. Sproull, L. 1982. Managerial Response to Changing Environments: Perspectives on Problem Sensing from Social Cognition, as quoted in Weick, K. E. 1995. Sensemaking, 52.

[139] Leiter, K. 1980. *A Primer on Ethnomethodology* as quoted in Weick, K. E. 1995. *Sensemaking*, 53.

[140] Starbuck,W.H. Milliken, F.J. 1988. Executives' Perceptual Filters: What they Notice and How They Make Sense, as quoted in Weick, K. E. 1995. Sensemaking, 112.

[141] Weick, K. E. 1995. *Sensemaking*, 49 and 50.

[142] Weick, K. E. 1995. *Sensemaking*, 51.

3.2.2 Identity

If in the preceding section 3.2.1 a cue is described as the smallest unit of meaning, then meaning in respect of Identity tends to be that which reflects self favourably and promotes self-enhancement, efficacy and consistency.[143] At the core of every human is his exclusive sense of self or identity, an "agent of its own creation" to quote Erez and Earley. This creation arises and changes dynamically, in their opinion, due to three basic needs:

- The need for self-enhancement, as reflected in seeking and maintaining a positive cognitive and affective state about self;
- The self-efficacy motive, which is the desire to prove oneself as competent and efficacious; and
- The need for self-consistency, which is the desire to sense and experience coherence and continuity. [144]

Self is to identity what cue is to frame; every individual has many roles that he associates with and draws identity from. For example, one person may be one, any or all of the following simultaneously: daughter, sibling, wife, mother, aunt, grandmother, chairperson for the Body Corporate, computer scientist, expert, manager, employee, shareholder, tax payer, citizen, traveller, deacon, club or union member, chef, event coordinator, political party member, raconteur, mystic, activist, protestor, protector, and so on. Weick uses Mead's well known expression that any Sensemaker is "a parliament of selves."[145] In organizational Sensemaking the more selves the individual has access to, the more meanings he can extract or impose on any situation.[146] While this overabundance may introduce confusion or raise issues of consistency,[147] the fact that within the Sensemaking perspective this multiplicity is acknowledged distinguishes it from other Knowledge Management models which either do not recognize unique identity or alternately only distinguish between management and line staff. It is also true that the growing number of roles that individuals identify or associate themselves with is a function of the information society that offers a multitude of different

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[143] Weick, K. E. 1995. *Sensemaking*, 21.

[144] Erez, M. Earley, P.C. 1993. *Culture, Self-Identity, and Work*, as quoted in Weick, K. E. 1995. *Sensemaking*, 20.

[145] Weick, K. E. 1995. *Sensemaking*, 21.

[146] Weick, K. E. 1995. *Sensemaking*, 24.

[147] Weick, K. E. 1995. *Sensemaking*, 24.

opportunities at different levels for individuals to network and contribute to society. Once again Identity as a property of Sensemaking as summarized by Weick, means:

> I make sense of what happens around me by asking, what implications do these events have for who I will be? What the situation will have meant to me is dictated by the identity I adopt in dealing with it. And that choice, in turn, is affected by what I think is occurring.[148]

And "human thinking and *social* functioning…[are] essential aspects of one another"[149] illustrates the interrelatedness of Identity within a consequent Social context, further explained in the following section 3.2.3.

However, this very unique singular characteristic also holds a dark side which inhibits Sensemaking individually and within organizations in two distinct ways. According to Weick: "the better the information system, the less sensitive it is to novel events"[150] Put simply in respect of individuals and organizations, precisely because issues of identity or reputation are intricately involved in Sensemaking, the more 'expert' the individual perceives himself to be, and the more "heavily networked the organization" is, the harder it is to create new knowledge. Westrum calls this "'The Fallacy of Centrality': because I don't know about this event, it must not be going on."[151] This is further compounded, and Sensemaking compromised, where individuals or organizations *are not competent*, yet fail to accurately recognize their deficiencies.[152;153] Even though the causes are opposite, the effect is the same and equally damaging in respect of Sensemaking. Being alert to these possible inhibitors

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[148] Weick, K. E. 1995. *Sensemaking*, 23-24.

[149] Resnick, L.B. Levine, J.M. Teasley, S.D. Eds. 1991. *Perspectives on Socially Shared Cognition*, as quoted in Weick, K. E. 1995. *Sensemaking*, 38.

[150] Weick, K. E. 1995. *Sensemaking*, 3.

[151] Westrum, R. 1982. *Social Intelligence about Hidden Events*, as quoted in Weick, K. E. 1995. *Sensemaking*, 2.

[152] Kruger, J. Dunning, D. 1999. *Unskilled and Unaware of It: How Difficulties in Recognizing One's Own Incompetence Lead to Inflated Self-Assessments*, 121: "People tend to hold overly favorable views of their abilities in many social and intellectual domains. The authors suggest that this overestimation occurs, in part, because people who are unskilled in these domains suffer a dual burden: Not only do these people reach erroneous conclusions and make unfortunate choices, but their incompetence robs them of the metacognitive ability to realize it."

[153] Ehrlinger, J. Johnson, K. Banner, M. Dunning, D. Kruger, J. 2008. *Why the unskilled are unaware: Further explorations of (absent) self-insight among the incompetent*, 98: "Surveys of the psychological literature suggest that perception of skill is often only modestly correlated with actual level of performance, a pattern found not only in the laboratory but also in the classroom, health clinic, and the workplace…Surveys of the literature also suggest that people hold positive beliefs about their competence to a logically impossible degree."

means that the possible effect inaccurate perception may have on new Knowledge Creation can be mitigated by realistic self-assessments.

3.2.3 Social

In the same way that "the" individual can be a "typified discursive *construction*"[154] so too the collective aspect of Sensemaking is a constant substrate that *builds* and *shapes* interpretation and interpreting;[155] Sensemaking is not only about unique identity but also includes a reciprocal social dimension. Weick aptly expounds this as "Conduct is contingent on the conduct of others, whether those others are imagined or physically present."[156] What else is an organization than a collection of identities? Defined a little more formally by Walsh and Ungson in Weick, an organization is "a network of intersubjectively shared meanings that are sustained through the development and use of a common language and everyday social interaction."[157] While cues are minimal structures of individual meaning, when people coordinate their actions on the grounds of shared or social meaning, Sensemaking may then be the result of, and coordinated by:

- Equivalent meaning;
- Distributed meaning;
- Overlapping views of ambiguous meaning; and
- Nondisclosive intimacy.[158]

In other words, the social property of Sensemaking recognizes that multiplicity of meaning abounds, but that through discourse and organized behaviour enough meaning may be shared to facilitate agreement or progress and even in some instances breakthrough or novel creative moments that distinguish individuals or organizations.

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[154] Knor-Certina, K.D. 1981. The micro Sociological challenge of Macro-sociology: Toward a reconstruction of Social Theory and methodology, as quoted in Weick, K. E. 1995. Sensemaking, 20 (my Italics for emphasis).

[155] Weick, K. E. 1995. *Sensemaking*, 39 (my Italics to link individual Identity to the Social aspect of Sensemaking).

[156] Weick, K. E. 1995. *Sensemaking*, 39.

[157] Walsh, J.P. Ungson, G.R. *Organizational memory*, as quoted in Weick, K. E. 1995. *Sensemaking*, 38.

[158] Weick, K. E. 1995. *Sensemaking*, 42.

This generative social dimension of the Sensemaking model plays a pivotal role in the creation of new knowledge, which is the basis of this thesis. Weick quotes Kahlbaugh's characterization that: "…our intentions and feelings do not grow within us but *between* us…[A]n individual *creates novel thoughts in the interaction with others*, and then communicates them to the larger community. If viable, the larger community generalizes these ideas such that they become part of the culture."[159] This is not unlike the knowledge claims put forward by McElroy and is unique to Sensemaking and the KMLC as mentioned earlier in section 2.4.5.

The common conveyor thus of existing and new meaning within individual identity and social context is talk, discourse and conversation – this is how a great deal of social contact is mediated.[160] Again, Weick so eloquently describes it in following manner: "Words induce stable connections, establish stable entities to which people can orient… bind people's time to projects…and signify important information. Agreement on a label that sticks is as constant a connection as is likely to be found in organizations."[161] In this social context, organization can thus be seen as a "set of procedures for argumentation and interpretation,"[162] which serves as an apt introduction to another of Sensemaking's properties: Enactive of Sensible Environments, discussed in section 3.2.4.

3.2.4 Enactive of Sensible Environments

"Sensemaking keeps action and cognition together;"[163] unjustified behaviour is action without suitable explanation and such a situation results in dissonance or a loss of sense, which as stated in the inception of this chapter (see footnote 116) "is consequential as well as existential." When Weick quantifies the 'making' activity in Sensemaking to characterize what 'Enactive of Sensible Environments' means, he is relying on the explanation of Morgan

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[159] Kahlbaugh, P.A. 1993. James Mark Baldwin: A *Bridge Between Social and Cognitive Theories of Development,* as quoted in Weick, K. E. 1995. *Sensemaking,* 39 (my italics for emphasis).

[160] Weick, K. E. 1995. *Sensemaking,* 41.

[161] Weick, K. E. 1995. *Sensemaking,* 41.

[162] March, J.G. Olsen, J.P. 1976. *Ambiguity and Choice in Organizations,* as quoted in Weick, K. E. 1995. *Sensemaking,* 41.

[163] Thomas, J.B. et al. 1993. Strategic Sensemaking and Organizational Performance: Linkages among Scanning, Interpretation, Action and Outcomes, as quoted in Weick, K. E. 1995. Sensemaking, 30.

et al that: "Individuals are not seen as living in, and acting out their lives *to*, a wider reality, so much as creating and sustaining images of a wider reality, in part to rationalize what they are doing. They realize reality by 'reading into' their situation patterns of significant meaning."[164] Thus behaviour, meaning and environment are welded together in a dynamic, self-sustaining systemic manner: "…there is not some kind of monolithic, singular, fixed environment that exists detached from and external to…people," "people [create] their own environments and these environments then [constrain] their actions."[165] The environment is *made* both sensible and sensable (see footnote 121). More importantly, this property of Sensemaking emphasizes the uniquely individual nature of how meaning exists contextually and is created anew through action. Sensemaking is different from other models in this respect precisely because it "better explains how entities get there in the first place."[166]

In the Knowledge Management models described earlier, action is seen as a patterned response to stimulus, for example, codification, abstraction, and diffusion (see Table 3) whereas Weick postulates that Sensemaking "becomes a process that creates objects for sensing or structures for structuration,"[167] and that "there are subjective interpretations, of externally situated information, but that information has become external and objectified by means of behaviour."[168] In other words there is a strong interdependency between any environment and how the environment is actively shaped by participants, be they individual or in orchestra. "The world is not fixed and pre-given but continually shaped by the types of actions in which we engage."[169] Summarized then by Weick, "…people see and find sensible those things they can *do* something about. Capabilities for *action* affect what is believed and what is rejected. What is believed as a consequence of *action*, is what makes sense,"[170] which seems to be a far more appropriate explanation of behavioural logic in the digital era of the Information Age. Sensemaking through action in sensible environments, better accounts for

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[164] Morgan, G. et al. 1983. *Organizational Symbolism*, as quoted in Weick, K. E. 1995. *Sensemaking*, 14.

[165] Weick, K. E. 1995. *Sensemaking*, 31.

[166] Weick, K. E. 1995. *Sensemaking*, 30.

[167] Weick, K. E. 1995. *Sensemaking*, 36.

[168] Weick, K. E. 1995. *Sensemaking*, 37.

[169] Varela, F.J. et al. 1991. *The Embodied Mind: Cognitive Science and Human Experience*, as quoted in Weick, K. E. 1995. *Sensemaking*, 38.

[170] Weick, K. E. 1995. *Sensemaking*, 60 (my italics for emphasis).

the multiverse of meaning and multiplicity of activities than any of the other mentioned models. "Situations, organizations, and environments are talked into (*or out of*) existence."[171]

3.2.5 Ongoing

As cognitively aware beings, we are always in a state of sensemaking which Weick explains as follows: "Sensemaking never stops, [because] pure duration never stops."[172] Sensemaking is ongoing and neither starts fresh nor stops cleanly."[173] He uses Schutz's notion that "time exists in two distinct forms, as pure duration *and* as discrete segments."[174] In living life, experience is an ongoing flow of 'nowness' which Dilthey characterizes as a phenomenon with "…no absolute starting points, no self-evident, self-contained certainties on which we can build, because we always find ourselves in the middle of complex situations which we try to disentangle by making, then revising, provisional assumptions,"[175] in other words, *ongoing* Sensemaking. How people "chop moments out of continuous flows and extract cues from those flows,"[176] will be dealt with in section 3.2.6 as *retrospective* Sensemaking, a separate, and further time-related property of Sensemaking.

The ongoing quality of Sensemaking is well typified in situations of thrownness which can largely be seen as a reflection of the unfolding Information Age:

- Acting is unavoidable: Actions affect the situation and the actor, often against his will;
- The actor cannot step back and reflect on his actions: He is thrown on his institutions and has to deal with whatever comes up, as it comes up;

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[171] Weick, K.E. Sutcliffe, K.M. Obstfeld, D. 2005. *Organizing and the Process of Sensemaking,* 409 (italics my addition).

[172] Weick, K. E. 1995. *Sensemaking,* 43

[173] Weick, K. E. 1995. *Sensemaking,* 49

[174] Schutz, A. 1967. *The Phenomenology of the Social World,* as quoted in Weick, K. E. 1995. *Sensemaking,* 25 (my italics for emphasis).

[175] Weick, K. E. 1995. *Sensemaking,* 43: In this instance Weick combines a number of authors and sources making citation difficult. He starts with Burrell and Morgan paraphrasing Dilthey and then moves to Burrell and Morgan citing Rickman noting Dilthey's adaptations to the "so called hermeneutic circle to social phenomena…"

[176] Weick, K. E. 1995. *Sensemaking,* 43.

- Effects of action are unpredictable: The dynamic nature of social conduct precludes accurate prediction;
- The actor has no stable representation of the situation: Patterns may be evident after the fact, but at the time the flow unfolds, there is nothing but arbitrary fragments, simultaneously capable of several patterns or none whatever;
- Every representation is an interpretation: Objective analysis is impossible; and
- Language is action: Whenever people say something, they create rather than describe the situation.[177]

Thus while other Knowledge Management models mentioned earlier resort to absolute categories, thereby ignoring large pieces of continuity,[178] Sensemaking acknowledges the world is continuous, dynamic and infused with emotion. Every individual is simultaneously and paradoxically reduced and enlarged into a participant; to remain a dispassionate observer would be to lose sense and substance of experience and consequent emotion. Within the Organizaoional domain, this stream of continuity can be both the problem and solution depending on the perspective and meaning ascribed to it by the beholder. The stream is punctuated by focal points,[179] such as project milestones, product launches, or crucial contracts signed and so Sensemaking "can be extended beyond the *present*. As a result, present decisions can be made meaningful in a larger context than they usually are and more of the *past* and *future* can be brought to bear to inform them."[180]

Furthermore, it is important to note that ongoing activity for individuals means that they are active participants in what Weick terms "projects": "particular purposes and private ends."[181] He develops this as "whatever is now, at the present moment, under way will determine meaning of whatever has just occurred," and "meanings change as current projects and goals change."[182] In respect of ongoing Sensemaking, interruptions of projects are relevant and matter. "The reality of flows becomes most apparent when that flow is interrupted…[which] typically induces an emotional response, which then paves the way for emotion to influence

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[177] Winograd, T. Flores, F. 1986. Understanding Computers and Cognition: A New Foundation for Design, as quoted in Weick, K. E. 1995. Sensemaking. 44

[178] Langer, E.J. 1989. Minding Matters: The Consequences of Mindlessnees-Mindfulness, as quoted in Weick, K. E. 1995. Sensemaking, 44.

[179] Weick, K. E. 1995. *Sensemaking,* 45.

[180] Weick, K. E. 1995. *Sensemaking,* 29.

[181] James, W. 1950. *The Principles of Psychology,* as quoted in Weick, K. E. 1995. *Sensemaking,* 26

[182] Weick, K. E. 1995. *Sensemaking,* 27.

