Analysing strategic decision-making in an environment with high rates of change: a model for leaders of organisations
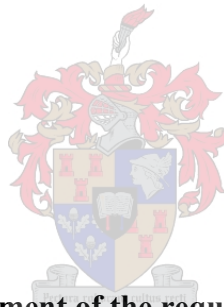
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DECLARATION

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Summary

The thesis deals with the *context, content* (being concepts) and *process* of model development. They are combined to propose a model for analysing strategic decision-making in an environment characterised by high rates of change.

Over the last 230 years, society has been re-categorised from 'agricultural' to 'industrial' and, more recently to 'post-industrial'. Naturally, organisations are part of such society, and strategy formation, as a process which is located within organisations, can only be discussed within the context of the *current* society. By necessity therefore, the model for analysing strategic decision-making would seek to reflect on the development of organisational strategies in the *current* environment. This rapidly changing environment is characterised by uncertainty which impacts on organisational decision-making.

Chapter 2 describes how the effects of uncertainty influences decisions and outcomes, particularly when considering the decision-maker's ability to manage risks emanating from the environment, as well as organisational risks within own work domains. The loose coupling of cause and effect leads to a conceptual problem when linear rationality is used to frame meaning. Decision-makers experience demand to change such meaning (and structure) based on the reality they are experiencing, presenting them with perceived dichotomies. In order to overcome such dichotomies, 'Constructivism', as a methodology, is used to provide form, acknowledging assumptions about behaviour and structure. The assumptions are discussed using conceptual continuums (presenting the perceived dichotomies), posed as a 'framework' intended to assist leaders in dealing with uncertainty. Order, for example, is temporarily established through standards that give an organisation stability. Innovation as a concept, on the other hand, is associated with the flexibility required to succeed in dynamic environments. Strategy formation in this thesis deals with the concepts 'organising', 'standardising', 'rationalising', 'emergence', 'complexification' and 'innovation' that form part of such framework.

Chapter 3 provides insight to organisational order, which emerges from the interplay between 'strategy formation' as a deliberate process, and the emergent and varied organisational and contextual forces at play over time. The process forms a narrative – and provides some of the organisational stability. Strategies emerge, as would the institution created by the interplay. The interplay results from continuous interaction between the intentional strategic intervention and its actual interpretation or sensemaking throughout the organisation and its context by those - including the leadership - who are operationalising the strategies. The

process of strategy formation provides opportunity for self-reflection by the decision-makers (the I), the team members (the We), and the organisation - embodied in the social constructs created through communication, processes and actions.

Chapter 4 connects the individual concepts in an iterative process of strategy formation, using a morphological approach, to create structure from relationships. This enables the creation of a normative model, which can be used in the process of analysing strategic decision-making as a whole, that is, incorporating both the intention and its implementation.

The interplay and change of form provide the insight and the impetus for change to the leader's understanding of the schemata employed, the schemata embodied in organisational strategy formation, as well as in decision-making.

Opsomming

Die tesis handel met die *konteks*, *inhoud* (konseptueel) en *proses* van model ontwikkeling. Hierdie dimensies word gekombineer om 'n model voor te stel waarmee strategiese besluitneming in 'n omgewing met hoë 'n veranderingstempo ge-analiseer kan word.

Gedurende die afgelope 230 jaar is ons sosiale omstandighede geherklassifiseer van 'agraries' na 'industriëel' en meer onlangs, na 'post-industriëel'. Natuurlik is organisasies deel van die totale sosiale omgewing en kan strategievorming, as 'n proses wat geplaas is binne organisasies, alleen bespreek word binne die konteks van die *huidige* samelewing. Dit is dus noodsaaklik dat die model vir die analise van strategiese besluitneming poog om na te dink oor die ontwikkeling van organisatoriese strategieë in die *huidige* omgewing. Die snel-veranderende omgewing word gekenmerk deur onsekerheid wat 'n impak het op organisatoriese besluitneming.

Hoofstuk 2 beskryf hoe die gevolge van onsekerheid besluite en resultate beïnvloed, veral wanneer in ag geneem word wat die besluitnemer se vermoë is om risikos wat voortspruit uit die omgewing, asook organisatoriese risikos binne die eie werksdomein, te bestuur. Die losse verband tussen oorsaak en gevolg lei tot konseptuele probleem wanneer 'n linêre rasionaliteit gebruik word om betekenis te vorm. Besluitnemers ervaar eise om sodanige betekenis (en struktuur) te verander, gebaseer op die werklikheid soos dit ervaar word, aangesien skynbare teenstellings na vore kom. Ten einde sulke teenstellings te bowe te kom, word konstruktiwisme as 'n metodologie gebruik om aannames oor gedrag en struktuur te erken. Die aannames word bespreek met gebruik van konseptuele kontinuums (wat die skynbare teenstellings in 'n eenheid voorstel), en word gestel as raamwerk wat bedoel is om leiers te help om suksesvol met onsekerheid om te gaan. Orde word byvoorbeeld tydelik tot stand gebring deur organisatoriese standaarde wat organisatoriese stabiliteit bring Innovasie as konsep word daarnaas geassosiëer met die soepelheid wat nodig is om in dinamiese omgewings suksesvol te wees. Strategievorming handel in hierdie tesis met die konsepte 'organisering', 'standardisering', 'rasionalisering', 'ontluiking', 'kompleksifikasie' en 'innovasie' wat deel vorm van sodanige raamwerk.

