

**Investigating the Constitutive Elements of Knowledge  
Processes and Organisational Capabilities: Tracing  
the Connexions**

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## Abstract

Knowledge is identified as a prerequisite for building capabilities in organisations which in turn is a prerequisite for value creation, competitive advantage and continuous learning and adaptation as the organisation co-evolves with its environment (Barney, 1991, Van den Bosch et al, 1999; Teece et al, 1997; Flood et al, 2001; Osterloh and Frey, 2000).

This paper discusses how the locus and characteristics of different organisational forms and knowledge types facilitate fundamental insights into organisational knowledge processes, absorptive capacity and hence organisational capabilities. The distinctions thus established are used as a primer for discussing the role of archetypal influences on knowledge and capacity building within the firm, emphasising the associated microfoundations relating to knowledge processes and organisational capabilities. The concept of the dominant logic is used to illustrate determinants of strategic preferences of organisations regarding choice of strategic objectives and the associated structural and process issues. Consequently, the concepts of power, politics and language are introduced to discuss how organisational constructs are enacted in the physical and linguistic domains of organisations and hence the implications for sense-making and coordinated efforts.

In addressing the issue of microfoundational contribution to organisational theory, the concepts of procedural justice is introduced as a field of study that has promising potential for investigating the motives and behaviour of individuals in organisations and how organisations can facilitate aggregation of knowledge from individual to collective levels. Lastly, a combinative concept of autopoietic and complexity theories is discussed as a potential area of research focus that could contribute to mitigating ambiguities surrounding micro-macro issues in the study of organisations.

## Introduction

The substance of this paper concerns life in organisations (a.k.a. firms and companies), how it is enacted and the rationale behind critical actions and processes directed at value creation and the competitive capacity of organisations. The organisation as a social system asserts the interdependent and socially embedded structures that form the organisation (Spender, 1996; Lam, 2004; Sandow et al, 2005, Granovetta, 1985). The convergence of individuals from disparate backgrounds mingling to achieve the so called common goal plants the seeds for contradictions, confusion and inconsistency and hence the need for formula to create meaning and coherence from the ensuing disparities. Knowledge processes are one such formula devised to capture, interpret and disseminate data, information and practices that the organisation deems relevant to its existence.

The emergence of the knowledge economy brings with it the undeniable indispensability of critical knowledge as the vehicle through which the knowledge economy is actualised. Critical knowledge in the sense that it is not just about knowledge, but knowledge that is significant in achieving leverage and maintaining viability in the domain/environment of operation. Increasing product complexity, the move towards globalisation, the emergence of virtual organizations and the

increasing focus on customer orientation demand a strategic and thorough approach to managing knowledge.

The knowledge economy is defined as one in which the generation and the exploitation of knowledge significantly determines wealth creation and economic value (DTI, 1998). Scarce resources, incessant changes in the operating environment and the increasing dependency of the economy on knowledge and information systems pushes knowledge and its application to the fore front as the key instrument defining market value and the competitive capacity of organisations. The emergence of the knowledge economy is a direct function of the prominent status that knowledge-based activities now occupy in facilitating economic growth. Hence, knowledge and the associated learning are considered to be fundamental sources of competitive advantage in the knowledge economy (Smith, 2002; Brint, 2001; Johnson and Lundvall, 2001).

### **The Concept of the Knowledge Economy and the Significance of Knowledge**

The rise in the knowledge intensity of economic activities and the increasing globalisation of economic affairs have been two main catalysts pushing the frontiers of the knowledge economy, coupled with the explosion of information technology and the pace of technological changes (Houghton & Sheehan, 2000; Flood et al, 2001). In this respect, knowledge has become the key factor in production, diminishing the primacy of capital and labour (Brint 2001; Flood et al, 2001). Companies pursue knowledge to achieve critical learning that enable them to acquire informed abilities (i.e. capabilities) to make strategic choices and allocate their resources and competencies in a way that creates market value, competitive advantage as well as timely and effective responsiveness to market conditions. Knowledge processes exist to coordinate, integrate and apply knowledge resources and the activities of the firm.

The emergence of the knowledge economy implicates knowledge as the critical mainstay directing economic activity and hence economic success. The prominence given to knowledge is continuously exacerbated by the proliferation of information technology and the increasing encroachment of boundaries separating business functions, market segments, industry sectors and even global markets.

Hence, the realisation of the interrelatedness of business functions in delivering the firm's business and the need for a holistic approach that transcends the silos created by specialization and taylorism approach to management. Another consequence is the realisation that competing and complementary organisations can enhance their performance and competitiveness through collaboration, mutual and complementary sharing of knowledge across boundaries to maintain viability within the disappearing demarcations of market. These features have very significant implications for the development of organisations and the strategic choices they make in defining their capabilities and the processes and resources for achieving them.

### **Knowledge, Learning and Organisational Capabilities (OC)**

Central to research interest in knowledge and its associated implications for organisational performance is the quest to explicate the reasons why certain firms outperform others (O'Regan and Ghobadian, 2004). Research in several academic disciplines on knowledge management indicates that the properties of knowledge units, relationships and the environment predict firm outcomes (Argote and Ingram, 2000; Cohen and Sproull, 1996; Helfat, 2001; Spender, 1996).

Firms exist to create value deemed to address specific functions or market demands hence, the primary purpose of an organisation is one of value creation. However, there are many players in the market seeking to create value, and naturally in the midst of scarce resources, competition will prevail, hence, the need for distinctive abilities (i.e. capabilities) that provide competitive advantage. This does not ignore the significance of generic capabilities as stressed by O'Regan and Ghobadian (2004). It is recognised that in as much as capabilities exist that are unique to firms in certain competitive positions, there are also capabilities that are generic to firms in their relevance to the execution of a business as a value generating entity e.g. product development and customer service capabilities. The term distinctive is used in this context to highlight the style and flavour that the individual organisation brings to bear on how it applies its capabilities even if these are capabilities generic to other firms.

As ascertained by Ulrich and Smallwood (2004), companies develop capabilities to enable them create market value in a distinctive way that define their identity and personality in the particular area of business pursuit. The nature of Organisational Capabilities (OC), much like knowledge (is to the individual) is distinctive and personal to the organisation because of its path dependency which is historically bounded. For instance, Daft (2000) describes organizations as goal oriented social entities consisting of deliberately structured and coordinated activity systems which are linked to the external environment. This suggests that OC are products of structural coupling between the organisation and its environment, hence any attempt to explicate or reduce OC to its constitutive elements must necessarily be context specific and must take account of the history supporting the development of these capabilities.

The path dependency of organisational capabilities creates distinctive characteristics that cannot be replicated because of their embeddedness in the ontogeny and configuration of the firm. This relates to the organisation's development over time and the shared constructs or meanings that define the values, culture and hence, the organisation's peculiar way of viewing the world, interpreting situations and hence, its particular manner of responding to and interacting with the environment. Hence, it defines the organisation's identity and personality because it pervades what it does and how it does it. (Ulrich and Smallwood, 2004; Thomas et al, 2001)

For instance, the ability of organisations to learn is a critical capability required by all firms. Organisations that achieve strategic learning derive meaning from familiar, new and ambiguous experiences in addition to developing shared understanding of current and future events. Learning in this context is inextricably connected to the understanding processes that enable and define sense-making (Thomas et al 1997). According to Bhatt (2000), in developing capabilities, organizations complement and combine knowledge from different repertoires in a way to make their application unique to the organizational context and history. Hence, capabilities are context specific and very personal to the organization of domicile. Hence, it can be argued that the multiple constitution of OC contributes significantly to the levels of ambiguity confronting attempts to establish substantive theoretical frameworks to underpin OC as higher order construct.