Sensemaking."[183] "Emotion is what happens between the time that an organized sequence is interrupted and the time at which the interruption is removed, or a substitute response is found that allows a sequence to be completed. Until either event occurs, autonomic arousal increases."[184] In an organizational context it is therefore important to note that highly emotive situations are likely to precede significant outcomes. This will be developed further in section 3.3.1.

3.2.6 Retrospective

When ongoing flow is thus interrupted, an opportunity arises to assess what has occurred, what has been accomplished or is indeed incomplete; this is the basis of the retrospective property of Sensemaking. Retrospection "makes the past clearer than the present or future."[185] Thus pure duration makes way for a sequence of discrete time segments,[186] in which essentially through observation and postdiction, structure is created [187] within individual experience as well as in larger organizational encounters. If ongoing Sensemaking is synonymous with experiencing, then retrospective Sensemaking is experiences.[188] Weick explains this reflection in four ways:

- The creation of meaning is an attentional process, but *attention to what has already occurred*;
- Attention is directed backward from a *specific here and now*, influencing what is discovered;
- The text being interpreted has *elapsed*, so anything that influences *memory* will affect sense being made; and

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[183] Weick, K. E. 1995 *Sensemaking*, 45.

[184] Weick, K. E. 1995. *Sensemaking*, 46.

[185] Weick, K. E. 1995. *Sensemaking*, 29.

[186] Weick, K. E. 1995. *Sensemaking*, 25.

[187] Starbuck, W.H. Nystrom, P.C. 1981. *Why the World needs Organizational Design*, as quoted in Weick, K. E. 1995. *Sensemaking*, 24.

[188] Weick, K. E. 1995. *Sensemaking*, 25.

- The situational sequence stimulus-response is misleading; an action can only become an object of attention after it has occurred. A *plausible stimulus can only be determined after a response has occurred*.[189]

In essence, "we are conscious always of what we have done, never of doing it,"[190] a somewhat disturbing realization. And furthermore, retrospection, because of its reliance on memory, is subject to 20/20 hindsight, known as hindsight bias: "…the future is actually indeterminate, unpredictable. And…the past has been reconstructed knowing the outcome, which means things never happened exactly the way they are remembered to have occurred."[191]

3.2.7 Driven by Plausibility rather than Accuracy

People need to be animated and oriented; this requires considerable time and effort which may not be accessible given concurrent ongoing projects, social obligations and/or organizational demands. "Having an accurate environmental map may be less important than having some map that brings order to the world and prompts action."[192] To initiate an act of Sensemaking, then, accurate reasoning is nice, but not a necessity.[193] In Isenberg's studies Weick finds that when information is incomplete, or facts fit imperfectly at times, people rely on plausibility, and go beyond directly observable consensual information, to form ideas and understanding, that provide enough certainty. [194]

Contrary to what is expected plausible reasoning, or satisficing trumps accuracy because:

- People need to distort and filter, to separate signal from noise given their current projects, if they are not to be overwhelmed with data;

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[189] Weick, K. E. 1995. *Sensemaking*, 25-26 (my italics for emphasis).

[190] Mead, G.H. 1956. *The Social Psychology of George Herbert Mead*, as quoted in Weick, K. E. 1995. *Sensemaking*, 26.

[191] Weick, K. E. 1995. *Sensemaking*, 28.

[192] Sutcliffe, K.M. 1994. What Executives Notice: Accurate Perceptions in Top Management Teams, as quoted in Weick, K. E. 1995. Sensemaking, 57.

[193] Weick, K. E. 1995. *Sensemaking*, 56.

[194] Isenberg, D.J. 1986. The Structure and Process of Understanding: Implications for Managerial Action, as quoted in Weick, K. E. 1995. Sensemaking, 56.

- Sensemaking is about embellishment and elaboration of a single point of reference or extracted cue, linked to a more general idea;
- Most action is time sensitive, meaning that there has to be a speed/accuracy trade-off;
- If accuracy does become an issue, it does so for short periods of time and with respect to specific questions;
- Mercurial stimuli mimic inherent equivocality of interpersonal perception;
- Accuracy is defined by instrumentality. Beliefs that counteract interruptions and facilitate ongoing projects are treated as accurate. Accuracy is project specific and pragmatic;
- Accurate perceptions have the power to immobilize and people who want to get to action tend to simplify rather than elaborate; and
- It is almost impossible to tell, at the time of perception, whether the perceptions will prove to be accurate or not.[195]

3.3 Sensemaking Processes

As discussed in the preceding sections of this chapter, Sensemaking can occur in an instant and/or can be described as a process. Whether it occurs at all is contingent on a number of variables, which in and of themselves can also paradoxically be interdependent or conversely, independent of each other. This section will briefly examine the processes of Sensemaking as initiated from two different domains:

- The Cognitive domain, through Abstract or Inferred Beliefs, and
- The Physical domain, through Concrete or Visible Actions.

The cognitive and physical realms of Sensemaking are specifically highlighted here, since 'Knowledge', as explored in section 2.1, is defined *both* in terms of Belief and Action. This facilitates and sanctions the study of Sensemaking within the context of Knowledge Management, and applied in an organizational framework.

The raw materials of Sensemaking are described by Weick as content, meaning and connection;[196] content and meaning are uniquely brought together in time and space in cues,

[195] Weick, K. E. 1995. *Sensemaking*, 57-60.

from frames through belief and/or actions. When these beliefs and actions are then tied together in a self-sustaining structure, meaning ensues, and a powerful sense of understanding results which affords individuals and organizations consistency and integrity. Weick even further emphasizes that it is "precisely because beliefs and actions are interrelated [that] sensemaking can start."[197] Weick et al. illustrate this close bond between action and belief when they summarize the distinguishing features of Sensemaking to include:

- …its genesis in disruptive ambiguity, its beginnings *in acts of noticing and bracketing*, its mixture of retrospect and prospect, its *reliance on presumptions to guide action*, its embedding in interdependence, and its culmination in articulation that shades into *acting thinkingly*;
- Answers to the question "what's the story?" emerge from retrospect, connections with *past experience*, and dialogue among *people who act* on behalf of larger social units; and
- Answers to the question "now what?" emerge from *presumptions about the future*, *articulation concurrent with action*, and projects that become increasingly clear as they unfold.[198]

Sensemaking can begin with Beliefs and take the form of Arguing or Expecting; or Sensemaking can begin with Action and take the form of committing or manipulation.[199] Either way, Sensemaking begins with the clearest minimal reference point available at the time and in that space, and comprises enlarging of the said small structures.[200] Porac describes this as an exercise in building confidence: "as particulars begin to cohere and as the explanation allows increasingly accurate deductions (*cognitive domain*) …people [make] do with whatever they have, comparing notes, often imitating one another directly or indirectly (*physical domain*).[201] Importantly however is Weick's observation that in distinguishing the cognitive from the physical, one should take into account practical reality: "Structures of mutual causality mock the language of independent and dependent variables…beliefs can

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[196] Weick, K. E. 1995. *Sensemaking*, 132.

[197] Weick, K. E. 1995. *Sensemaking*, 155.

[198] Weick, K.E. Sutcliffe, K.M. Obstfeld, D. 2005. *Organizing and the Process of Sensemaking*, 413 (my italics for emphasis of the aspects of Belief and Action).

[199] Weick, K. E. 1995. *Sensemaking*, 135.

[200] Weick, K. E. 1995. *Sensemaking*, 155.

[201] Porac, J.F. et al. 1989. *Competitive groups as Cognitive Communities: The Case of Scottish Knitwear Manufactures*, as quoted in Weick, K. E. 1995. *Sensemaking*, 133 (my addition in bracketed italics).

affect themselves through the mediation of action, and…actions can affect themselves through the mediation of beliefs."[202]

A further explanation of the interrelatedness between belief and action put forward by Weick is that "…to believe is to initiate action capable of lending substance to belief"[203] and what is an organization if not a collection of individual beliefs and actions which form "activity systems that generate action"[204]? When action and belief are married in this manner, it allows light to be shed on the origin of some of the more puzzling or bizarre aspects of organizational activity. More than that, it paves the way to utilize beliefs *and* actions as tools to create knowledge within an organizational context.

3.3.1 Action-driven Sensemaking

Sensemaking involves selectively taking what is clearer and linking it with the less clear, to form a unit of meaning.[205] In the mostly physical domain of Action-driven Sensemaking, the process of making sense starts with two variants of action:

- An action for which an individual or organization is responsible, implying *Commitment*, or
- Multiple actions (individual or organizational) that have made a visible change in the environment, implying *Manipulation*.[206]

Both these aspects of Sensemaking have cognitive aspects, but cognition comes second to action. Put simply, action rationality trades deliberation for implementation.[207] More specific associations and differences between these two concepts within the process of Sensemaking can best be illustrated diagrammatically and in summary as per Figure 9 below.

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[202] Weick, K. E. 1995. *Sensemaking*, 155-156.
[203] Weick, K. E. 1995. *Sensemaking*, 133.
[204] Starbuck, W.H. 1983. *Organizations as Action Generators*, as quoted in K. E. 1995. *Sensemaking*, 133.
[205] Weick, K. E. 1995. *Sensemaking*, 135, combined with 110.
[206] Weick, K. E. 1995. *Sensemaking*, 155-156.
[207] Weick, K. E. 1995. *Sensemaking*, 161.

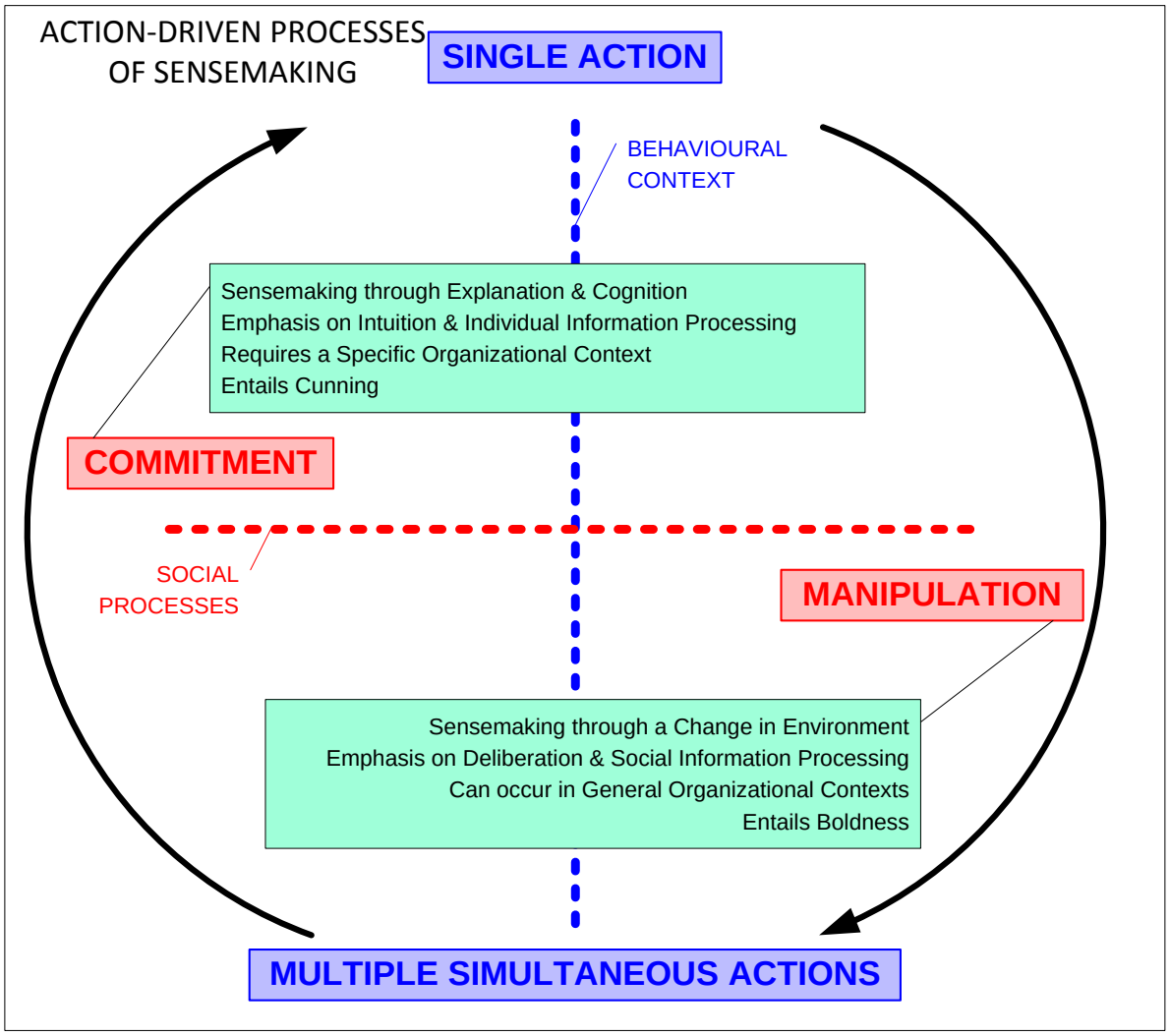

Figure 9: Action-driven Sensemaking

The first variant of action, Commitment, is about choice, attributing value, and explanation on an individual level of irrevocable action; life without choice leaves too many possibilities and too few certainties.[208] Commitment imposes a form of logic on the interpretation of action.[209] How does it work? The social process of Commitment ensues when the behavioural context involves a single action. When an individual acts or a single act of an organization is explicit as an entity or event, culpability is easily ascribed. In such an instance, the act in itself is meaningful and it provides a "pillar around which cognitive apparatus must be draped"[210] Since the act can be tied to the individual or organization, it forces Commitment if there is to be any sense of integrity or consistency. This originates from the very human characteristic to justify or rationalize action; if action is unjustifiable it places behaviour on a

[208] Weick, K. E. 1995. *Sensemaking*, 160.

[209] Weick, K. E. 1995. *Sensemaking*, 159.

[210] Kiesler, C.A. 1971. *The Psychology of Commitment*, as quoted in Weick, K. E. 1995. *Sensemaking*, 156.

lower order implying the individual is governed by instinct, rather than intellect. Consider the following two examples:

- Case 1: A person is hitting a tennis ball against a wall in a housing estate, next to a busy walkway. He misjudges the power and direction of his hit and the ball rebounds through a neighbour's garage window.
- Case 2: Two people are playing in the garden, tossing a ball at each other. A wild throw from one results in the ball crashing through the neighbour's garage window.

In both incidents, behaviour is explicit and consequential; neither the act nor its consequences can be undone. The window may be repaired, but culpability is incontestable and remains until in both instances, one or both persons accept the obligation brought about by their individual or joint action. Salancik and Kiesler define the concept of behavioural commitment as:

> a state of being in which an individual becomes bound by his actions and through these actions to beliefs that sustain the activities of his involvement…[such] binding occurs when the behaviour is:
>
> - Explicit (there is clear evidence that the act occurred),
> - Public (important people saw the act occur), and
> - Irrevocable (the act cannot be undone).[211]

Weick accepts this definition, however he sees 'explicit' and 'public' as synonymous and adds a further binding factor of volition (the act occurred because the agent chose to do it),[212] introducing the all important aspect responsibility. Even if somewhat simplistic, in both cases of the example above, behaviour is explicit, public and irrevocable and combines to ensure that the reality of the broken window is *socially constructed*, and thus responsibility is unavoidable. The behaviour was volitional leaving commitment as the only choice that will preserve social order.[213]

Within an organizational context Sensemaking initiated from commitment can thus be engineered when conditions prevail where individual actions are public or explicit, overt, immutable and volitional. Weick describes this macro level recipe in no uncertain terms as:

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[211] Weick, K. E. 1995. *Sensemaking*, 157.
[212] Weick, K. E. 1995. *Sensemaking*, 157.
[213] Weick, K. E. 1995. *Sensemaking*, 159.

"building a setting where action, publicity, choice, high stakes and low tolerance for mistakes" exists.[214]

Summarized, then, Sensemaking through the social process of Commitment ensues via explanation and cognition. Single and specific actions in the organizational context are cunningly used as individuals process information while to some extent relying on an innate sense of meaning (sometimes seen as intuition), but from which responsibility is apportioned and accepted. Weick also puts forward that "these meanings often become stronger when subsequent events confirm them, generalize them to other issues, and persuade other people to use them as premises in their decisions."[215] Thus value, social order and reality is continually created, one act at a time, implying ominously that all of the preceding can of course be undone too, act by act.