Hoofstuk 3 gee insig in die organisatoriese orde wat ontluik uit die interaksie tussen 'strategievorming' as bewuste proses en die ontluikende en veranderlike organisatoriese en kontekstuele kragte wat oor tyd heen aan die orde kom. Die proses vorm 'n narratief – en voorsien gedeeltelik organisatoriese stabiliteit. Strategieë ontluik soos wat die instelling deur

die interaksies gevorm word. Die interaksies is die gevolg van voortdurende wisselwerking tussen die bedoelde strategiese intervensies en die werklike interpretasie of singewing deur die organisasie heen en in die konteks deur diegene – insluitende die leierskap – wat die strategieë operasionaliseer. Die proses van strategievorming gee die geleentheid vir self-refleksie deur die besluitnemers (die Ek), die spanlede (die Ons), en die organisasie – uitgedruk in die sosiale konstrukte wat deur kommunikasie, prossese en aksies geskep word.

Hoofstuk 4 verbind die individuele konsepte in 'n iteratiewe proses van strategievorming, om daarmee struktuur uit verhoudings te skep. Dit maak die daarstelling van 'n normatiewe model wat gebruik kan word in die analise van strategiese besluitneming as geheel, dit wil sê, met insluiting van beide die intensie en die implementering, moontlik.

Die interaksie en verandering van vorm gee die insig en die impetus vir verandering aan die leier se verstaan van die skematas wat gebruik word, skematas wat beliggaam is in organisatoriese stratiegievorming en besluitneming.

Acknowledgements

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With love to Paula and Anika.

In memory of Paul.

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The views expressed in this thesis are those of the author and are not intended to represent the views of either Nedbank Group Limited nor those of the Development Bank of Southern Africa.

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1   Introduction

Over the last 230 years, society has been re-categorised from 'agricultural' to 'industrial' and, more recently to 'post-industrial'. The environment described by such categories has different characteristics that assist in explaining the functioning of the predominant 'systems' used to describe society. These systems are interdependent and part of the 'life-world', with which they interact, without being able to be reduced to one.

1.1   Contextual forces

As the increasing interconnectedness of world systems escalates, so the complexity of the organisational decision making environment continues to increase. Systems include those that are natural (as in climate), man-made (as in bricks and mortar and technology), and conceptual or abstract (as in regulations or economy). The world, and how we perceive it, is affected by these systems and their interrelationships. For example, climate change is evident in changes in rainfall patterns and rising temperatures, the impacts of which are seen inter alia in floods, droughts and rising sea levels[1]. Another example: the world financial system has been under severe stress after the failure of Lehman Brothers on the 18th September 2008, with unprecedented intervention by nation states in the system, the consequences of which are still unfolding today.

The system world is characterised by nation states[2] with various modes of production (capitalism, socialism and communism and all manner of hybrid forms) supported by modes of development which are the means of production. Over the last 35 years, the world economy has changed to a global economy on the back of new infrastructure provided by information and communication technology, as well as the economic reorganisation of the system of production i.e. deregulation and liberalisation policies[3]. The latter has led to the re-

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[1]   Friedman T. 2008. Hot, flat and crowded. Why we need a green revolution- and how it can renew America, 44

[2]   Drucker PF. Fall 92. The post-capitalist world. *Public Interest,* 92 "A world in which nation states will be *one* rather than *the* unit of political integration".

[3]   Castells M. 2000. *The Information Age Volume 1 Rise of the Network Society,* 101

organisation of sub-systems (around a network of financial flows[4]) to function and exchange globally on the basis of developments in technology. This networked capability has enabled the capitalist "mode of production to shape social relationships"[5] over the entire planet.

A second driver of change in post-industrial societies has been "knowledge as the primary resource for the individual and the economy overall"[6]. The developments in technology have strengthened the power of capital to support knowledge wherever it can be found, and the exploitation of such knowledge can be anywhere (and by anyone, influenced by the availability of capital) in the world, based on the least cost of production[7]. Associated with both drivers, has been an increase in the data and information that actors have to cope with, and process, in order to "assign phenomena to categories, or distinguish the relevant categories" for a particular task[8].

The space of flows[9] (and its impact on time) is determined by relationships; one where people, technology, places, organisations interact with each other[10]. Globalisations of economic systems, as well as technology networks, have created exponential growth in the relational complexity[11] between states, organisations and people that are part of the life-world. The instant connectivity enabled by technology has increased the impact on organisations, while compressing the time available for reflection by leaders, who have to decide and react to actual or perceived threats or opportunities. The interconnectedness of our existence has always been there, but the space within which this takes place has shrunk. The

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[4]   Ibid.502

[5]   Ibid.502

[6]   Drucker PF. Sep/Oct 92. The New Society of Organizations. *Harvard Business Review,* 95

[7]   In post-industrial society's labour can now be accessed (and controlled) directly by capital and not just through the organisation.