Chandler (1990) defines OC in terms of the combinations of physical and human resources and very importantly the abilities and skills of top management. Nelson and Winter (1982) describe capabilities as lower order skills and higher order coordinating mechanisms. Grant (1991), Amit and Schoemaker (1993) posit OC as the capacity to deploy resources effectively and perform improvement activities. Dosi et al (2000), defines OC, by relating it to the underlying intent that gives OC

significance, arguing that capabilities fill the gap between intention and outcome. Teece et al (1997) researches OC from a dynamic perspective in terms of the potential of OC to provide competitive leverage in volatile environments. These definitions suggest that OC relate to the know how of firms in integrating and exploiting their resources (tangible and intangible), skill sets and processes towards a specific end.

Ulrich and Smallwood (2004) provide a useful taxonomy of OC in relation to its nested position within the organisation.

	Individual	Organisational
Technical	<p><b>An individual's functional competence</b></p> <p>e.g. expertise in marketing, finance, human resource management etc</p>	<p><b>An organisation's core competence</b></p> <p>e.g. core technical competencies such as a risk management know how required by a financial services company</p>
Social	<p><b>An individual's leadership ability</b></p> <p>e.g. ability to set direction, motivate or communicate a vision</p>	<p><b>An organisation's capabilities</b></p> <p>e.g. culture, personality, how the organisation does what it does</p>

Fig 1: Taxonomy of Organisational Capabilities (*adapted from Ulrich and Smallwood, 2004*)

Fig: 1 suggests that OC are networks of relationships and processes (i.e. a social skills set) that enable firms to coordinate, combine and deliver its core competences and resources. Hence, OC relates to knowledge, skills and expertise as well as the organisation's ability to successfully exploit the combined competencies and abilities of its members. Hence, OC enables organisations to turn their technical competencies into results.

As argued by Bhatt (2000), it is the dynamics in the interactions between techniques, technology and people that determine organisational capabilities. I would add that organisational structures and by default knowledge process play a huge role in the configuration and combination of these dynamics. An organisation's approach to

acquiring, diffusing, interpreting and exploiting knowledge resources and hence its knowledge processes determine the patterns of interaction between the various dimensions of knowledge in the organisation (i.e. tacit and explicit, individual and collective). It is these patterns of interaction that provide sources of competitive advantage because the extent of an organisation's capabilities is determined by the extent of its ability to comprehend and apply these patterns of interactions. Hence, capabilities are organising principles that enable organisations to combine and integrate knowledge resources for specific purposes. In this respect, knowledge processes in organisations whilst facilitating the development of capabilities can also be considered as part of the organisation's capability. Capabilities here refer to the integration of knowledge and skills, it is synonymous with the organisation's ability to apply itself in converting its resources into services or product that delivers its strategic objectives. This ability is closely linked to the absorptive capacity of the organisation (Cohen & Levinthal, 1990).

### **Knowledge Processes, Absorptive Capacity (AC) and the Application of Knowledge**

Increasingly, firms are operating within highly volatile knowledge environments as knowledge becomes the key resource for production and competition. In the attempt to explicate how firms co-evolve with their environments, several authors have attempted to analyse the ability of organizations to absorb and apply new knowledge through the concept of absorptive capacity (Cohen and Levinthal 1990, Lane and Lubatkin, 1998; Zahra and George, 2000, 2002; Van den Bosch, 1999). According to Cohen and Levinthal (1990), AC relates to the ability of the firm to recognise and assimilate the value of new, external information as well as apply it for purposes key to its innovative capability. Zahra and George (2000) define absorptive capacity (AC) as capabilities required by organisations to manage knowledge for the purpose of value creation involving the ability to acquire, assimilate and exploit knowledge.

These definitions of OC and AC suggest duality of meaning and potential confusion as to the meaning or differences between the two concepts. This paper positions AC as a type of OC which bears a circular relationship with OC in its capacity to further the development of organisations, in the sense that AC also informs the organisation's capacity to develop capabilities in line with conditions in its environment.

Three main knowledge dimensions that facilitate the operations of organizations can be broadly classified as knowledge relating to products or services, knowledge relating to production processes and knowledge relating to markets. Elements of these knowledge types reside within the organization and external to the organization in its traditional knowledge environment as well as within unexplored knowledge environments (Van den Bosch, 1999). Various aspects exist at explicit and tacit levels (Polanyi, 1966; Nonaka 1994) necessitating a balance of interaction between the two levels to provide meaningful experience that can be absorbed through learning to realise its productive utilization.

As indicated by Grant (1996 in Van den Bosch 1999), the fundamental role of the firm revolves around the integration and application of knowledge. It is this capability that defines AC of organisations. The constant challenge to create new knowledge configurations within the firm implies that the absorption of new elements of the various knowledge dimensions is critical to a firm's operations, and hence to its ability to capture, assess and apply new knowledge. Cohen and Levinthal (1990 in Van Den Bosch et al, 1999) refer to internal mechanisms that determine absorptive capacity of organisations, such as knowledge transfer across and within subunits, the structure

of communication between the firm and its external environment, the wide-ranging networks of internal and external relationships as well as the cross functional interfaces. This variety of interfaces implies a complexity of interactions that require distinctions in order to explicate the mediating knowledge processes and how they interact to facilitate absorptive capacity in organisations.

Knowledge processes in organizations are critical to ensuring the efficiency, scope and flexibility dimensions related to absorptive capacity in organizations. Efficiency refers to the cost and the economies of scale related to knowledge acquisition and deployment; scope refers to extent of the various knowledge dimensions that a firm draws upon; flexibility refers to the firm's agility to access new knowledge as well as manipulate existing knowledge. In this respect, organizational forms play a significant role in determining the extent to which knowledge processes are enabled to ensure efficiency, scope and flexibility dimensions of an organisation's ability to absorb knowledge. This is collaborated by Van den Bosch et al's (1999) focus on organization form as an important organizational determinant of absorptive capacity based on the premise that a firm's organization form is strongly related to its knowledge-processing activities. To illustrate this, I use the three basic classifications of organizations used by Van den Bosch et al (1999).

**The functional form** which is underpinned by functional groupings of similar activities under the management of key functional managers lends itself to what could be termed as cumbersome hierarchical tendencies and compartmentalization of knowledge within the firm, hence, inhibiting cross functional learning and learning across boundaries because component knowledge is specialized and managed according to functional areas. This form of organisation naturally creates silos, which limits the scope and flexibility of knowledge processes (and hence absorptive capacity), however it does have the advantage of breeding efficiency through economies of scale, overheads and skills. While this form might suffice in a stable environment, it quickly becomes a nuisance in volatile or more unstable circumstances because the silos thus created generates conflicting interests as priorities across functional areas differ, hence decision making is a much longer and tedious process and as such, the organization's responsiveness to learning or knowledge absorption and application will be much slower than the environmental dynamics require.