The second variant of action, Manipulation, "involves acting in ways that create an environment that people can then comprehend and manage."[216] It differs from commitment in the main due to the emphasis on multiple simultaneous actions that bring about an environmental context which in turn facilitates individual comprehension and action. While Commitment and Manipulation both feature choice, Commitment makes sense by focusing attention on the question: "*Why* did the action occur?"[217] Manipulation on the other hand is about the *invention* of an environment through action.[218] Hedberg et al. explain manipulation as:

> processes by which an organization impresses itself into its environment…The manipulative processes include constructing desirable niches and negotiating domains, forming coalitions, educating clients and employees, advertising to potential clients and customers and resolving conflicts.[219]

Thus meaningful structure is created in an entrepreneurial manner, via action, implying control is the effect of the action and not vice versa as would naturally be assumed. Weick states "actions create relationships that *then* become binding or releasing. When people

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[214] Weick, K. E. 1995. *Sensemaking*, 159.

[215] Weick, K. E. 1995. *Sensemaking*, 162.

[216] Weick, K. E. 1995. *Sensemaking*, 165.

[217] Weick, K. E. 1995. *Sensemaking*, 168 (my italics for emphasis).

[218] Weick, K. E. 1995. *Sensemaking*, 163 (my italics for emphasis).

[219] Hedberg, B.L.T. et al. 1976. Camping on Seesaws: Prescriptions for a Self-designing Organization, as quoted in Weick, K. E. 1995. Sensemaking, 165.

choose their constraints, choice is the independent variable, and constraints, determinism and control are the dependent variables."[220]

In summary then, manipulation is about boldly making things happen or change in the environment; manipulation makes sense focusing on the question: "*What* did occur?"[221] It emphasizes the deliberation and social information processing involved in choices which are enacted in multiple simultaneous actions. Refer again to Figure 9 above.

3.3.2 Belief-driven Sensemaking

As already mentioned, Sensemaking involves selectively taking what is clearer and linking it with the less clear, to "form a unit of meaning" in Weick's words.[222] In respect of Belief-driven Sensemaking, meaning is initiated from Belief, since no clear Action is immediately evident. In the mostly cognitive domain of Belief-driven Sensemaking then, the process of making sense starts with two regularities that hold a bias towards Belief:

- *Arguing* in an effort to reduce the variety of belief to what is relevant, what is noticed, and what is prophesized, or
- Orderly and deliberate interaction around *Expecting*, often in the form of self-fulfilling prophesies.[223]

Both these aspects of Sensemaking have physical aspects, but Action comes second to Belief. Put simply, decision rationality trades implementation for deliberation.[224] More specific associations and differences between these two concepts within the process of Sensemaking can best be illustrated diagrammatically, and in summary as per Figure 10. In Belief-driven Sensemaking, *assumptions and presumptions* that are embedded in frames such as Ideologies, Paradigms, Traditions, and Culture, influence *what* people notice and *how* events unfold, *initiating* actions capable of lending substance to belief.

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[220] Weick, K. E. 1995. *Sensemaking*, 167 (Weick's own italics).
[221] Weick, K. E. 1995. *Sensemaking*, 168 (my italics for emphasis).
[222] Weick, K. E. 1995. *Sensemaking*, 135 combined with 110.
[223] Weick, K. E. 1995. *Sensemaking*, 134 (my italics for emphasis).
[224] Weick, K. E. 1995. *Sensemaking*, 161.

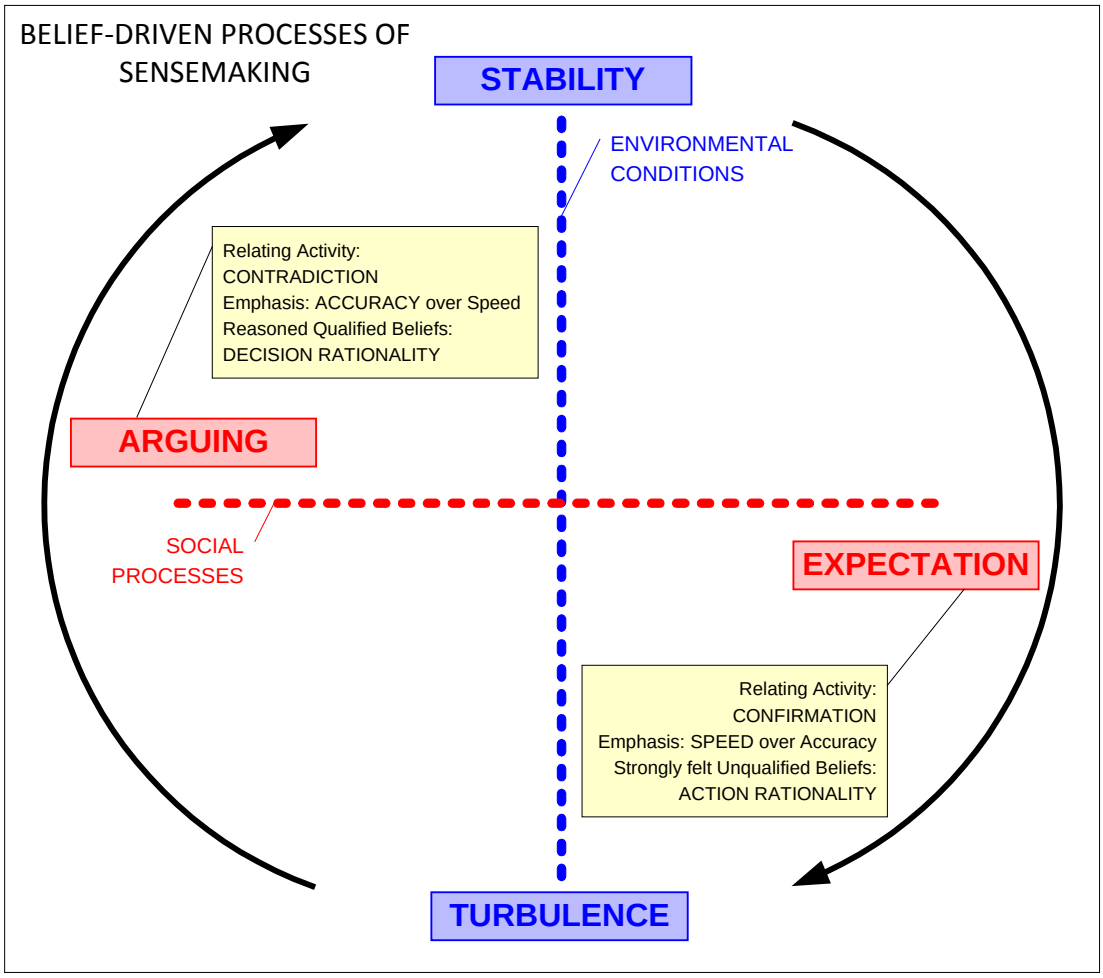

Figure 10: Belief-driven Sensemaking

A more in depth look at the nature of Arguing and expecting will be undertaken in Chapter 4, suffice to say here that in stable environments where conditions are predictable, and reasons can be expected to hold true for the future, Arguing represents an appropriate regularity in Sensemaking that starts with Belief as opposed to Action.[225] The emphasis is on accuracy over speed since the relating activity is contradiction. Weick summarizes the process progressing through four elements:

When Arguing is the dominant form of Sensemaking,

- weak definitions of the situation,
- embedded in tentative proposals,
- gradually become elaborated and strengthened,
- as proposers confront critics.

[225] Weick, K. E. 1995. *Sensemaking*, 153.

> Progressively the 'natural dialectic' produces either a synthesis or a winner.[226]

What is however important to note is that compared with Expectation, Arguing requires more intensive and active cognitive engagement. While Arguing is about actively forging a new reality, Expecting is about imposing an existing, static Belief onto a dynamic reality. In other words, in Belief-driven Sensemaking, the individual or organization has the choice to impose a belief system on the environment and so create the reality that is expected, or, to create a completely new reality by applying reasoned discourse to the environment.

In more turbulent and unstable environments, Expectation better serves as a starting point for Sensemaking. Whenever there is environmental variety beyond the point of cognition, it becomes a safer option for the individual to fall back on a smaller variety of internal and familiar paradigms, ideologies and/or belief and/or value systems. Beliefs are embedded in expectations and Expectations are a form of cognitive 'short cuts.' Brunsson states that "Beliefs that are the focus of Sensemaking by Expectation, resemble the singular, strongly felt, unqualified Beliefs of Action Rationality, rather than the reasoned Beliefs of Decision Rationality."[227] One of the obvious motivations for Action Rationality is environmental complexity, which forces individuals to filter inputs more severely resulting in a forfeiture of accuracy, an increase in error, and questionable social construction. Weick proposes that "when a cue is linked to an Expectancy, then a unit of meaning results" and the Expectancy rather than the reality is used to embellish "additional implications of the cue."[228] If these Expectations satisfice, in other words, are considered adequate, if not completely accurate, "people gain confidence in their situational assessment and treat it as *the* definition of the situation."[229] This could possibly also explain the origin of phenomena such as gender stereotyping or racial profiling to some extent. Such unilateral filtering is further underlined in Powers' Control Theory observations that "Expected events are processed quickly, which leaves time for adaptive action and also frees time for controlled processing."[230] So while Arguing relies on contradiction, which requires careful thought, implying time lapses, in Expecting, the relating activity is confirmation, or conformance, which can take place in a

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[226] Weick, K. E. 1995. *Sensemaking,* 145.

[227] Brunsson, N. 1982. The Irrationality of Action rationality: Decisions, Ideologies and Organizational Actions, as quoted in Weick, K. E. 1995. Sensemaking, 145.

[228] Weick, K. E. 1995. *Sensemaking,* 146.

[229] Noble, D. 1993. *A Model to Support Development of Situation Assessment Aids,* as quoted in Weick, K. E. 1995. *Sensemaking,* 146 (my italics for emphasis).

[230] Powers, W.T. 1973. *Behavior: The Control of Perception,* as quoted in Weick, K. E. 1995. *Sensemaking,* 146.

flash of recognition or acknowledgement. When a cue is connected to an Expectancy, confirmation is achieved and a "unit of meaning is formed,"[231] and this happens almost instantaneously.

Expectancy is however redeemed by its propensity for "self-correction" for when events seem to diverge from expectations, "both the expectation and the event itself can be adjusted" according to Jussim and Rothbaum et al.[232] Weick expands this by mentioning that "self-fulfilling prophesies are not simply ways in which erroneous preconceptions influence the outcomes of interpersonal relationships…[they] are a fundamental act of Sensemaking."[233] These are the minimal structure starting points around which Beliefs can be draped and can be seen as the reverse of the statement seeing is believing, in other words, in the case of Sensemaking by Expectation, believing *is* seeing. Furthermore, since motivation is not dependent on accuracy, in Argumentative interaction, Beliefs and Expectations will be strengthened by "behavioural confirmation" in Weick's opinion.[234] Once behavioural confirmation is achieved, a measure of stability is created inside a mass of turbulence, and once stability is achieved, then greater accuracy is possible. According to Weick, "When accuracy flourishes, self-fulfilling prophesies as a trigger for Sensemaking recede, to be replaced by Arguments that preserve the sense made by the Expectation in the first place."[235]

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[231] Weick, K. E. 1995. *Sensemaking*, 146.

[232] Jussim, L. 1991. Social Perception and Social Reality: A Reflection-construction Model, as quoted in Weick, K. E. 1995. Sensemaking, 147.

[233] Weick, K. E. 1995. *Sensemaking*, 148.

[234] Weick, K. E. 1995. *Sensemaking*, 153.

[235] Weick, K. E. 1995. *Sensemaking*, 153.

Chapter 4
Belief-driven Sensemaking – Arguing to Create Knowledge

4 Belief-driven Sensemaking - Arguing to Create Knowledge

It is better to know some of the questions than all of the answers.

~ James Thurber

In the Knowledge Economy, knowledge intensive organizations are valued by and for their ability to create and/or process knowledge. Kessels best describes this as follows:

> Knowledge is crucial for continual improvements to existing products and services and for radically innovative measures. Organisational hierarchy will also reflect these changes. During the industrial revolution, the power resided with the masters of the most important means of production: the owners of the machines. Knowledge was stored in these machines. During the revolution in productivity, control shifted from the owner-shareholders to the managers, who applied this knowledge to labour. Today, knowledge workers are taking charge. These individuals possess the intellectual means of production: generating; transmitting and manipulating data; information; and knowledge. The value of a product or service increases as knowledge is added.[236]

While there is general consensus that an individual can acquire existing knowledge through a process of learning, the processes whereby new knowledge is added to the existing body of

[236] Kessels, J.W.M. 2001. *Learning in organisations,* 499.

knowledge, Knowledge Creation, whether by an individual or an organization, are much more contentious. Besides the debate regarding the nature of the Knowledge Creation process, literature also distinguishes between at least two distinct context sensitive outputs of the creative process:

- "Incremental improvements, and
- Radical innovation."[237]

This distinction between incremental as opposed to radical change is also found entrenched and expanded in specific definitions of product development or general definitions of innovation. For example, O'Sullivan and Dooley underscore the importance and distinction of these concepts in their work *Applying Innovation* as follows:

> Product innovation is about making beneficial changes to physical products. Related terms that are often used interchangeably include product design, research and development, and new product development (NPD). Each of these terms offers a particular perspective on the degree of changes to products. The degree of change can include the following:
>
> - *Incremental improvements*
> - Additions to product families
> - Next-generation products
> - *New core products*[238]

And then they proceed to explain that the subjectivity of novelty blurrs the distinction between what can be considered radical or incremental innovation:

> Innovation is linked to the concepts of novelty and originality. However, novelty is highly subjective. What may be a trivial change for one organization may be a significant innovation for another. Based on this perspective, we can further extend the definition of innovation as follows: Innovation is the process of making changes, large and small, *radical and incremental*, to products, processes, and services that

[237] Kessels, J.W.M. Poell, R.F. 2004. Andragogy and Social Capital Theory: The Implications for Human Resource Development, 146.

[238] O'Sullivan, D. Dooley, L. 2009. Applying Innovation, 15 (my italics for emphasis).

> results in the introduction of something new for the organization that adds value to customers and contributes to the knowledge store of the organization.[239]

Retrospectively recognising and acknowledging products, processes, or concepts that are not just incremental improvements, but truly innovative and revolutionary is a fairly simple, standard exercise, however, arguably many 'discoveries' are discarded, discounted or abandoned before they can be accredited as new additions to the body of knowledge. For example, Knowledge Management models such as the SECI process, as discussed in section 2.4.1, propose that tacit knowledge is converted to explicit knowledge via Socialization, Externalization, Combination and Internalization. The KMLC model in turn proposes that knowledge claims are validated and integrated in a double loop feedback system as is discussed in section 2.4.4. In other words, Knowledge Creation in the view of these models, is subject to and the product of interactive social processes.

This immediately begs the question on a person to person basis, practically, how is the decision made as to what is deemed as knowledge? When and how can a knowledge claim be made? Who can tell midway through the race whether an idea will be a "great-winner" or an "also-ran"? Why are some incremental changes later identified as revolutionary? Criticism of the SECI model, for example, rests precisely on the answer to the preceding questions. Essers and Schreinemakers point out that Nonaka believes that Knowledge Creation is "the highly strategic task of the company leaders."[240] Gourlay sees and mentions this as Nonaka's "radically subjective definition of knowledge."[241] The SECI process lacks a mechanism for the justification of knowledge in the social process. Instead it is relegated to the enabling condition of Organizational Intention. In practice however, knowledge justification and validation is not the exclusive domain of the few endowed to lead and make decisions in organizations. Indeed Brown and Duguid rather write that the entire organization participates interactively with its environment:

> The source of innovation lies on the interface between an organization and its environment. And the process of innovating involves actively constructing a

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[239] O'Sullivan, D. Dooley, L. 2009. Applying Innovation, 5 (my italics for emphasis).

[240] Essers, J. and Schreinemakers, J. 1997. Nonaka's Subjectivist Conception of Knowledge in Corporate Knowledge Program, 28.

[241] Gourlay S. 2006. Conceptualizing Knowledge Creation:-A Critique of Nonaka's Theory, 1415.