[8]   Boisot M. 2006. Moving to the edge of chaos: bureaucracy, IT and the challenge of complexity. *Journal of Information Technology,* 242 dealing with descriptive complexity.

[9]   From a *people* perspective time will be related to the place or location (the place of things) people are in. For example, different media transmit information at different rates e.g. time to hear thunder (sound) once we have seen the lightning (light). Distance from the object sending the message therefore determines the time it takes for that message to reach the recipient; if you are closer you will receive the message earlier. As such, people and societies are embodied in time. In the "*space of flows*", however, *geographical distance dissolves*. This means that, depending on the organisation's position in the network, territorial components are brought together (or separated), by zero distance within the network, but infinite distance outside of that network.

[10] Castells M. 2000. *The Information Age Volume 1 Rise of the Network Society,* 407

     Although space and time are intertwined in nature, and in society, it is Castells' hypothesis that in the Network Society *space organises time* as the dominant form.

[11] Boisot M. 2006. Moving to the edge of chaos: bureaucracy, IT and the challenge of complexity. *Journal of Information Technology,* 242

need for different structures of organisations[12] today could be said to be a natural consequence thereof.

Modern societies have separated the 'world of science and instrumentality' (objective world) from the 'universe of values and the moral subject' (subjective world). There is a necessity to link these worlds in order to give meaning to all kinds of behaviour. In modern societies the concept of a political world is used as integrating principle, while in post-modern societies, a new principle of integration of the objective and subjective is being sought. Touraine proposed that the integration of the economic world (equated with the objective) and cultural world (equated with the subjective) can only be at the level of individual experience[13], which creates further focus on those actors with knowledge (and possibly their power), in the system.

At the same time, powerful financial and transnational corporations (as one category of actors that have little allegiance to nation states) continue to co-create the "impersonal economic world and uncontrolled market forces" which control all institutions[14]. Crises are transmitted by the financial system through short-term interest rates and exchange rates, balanced by demand and supply, to support the interests of owners of capital assets. An analogy to this phenomenon is the idea that when the "U.S. sneezes the world catches a cold"[15]. However, as "the underlying turbulence has been on the rise for at least 20 to 30 years", driven by "rapid diffusion of technology and increased interdependence across markets"[16], it culminated in the recent financial crisis. This crisis could also be seen as a crisis of confidence in the system[17], and its ability to control its own forces. In that context, the assumption of an efficient market may be unfounded. Polyani described, already in 1944, the 'self-regulating' market as a prescription for disaster, particularly where there is a breakdown in the institutions that

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[12] Bell D. February 1976. Welcome to the post-industrial society. *Physics Today,* 49
"Galileo referred to the square-cube law i.e. something doubles in size, it will triple in volume, but its shape will also change". While nature has set limitations on change of shapes, this is not the case for organisations.

[13] Touraine A. 2005. The Subject is coming back. *International Journal of Political Culture Society,* 202

[14] Ibid.209, 207 "The right we all share is to combine in a peculiar way our participation in the technological and economic world with the defense of a particular cultural approach".

[15] Mackowiak B. 2007. External shocks, U.S. monetary policy and macroeconomic fluctuations in emerging markets. *Journal of Monetary Economics,* 2512 "The price level and real output in a typical emerging market respond to U.S. monetary policy shocks by more than the price level and real output in the U.S. itself".

[16] McKinsey & Company. December 2009. Strategy through turbulence: an interview with Don Sull. *McKinsey Quarterly,* 2

[17] Here the system has become an end itself.

support such market[18]. That is why systems should be seen and reigned in as dependent on the life-world[19].

Touraine describes the tension between the individual and economic worlds (of which organisations are key ingredients) as a combination of differences and equality through non-social principles[20]. Individuals are actors that can do something to support/create change[21] in order to effect change of the economic world - for example by focusing on a combination of factors of development[22].

The thesis cannot resolve the different views on the nature of systems and acknowledges that the terminology is contentious and applied differently by different authors, inter alia when considering boundaries of the system, the vantage point or perspective of observers, the description of the system itself and feedback loops.

1.2   Organisational forces

This thesis focuses on one element of a man-made or functional sub-system i.e. the organisation, and individuals within such a socially constructed concept. Organisations and

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[18] Levitt PK. June 1995. Towards alternatives: Re-reading the great transformation. *An Independent Socialist Magazine,* 3,4,7 The related question is whether "the nation state as an instrument to regulate and contain the disembodied capital" can be reclaimed to avoid debt service to creditor nations remaining as priority over developmental expenditure. After all, we would hope that there are limits to "subordinating societies and cultures to the accumulation of capital on a global scale".

[19] Thompson JB. May 1983. Rationality and social rationalization: an assessment of Habermas's theory of communicative action. *Sociology,* 285. The concept of system and life-world are "interrelated without being reduced to another". "Hence societies must be conceived simultaneously as system and lifeworld". The systemic mechanisms as functional sub-systems e.g. state, market economy are differentiated from the structures of the lifeworld yet "anchored in the lifeworld by specific institutional complexes".