**The division form**, which is derived from grouping organizational activities according to product market combinations is characterized with fewer hierarchical structures and reduced compartmentalization of functional areas. The autonomy of divisions to make operational decisions and interact directly with the environment allows greater flexibility of knowledge absorption than would be found in the functional form. However, the interpretation and application of component knowledge occurs at divisional levels and to that extent limits the integration and common application of knowledge between multiple divisions, though the loose coupling amongst the division facilitates some level of divisional knowledge absorption. Hence, the division form offers relatively higher latitude for flexibility of knowledge absorption whilst constrained in providing sufficient scope and efficiency in the process. This form of organization is considered to be more suited to organizations operating in a dynamic environment characterized by large numbers of different product-market combinations that have little knowledge characteristics in common.

**The matrix form**, which in many respects symbolizes recognition of the limitations of the functional and division form, attempts to harmonise the principles of both forms in order to harvest the combined benefits. As a hybrid, the matrix form offers the benefits of combining the concepts of functional departments with that of

autonomous divisions, thereby offering greater flexibility combined with scope of knowledge absorption because resource can be allocated to projects without the constraints imposed by functional or divisional boundaries. However, efficiency through economies of scale is still significantly constrained because of the wide variety of resources that will be needed to service multiple projects simultaneously. The benefits make this form attractive for organizations operating in many new product-market combinations with relatively short life cycles (Van den Bosch, 1999).

Knowledge processes in organisations have the potential of providing firms with the much needed efficiency, scope and flexibility. In this respect, knowledge processes are related to organizational forms as they are the vehicle that connects the different resources and structures that give the organization form. Other forms of organizations have been proposed for example the network paradigm (Cravens et al, 1996) to illustrate how companies have evolved in the attempt to achieve a balance in the efficiency, scope and flexibility of knowledge absorption and utilization vis-à-vis conditions in their operating environment.

For example, the hollow network organization as identified by Cravens et al (1996) is designed to respond to volatile situations especially in highly segmented product markets where customer needs are differentiated. Hence, the need for collaboration or synergistic relationships with complementing partners as organisations tap into other organisations and individuals to address market situations and deliver their corporate objectives. Cravens et al illustrate the design of the hollow network organization through the operations of the Registry Inc (USA). The company's core competence is its skills in using its extensive database to recruit technical skills for client projects. A major advantage that the company derives from the hollow network is the flexibility, efficiency and scope it gains through its hub of worldwide networks that enables efficient tracking and updating of the database, extensive scope in terms of access to skills and the flexibility to shift quickly to new opportunities as they arise as well as to alternative sources of supply when required (Achrol, 1991, Cravens et al, 1996). In this sense, the hollow organization represents a buffering mechanism devised to counter the threats created by the volatility of the environment

## **Organizational Forms and Knowledge Types**

All organisational activities arise from and are conducted through Knowledge in action, hence, a firm's capacity to act is closely connected to how its knowledge is articulated and applied. Ontological and epistemological approaches to knowledge in organisations allows distinctions to be made between the categorisation of the locus of knowledge as nested at the individual or collective levels (Polanyi, 1962) and modes of knowledge expression as explicit or tacit (Nonaka, 1994). These dimensions of analysis allow knowledge to be expressed in various forms in organisations as illustrated by Lam (2004):

- Knowledge that is individual and explicit (i.e. embrained in the individual, e.g as acquired through formal education or studying)
- Knowledge that is individual and tacit (i.e. embodied in the individual, e.g. action oriented or practical knowledge, usually context specific and acquired through experience)
- Knowledge that is collective and explicit (i.e. encoded in the organisation, e.g. shared across the organisation usually through information mechanisms such as written rules, procedures etc

- Knowledge that is collective and tacit (i.e. embedded in the organisation as would be found in organisational practices and shared norms) the complex social nature of this type of knowledge renders it difficult for articulation or easy transference. Furthermore it is context and relation specific as well as diffused across the organisation and to a large extent generated through the organisation's specific identity, hence, making it very personal to the organisation

Though the 4 knowledge types exist in all organizations, they exist in varying degrees of combination and the relative importance of any one form of knowledge will be highly dependent on the nature of the firm's business and by derivation on its organizational form/structure (Cravens et al, 1996; Kogut & Zanda, 1986; Hansen et al, 1991). For example organizations whose economic model is based on knowledge reuse (e.g. Process Consulting firms, mass automobile manufacturers) tend to be characterized by high explicit knowledge base and hence a high level of standardization of tasks and operational procedures typified by strict levels of formal control and coordination.

In contrast, firms whose business involves high levels of contextual solution engagements tend to provide solutions that are formulated alongside and around specific problem resolution, usually through the application of high levels of embodied knowledge. Hence, a significant portion of the knowledge utilised tends to be context specific and personal. As a result, organizational structures are designed to allow decentralization through informal coordination mechanisms because the complex social nature of the knowledge type required renders it difficult for articulation through the system capabilities of the organisation. Furthermore, because tacit knowledge is diffused (not encoded), personal and organic, it cannot be standardised or predetermined through encoding (Lam, 2004; Polanyi 1962; Tsoukas & Vladimirou, 2001; Osterloh et al, 2002). Hence, the significant implication for matching knowledge forms to knowledge types. Fundamentally, organisational form should match or facilitate the predominant knowledge type relevant to the delivery of its business, which also bears significant connotations for the correlating knowledge processes.

A firm's organisational form influences its knowledge processes, because all organisational activities arise from and are conducted through knowledge in action. Kogut and Zander (1992) propose a similar view in their argument that a firm's knowledge base is inextricable from its current organization. Similarly, Van den Bosch et al (1999) posit that the organizational form provides the infrastructure that enables knowledge to be processed in a particular way. In this respect, organizations are pressed to devise strategies around their structures that integrate the various types of knowledge they operate, in order to facilitate its access, sharing, and reconfiguration. As a result, knowledge processes have evolved as companies strive to couple knowledge processes to corporate strategies in order to deliver strategic objectives. As already illustrated, organisations are increasingly modifying their traditional forms (as captured by Mintzberg, 1991) to include forms that are significantly characterised by intra-organisational and inter-organisational network and relationship structures.

How an organisation responds to market circumstances will be dependent on its form and hence its knowledge processes. In this sense, knowledge processes are akin to operational processes in organisations. This conceptualisation allows knowledge to be put in the context of its functionality in delivering the business of the organisation. To explicate this further, I draw upon Kogut and Zanda's (1992) concept of

Combinative Capabilities to explain how organisation structures are designed around its knowledge base as a channel for coordinating and delivering its activities:

One way in which firms direct the activities of its members is through the dissemination and application of extant knowledge acquired either through experience, imitation or observation. For example, as typified by company policies, standard operating techniques, problem solving procedures etc. This is achieved through System Capabilities that are used to integrate explicit knowledge in order to channel behaviour in a pre-determined direction deemed as the preferred method of utilising the knowledge thus captured for the purpose intended (Van de Bosch et al, 1999). In other words, organisations formalise rules, procedures, instructions and other types of communication through their systems capabilities, used to capture that portion of knowledge that can be made explicit and generally applied. Hence individuals in organisations exchange and combine explicit knowledge – and consequently achieve some form of learning – through formal exchange mechanisms such as a priori procedures, formal language, codes, working manuals, information systems etc. thus, providing a memory for handling recurrent situations. Other ways in which the organisation influence the activities of members are through Coordination Capabilities which allow knowledge interchange to occur through the relationships between members either by design or through the process of natural interaction, for example, through the process of training, job rotation, job interactions, specific team membership/participation, line/reporting relationships etc and Socialisation Capabilities, which disseminates tacit rules for suitable behaviour/conduct in unspecified circumstances. Socialization Capabilities concern the sense-making ability of the organisation to provide acceptable identity that members can associate with from an individual and collective perspective. Hence, this particular capability has deep cultural foundations. (Van den Bosch et al, 1999, Cossette, 1998)