> conceptual framework, imposing it on the environment, and reflecting on their interaction.[242]

If Knowledge Creation is thus a social and environmentally interactive process, involving the entire organization, then one should be able to identify and isolate its constitutive elements, in order to exploit these for competitive advantage. This thesis thus proposes that Knowledge Creation or the production of new knowledge, takes place practically when individuals interact through communication, using Argument. Within the framework of Sensemaking, Arguing is seen as a corroborative social process, which serves the dual purpose of refining accepted ideas and/or establishing new ideas. It is the locus of Knowledge Creation precisely because it involves interactive validation through a warrant, from accepted data to a new claim. When Sensemaking occurs at an individual level or in organizational context, one of a number of interrelated regularities is consistently substantiated, for example:

- An existing frame or belief is endorsed, adjusted, sharpened and/or strengthened, or
- A completely new frame or belief is created and/or assimilated.

In the process of generating new frames or beliefs, there is an opportunity to actually generate new knowledge since frames or beliefs are underpinned by awareness and understanding of newly processed anomalies. Put simply and to paraphrase the Thurber quote above, either *the known* answer is confirmed, or *a new* question is asked, considered and adequately answered. The idea that the dynamic and familiar 'question and answer' device is an incipient Sensemaking entity is also the central focus of Weick's in *Sensemaking in Organizations*; in the Preface he states that "Sensemaking is best described as a developing set of ideas with *explanatory* possibilities, rather than as a body of knowledge."[243] Nevertheless, when a new frame or belief is integrated and embraced, it creates within the individual or organization a capacity for action that did not necessarily exist before. In other words, an opportunity is created or now newly exists to add novel knowledge to the body of existing knowledge. This also illustrates the interrelated relationship between Belief and Action, which form the basis of the definition of knowledge as illustrated in Chapter 2.1. What is however of even greater significance is the twofold question:

- How are *existing* frames of reference or beliefs in individuals endorsed, and strengthened, or narrowed, and sharpened, and

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[242] Brown, J. S. Duguid, P. 1991. Organizational learning and communities-of-practice, 51.

[243] Weick, K. E. 1995. *Sensemaking*, xi (my italics for emphasis).

- How do *new* frames of reference or beliefs in the tacit individual realm traverse the boundary between individuals to become common knowledge so to speak?

The question is to what extent Arguing can indeed be considered as a means of generating and validating new communal knowledge. When an idea is expanded through thought into a concept or a design, there is the potential that it can become accepted wisdom or in fact a new product. To transmute ideas into wisdom or new products nonetheless seldom occurs through *description* or *classification*, processes that Weick identifies and declares as "nonargumentative."[244] Description implies that data is available and can be arranged in order to learn something; classification implies unsurprisingly that various data can be grouped into bins.[245] Weick goes further stating:

> of more help for Sensemaking are people who provide *explanations* rather than…descriptions or classifications. *Explanations* create sense by connecting concrete experience and more general concepts…In the process of developing and criticising explanation, people often discover *new explanations*, which is why argument or expectation can produce adaptive Sensemaking.[246]

In other words, while an individual's tacit knowledge can expand inductively through perception and environmental interaction, the common body of knowledge is enlarged through social and corroborative interaction centred on discourse, based on embedded beliefs. When examined from the Sensemaking perspective, whether the additional knowledge is an incremental improvement or radically innovative, would appear to be environmentally driven and context specific.

Section 4.1 reveals the essential elements that constitute an Argument as a concept and an organizational process for Sensemaking. By defining the conceptual nature, characteristics and process of Argument, it can be used purposefully and creatively as an organizational process, rather than avoided as an unpleasant exchange between foes.

The environment is consequential in as much as it is an indiscriminate *given* on the one hand, and paradoxically selectively *chosen* component which facilitates active exchange between individuals, organizations and itself. Section 4.2 examines the role that the situational context

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[244] Weick, K. E. 1995. *Sensemaking*, 138 (my italics for emphasis).

[245] Brockriede, W. 1974. Rhetorical Criticism as Argument, 173.

[246] Weick, K. E. 1995. *Sensemaking*, 139.

or environment plays within the Knowledge Creation paradigm, considering existing and new knowledge from both the individual and organizational perspective, while paying particular mind to the characteristics of the Information Age.

Applying Argument as a Sensemaking utility requires unique consideration of the opposite but complimentary locus from which the Argument is driven. Given that Sensemaking is a relational and typically social process, section 4.3 looks into and considers how a Minority or Majority position can be a key characteristic when Arguing. When an individual conceives a new concept, it is not automatically recognized for what it is and generally adopted. He stands alone with his notion and essentially has to convince all and sundry that it is valid, valuable and worthy of adoption by a wider audience.

Finally section 4.4 looks at the examples of new Knowledge Creation where all of the preceding fundamentals mentioned of the Argument, form the basis of the process of new Knowledge Creation.

4.1 What is an Argument?

The moment we want to believe something, we suddenly see all the arguments for it, and become blind to the arguments against it."

~ George Bernard Shaw

The trouble with the "arguing" and "argument" is that besides its definition as a rational concept, people commonly suffer "blind" bias of beliefs and readily assume and associate emotional conflict with the action of defending opinions or beliefs. Even in such established, regulated and rational contexts such as the legal system, an element of blame or accusation is attendant to the words "argue" and "argument." In order to promote 'argue' and 'argument' as concepts, all the various semantic and theoretical characterizations should be distinguished and recognized. This will facilitate the rational examination and unambiguous application of Argument, whilst utilizing the negative emotional context commonly associated with heated altercations as a motivator for Sensemaking.

The Collins World Dictionary mentions seven definitions and two specific contexts (Logic and Mathematics) for the noun "argument", namely:

1. a quarrel; altercation.
2. a discussion in which reasons are put forward in support of and against a proposition, proposal, or case; debate: the argument on birth control will never be concluded.
3. (sometimes plural) a point or series of reasons presented to support or oppose a proposition.
4. a summary of the plot or subject of a book, etc..
5. logic:
    a. a process of deductive or inductive reasoning that purports to show its conclusion to be true,
    b. formally, a sequence of statements one of which is the conclusion and the remainder the premises.
6. logic: an obsolete name for the middle term of a syllogism.
7. maths:
    a. an element to which an operation, function, predicate, etc., applies, especially the independent variable of a function,
    b. the amplitude of a complex number.[247]

The academic literature on Argument Theory, shows that Toulmin's characterization of Argument is widely acknowledged as an acceptable standard for *reasoned* discourse. Summarized, Brockreide and Ehringer describe his definition as follows:

> An Argument is movement from accepted data, through a warrant, to a claim:
>
> - Data (D) answer the question, "What have you got to go on?"
> - Claim (C) is the term [applied] to what we normally speak of as a conclusion. It is the explicit appeal produced by the Argument, and is always of a potentially controversial nature.
> - Warrant (W) is the operational name [for] part of an Argument which authorizes the mental "leap" involved in advancing from data to claim.[248]

[247] http://dictionary.reference.com/cite.html?qh=argument&ia=ced

[248] Brockreide, W. E. Ehringer, D. 1960. Toulmin on Argument: An Interpretation and Application, 44.

These elements and their relationship can be diagrammatically illustrated as follows in Figure 11.

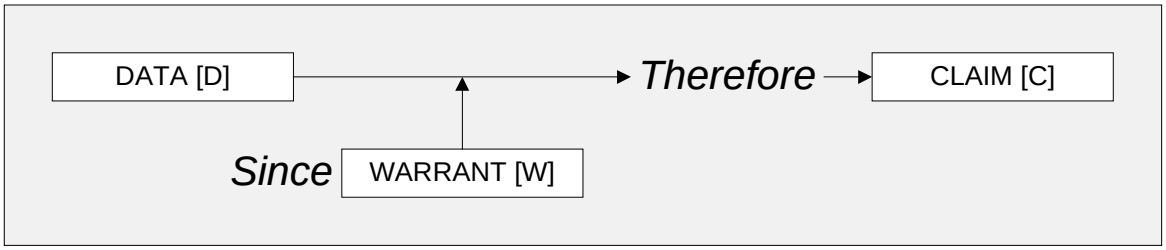

Figure 11: Toulmin's Elements of Argument[249]

However, literature also shows that Argument Theory is not limited to definitions of reasoned discourse or beyond polemic. Various authors identify the process and/or procedure and product of Arguing and Argument as distinct. O'Keefe specifically refers to Argument in two senses which closely resemble *product* and *process*, simply put:

- Argument$_1$ something one *person makes* (or gives or presents or utters), and
- Argument$_2$ something two or more *persons have* (or engage in).[250]

Wentzel expands the concept and for example, finds three relations of Argument. He builds on the notions of product and process and adds procedure, writing:

> Of the several senses in which scholars use the term Argument and its relations, three are of immediate importance: Argument as process, Argument as procedure, and Argument as product. Although the three senses are indexed roughly in ordinary language (e.g. 'presenting arguments,' 'engaged in argumentation,' 'judging an argument'), it is the scholar's application of the three senses that is of principal interest. When used by specialists, each sense of the term refers implicitly to a distinct perspective taken in the examination of arguers and their behaviours, and the perspectives are roughly aligned with the disciplines that have historically been concerned with Argument.[251]

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[249] Brockreide, W. E. Ehringer, D. 1960. Toulmin on Argument: An Interpretation and Application, 45.

[250] O'Keefe, D.J. 1992. Two Concepts of Argument, in Benoit, W.L., Hample, D., Benoit, P.J. (Eds.) 1992. *Readings in Argumentation*, 79.

[251] Wentzel, J.W. 1992. Perspectives on Argument, in Benoit, W.L., Hample, D., Benoit, P.J. (Eds.) 1992. *Readings in Argumentation*, 124.

These differences are also acknowledged and further built on in such a manner as to bring Argumentation into the realm of Knowledge Creation. Rowland remarks:

> Traditionally, Argument has been treated as the means by which knowledge claims were justified. Physicists, chemists, historians, philosophers, and the experts in other fields discovered knowledge, while Argumentation theorists provided the means of justification. Over the last twenty years this view of the function of Argument has been replaced by one treating Argument, particularly dialectical Argument, as an independent means of discovering as well as of justifying knowledge.[252]

These different dialectical and semantic perspectives are best combined and illustrated comparatively in Wentzel's summary of views in Table 4.

	Rhetorical Perspective Focus on Arguing as Process	**Dialectical Perspective Focus on Argumentation as Procedure**	**Logical Perspective Focus on Argument as Product**
Practical Purpose	Persuasion	Criticism	Judgement
Theoretical Purpose	Understand conditions for effective Arguing	Explain Conditions for Candid & Critical Argumentation	Establish Standards for Sound Argument
Situation	Natural Rhetorical Situations	Contrived Arenas of Discourse	Field of Argument
Rules	Tacit Social Rules	Explicit Procedural Rules	Explicit Inferential Rules
Standards	Effectiveness	Candidness	Soundness
Speaker	Naïve Social Actor	Conscious Advocate	Impersonal Explicator
Listener	Particular Audience Universality	Particular Striving for	Universal Audience

Table 4 Wentzel's Three Perspectives on Argument[253]

From the preceding semantic definitions, Arguing in Sensemaking would seem to refer to the logical, most often controversial "process of deductive or inductive reasoning that purports to show its conclusion to be true" (in point 5), rather than the emotive "quarrel; altercation" (of

[252] Rowland, R.C. 1987. On Defining Argument, 140.

[253] Wentzel, J.W. 1992. Perspectives on Argument, in Benoit, W.L., Hample, D., Benoit, P.J. (Eds.) 1992. *Readings in Argumentation,* 134.

point 1). Alternately or equally, Arguing in Sensemaking would seem to refer theoretically to "knowledge claims" and "justification." However, Weick quotes Billig and adds that:

> The word Argument itself has both an individual *and* a social meaning. The individual meaning refers to any piece of reasoned discourse. The social meaning of Argument refers, not to chain of reasoning, but a dispute between people…Individual reasoning is embedded in social controversy. And the unfolding of controversy is what we mean by Arguing as a vehicle for Sensemaking. Because controversy starts with a piece of reasoned discourse, it is said to be Belief-driven Sensemaking [254]

Toulmin's the formal definition of Argument and the duality above is reflected by Ehringer when he further postulates that: "Argument…instead of being an enterprise in instruction, is an exercise in correction. Its purpose is not to extend knowledge, but to reform and purify it."[255] However, literature also shows instances where Argument is defined in terms of its creative structure and function. Hample describes this distinction as: "The function of an Argument is to create meaning…[and]…Reasoning and concluding are human actions, not grammatical relations."[256] From the preceding, Argument can thus be deployed in two ways:

- As an process to *improve understanding*, or
- As a process to *create new understanding*.

The dual view allows the comparison to be drawn between the outputs of Sensemaking and Argument. Improving understanding is akin to endorsing, adjusting, sharpening and/or strengthening existing frames or beliefs; conversely, creating new understanding is analogous to creating and/or assimilating a completely new frame or belief.

Besides the constituent elements in the concept of Argument, the process of Arguing is well defined. When describing an Argument, Brockriede believes that it is a "process by which people reason their way from one idea to another;"[257] more specifically he identifies five fundamental characteristics contained in an exchange which leads to qualifying the exchange formally as an argument:

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[254] Weick, K. E. 1995. Sensemaking, 136-137.

[255] Ehninger, D. 1992. *Argument as Method: Its Nature, Limitations and Uses,* as quoted in Benoit, W.L. Hample, D. Benoit, P.J. (Eds.) 1992. *Readings in Argumentation,* 101.

[256] Hample, D. 2006. *Argument production,* as quoted in van Eemeren, F. H. Hazen, M. D. Houtlosser, P. and Williams, D. C. eds. 2006. *Contemporary Perspectives on Argumentation: Views from the Venice argumentation conference*, 11.

[257] Brockreide W.E. 1975. Where is argument? Abstract, 179.

- An *inferential leap* from existing beliefs to a new belief or the reinforcing of an old belief,
- Perceived *justifications for the inference,*
- A choice among *competing claims,*
- The *regulation of uncertainty* in relation to the claim, and
- A willingness to *risk confrontation* with one's peers.[258]

These five elements are not so much a checklist or formula by which conversation or organizational procedures can be classified as, or transformed into Arguments. What is important is that they represent interrelated dimensions along a continuum along which an interchange becomes an opportunity for the creation and/or acceptance of a new idea.[259] Weick uses Brockriede's explanation in his theory of Sensemaking to demonstrate this creative inductive operation in practice as follows:

> When a person advances an explanation that qualifies as an Argument, the listener can then confront. If the listener 'tries to disconfirm the critic's Argument and fails to do so, the intersubjective reliability of that Argument is increased. If he can disconfirm or cast doubt on the critic's Argument, that Argument must be abandoned or revised. The *product* of the process of confrontation by Argument and Counterargument *is a more dependable understanding*.'[260]

Arguing thus either has individual meaning as a reasoned discourse, or social meaning when involving two or more parties participating in a dispute,[261] supporting opposite sides of an issue. Furthermore, there is a striking commonality between regularities in Sensemaking, Brockriede's first characteristic of an Argument, and Knowledge Creation perspectives. These concepts propose a dichotomy of outcomes, as can be seen in Table 5, which revolve around confirming or updating something extant or creating something completely new.

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[258] Brockriede, W. 1974. *Rhetorical Criticism as Argument,* 166 (my italics for emphasis).

[259] Brockriede, W. 1974. Rhetorical Criticism as Argument, 166.

[260] Weick, K. E. 1995. *Sensemaking,* 139 (my italics for emphasis).

[261] Billig, M. 1989. Arguing and Thinking: A Rhetorical Approach to Social Psychology, as quoted in Weick, K. E. 1995. Sensemaking, 136-137.