Differentiation is also necessary to create boundaries for systems to be analysed.

[20] Touraine A. 2005. The Subject is coming back. *International Journal of Political Culture Society,* 207

[21] Milner M. June 1987. Theories of inequality: an overview and a strategy for synthesis. *Social Forces,* 1057, 1059, 1060

There may be a question whether the discourse between conflict theory and consensus theory is still relevant if society as a concept is no longer the integrator between the two worlds i.e. the individuals will operate on basis of assumed 'local' norms and context rather than on societal norms. If the leader uses norms as a mechanism to dominate, then that is the driver of change rather than conformance to perceived values. As the norms are socially constructed "they must be treated as variables to be analysed, not as 'givens' which remain outside the realm of analytical, political or moral scrutiny".

The thesis does not try to resolve the different theories, and acknowledges the possible inherent bias in any discourse, results from such discourse and value premises. The specific discourse would shape and be shaped by "the content of the evaluative consensus (norms) and cognitive consensus (the dominant definition of the situation)" and contain bias relating to both aspects. In situations where the integrating principle of power relations is used, such relations add an additional bias.

[22] Touraine A. 2005. The Subject is coming back. *International Journal of Political Culture Society,* 209, 207
Factors of development include the need for "education, national consciousness and cultural identity"

"The right we all share is to combine, in a peculiar way, our participation in the technological and economic world with the defence of a particular cultural approach".

their leaders attempt to thrive and survive in a world characterised by 'high rates of change'[23], adapting to the environment in order to meet their respective objectives. Within that context, complexity in current decision-making has also increased, owing to the multiplicity of factors (captured by the number of variables[24]) which, depending on perspective (e.g. political, organisational norms and the individual within), can be used to give meaning to behaviours. Even though the actors may attempt to limit the number of categories in order to cope with complexity, the interrelationship of such variables could create non-linear outcomes that, through positive feed-back loops, can be supported by organisational structure and interactive processes[25].

As stated before, organisational structures, both internal and external to the organisation, had to be adapted to cope with the degree of change in the environment. As a feature of this changed environment, a society of organisations emerged, as did new organisational characteristics. For example, Castells describes the development of networked organisations - where being part of the network is essential for competitiveness[26]. It requires the management of distributed parts[27] of the structure in this increasingly uncertain environment. In such a society, the organisation's culture is likely to prevail if there is a clash with the values of its community[28]. The values applicable to the local environment are subordinated to the organisation, rather than vice versa as previously assumed by modern societies[29]. The above examples describe the co-evolution of the system, its actors and its environment. Co-evolution of social systems is "characterised in terms of their growth in complexity" "which react back on the life-world", "where rationality potential is implicit in communicative action"[30] and is required to enable understanding and development. As "individual

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[23] High rates of change include 'conditions of turbulence' but are not synonymous with such conditions.

[24] Boisot M. 2006. Moving to the edge of chaos: bureaucracy, IT and the challenge of complexity. *Journal of Information Technology,* 242

[25] McGrath RG, Boisot M. 2005. Options complexes: Going beyond real options reasoning. *E:CO,* 6

[26] Castells M. 2000. *The Information Age Volume 1 Rise of the Network Society,* 161

[27] Drucker PF. Sep/Oct 92. The New Society of Organizations. *Harvard Business Review,* 95 "The need to organise for change requires a high degree of decentralization".

[28] Ibid.95 Drucker describes a 'New Society of Organisations' where "knowledge is the primary resource for the individual and the economy overall".

[29] Again clarity is required as to what integrates the economic and cultural worlds.

[30] Thompson JB. May 1983. Rationality and social rationalization: an assessment of Habermas's theory of communicative action. Sociology, 286, 278 "The theme of rationality is explored in conjunction with sciences of nature, of language, of society" to "provide a rational explanation of the phenomena which constitute the world.

'Rationalisation' has been replaced with 'co-evolution' by the author of this thesis to fit into language of this paragraph.

subsystems or agents learn i.e. they alter their schemas during their own individual lifetimes and the system as a whole learns"[31]. There is therefore a need for a framework that enables leaders to analyse the efficacy of strategies intended to support the evolution of the organisation and its actors.

If we accept (for a second) that the world is the whole, any representation thereof, by necessity, would be an abstraction of what it is. Representing parts of the world e.g. the planet earth, society or organization would, by definition, be a reduction from the whole in order to describe such systems. If we want to consider the "structural and semantic problems of modern society, a hypothesis about the structure of complex systems is required i.e. system differentiation[32] at the operative level. System differentiation makes it possible to achieve the advantage of system formation by assuming a pre-formed system already delineated from the environment, and then demoting it to the status of an environment of the new subsystem that is being formed"[33]. Conceptually, this is an appropriate assumption in order to enable an analysis of systems, based on differentiation from other systems, always accepting that it is but part of the whole. There would therefore be two separate levels of abstraction i.e. the system as a whole, and the system made up from parts that make up the whole[34].

Applied to the organisation, this principle would enable managers to "choose between irrationality and partial optimization"[35] to cope with the structural complexity of the business enterprise. System differentiation, through choice of a method that will supply the manager with clear, simple, meaningful communicable models of the *whole structure,* is the manager's greatest need[36]. This method still seems to be what managers and consultants wish for, and unfortunately sometimes assume they have.