The preceding discussions have illustrated that whilst tacit and explicit modes of knowledge expressions are useful ways of broadly classifying and studying knowledge types in organizations, relating these to the supporting ontological grounds allow us to develop useful categories of knowledge in action and their applicability in different organisational forms. Taking the analysis further by relating it to prevailing market forces allows us to explicate the locus of knowledge processes in organizations and how they enable organizations to deal with the market realities they were invented to address and hence gain understanding of their usefulness as tools or mechanisms for acquiring competitive advantage and dealing with the volatility that is characteristic of current market environments. It also allows us to see how organizational forms have evolved with changing market circumstances and how knowledge processes act as the thread knitting the various elements of the corporate entity to deliver its objectives.

## **Organisational Forms and the Environment**

Fast technological changes, short product life cycles, highly segmented markets, diminishing market boundaries and mature market sectors are all features of the post industrial economy that are constantly reshaping the knowledge economy. The application of knowledge is increasingly viewed as the thread connecting the various facets of the structures and processes that combine to provide for a market of increasingly diminishing boundaries. Furthermore, the ability required to provide for the market increasingly transcends market boundaries. Hence, the demand for apt and timely response to market situations dictates that corporate strategies adopt a diversified approach to providing solutions in order to compete effectively (Cravens et al, 1996; Lane and Lubatkin, 1998; Prahalad and Hamel, 1990). As the rate of

instability and uncertainty increased so have different forms of organizations emerged as firms strive to achieve flexibility and the ability to adapt effectively. Corporate strategies adopted to deal with this highly complex and fluid situation are interlocked with knowledge management strategies.

One major consequence of these phenomena is the changing forms of organisational structures from the traditional forms of intra-organisational focus to the more complex structures of connecting intra and inter-organizational network of relationships designed to provide flexibility, scope and efficiency in responding to prevailing market conditions. Organisations as living systems respond to environmental stimulus according to their particular structure at the point in time, hence, the reason why different organisations will react to or be affected by change situations or environmental conditions in different ways. Furthermore, the same stimulus experienced at a different point in time may generate a different response with the same organisation. This is because, in order to maintain its viability within its operating environment, the organisation's structure changes as it co-adapts through continuous structural and behavioural changes (Maturana and Varela, 1980). In this context, structure and form are used interchangeably to conceptualise the ideology underpinning the particular format through which organisations organise their management systems, operations and processes. This includes issues of coordination and design as secondary functions aimed at delivering the primary tasks of the organisation. In this respect, organisational forms relate to organisational processes. For example, knowledge processes in organisations represent the way in which specialised knowledge concerning individual domains relevant to achieving the organisation's business are coordinated, integrated and utilised and hence, its connexion to the organisation's form (Jorna 2001).

'The dominant logic', derived from the organisation's interaction with its environment, influences the organisation's choice of business and strategic preferences and hence, the form it adopts to execute its business and the dominant knowledge type(s) relevant to it and hence the knowledge processes to coordinate, integrate and utilise its knowledge-based resources.

### **The Dominant Logic**

A critical aspect of understanding organisations is an understanding of how they co-evolve with their environment. Organisations, like its human population, develop as a result of learning and adaptation through series of structural adjustments (Maturana and Varela, 1980). These structural adjustments include reaction to market needs, competition, industry norms, economic regulators etc. which are all environmental forces that combine to direct a firm's actions in a certain trajectory, which might deviate from time to time depending on the dominant logic operating at the time. The concept of the Dominant Logic was introduced by Prahalad and Bettis (1986) to explicate how dominant schemas representing the experience and ideologies of leadership within the organisation permeate the organisation structure to lend direction to the firm's strategic objectives and preferences. They define dominant logic as a conceptualisation of the business and the administrative tools for making decisions and accomplishing goals in the business. They further assert that it is stored as a shared cognitive map among the dominant coalition, expressed as a learned, problem solving behaviour. Hence firms develop preferences for certain types of businesses, projects, style of management based on the dominant logic operating it. The dominant logic is stored as schemas through organisational structures and knowledge processes (von Krogh & Roos 1996; Prahalad and Bettis, 1986)

and hence can be viewed as both a knowledge structure and a set of management processes.

Factors influencing the dominant logic and hence, the structural characteristics of firms derive from both external and internal sources. As firms learn and apply knowledge gained from their operating environment, they must devise methods to enable them build capabilities for gaining competitive advantage. As such, firms choose their projects and strategies based on certain key success factors and other extenuating factors derived from their peculiar realities vis-à-vis that of the operating environment (Lane & Lubatkin, 1998).

In effect, the key to understanding the locus of organisational forms and their associated knowledge types as a gateway to explicating knowledge processes and their contribution to organisational capabilities resides in the ontogeny of the organisation. However, the organisation's ontogeny is a very complex phenomenon to understand because of the multiple constituents involved. Analysing the ontogeny of the organisation would necessarily imply not only analysis of the firm's relationship with its external environment but also that of its individual members with the firm, amongst themselves and with their various other domains of interaction, Hence raising a real problem of irreducibility in the analysis of the organisation as a phenomena. For instance, external factors influencing the firm's dominant logic are extenuating higher order phenomena that cannot be reduced to the individual level of its micro constituents, mainly because of the dimensional complexity of the factors involved as well as the fact that some of these factors are influences created by unrelated circumstances engulfed in another time and space, which, due to the non-linearity of the causal relationship might not be visible for analysis (Stacey, 2000).

However, if analysis extends to incorporate certain aspects of the more visible internal/organisational factors driving the dominant logic of the firm for example, its founding leaders, or the leading coalition within the firm, then some level of constitutive analysis can be drawn to understand and explicate why firms apply their experience in a particular manner, why market circumstances are interpreted and addressed in a particular way and why certain choices are made such as; the chosen form of organisation, strategies, management systems, etc. For example, Thomas et al (2001), identify correlations between how top managers categorise and interpret information and knowledge and discrepancies in organisational performance.

The essence of the importance of the dominant logic can be seen in the difference between the ideologies underpinning different companies from different era and the sort of capabilities they sought to develop. For instance, the case of Henry Ford's Ford Motor Company and Sam Walton's Wal-Mart. The Original Ford Motor Company was made what it was by the man who founded it, Henry Ford. As history bears out, Ford's practices at that time were in direct response to the needs of the market for affordable cars for the masses as well as a derivative of Henry Ford's ideologies and value constructs. Henry Ford started out his career as a machinist apprentice and not surprisingly the ideologies ruling the company's operations were akin to that of a robotic culture (machine bureaucracy, see Mintzberg, 1991). Hence, these factors were major influences that shaped the company's structure and processes at that time.