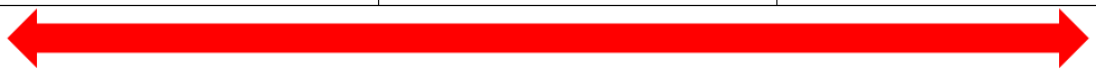
Sensemaking	Argument	Type of Knowledge Creation
A completely ***new*** frame or belief is created and / or assimilated.	An inferential leap from existing beliefs to a ***new*** belief	**Radical Innovation**
		
An ***existing*** frame or belief is endorsed, adjusted, sharpened and/or strengthened.	The reinforcing of an **existing** belief through validation.	**Incremental Improvement**

Table 5: Sensemaking, Argument and Knowledge Creation

When discussing the nature, definition and process of Argument in the organizational context two considerations are important. Firstly, most people associate fairly negative emotive content with the concept of an Argument. Writers from Ayn Rand to Jonathan Swift characterize this familiar sentiment regarding Argument from "confession of intellectual impotence" to the "worst sort of conversation." These connotations are possibly the conditioned response to the inevitable conflict, dispute, domination and contradiction, and correspondingly negative effect, often associated with the process and outcome of an Argument, defined as a quarrel or altercation. However, in spite of these visceral responses in relation to Argument, it is important to remember that social Argument need not imply ill will or loss of temper.[262] It must also be noted that antithetical processes in social systems abound and are unavoidable – indeed, they are the substance from whence Sensemaking springs. This is succinctly explained by Starbuck and Milliken in the following claim:

> Facing such a world [of antithetical processes] realistic people have to have numerous Sensemaking frameworks that contradict each other. These numerous frameworks create plentiful interpretive opportunities – if an initial framework fails, one can try its equally plausible converse [Protagoras' Maxim], or try a framework that emphasizes different elements. Thus, meanings are generally cheap and easily found, except when people confront major tragedies such as divorces or deaths of loved ones…and even these become 'growth experiences.' People have confidence that they can eventually make sense of any situation because they can.[263]

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[262] Billig, M. 1989. Arguing and Thinking: A Rhetorical Approach to Social Psychology, as quoted in Weick, K. E. 1995. Sensemaking, 137.

[263] Starbuck,W.H. Milliken, F.J. 1988. Executives' Perceptual Filters: What they Notice and How They Make Sense, as quoted in Weick, K. E. 1995. Sensemaking, 137.

Secondly, various studies have indicated that "people think narratively rather than Argumentatively or paradigmatically."[264;265] For example, Brunner also notes that "…we organize our experience and our memory of human happenings mainly in the form of narrative-stories, excuses, myths, reasons for doing and not doing, and so on. Narrative is a conventional form, transmitted culturally and constrained by each individual's level of mastery and by his conglomerate of prosthetic devices, colleagues, and mentors."[266] This is important since most "models of organization are based on Argumentation rather than Narration,"[267] for example "an organization [is] a set of procedures for Argumentation and Interpretation as well as for solving problems and making decisions."[268] If people consequently try to make sense organizationally, the default use of narrative skills is paramount. These skills although useful, are understandably not optimally suited to "structures designed for Argumentation."[269] Thus if in an organizational context, meaning is to be enhanced, it would certainly be useful if employees were schooled in what constitutes an Argument in other words, when and how an Argument is a dispassionate debate rather than a dispute or quarrel. Moreover also when Argument can and should be used in a positive manner in order to contribute to the organization achieving its purpose.

The preceding paragraphs give a brief overview of the nature, definition and process of Arguing in general and of an Argument as is pertinent to this thesis. These definitions need to be supplemented and examined from a practical point of view in order to relate Argument to Knowledge Creation in an organizational context. This is the purpose of the following section 4.2.

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[264] Weick, K. E. 1995. *Sensemaking*, 127.

[265] Bruner, J. 1991. *The Narrative Construction of Reality*, 4: "…most of our knowledge about human knowledge-getting and reality constructing is drawn from studies of how people come to know the natural or physical world rather than the human or symbolic world."

[266] Bruner, J. 1991. The Narrative Construction of Reality, 4.

[267] Weick, K.E. Browning, L.1986. *Arguments and Narration in Organizational Communication*, as quoted in Weick, K. E. 1995. *Sensemaking*, 127.

[268] Cohen, M.D. March, J.G. Olsen, J.P. 1972. *A Garbage Can Model of Organizational Choice*, as quoted in Weick, K. E. 1995. *Sensemaking*, 136.

[269] Weick, K. E. 1995. *Sensemaking*, 127.

4.2 Where Do You Argue?

Arguments are not in statements but in people.

~ Wayne Brockriede

When considering Argument from a Sensemaking perspective, it is imperative to recognize the unrelentingly *social*[270] nature of both Argument and Sensemaking. Location, setting and participants are all contributing elements of critical importance. It has also been said by Shariq, for example, that "in order to make sense, or create understanding, humans bring prior knowledge and context to information" and that "the development of context is an economic activity of human cognition."[271] The situational context or environment is in other words as much of an element as the participants and the respective subject or object of the Argument. Furthermore writers such as Basadur et al. also emphasize that defining 'Environment' is context dependent [272] and this is the case too for creating new knowledge by Arguing from a belief-driven perspective. Within the organizational context, there are scripted and unscripted situations where Arguing can and regularly does take place. For the purposes of this thesis, only the following aspects of the situational context or environment will be outlined and considered:

- Individuals in organizations,
- Meeting as a standard operating procedure within the organizations, and

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[270] Weick, K. E. 1995. *Sensemaking*, 79 (Weick's italics for emphasis).

[271] Shariq, S.Z. 1998. Sensemaking and Artifacts, 10.

[272] Basadur, M. Conklin, J. VanPatter, G.K. 2007. *ReRethinking Wicked Problems*, 10 (my italics below for emphasis):

"GK VanPatter: I think it is possible that we have, in this conversation, at least three views of what constitutes the innovation container or the environment in the context of organizations. *Environment is one of those tricky words that can mean several things. We each might be using that word in slightly different ways. It is quite likely that each view is connected to our personal backgrounds, expertise, experience, and realistically to consulting services.* Correct me if I am wrong: Jeff seems to focus on a technology application tool of a specific type that is intended to serve a specific innovation related purpose. Min focuses on a specific type of cognitive skill-building that in turn impacts behaviors that are intended to result in a more innovative environment or culture.
At Humantific we created a six dimensional innovation ecology model numerous years ago that contains the two dimensions of technology and process skills/behavior but also includes four additional dimensions that play important roles in organizational innovation enabling or transformation enabling from our perspective. In our innovation ecology model we also include inclusive innovation strategy, inclusive information, inclusive teams and the physical environment itself as each plays a role in accelerating innovation. In practice, we use this innovation ecology model as a visual explanation tool in all of our organizational transformation work."

- Organizations in the economic world.

The following three sections will analyse the context specific constraints and idiosyncrasies of the aforementioned loci of Argument to examine how each context can be utilized for Knowledge Creation.

4.2.1 Individuals in Organizations

Each of us literally chooses, by his way of attending to things, what sort of universe he shall appear to himself to inhabit.

~ William James

Whether the solitary individual creates a *monologue* where he fulfils both roles of speaker and listener, or participates in a *dialogue* with a party external to himself, conversation is a major measure of the human experience. This ongoing conversation is the basis on which "social contact is mediated."[273] Mediation in social context is about roles, rules, and rituals and negotiating to what extent the individual asserts his individuality or cedes it in the interest of membership of the group in the given roles, rules, and rituals. For example, when patrons attend a theatre production or a film showing, for the entire duration spectators willingly suspend disbelief and 'allow' themselves to be entertained. Social rules, norms and rationality are, or can be, bent or thrust aside for the purposes of entertainment. Similarly, but on the opposite side of this scale of belief and rationality we find organizational life. While an individual will take a number of social conventions such as roles, behaviour, customs, rituals and the like for granted, and adjust his behaviour accordingly, in an organizational context, all of the above are in Weick's words, fair game for continual negotiation. In other words, nothing is taken for granted in a work context; there is continual and pervasive accounting, justification, and rationalization.[274] Put simply, individuals exist independently and their identity is constituted of multiple roles, one of which is their occupation. Outside of government structures, parastatals and non-profit institutions, the organization's sole

[273] Weick, K. E. 1995. *Sensemaking*, 42.

[274] Weick, K. E. 1995. *Sensemaking*, 63.

rationale is to generate income. As has been mentioned in section 2.3, income generation is latterly very closely intertwined with the creation of new knowledge. This singularity of purpose results in behavioural stricture and purpose unseen in other spheres of human experience.

Furthermore this unique environment emphasizes the underlying importance of an individual's cognitive commitment in an organizational context and sets the scene for an ongoing internal dialogue or external exchange with his fellow participants in the organizational environment which is not unlike an ongoing, if unseen Argument. It is an uneasy relationship where certain sacrifices are made and negotiated at individual level for the greater good of the group or purpose of the organization, a concept which is as much evolutionary as it is current. It can possibly be maintained that the survival of the human race was a consequence of the first organizations into units greater than the primary family. What is however relevant now and in the context of this thesis is how this situational context determines behaviour and shapes creative outputs through such engineered surroundings. Czarniawska-Jeorges identifies four distinct differences when it comes to how Sensemaking takes place in organizational life:

- The job is taken much more for granted than the organization,
- Organizations challenge everything and ask for explanations of everything including rationality itself,
- Socialization is shallower, more transient, and more easily upended by deviants and mavericks and less controlled by elders, and
- Social competence tends to be office specific, local, narrowly defined and non-predictive of what will pass as competence anywhere else in the firm.[275]

Summarized then we find that in an organizational environment, an individual assumes a socially scripted role which is related to the function of his employment. For example, if he is a qualified teacher, he can find gainful employment in any educational institution where his qualification is recognized, specifically the "job" allows for seamless interchange of qualified individuals. In accepting such positional employment, the individual sacrifices some of his unique characteristics and individual rights but it frees him from certain social burdens that may govern his actions outside of this context. In other words, all focus is on teaching, and

[275] Czarniawska-Jeorges, B. 1992. *Exploring Complex Organizations: A Cultural Perspective*, as quoted in Weick, K. E. 1995. *Sensemaking*, 64.

teachers are interchangeable functionaries in this context. While this freedom allows him to achieve the organizational goals within this space (to teach), it also introduces a constructed reality where his functionally pared down behaviour can be challenged and overturned without notice (is that behaviour that is expected of a "teacher"?). The situation is in other words primed for Argumentation. Recognizing the nuanced character and challenges inherent in organizational life is important since it not only affects Sensemaking but also influences and determines the opportunities to generate new knowledge using Argumentation as a tool. Brockriede describes this tension most aptly as:

> Hardly ever, if ever, is a person under unqualified and deterministic control; hardly ever, if ever, does a person have unrestrained choice. Even when a person wants most to control, other people can choose; even when a person wants most to choose, other people can control.[276]

While identity construction is at individual level, within the organizational context, this identity is tied to the employment function and is subject to deconstruction for the reasons mentioned above. Weick et al. articulates it as: "Who we are lies importantly in the hands of others, which means our categories for Sensemaking lie in their hands."[277] This may seem to indicate a worrying lack of control for the individual and be a rather disturbing reality until one recalls that from a Sensemaking perspective, it is this very tenuous situation that facilitates interactive interchange which could potentially enhance meaning for the individual. To continue Weick et al.'s argument: "If [other's] images of us change, our identities may be destabilized and *our receptiveness to new meanings increases*."[278] Thus when the deviants or mavericks destabilize organizational socialization, it need not only be considered in a negative light. It establishes a forum where new sense and identity can be created via rationalization or justification through the process of Arguing and this implies that it introduces scope for growth, both for the individual and organization.

Ultimately, it is important to keep in mind that given the mix of organizational constraints of purpose and scope, and multiple individuals fulfilling functionary roles, Sensemaking for the individual and organization may be limited by and subject to these confines. In other words, while there is an opportunity to create new meaning, one should bear in mind that it may be

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[276] Brockreide W.E. 1974. Coping with Dialiectical Tensions. 4.

[277] Weick, K.E. Sutcliffe, K.M. Obstfeld, D. 2005. *Organizing and the Process of Sensemaking*, 416.

[278] Weick, K.E. Sutcliffe, K.M. Obstfeld, D. 2005. *Organizing and the Process of Sensemaking*, 416 (my italics for emphasis).

equivalent rather than shared meaning and that it may be very firm specific. As Weick explains:

> When information is distributed among numerous parties, each with a different impression of what is happening, the cost of reconciling these disparate views is high, so discrepancies and ambiguities in outlook persist. Thus, multiple theories develop about what is happening and what needs to be done, people learn to work interdependently despite couplings loosened by the pursuit of diverse theories, and inductions may be more clearly associated with effectiveness when they provide equivalent rather than shared meanings.[279]

Thus in the situational context of the organization, an individual's internal monologue often makes way for a dialogue that in its most innocuous form may be an exchange of information, but can also be a confrontation which questions the individual's sense of purpose and/or belonging within the organization. In such instances, "people reach a threshold of dissatisfaction with their current conditions, they experience a "shock" and initiate action to resolve the dissatisfaction."[280] Beyond the individual's interchangeable contribution, the organization itself is transitory and only exists as long as it participants continue to cooperate in order to achieve organizational goals.

Given that individuals come together in communities of practice and assume organizational roles for the purpose of achieving a communal goal line, it is thus important to recognize that the organization is nevertheless a collection of individuals. And while certain behavioural restrictions in the form of organizational roles and objectives limit individual freedom, each individual brings his/her inimitable skills, motivation, capabilities and personal traits to the organization. It is in these unique attributes and their singular combination that the potential for organizational success can be found. Brown and Duguid describe this as an enacting organization:

> capable of reconceiving not only its environment but also its own identity, for in a significant sense the two are mutually constitutive. [This] reconceptualization is something that people who develop noncanonical practices are continuously doing, forging their own and their community's identity in their own terms so that they can break out of the restrictive hold of the formal descriptions of practice. Enacting

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[279] Weick, K.E. Sutcliffe, K.M. Obstfeld, D. 2005. *Organizing and the Process of Sensemaking*, 418.

[280] Weick, K. E. 1995. *Sensemaking*, 84.

> organizations similarly regard both their environment and themselves as in some sense unanalyzed and therefore malleable. They do not assume that there is an ineluctable structure, a "right" answer, or a universal view to be discovered; rather, they continually look for innovative ways to impose new structure, ask new questions, develop a new view, become a new organization. By asking different questions, by seeking different sorts of explanations, and by looking from different points of view, different answers emerge—indeed different environments and different organizations mutually reconstitute each other dialectically or reciprocally.[281]

In other words, the individual Arguing in the organizational context is not only creating knowledge, but continually and simultaneously, recreating him- or herself *and* the organization.

4.2.2 Standard Operating Procedure in Organizations

Could Hamlet have been written by a committee, or the Mona Lisa painted by a club? Creative ideas do not spring from groups. They spring from individuals. The divine spark leaps from the finger of God to the finger of Adam.

~Alfred Whitney Griswold

Once the individual has committed himself to a contribution in an organizational context, given the sacrifices mentioned in the preceding section (see Section 4.2.1) his behaviour is then operationalized. In other words, the conduct of the employee is goal orientated and purposive but subjugated to the firm's existence and directive and simplified into formulaic units, Standard Operating Procedures. For example the production technician assembles a power supply unit, while the software developer writes Java code and each of these actions can be done to a standard, have a unit cost and contribute to a product that can in turn be sold. While this is a somewhat deterministic view of employment, it does realistically reflect organizational actions and account for our individual rebellious reaction at times. After all, as singular people we need to be countenanced to live out our uniqueness to achieve some sense

[281] Brown, J. S. Duguid, P. 1991. Organizational learning and communities-of-practice, 52.

of meaning and identity, in spite of being considered interchangeable functionaries in these organizational contexts. However, as stated in the preceding section, this is the pact or contract between the employee and his employer, and Standard Operating Procedure is a form of simplified organizational behavioural routine that allows individuals to be utilized interchangeably.

There are several operating procedures, routines, roles and best business practices, firm specific or industry standard, that pattern individual behaviour. However, for the purpose of this study, only Meetings will be mentioned since they are a structured form of conversation and provide a very specific situational context for Sensemaking through the interactive exchange that can take place during Arguing. Much like in life in general, Meetings, whether deemed to be a prerequisite for organized activity[282] or the organized activity,[283] assemble and generate Minorities and Majorities of opposing support. People naturally coalesce in groups of shared and/or unique areas of expertise, values and beliefs, for example. This assembly forms the opportunity as well as the infrastructure that creates sense within the organization. In this section, the fundamental nature of the Argument will be characterized in preparation for applying it as an organizational tool for not only Sensemaking, but also Knowledge Creation.