System differentiation would also suggest separating the system description from the methodologies that support it, supporting the approach that has been applied in the sections following.

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[31] Stacey R. Apr96. Emerging Strategies for a Chaotic Environment. *Long Range Planning,* 183

[32] That is formation of systems within systems

[33] Luhmann N. 1996. Complexity, Structural Contingencies and Value Conflicts. IN Heelas, et al. (Eds.) *Detraditionalization,* 60

[34] Ritchey T. 1991. Analysis and Synthesis: On scientific method - based on a study by Bernhard Riemann. *Systems Research,* 7

[35] Drucker PF. January 55. Management science and the manager. *Management Science,* 123

[36] Ibid.123

Organisations as "dominant social institutions of our Age"[37] require "our understanding *of them* to be socially constructed"[38]. Similar to any concept that is a construction, *beliefs* (which are historical constructions once identified) are open for change. It is important in arriving at a (alternative) meaning for a concept in the current context, that we do not assume the historical context (still) to be valid, and that we are not bound by assumptions (of relationships, context) which no longer hold true. At the same time, we need to be cognizant of the limitations we have placed on the organisation and its members, through the construction of concepts[39].

An organisation is defined as: "specific systems of means oriented to the performance of specific goals"[40]. In a network structure (within and across organisations) "norms and practices diffuse from one actor to another"[41], as do the components of decision-making i.e. "information, alternatives, expectations, desires, identities, definition of situation rule"[42].

The organisation is a tool whose purpose and function is to integrate specialised knowledge into a common task, and put knowledge to work[43] in pursuit of *economic performance,* without which it cannot discharge any other responsibilities[44]. "Economic activity, of necessity, is the commitment of present resources to an unknowable and uncertain future i.e. a commitment to expectations, rather than facts"[45].

Organisations are therefore a means to an end, in pursuit of an uncertain future; much as day-to-day life leaders would change their means, if they could not get to the desired end driving continual change in the organisation. "The strategic choice paradigm asserts that an organisation's leaders can both wilfully design their organisation and enter into negotiations with environmental actors to alter that environment to suit its end"[46]. Important to remember

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[37] Pascale R. 1990. *Managing on the Edge,* 52

[38] Andersen JA. 2008. An organization called Harry. *Journal of Organizational Change Management,* 185

[39] Taleb NN. 2007. *The Black Swan: The Impact of the Highly Improbable,* 15 In Taleb's words "categorisation is necessary for humans, but it becomes pathological when the category is seen as definitive, preventing people from considering the fuzziness of boundaries, let alone revising their categories".

[40] Castells M. 2000. *The Information Age Volume 1 Rise of the Network Society,* 164

[41] March JG. Jun96. Continuity and Change in Theories of Organizational Action. *Administrative Science Quarterly,* 284

[42] Ibid.284

[43] Drucker PF. Sep/Oct92. The New Society of Organizations. *Harvard Business Review,* 96

[44] Ibid.99

[45] Drucker PF. Jan/Feb59. Thinking Ahead. *Harvard Business Review,* 148-150

[46] Walsh JP. May-June 1995. Managerial and organizational cognition: notes from a trip down memory lane. *Organization Science,* 290

when making that statement is that characteristics of organisations are "historically acquired features, (that are) contingent on the particular culture and circumstance. The historical-cum-comparative approach can help us to see the contingency of our dearest biases and most accepted necessities, thereby opening up a space for change"[47].

Organisations must therefore be "capable of purposeful evolution *to adapt* to new conditions and of *purposeful innovation* to *change* the conditions"[48]. Adaptation and innovation would not be in isolation, but linked to the rate of change in the environment.

The theories describing the objective world can be summarised by the Kantian frame which suggests that emergence of "knowledge of forms is created intentionally within minds by imagination through the processes of abstraction and generalization"[49] (i.e. already there in Kant's terms). From an organisational and individual perspective, the other end of the continuum reflects a combination of the concepts of subjectivity and life world in the *subjective world.*

The use of concepts of lifeworld as distinct from the systems world according to Habermas[50] has been briefly set out above. Society in the rational sphere is composed of two archetypal complexes of rational action – state and economy[51]. Even though the naming and the following source may indicate otherwise, the intention of this thesis is not to reduce lifeworld to systems world. Societal structures are formed based on how functions of political, economic and symbolic reproduction are organised, leading to different perspectives of World Society[52]. The system of states no longer covers the political system as a whole. When defining the political system in contemporary terms, one should incorporate other political institutions and actors, like new social movements and social concern organisations, in a newly defined political system that goes beyond the system of states. Using this description as a basis, the archetype *state* has therefore been replaced by one labelled the 'socio-political system'.

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[47] Tsoukas H, Cummings S. 1997. Marginalization and Recovery: The Emergence of Aristotelian Themes in Organization Studies. *Organization Studies,* 673 The Aristotelian conception of rationality emphasized final ends not means.