Similarly, Sam Walton's ideology defined the structures and processes that typified Wal-mart's operations. His evangelical values of low prices and customer satisfaction permeated the entire organisation structure. Hence, the company's famous practice of keeping costs down to the barest minimum. The dynamic proliferation of Wal-mart and its subsidiaries across the globe today can be attributed to the aggressive and

dynamic personality of Sam Walton and his approach to doing business. In order to achieve Wal-mart's aim of becoming the no 1 value provider in the retailing business, Sam Walton preached and entrenched low prices and customer satisfaction values, hence institutionalising the guiding principles of cutting down inventory and operating overhead whilst cultivating employee morale and loyalty, as a means to achieving its goal. Wal-mart succeeded by adopting a management style of rhetorically treating associates (i.e. floor staff) as equals by keeping them fully informed of company developments, inviting them to contribute their suggestions and making them feel that their contributions are valued. (Jacques et al, 2003).

The implication of these are that the histories and dispositions of organizational leaders define their world view, their values and how these relate to their commercial objectives as well as the manner in which they interpret and exploit market situations and hence their influence on the choice of organizational form i.e. strategies, management style, reward systems and the associated processes. Hence, the dominant logic in the organisation influences the organisation's choice of business, the form it adopts to execute its business and hence the dominant knowledge type relevant to it and the associated knowledge processes.

Understanding the role of the dominant logic in influencing knowledge and capabilities of individual agents within the firm necessarily involves the recognition of the role of power, politics (Pfeffer, 1981, 1992; Hislop, 2004; Musa, 2004) sense-making (Choo, 2002; Weick, 1995) in organisations. Contrary to the espoused rationality of organisations as the economists and the proponents of macro organisational behaviour imply, there exists subjective elements in the way decisions are taken and executed in organisations that needs to be incorporated to establish substantive theories of knowledge foundations in organisational behaviour. From a micro foundation perspective this draws attention to the role of power, politics and language in underpinning how individuals contribute to knowledge processes and the development of capabilities in organisations. (Pettigrew, 1973; Pfeffer, 1981, 1992)

### **The Role of Power and Politics**

Knowledge processes in organisations arise from agendas perpetuated by organizational actors. Hence, knowledge processes are fundamentally influenced by the political dynamics of organizations (Clegg and Ray, 2003). Knowledge processes in organisations are perpetuated through the physical and linguistic domains of organisations. In the physical domain they are actualised through the political mechanisms of the organisation, because politics is the mechanism through which action is facilitated (Kumar and Thibodeaux, 1990; Pfeffer, 1981, 1992). For example, Hislop (2004) posits that knowledge processes are shaped by conflicts and politics, in his demonstration of how and why knowledge and power are inextricably linked.

Pfeffer (1981, 1992) defines Power as the potential ability to influence behaviour, change the course of events, overcome resistance and to get people to do things that they would not otherwise do and Politics as power in action. Organisational politics is defined as activities taken within organisations to acquire, develop and use power and other resources to obtain preferred outcomes (Musa, 2004). The link between knowledge processes and politics derives from the different dimensions of knowledge. Davenport (1998) relates the political intricacies of knowledge processes to the association of knowledge with power and hence, the underlying politics. Also, knowledge processes constitute a subculture in organizations (i.e the way things are done) which also bears a political connotation because culture is perpetuated by the subjective constructs of dominant coalitions (Hislop, 2004; Lukes, 1974; Hofstetde,

1981; Morgan, 1989; Senior, 1997). This incorporates the role of leadership in the organization, - which might not necessarily be the formally designated leader for the organisation – but individuals or groups influencing the affairs of the organisation in perpetuating values and schema that defines organizational constructs such as knowledge processes. This aspect bears a direct relationship to the concept of dominant logic (Clement, 1994; Hardy, 1996, Harrison, 1987, Ansoff & McDonnell, 1990).

## **The Role of Language and Sense-making**

Also, closely linked to the role of leadership in defining the dominant logic of the firm and the associated politics is the act of sense-making as medium for creating and diffusing shared meaning across the organisation. This is supported by Pettigrew's (1973) argument for leadership's role in the management of meaning, referring to it as a process of symbol construction and value use designed to create legitimacy for one's demand as well as to de-legitimise the demands of others. In the linguistic domain, knowledge processes are actualised through language as a means of communicating (sense-making) and diffusing shared meaning. According to Boonstra & Gravenhorst (1998) management of meaning involves the ability to define the reality of others. They also assert that leadership can effectively create shared meanings, ideas, values and reality through communication and the social construction of meaning.

Several authors have acknowledged the significance of language in organisational behaviour especially in the creation of meaning and the management of perception (Mintzberg, 1973; Cossette, 1998; Maturana and Varela, 1980). The significance of language in organisations derives from its communication function and instrumentality in inferring and influencing the cognition of others (Donnellon, 1986; Cossette, 1998). Despite this however, the role of language in understanding life in organisations remains obscure in the organisational behaviour literature. Cossette, 1998 describes language in terms of its communication and representation function and hence posits language as a set of discursive and cognitive representations employed in a dynamic process of reciprocal influence. As Girin (1990), Clegg and Stewart (2003) point out, the circumstances in which language is created are essential to understanding it. Similarly, Wittgenstein in Watson (1989) argued that words have multiple connotations and hence, interpretation requires not only knowledge of the object that the word pictures, but also knowledge of the context and meaning by which it is used. Hence, the use of words or language, and thus, its meaning, brings context to situations and therefore, the underlying implications for sense-making and the management of meaning in organizations.

Cossette (1998) proffers the concept of symbolic interactionism as a theoretical approach for researching language in organizations by emphasising the contextual nature of language use in ascribing meaning and generating understanding based on the environmental, cognitive and emotional contexts. Symbolic interactionism is based on the premise that the relevance of language lies not in the word or phrase, nor the subject but in the interactive situation because it is constructed subjectively by the actors concerned. Cossette, ascribes three elements to defining the interactive situation:

- (1) The tongue spoken – a shared linguistic code independent of the users, the fundamental material used to define and distinguish an individual's experience and hence, constitutes a restriction on the language used in organisations because it provides the words and the grammatical rules that organisational actors use to visualise, conceptualise and communicate reality.

- (2) The psycholinguistic schemata – defines a frame of reference outside which a word or statement would have no meaning for the user. Hence, it enables individuals to analyse and interpret reality and events, as well as perform acts. In this sense, they are cognitive structures that affect thinking and communication and are concurrently derived or developed from the language used. Therefore, suggesting the existence of a circular influencing dynamics between schemata and language. Factors defining schemata have been associated with age, socio cultural environment, training, education, on-the-job training, position and hierarchical level which are modifiable by various intra and extra-organisational influences such as the rituals or values that shape organisational culture. In this respect, language is a social product (a product of the tongue) as well as a product of the individual (i.e. of personal experience resulting from the psycholinguistic schemata)
- (3) The linguistic context which enables the creation of meaning and sense making (including its non verbal features), in the sense that these factors don't have a meaning in themselves but rather in the interpretation ascribed by the interlocutors. Hence, these factors are path dependent on the observable and non-observable conditions in which language is produced and interpreted and necessarily involves environmental contexts (in terms of participants, place and time) for example, hierarchy can strongly influence a person's language or the meaning ascribed to statements/interactions, so also the location where interaction happens e.g. whether it is at the office, in a bar etc) , cognitive contexts (e.g. the interlocutor's intentions to cause a task to be performed, to create enthusiasm etc) and the emotional contexts (i.e. the feelings of the interlocutor such as anger, admiration, fear etc)

In a study conducted by Thomas et al, (2001), it was established that knowledge resources of organisations support strategic decisions made by managers based on learning achieved through sense-making and that such strategic learning translates into key assets, e.g. capabilities, which contribute to organisational effectiveness. By derivation, a key conclusion drawn by Musa (2004) bears a microfoundational implication for furthering the study of organisational behaviour with regard to knowledge processes and organisational capabilities. This concerns the recognition of the importance of sense-making (i.e. shared meaning) in relation to the dual instrumentality of politics as a key to managing the political dynamics of organisations. And hence, the conclusion that by deliberately taking actions to shape organisational experiences upon which members develop their terms of reference, organisations can hope to influence their members' value system in the direction that supports its mandate and as such align their political behaviour accordingly.