Schwartzman defines the concept of meetings in an organization as:

> a *communicative* event that organizes interaction in distinct ways. Most specifically a Meeting is a gathering of three or more people who agree to assemble for a purpose ostensibly related to the functioning of an organization or group, for example, to exchange ideas, or opinions, to develop policy or procedures, to solve a problem, to make a decision, to formulate recommendations, and the like. A Meeting is characterized by *multiparty talk* that is episodic in nature, and participants develop or use specific conventions for regulating this *talk*…The Meeting form frames the behaviour that occurs within it as concerning the 'business' or 'work' of the group, or organization.[284]

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[282] Huff, A.S. 1988. Politics and argument as a means of coping with ambiguity and change, as quoted in Weick, K. E. 1995. Sensemaking. 142.

[283] Schwartzman, H. B. 1989. The Meeting: Gatherings in Organizations and Communities, as quoted in Weick, K. E. 1995. Sensemaking, 143.

[284] Schwartzman, H.B. 1989. *The Meeting: Gatherings in Organizations and Communities*, as quoted in Weick, K. E. 1995. *Sensemaking*, 143 (my italics for emphasis).

The implication is that Meetings in Weick's words "…define, represent, and reproduce social entities as well as relationships. People use and are used by this Sensemaking form."[285] The Meeting in other words provides an opportunity for an individual to assert his singular voice and hold sway giving back some of his individuality sacrificed when he took up an organizational role as described in section 4.2.1.

Given that both Meetings and Argument are in essence social, it takes no stretch of the imagination to conceive of a Meeting where the process and procedure are contrived to facilitate a specific creative output or product: Wentzel's 'Contrived Arenas of Discourse' (see Table 4) For example, bearing in mind the earlier description of Knowledge Creation as incremental improvement and/or radical innovation (see Footnote 237), an incubator Meeting with two goals can be held on a quarterly basis:

- Incremental Improvements to existing Products, Business Processes, and/or
- Radically innovative Products, Business Processes and the like.

Participants, the Minority Group, could follow a structured presentation of information and spectators, the Majority Group could similarly respond as suggested in section 4.3. In such a stylized encounter, the emphasis shifts off the individual and onto the process, Arguing, and the product, creation of new knowledge.

Thus within the macro environment of organization, Meetings form a micro setting in which participants can relate and communicate individually and rationally, from more than the perspective of the organized roles that they portray. Furthermore, through reasoned discourse and exchanges in these confines they can derive meaning through progressive clarification: Sensemaking involves selectively taking what is clearer and linking it with the less clear, to form a unit of meaning.[286] Schwartzman sees in this minutia "*the* form that generates and maintains the organization as an entity."[287] Again Weick explains this as "action that occurs in Meetings is organizational action, this must mean that there is really organization."[288] Simply put, the actions and interactions within Meetings is what "organizes the anarchy."[289] This is further expanded in his point that Meetings are "part of the political system that offers

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[285] Weick, K. E. 1995. *Sensemaking*, 143.

[286] Weick, K. E. 1995. *Sensemaking*, 135 combined with 110.

[287] Schwartzman, H.B. 1989. The Meeting: Gatherings in Organizations and Communities, as quoted in Weick, K. E. 1995. Sensemaking, 143.

[288] Weick, K. E. 1995. *Sensemaking*,143.

[289] Weick, K. E. 1995. *Sensemaking*,144.

regular opportunities for people and solutions and problems to interact."[290] Meetings are punctuation in organization, repeated moments in an ongoing conversation, and a prerequisite for Sensemaking. Furthermore, and finally as an introduction to section 4.2.3 "Meetings embody the organization and give it some substance. They are also the main sites where requisite variety can be mobilized in the interest of sensing and regulating more variety that confronts the organization."[291]

Given the preceding description of the social interaction within Meetings, it is possible to extrapolate that similar patterns of action, interaction and conversation can be applied in broader terms beyond Standard Operational Procedures, especially when facing problems of environmental ambiguity and equivocality which is a function of the Information Age. For example, Weick encourages this form of interchange, saying:

> …in a changing world, it is not just the old answers that are suspect. It is also the old questions. And once people are uncertain what questions to ask, then they are put in a position where they have to negotiate some understanding of what they face and what a solution would look like. Puzzles now represent both threats and opportunities, the same event means different things to different people, and more information will not help them. What will help them is a setting where they can Argue, using rich data pulled from a variety of media, to construct fresh frameworks of action-outcome linkages that include their multiple interpretations. The variety of data needed to pull off this difficult task are most available in variants of the face to face Meeting.[292]

While it is generally agreed that a camel is a horse designed by committee, it is nevertheless important to acknowledge that we Meet and engage in organization in order to nurture, mature, maximize and implement the individual creative spark.

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[290] Weick, K. E. 1995. *Sensemaking*,144.

[291] Weick, K. E. 1995. *Sensemaking*,187.

[292] Weick, K. E. 1995. *Sensemaking*, 186.

4.2.3 Organizations in the Knowledge Economy

Knowledge intensive organizations are enterprises whose revenues depend on their ability to continuingly generate new knowledge and apply it successfully to clients.

~ Harrison & Kessels 2004

The business domain, indeed the larger world within which all organizations operate, is anything but stable – it is fraught with ambiguity, complexity and uncertainty. The various characteristics of the Information Age in which individuals and organizations find themselves were broadly defined in section 2.2; key amongst those identified being rapid and almost exponential change in a completely interlinked, networked world. This chaotic instability and volatility implies great risk, and would seem to nullify Argument as a possible tool of Sensemaking; especially since Weick is quite specific about the circumstances best suited to Argument (see section 3.3.2). As such, he mentions that "whatever *expectations* seem most compelling…at times of renewed *instability* are likely to trigger the next round of stabilization by behavioural confirmation. A *socially constructed world is a stable world*, made stable by behaviourally confirmed expectations."[293] Conversely, he states that "people…*Argue* their way to sense only when the world is relatively *stable* and reasons can be expected to hold true for the future."[294]

Within the larger business domain, organizations can couple themselves to their environment and constituent elements to a lesser or greater degree.[295] Nonaka et al. describes this situational context in even more details as follows:

> Today, Firms are facing many contradictions. In the era of globalization, a Firm has to achieve global integration and local adaptation at the same time. It faces various contexts in terms of its employees, customers, suppliers, related firms, and so on. Yet it has to share context within and across the firm to function efficiently. A Firm has to achieve creativity and efficiency in its operation at the same time. It has to effectively

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[293] Weick, K. E. 1995. *Sensemaking*, 154 (my italics for emphasis).

[294] Weick, K. E. 1995. *Sensemaking*, 153 (my italics for emphasis).

[295] Weick, K. E. 1995. *Sensemaking*, 71.

> create (explore) and utilize (exploit) knowledge. For that, it has to let the organizational members have autonomy while exercising some control over them.[296]

Given the multiple and contradictory requirements mentioned, it would be advisable to keep in mind that even though organizations are sometimes anthropomorphized, they are no more or less than "a set of people who share many beliefs, values, and assumptions. These beliefs, values, and assumptions encourage people to make mutually-reinforcing interpretations of their own acts and that of others and encourage them to act in ways that have mutual relevance."[297] It is perhaps not surprising when considering organizational origins and outcomes, that the world is filled simultaneously, with great successes and equal measure of disaster. The boundary between the individual and the organization, like the boundary between the organization and its environment, although real, is flexible and dynamic. What should perhaps be emphasized is that the individual, organization and environment form a complex and interactive system which constantly recreates itself. The system is most simply analysed as rational, natural or open.[298, 299] In each of the three instances, there is collective and goal-driven action, but varying degrees of structure, from the highly formalized in rational systems, such as found in bureaucracy, to continuously negotiated structure and purpose in open systems or anarchies. Since Open Systems leave the most room for individual expression and environmental variation, it would be expected that an organization functioning in this manner while chaotic, would generate more opportunities for Sensemaking and thus Knowledge Creation. When individuals Argue, in Weick's words, intersubjective meaning is created,[300] however, at organizational level becomes generic subjectivity:

> What is unique about organizational Sensemaking is the ongoing pressure to develop generic subjectivity in the interest of premise control and interchangeability of people. Generic subjectivity is developed through the processes of Arguing, Expecting,

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[296] Nonaka, I. Toyama, R. 2002. A Firm as a Dialectical Being: Toward a Dynamic Theory of a Firm, 998.

[297] Weick, K. E. 1995. *Sensemaking*, 73.

[298] Scott, W.R. 1987. *Organizations: Rational, Natural and Open Systems,* as quoted in Weick, K. E. 1995. *Sensemaking*, 69 and 70.

[299] Scott, W.R. 1998. Organizations: Rational, Natural and Open Systems, as quoted in Baum, J. A. C. McKelvey, B. eds. 1999. Variations in Organization Science: In Honor of Donald T. Campbell, 279–307.

[300] Weick, K. E. 1995. Sensemaking, 139: "When a person advances an explanation that qualifies as an Argument, the listener can then confront. If the listener tries to disconfirm the critic's argument and fails to do so, the intersubjective reliability of that argument is increased. If he can disconfirm or cast doubt on the critic's Argument, that Argument must be abandoned or revised. The product of the process of confrontation by Argument and Counterargument is a more dependable understanding."

> Committing and Manipulating. These four processes produce roles that create interchangeability, and they produce Arguments, Expectations, Justifications, and objects that become common premises for Action. These same four processes dominate the more intersubjective interactions where *innovations* in Arguments, Expectations, Justifications, and Objects are formed.[301]

Given that the post-modern 21st Century environment has changed significantly, it stands to reason that organizations have also adapted, since they are endemic to the environment and generally do not exist in resistance to the environment, but function systemically within it. Weick goes as far as saying: "People create their environments as those environments create them"[302] and expands this with "complicate yourself if you want to understand complicated environments"[303] in other words the theory of requisite variety applied practically in the environmental context. Building on the aforementioned, it is also worth noting that in these particular environments, Sensemaking is a uniquely suited organizational management tool. Weick explains as follows:

> Complex systems…make both limited sense and many different kinds of sense. They make limited sense because so little is visible and so much is transient, and they make many different kinds of sense because the dense interactions that occur within them can be modeled in so many different ways. Because new technologies are equivocal, they require ongoing structuring and sensemaking if they are to be managed.[304]

Part of the ongoing Sensemaking can be achieved paradoxically because of complexity. Indeed, Weick specifically mentions these environmental determinants identified by Huber and Daft: information load, complexity, and turbulence,[305] as three varieties of occasions where Sensemaking *must* ensue. Bureaucratic or rational organizational structures offer less opportunity for Sensemaking while Open Systems or organized anarchy offers more. Coleman recognizes: "Complexity theory suggests that self-organization is the natural

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[301] Weick, K. E. 1995. Sensemaking, 170.

[302] Weick, K. E. 1995. *Sensemaking*, 34.

[303] Weick, K. E. 1995. *Sensemaking*, 56.

[304] Weick, K. E. 1990. Technology as equivoque: Sensemaking in new technologies, as quoted in Hsiao, R.L. Wu, S.H. Hou, S.T. 2008. Sensitive cabbies: Ongoing sense-making within technology structuring. 252.

[305] Weick, K. E. 1995. *Sensemaking*, 87.

"default" behaviour, while organization studies recognize barriers to such freedom in bureaucratic structure."[306] Organized anarchy in this context is:

> a collection of choices looking for problems; issues and feelings looking for decisions-in-process through which they can be mediated; and solutions looking for questions. An organization is…a set of procedures by which participants arrive at an interpretation of what they (and others) are doing, and who they are.[307]

Thus it can be postulated that open organizations utilize significant environmental instability, complexity and turbulence, as opportunities for Sensemaking. Organizations' constituent structure, Standard Operating Procedures (such as Meetings, for example), and repertory of beliefs, all contribute to carving out a stable albeit complex, organizational existence which exploits the environment as an ally rather than an adversary. When organizations create stability through their roles, responsibility, vision and mission, they inadvertently also create the precise conditions in which Argument can be utilized to create new knowledge. The following section will explore the process of Arguing in relation to Knowledge Creation.

4.3 How Do You Argue?

If we Operationalize Arguing as interaction between Minorities and Majorities that routinely occurs in Meetings, we can deepen our understanding of how Argument aids Sensemaking.

~ Karl Weick

It has been said in jest that 'He who wields the largest stick, wins the argument.' This is a humorous reminder that regardless of how rational the Argument, when dispute arises, power often trumps reason. There is something about the smugness of being part of a convinced majority, a 'condition' that we all suffer from periodically. Weick describes this hubris in elegant simplicity as: "The sheer implausibility of a Minority view tempts people to dismiss those views publicly, yet to wonder privately how could someone be *so wrong* and yet *so*

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[306] Coleman, H.J. 1999. What Enables Self-Organizing Behavior in Businesses Emergence, 34.

[307] Olsen, J.P. 1976. *Choice in an Organized Anarchy,* as quoted in Weick, K. E. 1995. *Sensemaking,* 160.

certain of his or her position?"[308] Inevitably, especially in the constructed reality of an organization, there is shared purpose if not shared meaning. This translates into the Majority held position within the Firm and is not necessarily limited to purpose. It can be seen in Weick's words as the "generic subjectivity"[309] which makes a system of the organization. This generic subjectivity is called into question when individuals hold opposing views; however the difference only precipitates action when these individuals are thrust into a situation such as a Meeting where they are invited or forced, to defend their respective positions. Since such an opportunity can create new meanings and or new knowledge, it is important to review and understand the dynamics involved.

In organizations, as mentioned, Meetings serve a multitude of purposes from sharing information or conveying decisions to making or reviewing decisions, to name but a few. Participants bring their own context and individual meaning into this gathering, perhaps better described as their unique point view. This point of view or opinion is likely to be the result of a reasoned discourse, in other words, the individual has specific explanations and motives for this belief (the product of Argument as illustrated in Table 4). We also know that in a social setting, there may be some equivalent meaning or common opinions resulting. This may translate into a Majority position, strengthened by the fact that people change their positions towards those of a Majority.[310] Weick also emphasizes the political consequence of this aptly as: "sense may be in the eye of the beholder, but beholders vote and the Majority rules."[311] Since the Majority will wield power, there is thus an incentive to be part of the Majority and thus empowered. Majority and Minority positions in organizations as in life in general, arise since each question under review can be substantiated by exactly opposite Arguments (Protagoras' Maxim[312] and also see Section 4.1 and Footnote 263). In other words, while one person may identify a problem, the rest may see this not so much as the problem but as a solution or simply as the way things are. Weick conveys this multiplicity very clearly as follows:

> To label something that is novel or undesirable as a "problem" is to imply that it is also something to be solved. But that is not the only label that is possible. If the

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[308] Weick, K. E. 1995. *Sensemaking*, 141 (my italics for emphasis).

[309] Weick, K. E. 1995. *Sensemaking*, 71.

[310] Weick, K. E. 1995. *Sensemaking*, 140.

[311] Weick, K. E. 1995. *Sensemaking*, 6.

[312] Billig, M. 1989. Arguing and Thinking: A Rhetorical Approach to Social Psychology, as quoted in Weick, K. E. 1995. Sensemaking, 137.

> novelty is truly open to a variety of labels, then one could also say things like, that is an *issue*, manage it; that is a *dilemma*, reframe it; that is a *paradox*, accept it; that is a *conflict*, synthesize it; that is an *opportunity*, take it. To label a novelty a problem is a consequential act, just as it is consequential to call it an issue. That is the whole point of Sensemaking. Once something is labelled a problem, that is when the problem starts.[313]

Similarly, there may be multiple solutions to a problem and vice versa and varied agreement on these definitions. Whether one holds a Majority or Minority position with regards to an Argument matters; it matters since each requires an intrinsically different approach and rejoinder. There is a fundamental and unshakeable belief in the 'strength in numbers' which results in the Majority position always being perceived as one of strength and safety, irrespective of the validity of the Arguments it espouses. Essentially, the opinion is strengthened by the force behind the numbers: *it must be right, since 'everyone' agrees.*..While this is useful in limiting unnecessary variation or 'noise'[314] thereby facilitating day to day functioning, paradoxically it is also dangerous since it could compromise long term survival by limiting innovation.