[48] Drucker PF. Jan/Feb59. Thinking Ahead. *Harvard Business Review,* 146

[49] Freeman WJ, Núñez R. 1999. Restoring to Cognition the Forgotten Primacy of Action, Intention and Emotion. *Journal of Consciousness Studies,* x

[50] Thompson JB. May 1983. Rationality and social rationalization: an assessment of Habermas's theory of communicative action. *Sociology,* 285

[51] Jung D. 2001. The Political Sociology of World Society. *European Journal of International Relations,* 451

[52] Ibid. 452

In order to reflect on tensions within the life world, for purposes of this thesis, the labels 'socio-political system' and 'economic system' have been used to categorise contextual forces (sometimes opposing forces) that are likely to influence the organisation. Visually the continuums are depicted by the following x-axis and z-axis:
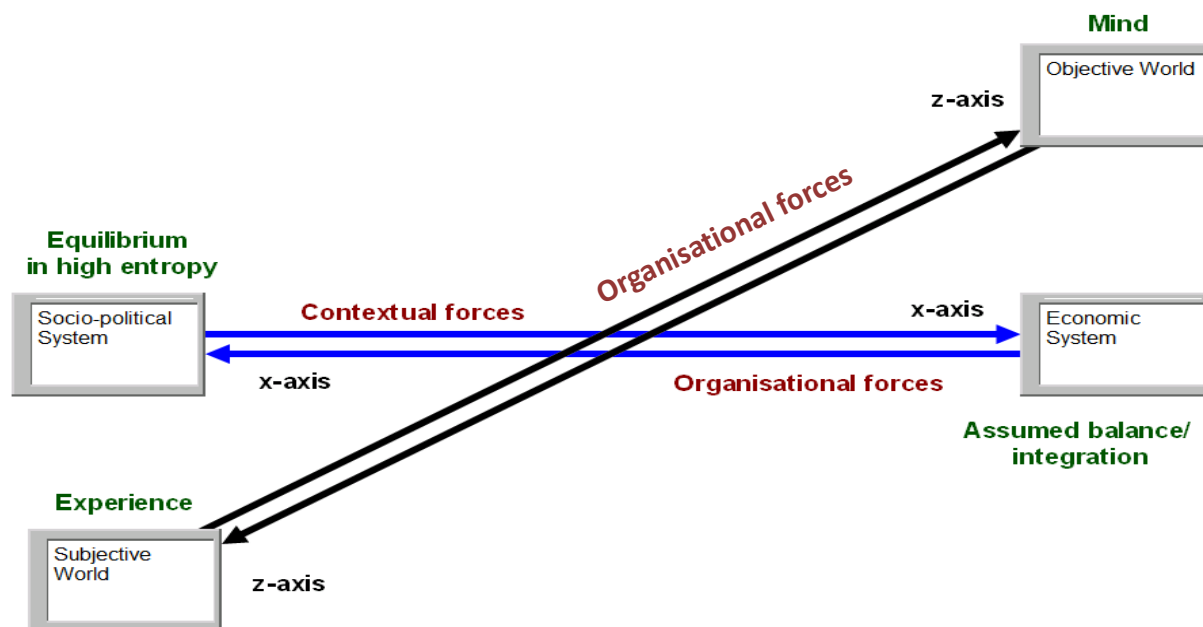
Figure 1 Contextual and organisational forces

1.3　Model development

Within the context of the background described above, the thesis provides conceptual support for the analysis of strategic decision-making by institutional leaders in organisations, by means of a model[53].

The model has been developed from concepts that support decision-making in complex environments. The organisational process of strategy formation or strategising, as action, is used to support the conceptual development of the model. The intention is to demonstrate the interconnectedness of communicative action and social systems. The interconnectedness will be shown by a "framework for comprehending the tensions and tendencies, and the conflicts and potentialities that characterise"[54] the organisation of today, and individuals within such.

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[53]　This is a model for analysis of strategic decision-making and not a predictive or normative model of change. One would wish to provide insight to leaders so that through analysis of a system it can be gradually pushed towards a threshold at which change takes place, without being able to predict the exact point of change.