The implication this has for microfoundational research lies in (1) the potential to analyse the motives and actions of organisational actors in shaping knowledge processes, (2) the potential to develop theoretical frameworks explicating the constitutive elements behind the functioning (or not) of knowledge processes and the associated capabilities as well as (3) clarifying the extent to which OC derive from higher level ordering principles such as the strategic vision of the firm and (4) clarifying the extent to which the commitment of individual agents contribute to making this happen.

Linked to this implication is the subject of the invisible hand theory and the extent to which it enables examination of the behavioural tendencies of individual agents within the organisations especially in relation to aggregating from the individual to collective levels of knowledge and hence capacity building in organisations.

## **The Role of the Invisible Hand**

Individuals brought together not by the desire to achieve a common purpose but by their individual quests to achieve their varied and often disparate, social, economic and career goals end up contributing collectively to furthering the welfare of the organization through the dynamics of their collective interactions. Hence, generating collective level constructs such as AC and OC that enhances the business of the organization. The same pattern of interactions are enacted on a higher plane amongst the multitude of organizations interacting and working towards the achievement of their individual and often disparate goals but invariably contributing to furthering the prosperity of the economy or the universal environment, which by default regulates their actions and behaviour through emergent rules of engagement created to maintain some level of order between the interacting entities and the universal environment (Smith, 1776)

The Invisible hand is a metaphor created by Adam Smith to illustrate the principle of "enlightened self interest" (Wikipedia). In *The Wealth of Nations*, Adam Smith asserts that in a capitalist system, an individual acting for his own good invariably promotes the prosperity of his community without the intention or awareness of doing so. He attributes this principle to a social mechanism, the Invisible Hand that leads individuals to promote an unintended end. Major proponents of the invisible hand theory have been from the field of economic theory, where it was incorporated in developing the general equilibrium model that postulates that individual self-interest operating in competitive markets produces unique conditions for maximising a society's total utility. A major criticism directed at the validity of this principle was that the concept was designed in such a way that made it difficult to prove or disprove it, despite the elements of truth observed from the operating principles of the theory. The concept of the Invisible hand bears significant foundational connotations regarding the behaviour of individual organisational agents and the relationship between their interacting action and the welfare of the organisation. However, there continues to be a debate about the validity or sufficiency of the invisible hand theory in explaining organisational behaviour, especially in relation to the related economic theory of 'the rational man' who is said to be primarily motivated by selfish interests. (Rumelt et al, 1991)

## **The Issue of Procedural Justice**

One aspect that requires fundamental expression in theories of organisational behaviour is the critical aspect of microfoundations that relates to understanding how organizations use strategic management to achieve collective member commitment and cooperation in order to deliver strategic goals and how individuals in organizations contribute to making this happen. Irrespective of the extent to which the reducibility of organizational phenomena is constrained by the complexity of the interacting dynamics, knowledge processes and the means by which organizations utilize their knowledge resources to achieve competitive advantage (for example through the development of capabilities and core competences) cannot be fully understood as higher order level constructs until the constitutive processes leading up to it are exposed and incorporated in the application of theories in this area. In other words, the 'what' needs to be justified by the 'how'.

Organizations are social institutions utilising the skills of its members to exploit knowledge resources, whereby, the collective knowledge of individual members and their patterns of interaction provide a key differentiating factor in determining the winners from the losers in the market place. Organisations develop organising principles in the form of capabilities to enable the integration and utilisation of the

diverse knowledge potential embedded in its knowledge base. Hence, collective knowledge building and sharing is a critical strategic objective for the organisation's success. However a key challenge remains as to how organisations persuade individual knowledge and abilities into collective capabilities. After all, knowledge is a very personal and intangible attribute that cannot be harnessed without the consent of its owner (Hayek, 1945)

Kim & Mauborgne (1998) draw on the theory of procedural justice (pioneered by Thibaut and Walker) to identify creative initiatives and spontaneous actions as prerequisites for achieving requisite improvisation in the execution of strategic decisions in a fluid environment, and hence the need for voluntary cooperation of members as apposed to enforced cooperation. In order to explicate the process implications for achieving this, the authors posit the concepts of procedural justice as an approach to understanding motivations driving individual actions and hence organisational behaviour. They adopt a socio-psychological approach to expantiate on the behavioural underpinnings of strategic decision making and implementation, the consequences for knowledge creation and sharing in organisations and hence by derivation, the implications for facilitating mechanisms such as knowledge processes and OC. In their discourse, they challenge the traditional economic perspective of the rational man as an economic agent driven by intrinsic self interest. Whilst not discounting this opinion, they postulate that the underlying ideology is not sufficient to explain the behaviour of the individual especially in the face of the 'extra role' adopted by organisation members in the pursuit of organisational gains and beyond the call of their economic contract with the organisation.

Drawing on Rumelt et al's (1991) argument that the specialty of economics is highly contingent on the principles of exchange and individual gains, but grossly insufficient in explaining the "less rational" phenomena involving the accumulation and coordination of knowledge, patterns of values and attitudes which other disciplines attempt to explicate, they highlight the contribution of the fields of law and social psychology in developing theories of social behaviour which are generalisable e.g. the theory of Procedural Justice. Based on empirical data, Kim & Mauborgne (1998), Flood et al (2001) argue in their essay that when people perceive strategic decision making processes to be fair they are motivated to cooperate voluntarily, based on their attitudes of trust and commitment. And conversely, when processes are considered to be unfair there will be reluctance to cooperate and difficulty in achieving the commitment and trust necessary for idea generation and decision making and implementation. Hence, suggesting the necessity for a social relationship and an ensuing familial connection in the relationship between the individual and the organization as a primer for behaviour

Procedural Justice in the business setting conceptualises the extent to which the dynamics of the decision making process are deemed to be fair based on the trio criteria of engagement (i.e. involving individuals in the decisions that affect them), Explanation (i.e. everyone involved and affected should understand the rationale behind final decisions) and Clarity of expectations (that members have a clear understanding of what is expected of them before, during and after decisions are made as well as what the new rules of the game are). These trio criteria need to be collectively embraced in order to give meaning to the concept of procedural justice (Kim & Mauborgne, 1998)

Procedural Justice was initially coined to address the issue of how the dynamics of decision making processes exert a powerful influence on human cognition and behaviour, hence, the integration of the psychology of justice with the study of process. Since then, several works have identified the relevance of procedural justice tenets to be generic to people in the workplace and other forms of organization; on the basis that the experience of procedural justice enhances the individual's cognitive confidence in the decision making process and as such, generates psychological and emotional sentiments of belonging and loyalty (Kim & Mauborgne, 1998; Flood et al, 2001; Konovsky, 2000). This link between individuals' perception of procedural justice to the feeling of oneness and belonging with the organizations suggest a shift in the relations between the organization and the individual from one based solely on contractual engagement to include psychological/emotional engagement. For example, as typified by the practice of flatter structures where management is seen to be more consultative than authoritative, where reduced management hierarchies and relatively decentralized control allows executing individuals to contribute to the decision making process. Hence, the perception that the decision making and management processes are inclusive (engagement and explanation) and transparent (i.e. clarity of expectations) which eventually results in the trust and commitment that moves the interaction between the organization and the individuals from a contractual to a relational one.