Truly innovative concepts, products or indeed knowledge often originate as arbitrary hare-brained ideas from genius individuals or minorities. It is imperative therefore for organizations to strike a balance between providing stability and structure in a chaotic environment, whilst still facilitating a measure of internal instability and disorganization to encourage change. One of the ways in which this can be achieved is to not only encourage hare-brained ideas, but specifically nurture individuals or minorities that incubate these ideas. Examples of this strategy can be found in companies such as 3M[315] and Google[316] who set aside a substantial portion of their operating capital to finance new and untested projects and products (also see section 4.2.2).

It is important to understand the dynamic of Arguing from a Minority position in a Meeting, for example, and to utilize it as a business process or tool that facilitates innovation or the

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[313] Weick, K. E. 1995. *Sensemaking*, 90 (my italics for emphasis).

[314] Mokyr, J. 1992. *Technological Inertia in Economic History. The Journal of Economic History*, 326: "Resistance to change is essential for any system if it is to function and not degenerate into chaos."

[315] Lawson, B. Samson, D. 2001. *Developing Innovation Capability in Organisations.* 394: "For example, at 3M all technical employees are allowed to devote 15% of their time to a project of their own invention."

[316] Iyer, B. Davenport, T. 2008. *Reverse Engineering Google's Innovation Machine*, 7: "Technical employees are required to spend 80% of their time on the core search and advertising businesses, and 20% on technical projects of their own choosing."

creation of new knowledge, rather than to allow the process to deteriorate into open animosity and counterproductive discord. During Sensemaking, the Majority position allows its members the 'luxury' to passively focus attention on the *position* they propose, with only limited information processing, ignoring unselected alternatives. This results in what can be likened to an easy and dismissive arrogance, where the effort on the part of its members is limited to compliance. Conversely the Minority position, because of its perceived position of weakness, has to expend great cognitive effort in information processing, to evince substitutes for the Majority view and position. If the Majority position is likened to 'going with the flow' the Minority position would be akin to 'swimming upstream' to continue the metaphor. Essentially, its members are not compliant and besides that, they have to convert others to their position. This results in divergent, inclusive thinking, with multiple outcomes being proposed rather than the convergent, exclusive thinking in the majority position.[317] Consequently, more cues are considered from the Minority position leading to novel solutions, that elusive innovative alternative that no one else has yet conceived, never mind proposed. Such cues are ignored by the Majority as there is little information processing beyond the cue that validates the initial Argument and its sense. The patent danger thus in the Majority position is that while there is this safety in numbers, sense is limited to very narrow and possibly defective definitions. Weick identifies this weakness and its possible consequence as follows: "Unusual cues simply go unnoticed, which means Majority definitions of a situation may make sense, but only in a narrow way. Flaws in that definition of the situation are missed, which could mean that Majority positions can collapse suddenly into something that is incomprehensible or inconceivable."[318]

Examples abound, particularly in the political realm where systems with Majority support 'suddenly' disintegrate into revolutionary chaos while a new sense is being sought, blow by blow and in street fighting popular uprisings. Summarized, the main elements of Majority and Minority positions in organizational Argument are displayed as polar opposites in Figure 12.

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[317] Weick, K. E. 1995. *Sensemaking*, 141.

[318] Weick, K. E. 1995. *Sensemaking*, 142.

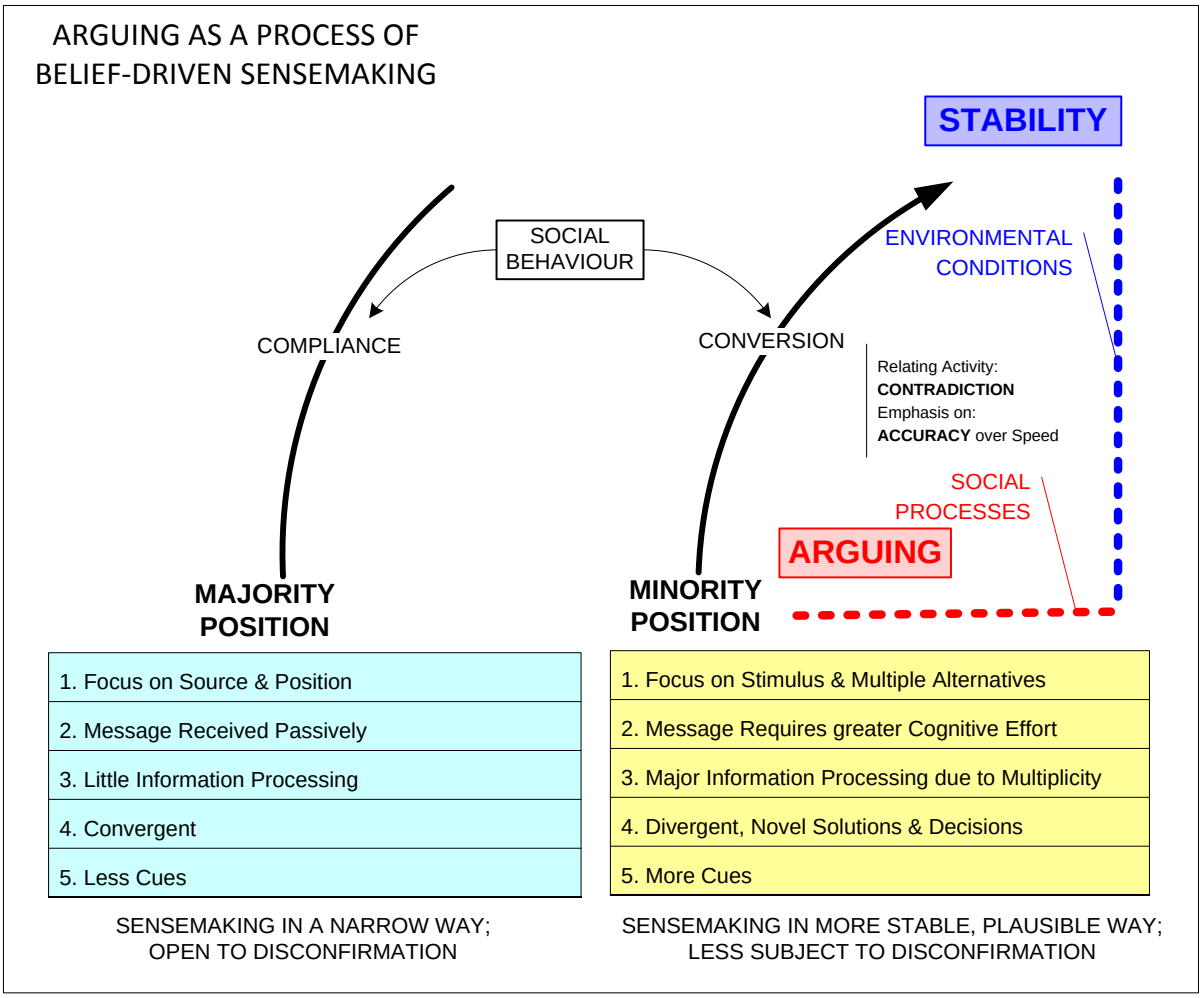

Figure 12: Arguing as a Belief-driven Sensemaking Process

Challenging the Majority position by considering alternative cues results in arousal; this threatens sense that had been made, or indicates the loss of sense. Looming in front of the critic is the sheer force of numbers that can turn into a tyranny and threaten not only the Minority position but the Minority itself. Questioning a Minority position is far less menacing. Publically the social influence and behaviour elicited by the majority position is one of compliance, whereas the minority position elicits conversion.[319] Privately however, individual members of these groups may not accept this compliance or conversion. The following section examines this process of compliance and conversion, see Figure 14.

[319] Moscovici, S. 1980. *Toward a theory of conversion behaviour*, as quoted in Weick, K. E. 1995. *Sensemaking*, 140.

4.4 Why Do You Argue?

Truth is eternal. Knowledge is changeable. It is disastrous to confuse them.

~ Madeleine L'Engle

People Argue because it is a stylized form of communication where reasons for and against a proposition can be proposed, discussed and debated for validity, relevance and/or correction. In January 2007 the world media carried the humorous after effects of the debative, cooperative knowledge creation or refinement process. The American Dialect Society published the following Press Release Statement: "In its 17th Annual Words of the Year vote, the American Dialect Society voted 'plutoed' as the word of the year, in a run-off against 'climate canary.' To pluto is to demote or devalue someone or something, as happened to the former planet Pluto when the General Assembly of the International Astronomical Union decided Pluto no longer met its definition of a planet."[320] The winning word, like the satirized image of 'Poor Pluto,' see Figure 13, and resulting internet meme using this image as its signature (another example again of the power, reach and interactive nature of the internet or Web 2.0), was the inevitable amusing spinoff from a serious academic deliberation which ensued when International Astronomical Union (IAU) declared: "The eight planets are: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune," and "Pluto is a 'dwarf planet'…and is recognized as the prototype of a new category of Trans-Neptunian Objects," published in Resolutions 5 and 6: *Definition of a Planet in the Solar System* and *Pluto.*[321] This is the fluid if not fickle process by which knowledge is created, revised and re-created; the outcome of the process is predictably equally dynamic.

Practically, knowledge, or justified true belief, is not so much about absolutes as it is relative, contingent and up for continual re-negotiation. For decades since the 1930s, generations had been confident in the belief system that after Uranus and Neptune, Pluto although smaller, was the ninth planet in our solar system. However, the professional astronomers, no less

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[320] Glowka, W. Barret, G. Barnhart D.K. 2007. *"Plutoed" Voted 2006 Word of the Year*. American Dialect Society. Full Press Release January 5, 2007. Available online at:
http://www.americandialect.org/index.php/amerdial/plutoed_voted_2006_word_of_the_year/
http://articles.cnn.com/2007-01-07/us/word.of.the.year_1_pluto-planet-awards-show?_s=PM:US

[321] International Astronomical Union (IAU). 2006. *Resolutions GA26: 5-6.* Available online at: http://www.iau.org/administration/resolutions/ga2006/

expert, authoritarian and respected than the IAU, had just revised that truth and replaced it with a new definition.

Figure 13: Poor Pluto[322]

One only has to mention Copernicus (1473–1543) to bring to mind that larger belief shattering demotions have occurred in preceding centuries when it comes to planetary knowledge. This does not invalidate the process by which new knowledge is created, but serves to remind us that definition, like classification, can bring to bear believable facts, but explanations facilitate adaptive Sensemaking (see footnote 246), and more importantly, that rational discourse, or Arguing is at the heart of Knowledge Creation .

"Sensemaking is about the *enlargement* of small clues,"[323] but even more than that, we can liken Sensemaking to creating knowledge because it is not simply an interpretation of what already exists. Weick's opening Arguments in *Sensemaking in Organizations* revolve around the salient theme that more than simply reading, "Sensemaking is about authoring as well as interpretation, creation as well as discovery."[324] He expands and delineates this theory by stating that "whatever *coherence such a process* has derives in a large part from one of two

[322] © Pedersen, Mathias Helmuth. 2011. 3D Image: *'Poor Pluto.'* www.MathiasPedersen.com

[323] Weick, K. E. 1995. *Sensemaking,* 133 (my italics for focus, linkage and emphasis).

[324] Weick, K. E. 1995. *Sensemaking,* 8 (my italics for focus, linkage and emphasis).

structures: *beliefs or actions*."[325] These structures also form the rudiments of knowledge definition and places Sensemaking at the root of human experience and existence. The relationship between these constructs also informs our understanding of Knowledge Creation. For Weick this interrelatedness and uniquely individual existential experience is best described as: "First, there are beliefs, embedded in frames such as ideologies or paradigms, that *influence what* people notice and *how* events unfold. Beliefs affect how events unfold when they produce a self-fulfilling prophesy."[326] In other words, not only is the experience uniquely individual, the process involves selective engineering. Again Weick is at pains to point out that contrary to the accepted platitude "in matters of Sensemaking, *believing* is *seeing*. To believe is to *notice selectively*. And to believe is to *initiate actions capable of lending substance to belief*."[327] The natural or pre-programmed result is the inevitable proliferation of beliefs through the individuality of meaning. While human interaction is time and space dependent, it is also to a large extent a vocal exchange. People think symbolically, they couple words to images, and associate meaning with words and images and they exchange their understanding through conversation and debate. In the theory of Sensemaking,

Weick also includes and characterizes the process by which this takes place: "Because beliefs vary among people, we…see orderly interaction around *Arguing in an effort to reduce the variety* in beliefs that are thought to be relevant, variety in what is noticed, and variety in what is prophesied."[328] In other words, understanding is encoded into words and these form the basis of a social exchange that has variously been identified as "decision making by objection,"[329] the "natural dialectic"[330] and "debative cooperation."[331] Pluto's varying solar status is a somewhat amusing but simultaneously serious example of these constructs that can be brought to bear in the digital networked world of organizations. It is an illustrative example showing how knowledge is created through the process of Argument, based on selective observation and a pre-existing belief system. It also serves to show how such

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[325] Weick, K. E. 1995. *Sensemaking*, 133 (my italics for focus, linkage and emphasis).

[326] Weick, K. E. 1995. *Sensemaking*, 133 (my italics for focus, linkage and emphasis).

[327] Weick, K. E. 1995. *Sensemaking*, 134.

[328] Weick, K. E. 1995. *Sensemaking*, 134.

[329] Hage, J. 1980. Theories of Organizations: Form, Process and Transformation, as quoted in Weick, K. E. 1995. Sensemaking, 136.

[330] Huff, A.S. 1988. Politics and argument as a means of coping with ambiguity and change, as quoted in Weick, K. E. 1995. Sensemaking, 136.

[331] Schmidt, K. 1991. *Cooperative Work: A conceptual Framework*, as quoted in Weick, K. E. 1995. *Sensemaking*, 136.

knowledge can be refined or refactored when observations change or are widened and beliefs evolve. Furthermore it emphasizes that at the leading edge of the known, an Argumentative process is a useful tool for reasonable validation of the output of this creative process. Hsiao et al. explains as follows: "As a whole, although technology is equivocal, our studies suggest that the equivocal nature can be better understood, if not managed, by examining ongoing structuring and sense-making around technology."[332] Simply put, when proposing an innovative solution, new product, or ground-breaking knowledge we would do well to follow the process of Arguing from a Minority point of view. See Figure 14 following for an illustrated view of how the characteristics of Arguing from a Minority position can be compared to the generic characteristics of Argument and Sensemaking.