[54]　Thompson JB. May 1983. Rationality and social rationalization: an assessment of Habermas's theory of communicative action. *Sociology,* 279. Used by Thompson to describe the "industrial society" while application in this thesis reflects on organisations.
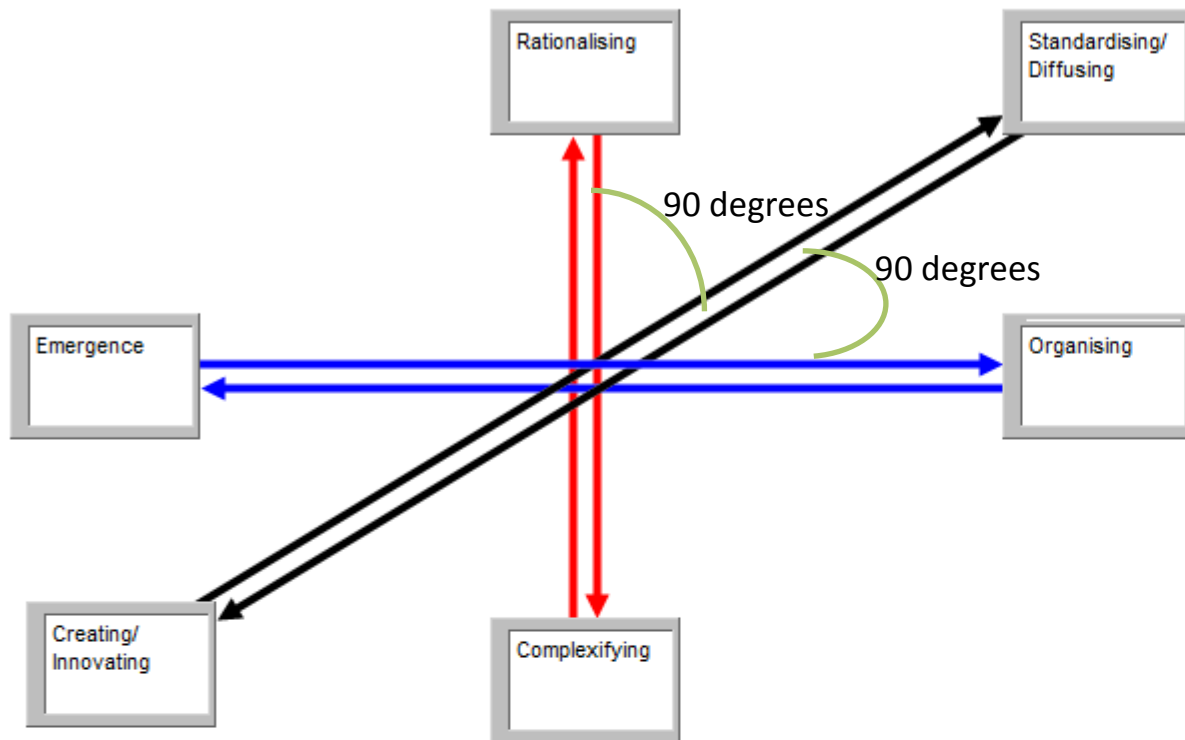
Figure 2 Tensions in an organisation

The concepts selected to enable leaders to develop comprehension of the 'tensions and tendencies, the conflicts and potentialities'[55] in organisations, using verbs to denote action[56], are:

i) Control versus lack of control, denoted by the concepts of organising and emergence[57];

ii) The majority of members of the organisation have a great need for stability. There is therefore a need for leaders to explain rationally a decision taken, or situation, even though the environment is characterised by an increase in inherent uncertainty. The concepts of rationalising and complexification[58] are used to reflect on the continuum between stability and uncertainty; and

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[55] Hereafter referred to as tensions. Weick KE. 1995. *Sensemaking in Organizations,* 72 Weick refers to Aram's view of organisations as tension systems.

[56] Mir R, Watson A. 2000. Strategic management and the philosophy of science: the case for a constructivist methodology. *Strategic Management Journal,* 950 Environment in the context of constructivist theory is an enacted environment and distinct from a perceived or objective environment.

[57] De Wit B, Meyer R. 2001. *Strategy Synthesis - resolving strategy paradoxes to create competitive advantage,* 101, 104, 367

[58] Conscious choice not to use irrationality at the end of the spectrum but some action/concept that may be regarded as irrational depending on level understanding by the leadership.

iii) Business organisations strive to improve productivity (through a combination of effectiveness and efficiency) in order to maximise returns for their stakeholders[59]. The concepts of innovating/creating and standardising/diffusing are used in the framework, as they support achievement of such an organisational goal.

The structure of the model is based on the concept of morphology - of tying material objects, phenomena, ideas and expectations together in a mutually coherent framework that supports their *relationship*[60]. The general morphological process as methodology, first proposed by Zwicky, can be used to create models of systems and processes, which cannot be meaningfully quantified. The process has been applied in this thesis to create and analyse structure, using typologies of concepts, by reflecting on possible combinations between variables, as well as reflecting on the whole system. The choice of variables and the description of interrelationships and visualisation in space have the potential to create meaning[61] and direction.

The objective would be for leaders (and those participants involved in creating and operationalising the strategies of business organisations) to create meaning through reflection on such *relationships*, in order to develop an understanding of organisational decision-making in high rates of change. A leader would attempt to develop meaning to support strategic intent that will guide organisations in the direction of the chosen strategies or aims.

Intent[62], in the context of this thesis, can be expressed as the stated strategic intent[63] of the organisation[64]. Intent creates the room for discourse by different actors, on multiple levels of

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[59] By using productivity as objective the author of this thesis does not intend assume a single organisational identity or reality.

[60] Zwicky F. 1966. *Entdecken, Erfinden, Forschen*, 11

[61] Ritchey T. 2006. Problem structuring using computer-aided morphological analysis. *Journal of the Operational Research Society,* 3

[62] Mantere S, Sillince JAA. 2007. Strategic intent as a rhetorical device. *Scandinavian Journal of Management,* 407 "Intent, a psychological concept, is held by a conscious subject, capable of forming intentional states, mental states connected to external reality".