A present day representation of the potential relevance of procedural justice in underpinning the microfoundations of organizational capabilities can be drawn from the Wal-mart example used earlier. Low inventory and operating overhead costs as well as high employee morale and loyalty were essential to achieving Wal-mart's strategic objective of being the no1 value provider in its line of business. In order to achieve this, Wal-mart needed the trust, voluntary cooperation and commitment of its staff. Wal-Mart achieved these through a management style that echoes of the principles of procedural justice. By treating the floor staff as equals, keeping them fully informed of company developments, making them feel that their contributions were valuable as well as entrenching the low cost culture through its practices, policies and procedures; Walmart ensured that employees were carried along with company decisions by keeping them informed (explanation), employees contributed suggestions to the decision making process (engagement) and employees were clear about what was expected of them through the entrenched low cost and customer satisfaction culture (clarity of expectation). This illustration presents a clear potential for the application of the concepts of intellectual and emotional recognition theory as a way of explaining the relevance of procedural justice to organisational behaviour.

This is particularly important considering the observation that competitive advantage arises from the unique combination characteristics of an organisation's resources and skills set. As argued by Bhatt (2000) and Barney (1991), the key to competitive advantage lies not in the tangible resources of capital or machinery, but in the intangible knowledge-based resources of the organization. Hence, the importance of trust and the need to establish kinship with and amongst organisation members, as a precursor to voluntary cooperation and commitment that goes beyond quid pro quo attitudes to exchange, to encompass kinship obligation and by extension, the altruistic execution of tasks in a spontaneous and creative way that goes beyond contractual obligations (Katz 1964).

Based on several studies, Kim & Mauborgne (1991, 1993, 1995, 1996, 1997) concluded that procedural justice is responsible for the extra-role behaviour adopted by top managers in the execution of resource allocation decisions, irrespective of whether or not these decisions favoured their division or contradicts their perception

of what is strategically appropriate for their division. They interpret this to reflect the managers' commitment and trust in the decision process and hence their willingness to allow it to subjugate their preferences. The implications derived for knowledge sharing thus, were that procedural justice will have a positive effect on active knowledge sharing in organisations based on the link identified between procedural justice and higher order attitudes and behaviour, especially as knowledge and expertise are considered to be sources of power that are not easily shared. Hence, the significance of the underlying principles of procedural justice for the accumulation, integration and exploitation of knowledge resources in organisations, for instance, the principle of engagement has the potential to enhance diffusion of knowledge across the organization, the principle of explanation allows individuals a greater understanding of the rationale behind the actions of decision makers, the principle of clarity of expectations helps to establish a transparent agenda hence focusing the efforts of organizational members. The instrumentality of procedural justice in enabling knowledge resources in organizations lies in the wealth of information it diffuses and the resultant atmosphere it creates. Viewed from this perspective, it provides possibilities for investigating circumstances surrounding the emergence of collective level constructs in organizations.

To answer the question "what is the fundamental motive of individuals that make them respond to procedural justice", Kim & Mauborgne (1998) offer the intellectual and emotional recognition theory derivative as a way of explanation. They identify a strong link between procedural justice and intellectual and emotional recognition based on the premise that when individuals feel recognised for their emotional and intellectual worth, they are motivated to cooperate and engage in active knowledge sharing. Similar to Maslow's needs and Herzberg's motivation theories, the intellectual and emotional recognition theory asserts that when individuals are treated such that their intellectual worth is recognized, they are inspired and willing to share their knowledge in order to impress and confirm the expectations of their intellectual worth, when individuals are treated with emotional recognition, they feel emotionally tied and inspired to give their all.

Consequently, they predict a converse dynamics that require even more attention namely that: If individuals are not treated as though their knowledge is valued they will feel intellectual discontent and will not share their knowledge or their ideas, rather they will hoard their best thinking and creative ideas. Likewise, to the extent that their emotional worth is not recognized, they will feel emotionally angered and not invest their heart and energy in actions; rather they will apply counter-efforts including sabotage. Hence, to the extent that procedural justice judgments convey intellectual and emotional recognition, individuals could be expected to better apply their knowledge, expertise and voluntary efforts to cooperate for organizations' success.

The principles of procedural justice strongly concern the socialisation capabilities (Van den Bosch et al, 1999) of the organisation in creating meaning and shared understanding through its culture and sense-making constructs, that its members can identify with and hence use as a reference for relating with the organisation in beneficial dimensions beyond that specified by the formal or economic contract of engagement.

In a nutshell, procedural justice theory offers exploration opportunities for theoretical foundations in organisational behaviour that examines the critical role of attitude and behaviour that members adopt towards the organisation, and hence, the rationale behind their 'extra' role in enabling the organisation to transform individual level knowledge and skills to organisational level capabilities. In this respect, it has a potential of providing microfoundational insights to mitigate process ambiguities

surrounding various macro-level concepts relating to how individual level knowledge is aggregated to collective levels. Also very significant is the complementary position that the theory of procedural justice takes to the concept of the rational man and the theory of the invisible hand, because it extends the utilitarian perspective of the economic man to include the altruistic perspective, hence, providing a more holistic view of motivators for human behaviour in organisations and underpinnings for the resultant outcomes, which unlike the invisible hand theory is visible and can be examined for its validity.

### **The Micro-Macro Debate**

The micro-macro debate relates to a lack of substantive theory explaining the connections between the constitutive aspects of the relationships underlying emergent phenomena such as organisations, economies and societies (Foss, 1997; Felin and Foss, 2004; Goldspink and Kay, 2004, more reference). As identified by Goldspink and Kay (2000), the contentions arise mainly from attempts to explain different phenomena such as:

- differences in time-frame, history and scale such as short-term phenomena within small groups vs. evolution of cultures
- different perspectives such as the interest of management vs. that of the employee
- different levels of analysis such as the behaviour of an individual vs. that of an organisation

Attempts to deal with this dilemma have drawn on the theory of Autopoiesis as a possible solution to the problem created by the reification of organisational processes to the exclusion of the dynamic elements underlying these processes as typified by the systems approach (Luhmann, 1982; Mingers, 1985, 2004; Goldspink and Kay, 2000, 2003, 2004). For example, Autopoietic theory has been posited as a non-linear systems theory based on its relativist epistemology and realist ontology orientation.