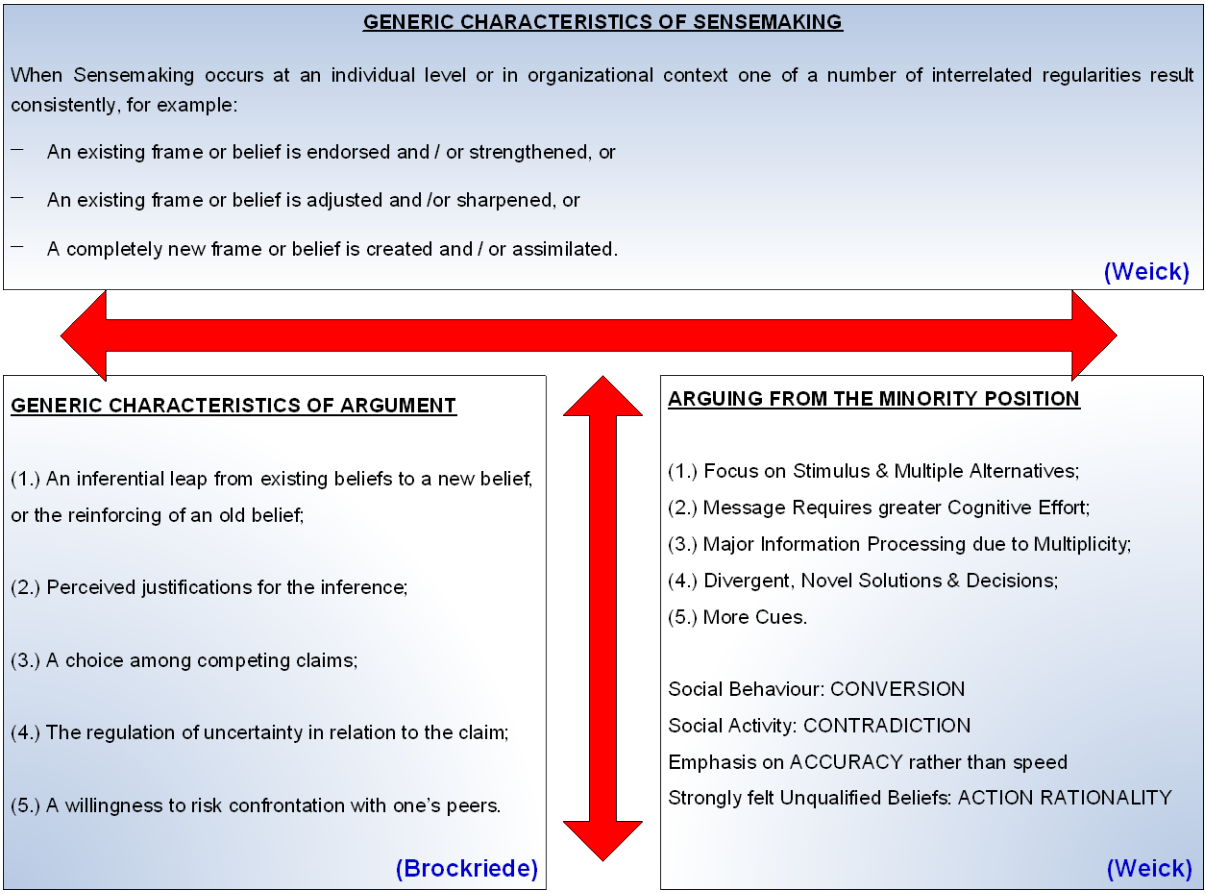

Figure 14: Synthesizing Sensemaking and Argument from the Minority Position

On examining Weick's explanation of Arguing from the Minority point of view in the context of Brockriede's characteristics of Generic Argument, framed within the regularities of Sensemaking, it is possible to identify unifying similarities. For example, the overriding

[332] Hsiao, R.L. Wu, S.H. Hou, S.T. 2008. Sensitive cabbies: Ongoing sense-making within technology structuring, 276.

social behaviour when Arguing from the Minority position is "*Conversion*," in other words, presenting an alternative opinion, belief, or truth to the accepted status quo. The scene is thus set for "*Contradiction*" of an existing belief or frame of reference by a new and untested belief or frame. This will inevitably result in "*Confrontation*" since the challenge either represents a valid alternative and opportunity to learn or revise learning, or a non-sense claim and thus reason to reinforce exiting belief and frame. Since most frames and or beliefs are *justified*, the Minority Arguer has to invest in significant *information processing* efforts in order to offer multiple and *divergent alternatives* demonstrating the substantive nature of the new knowledge claim. This presentation allows for a *reasoned choice* to be made among competing claims. When *compliance* to the Majority point of view takes place, one can say that single loop learning has taken place, however, when *conversion* results from a Minority position double loop learning, and thus Knowledge Creation can take place. This distinction is clear on consideration of Argyris' definition: "Single loop learning asks a one-dimensional question to elicit a one-dimensional answer…The whole transaction is binary. Double loop learning takes an additional step or…several additional steps…double loop learning asks questions not only about objective facts but also about the reasons and motives behind those facts."[333] In other words, a new frame or belief is established, based on reasoned justification.

When considering the example of the IAU (see footnote 321) what has taken place with regard to learning is not so much the creation of new knowledge, but a correction or refinement of existing knowledge which can also be substantiated against Argyris' later expansion of the definition of learning "…as the detection and correction of error. Single-loop learning occurs when errors are corrected without altering the underlying governing values…Double-loop learning occurs when errors are corrected by changing the governing values and then the actions."[334] This illustrates the checks and balances or continual review and renegotiation that mirror the dynamic and evaluative aspects of Sensemaking process in action.

Arguing from a Minority position in an organizational context can thus be considered a tool that serves a twofold purpose:

- A structured means to incubate ideas from which innovation and Knowledge Creation can take place, and

[333] Argyris, C. 1994. Good Communication that Blocks Learning, 78.

[334] Argyris, C. 2002. Double-Loop Learning, Teaching, and Research, 206.

- A quality filter (read 'bullshit' meter) that protects the organization against spurious or specious knowledge claims.

Perhaps one of the most well established forums that illustrate the strengths but also weaknesses of this process of Knowledge Creation, Argued into existence from the Minority point of view, is the Peer Review System, used in academic and scientific publication. This system has been described as a structured means of ensuring the "evaluation of scientific research findings or proposals for competence, significance and originality"[335] Brown points out that this process has a distinguished history, and follows repeatable steps:

> Formalised peer review began with some journals in the 18th century and scientists have used it as a systematised method of quality control for the last 100 years…To succeed in getting a paper published, scientists must present their findings clearly for review by experts in their field, chosen by a knowledgeable, neutral journal editor. This process is the accepted route for making findings public: only once a paper has been reviewed, revised and published does the wider scientific community take it seriously, examine it and evaluate its contribution. For new work to be incorporated into the body of scientific knowledge, researchers must first convince those knowledgeable in the same field about the plausibility of their claims and the appropriateness of the research methods and evaluation techniques they use.[336]

In the digital Web 2.0 era of self-publication, one of the means thus of establishing or maintaining the integrity of information, is to rely on the rigours of the Peer Review System. However the system is also not without fault. Even Weick is at pains to point out that: "the more advanced the technology is thought to be, the more likely people are to discredit anything that does not come through it."[337] The origin of this professional blind spot is characterized as Westrum's fallacy of centrality: "experts overestimate the likelihood that they would surely know about a phenomenon if it were actually taking place."[338] See section 3.2.2 specifically footnote 151. For example, Campanario has noted: "instances in which 19 future Nobel Laureates encountered resistance on the part of the scientific community towards their discoveries, and instances in which 24 future Nobel Laureates encountered

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[335] Brown, T. 2004. Peer Review and the Acceptance of New Scientific Ideas, 7.

[336] Brown, T. 2004. Peer Review and the Acceptance of New Scientific Ideas, 2.

[337] Weick, K. E. 1995. *Sensemaking*, 3.

[338] Westrum, R. 1982. *Social Intelligence about Hidden Events*, as quoted in Weick, K. E. 1995. *Sensemaking*, 2.

resistance on the part of scientific journal editors or referees to manuscripts that dealt with discoveries that later would earn them the Nobel Prize"[339] While the numbers are too small to indicate the failure of the peer review system, it does serve as a warning that while Argument may be the best tool to establish new knowledge, it is by no means infallible.

4.5 Concluding Summary

Verena's Law of Constructive Proof: Every sound argument can and ought to be turned into a construction that embodies and explains its conclusion.

~ Verena Huber-Dyson

For the most part, people respond viscerally and emotionally to Argument, yet we unquestioningly accept that some of our greatest institutions in society rest upon its fundamental principles. Our civilization has grown and advanced, for example, due to the establishment and practise of democracy in parliaments, law in courts, and learning in universities. At the heart of these traditions, Argument is an accepted routine of discourse and ritual for the advance of policy, fairness and knowledge. There is no reason why Argument should not be utilized as a structured form of discourse within organizations by individuals, especially in established forums such as Meetings.

This Chapter has examined what constitutes an Argument (see Toulmin in Figure 11) and what the process of Arguing involves (See Brockriede as reference in Footnote 258). Furthermore, it has established that when an Argument is made from a Minority position (see Figure 12), the following critical elements are naturally exercised:

- Not only is the stimulus at hand considered, but multiple alternatives are explored to establish cogency;
- Great cognitive effort is expended in exploring possible options and probable contradictions;

[339] Campanario, J.M. 2009. Rejecting and resisting Nobel class discoveries: accounts by Nobel Laureates, 549.

- Major information processing takes place due to the multiplicity of meaning and evidence;
- Divergent, novel solutions and decisions are deliberated on to establish proof and meaning; and
- The widest range of cues is given consideration.

In an organizational context, considering these elements greatly increases the chance of not only original ideas, processes or products, but also, in effect dynamically creates the opportunity to establish a competitive advantage. Utilizing a natural element of human interaction, which is what Argument is, and regimenting it in a way to leverage maximum creativity, seems to be a feasible strategy for innovation.

Chapter 5
Conclusion

5 Conclusion

But argument is a tool of deconstruction and affirmative re-construction that we ought to reclaim in the service of cultural evolution and social transformation.

~ Jeffrey Thomas Bile

5.1 Findings and Practical Implication

The environment that individuals and companies alike find themselves subjected to and participating in, is stressed, not only in terms of climate, but equally so economically. Competition is fierce and while scarcity does still factor in the campaign, the basic terms of engagement have changed. Thus the ever daunting battle for survival plays out not so much on a physical and existential level, but judging from countless financially impoverished individuals and failed enterprises, in even the most developed of countries, on an abstract level where knowledge is the distinguishing factor. Whereas formerly the Industrial Economy could be said to have embodied deliberateness, evolution and control, the current Knowledge Economy is one characterized by emergence, revolution and chaos. Not only is knowledge the dominant currency, but the creation, control of supply, and management of knowledge have become the standard terms and conditions and driving force in trade and commerce.

Furthermore, given the innate fluidity and perishability of knowledge, not only have the terms and conditions of economic exchange been altered, but nature and pace of change is also fundamentally different. In the knowledge economy, the half-life of knowledge is continually diminishing. While an asset which can be ascribed a value, knowledge cannot be

accumulated in the traditional sense that money was; in fact, its fluid nature is such that while it may have enormous value one day, it may lose all of it on the following day. To continually sustain growth in an enterprise, having exclusive knowledge is important, but being able to generate new knowledge is the differentiating characteristic. The World Bank Institute has formally identified four pillars that support this notion of the Knowledge Economy:

- An *economic and institutional regime* that provides incentives for the efficient creation, dissemination, and use of existing knowledge.
- An *educated and skilled population* that can create and use knowledge.
- An *effective innovation system* consisting of research centers, universities, think tanks, and other organizations that can, not only tap into the growing stock of global knowledge, assimilate and adapt it to local needs, but also create knowledge.
- A *dynamic information infrastructure* that can facilitate the effective dissemination and processing of information.[340]

While the World Bank Institute emphasizes the regime, the skilled population, the innovative system and the infrastructure, this thesis has focused on the differentiator amongst these entities: *the ability to create knowledge through a controlled and repetitive process*. Literature has shown that knowledge management theories such as the SECI process, the Knowledge Management Solution model, the I-Space model, and the Knowledge Management Life Cycle all provide valuable tools that may facilitate operational success in the Knowledge economy. Each of them focuses on management aspects related to knowledge. Yet in these theories, the key process, namely the creation of new knowledge, is either not considered or shrouded in terms such as “conversion,” “externalization,” and “combination,” which do not easily translate into practical or actionable steps. Furthermore, the theories do not adequately account for, or address the influence that an emerging, revolutionary, chaotic environment may have on participants.

In the tumult of the world, individuals often experience rational thought and emotional turmoil in equal measure, whether in a personal or organizational context. A great deal of energy is thus consumed simply trying to make sense in a confused and confusing environment. This very common, consuming and uniquely individual, human activity does not feature in the Knowledge Management models selected for this study. Within these

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[340] World Bank Institute. 2004. Benchmarking Countries in the Knowledge Economy: Presentation of the Knowledge Assessment Methodology (KAM). Knowledge for Development Program, 2 (italics from the source).

theories, organizational behaviour is characterized as or assumed to be purely functional and therefore completely rational. However, any employee that has weathered a 'boardroom brawl,' or similar exchange, whether as a spectator or participant, will testify that organizational behaviour is never *only* functional and rational.

organizations consist of individuals, consequently, organizations exhibit the complete spectrum of human behaviour, driven by intellect and/or emotion. Any management theory applied in an organizational context should as a minimum acknowledge the unpredictability of human behaviour. Sensemaking with its grounding in such disparate disciplines and domains as Cognitive Dissonance Theory, Social Psychology, and Ethnomethodology does exactly this; it focuses on "conflict, affect, motivation, and instability as antecedents of change, rather than…on cool formation processing."[341] First and foremost, Sensemaking is an Cognitive Theory that Weick situates in organizations, not a knowledge management theory, and making sense is not equal or equivalent to creating knowledge. Nevertheless, Weick describes Sensemaking as: "grounded as much in deductions from well-articulated theories as it is in inductions from specific cases of struggles to reduce ambiguity."[342] Inductions and deductions result from beliefs and or actions, and Sensemaking, distinguishes and combines the Cognitive domain, through Abstract or Inferred Beliefs, and the Physical domain, through Concrete or Visible Actions. In his words, "Sensemaking keeps action and cognition together."[343]

5.2 Originality and Value

It is safer to accept any chance that offers itself, and extemporize a procedure to fit it, than to get a good plan matured, and wait for a chance of using it.

~ Thomas Hardy

The exploration of Sensemaking in organizations with particular emphasis on Belief-driven Sensemaking as a process to generate new knowledge, shows that there are means to meet the

[341] Markus, H. Zajonc, R.B. 1985. *The Cognitive Perspective In Social Psychology,* as quoted in Weick, K. E. 1995. *Sensemaking,* 12.

[342] Weick, K. E. 1995. *Sensemaking,* 13.

[343] Weick, K. E. 1995. *Sensemaking,* 30.

challenge of creating new knowledge, even in chaotically turbulent environments. Sensemaking proves particularly useful when dealing with voluminous information in rapidly changing environments. Discomfort and discontinuity, which characterize turbulent environments, are primary motivators which can be leveraged for creativity and innovative growth. Within Sensemaking terminology, discomfort and discontinuity serve as anomalies or cues which initiate cognitive processes and/or actions. The outcome of these processes or actions can be differing types of new knowledge.

This means that organizations can facilitate creativity and innovative knowledge growth in two ways, namely:

- Providing a stable organizational platform, in a chaotic world, and
- Actively identifying and developing processes that foster accuracy.

Weick eloquently explains the process as:

> In an unstable world, what people need is some sort of stability. Behavioural confirmation allows them to enact a small pocket of stability and then to work outward from there. A small pocket of stability is as joint product of selective noticing and selective shaping that recycles across time. The combination of selective noticing and selective shaping, and serial self-fulfilling prophesies eventually constructs a social world where people may then be able to worry about accuracy rather than stability. Once stability is achieved, accuracy is possible. When accuracy flourishes, self-fulfilling prophesies recede as a trigger for Sensemaking, perhaps to be replaced by Arguments that preserve the sense that was first created by Expectations.[344]

Creative individuals are most likely, and most often, in the Minority in an organization; one of the ways in which organization can nurture them, is to mentor them in the process of Arguing, since "Argument is based on the perceptions and choices of people."[345] In studying Argument and how Minorities Argue in the setting of a Meeting, Weick identifies a number of key characteristics that define Argument (see section 4.1) and the process of Argument from the Minority position (see Figure 12). Summarized these characteristics can be seen in Table 6 below:

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[344] Weick, K. E. 1995. *Sensemaking*, 153.

[345] Brockriede, W. 1975. *Where is argument?* 179.

Exchanges Characterized as Arguments	Characteristics of Arguing from the Minority Position
A willingness to risk confrontation with one's peers.	More Cues have to be taken into consideration
A choice among competing claims.	The Focus on is on Stimulus as well as Multiple Alternatives
An inferential leap from existing beliefs to a new belief or the reinforcing of an old belief.	The outcome results in Divergent, Novel Solutions and Decisions
Perceived justifications for the inference.	The Message Requires greater Cognitive Effort
The regulation of uncertainty in relation to the claim.	There is Major Information Processing due to the consideration of Multiple Alternatives

Table 6: Argument and Arguing from the Minority Position

Using the definition of Argument and the process of Arguing from a Minority Position, organizations can thus implement a three-pronged strategy where employees are encouraged to:

- Consider more cues, that is examine varied opinions, regardless of the potential for confrontation,
- Focus on divergent, novel solutions and decisions as well as competing alternatives,
- Exert the Cognitive Effort for Information Processing required to substantiate deductions that support these new ideas,

It was shown that Sensemaking, although a Cognitive Theory that has been applied in organizational contexts, can be fruitfully utilized as a Knowledge Management theory, when considering Arguing, as a Belief-driven process to make sense. In fact, Sensemaking has a number of advantages over the mainstream Knowledge Management theories. Not only does Sensemaking facilitate better coping strategies in complex and chaotic environments, but it can also be utilized as a driver for innovative growth, when Arguing is applied formally as a distinctive process within an organizational context.

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