Autopoietic theory was originally developed by Maturana and Varela (1980) as a theory of biology to distinguish the particular nature of living from non-living entities in the physical domain. They defined autopoietic systems as those systems in which the primary product of the system's operation is itself (i.e. self-production). However, they further assert that whilst all living systems are autopoietic not all autopoietic systems are living. Hence, they propose these tenets to define what constitutes an autopoietic system:

1. That they are self producing systems that continually act to maintain its capacity for self-production (i.e. they are capable of going through structural change to maintain their capacity for self production)
2. That they possess the capacity to distinguish themselves as an entity/unity separate from their environment (ability to generate its own boundaries) as well as relations which specify the properties of the components of the system and those that determine the dynamics of these components

According to the theory of autopoiesis, the phenomenology of living systems is determined by their autopoiesis and all changes therein are subordinated to the maintenance of the autopoiesis of the living system (as a unity). Maturana and Varela argue that these changes are as a result of reactions to stimuli from the environment (i.e the domain of operation) or in relation to other unities, which occur due to the internal dynamics of the particular unity and hence are structurally determined. Over

time, these changes are said to produce a history of structural transformation that equals the ontogeny of the autopoietic unity.

Maturana and Varela explain the dynamic relationship between living systems and their environment/other unities as a congruent one through the concept of structural coupling. They argue that when living systems interact with their environment/other unities, either or both might be changed by the encounter, (through learning that leads to structural or behavioural modification) hence, when these interactions become recurrent the interacting entities become structurally coupled. In addition they incorporate language as the vehicle connecting the consensual and physical domains of living systems. They define language as the process of distinction and the nature of cognition through enactment in the consensual domain of living systems, in which interacting agents orient each other in their internally determined behaviour, through interactions specified by their coupled ontogenies.

By recognising the role of sense-making in interactions, Autopoietic theory provides possibilities of combining the analysis of the organisation as a phenomena from two main domains, the consensual and the physical and hence allows the incorporation of process issues regarding that which is conceptualised in the linguistic to give interpret or describe observed phenomena and that which is conceptualised based on the consensual domain of interacting actors to provide generic principles to inform organisational theory. The concept of the linguistic domain as used by Maturana and Varela is based on the postulation that when a system influences another, the influenced one sustains a structural change, which serves a reply from the influenced to the influencer of how the influence was interpreted and vice versa, hence establishing a dialogue (through interaction in a consensual context) (Mariotti, 2001) However, autopoiesis is limited in its failure to provide a language for describing the behavioural dynamics of individuals in structural coupling or intersecting consensual domains or a way to understand the reflexive role of language in the maintenance of these domains (Goldspink and Kay, 2004)

Major problems regarding the application of autopoietic theory to explaining social phenomena relates to the origin of the theory and the purpose for which it was developed originally. As argued by Mingers (2004), the definitive criteria of what constitutes an autopoietic system as proffered by Maturana and Varela (1980) raises questions about the applicability of this theory to explaining social phenomena such as:

1. Based on the tenet of autoproduction and self reproduction characterising autopoietic systems (i.e. autopoiesis is concerned with processes of production, the production of those components which themselves constitute the system), can the components of an autopoietic social system and the processes of producing these components be distinctively identified?
2. Based on the tenet that an autopoietic entity is characterised by spatial and temporal relations in which the components must necessarily create boundaries to define the entity as a whole, is it possible as a social system to identify clear boundaries that are constructed and maintained by social systems?

Hence, any attempt to apply the theory of autopoiesis in the field of organisation raises questions of contextual application.

An approach to mitigating this problem was identified in the potential for integrating the concepts of autopoietic and complexity theories as proposed by Goldspink and Kay (2004). They propose autopoietic theory as a basis for understanding micro-level

constituents characterising social systems and complexity theory as well as how these characteristics influence the range and types of macro-level phenomena that arise from their interactions. Combining both concepts offers potential opportunities to make sense of the circular, non linear relationships and the associated ambiguities that characterise the concepts of social systems in organisation theory. The implications of such an approach however include the need to distinguish between observable phenomena/patterns and the underlying causal laws, which necessitates a critical realist approach to distinguishing between three layers of reality: the empirical (as observed by humans), actual (existing in time and space), and real (transcending factual observation). Hence, the potential usefulness of fusing the theories of autopoiesis (Maturana and Varela, 1980) and complex systems (Stacey, 2000a)

One key contribution of complex systems theory is that it has increased the propensity to distinguish classes of behaviour characteristic of non-linear systems and provided insights into the micro-conditions associated with the emergence of those classes of behaviour (Goldspink and Kay, 2004). The theory of complex systems provides a framework for understanding the emergence of social phenomena from the complex and non-linear interactions between constitutive heterogeneous agents (i.e. as defined by their unique ontogeny). Hence, social structures are defined by their biological constituents and consequently influence the nature and types of interaction possible between agents, when mapped into the 3 levels of reality suggested by critical realism. In combining both theories, autopoiesis, which derives from a position of relativist epistemology (Maturana, 1988) and realist ontology (Mingers, 1995) synthesizes with complexity theory, which derives from a position of realist ontology but is compatible with relativist epistemology when applied to social systems (Cilliers, 1998, 2000). In this manner, complexity theory provides a foundation for understanding how the characteristics of individuals influence the various dimensions of macro level phenomena that will result from their coordinated actions and interactions.

In summary, the synthesis of autopoiesis and complex systems theory provides a basis for understanding the mechanics and dynamics of social systems. The connection lies in the potential to demonstrate the basis for common epistemological and ontological roots and implications. Hence, the suggestion of an adoption of ontological realism and epistemological relativism similar to critical realism, furthermore, the theory cuts across phenomenological levels and hence provides a bridge between the micro and macro. It achieves this through the description of mechanisms by which social systems emerge in a way consistent with human biology and the description of the nature of language in a manner consistent with human biology as well as how language influences the emergence of social structures, explaining the difference between individuals as a product of their biology and their history of involvement in social processes.

## **Research Implications**

Any attempt to apply the theory of autopoiesis to explaining the organisation as a social system raises questions of contextual application. The application of the combined principles of autopoiesis and complexity to social systems such as organisations is very much in its nascent stage of exploration, and there are issues to be addressed regarding the contextual application of these theories since they were originally designed to explain phenomena in the natural sciences. However, there is no doubt of its potential usefulness in the area of microfoundational research. The fundamental question is one of context, which leaves the field open to research in this area. The aim of this paper in this respect is to raise further awareness and

interest in an area of research with promising potentials of contributing to the resolution or at the very least, clarification of the micro-macro debate.

## Conclusion

This paper has argued that factors underlying the cognitive and know-how base of organisations fundamentally contribute to explicating process issues relating to organisational knowledge and capabilities. It was established through discursive analysis that an understanding of the locus and characteristics of different organisational form and their corresponding knowledge type(s) facilitates fundamental insights into knowledge processes, absorptive capacity and hence, the organisation's capabilities. Furthermore, connexions were made to show how an understanding of the dominant logic operating in the organisation reveals microfoundational issues related to its strategic direction and hence its chosen way of doing things.

This paper also highlighted the instrumental significance of politics and language in generating actions and sense-making which bears consequences for knowledge processes and the development of capabilities in organisations. Subsequently, this connexion was related to the theory of procedural justice to illustrate how organisations can acquire and transform individual knowledge into organisational capabilities through the voluntary cooperation of its members. Lastly, as way of generating interest in seeking new approaches to resolving the micro-macro dilemma, a combinative concept of autopoietic and complexity theory was introduced to highlight a potential opportunity for microfoundational research opportunities originating from the field of natural sciences.

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