[63] Mintzberg HA, Bruce; Lampel, Joseph. 1998. *Strategy Safari: The complete guide through the wilds of strategic management,* 219 "Strategic intent sets general direction, defines emerging market opportunities, and provides rallying cry for employees. Boisot sees particular value in this concept in situations of environmental uncertainty:".. .strategic intent relies on an intuitively formed pattern or gestalt – some would call it vision – to give unity and coherence ...This yields a simple yet robust orientation, intuitively accessible to all firm's employees, an orientation which, on account of its clarity, can be pursued with some consistency over the long term in spite of the presence of turbulence."

[64] Mantere S, Sillince JAA. 2007. Strategic intent as a rhetorical device. *Scandinavian Journal of Management,* 407, 412 Strategic intent is a "rhetoric device for creating coherence between intents possessed by multiple intra-organisational actors" which when achieved equates to organisational strategic intent. Rhetoric is used in the sense of communicating a managerial conviction rather than a true collective intent.

the organisation, with varied perspectives on context, content and process of strategy formation, making tensions visible in order to generate coherence.

The interaction and relationships between phenomena, ideas and actors (and their expectations), and factors (physical or otherwise), in such space is supported by communication (reflected upon as a process and a system), providing a medium and description as to 'how' change is facilitated. Communication, for the purposes of the thesis, is also regarded as part of the larger notion of 'Life' as a whole[65].
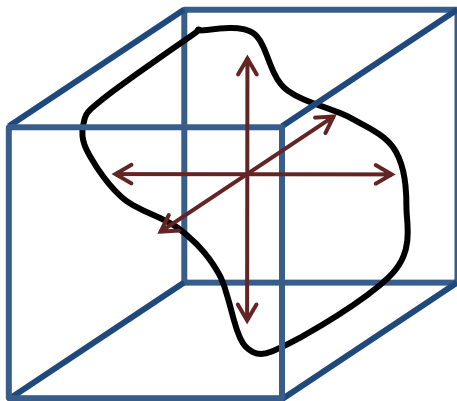
Figure 3 Communication as process and system[66]

A 'constructivist' approach has been taken, in which interactions of actors, observers and the selected system are not assumed to be neutral. "Abstraction and conflict are encouraged in the decision process" to resolve plurality and possible incompatibility of theories (inter alia in strategy, cognition and communication), supporting the concepts. The resultant model of reality is called knowledge (a relative truth based on the formalisation of thought of the author)[67]. The thesis assumes the applicability of structuration theory, in accordance with which the "structural properties of systems are both medium and outcome of the practices they recursively organise"[68].

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[65] Acknowledging that there are different opinions on this matter (Juergen Habermas, Niklas Luhmann)

[66] Boisot M. May 2004. Exploring the information space: a strategic perspective on information systems. *Sol Snider Center for Entrepreneurial Research (Working Paper Series WP04-003),* 23. The representation of the structure shown is similar to Boisot's i-space/learning cycle but the dimensions and purpose are very different.

[67] Mir R, Watson A. 2000. Strategic management and the philosophy of science: the case for a constructivist methodology. *Strategic Management Journal,* 941, 943

[68] Giddens A. 1984 The constitution of society: outline of the theory of structuration, 25

Motivation for change, i.e. 'the why' change exists, is based on individual needs, whether real or perceived, beliefs as well as organisational intent[69]. The individual's needs can be divided into psychological, safety, belonging and love, esteem and self-actualisation[70] needs. These concepts can be transported to organisational concepts of, for example[71]: consciousness of financial survival, relationships, self-esteem (focus on improving corporate fitness), transformation (self-knowledge and renewal), organisation (internal connectedness), community (partnerships and supporting local communities), and society (servicing humanity and the planet), resulting in multiple possible realities for organisations in relation to desired positions for each of these. There are obvious trade-offs, but also feedback loops, between such concepts, which create the need for change, and support the change process when initiated. For example, organisations could be said to transition between various stages of their development (or life cycle) primarily through political engagement of internal and external actors[72]. This highlights that it is the actors' needs that have an impact on organisations. Organisations are non-natural creations for a specific task[73]. The same issues that apply for institutions of the system-world also apply here. Organisations often take on the appearance a life of their own and appear to exist independently of the people in them but this is an illusion of the same nature than that of system versus lifeworld.

Even within a particular organisational life-stage, there are different structures that can support the organisational objective. For example, Perrow recommends that, in order to reduce the risk of serious failure [as an organisational objective], it may be necessary to structure the "system to be less complex and tightly coupled" [with more focus on stability

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[69] Mantere S, Sillince JAA. 2007. Strategic intent as a rhetorical device. *Scandinavian Journal of Management,* 407 Intent, beliefs and desires are examples of intentional states about the world.

[70] Valentine ER. 1992. *Conceptual issues in psychology,* 183, 189 Humanistic psychology (Maslow). An alternative to this would be Idiographic psychology, which sees most important unifying forces in "people as purpose and moral character, and human character as intimately related to, and an outgrowth of, social institutions". An interesting aspect of this practice is that it strives for "direct insight into the vital nature of things as articulated wholes involving the systematic description of the nature and development of consciousness and the inner unity of individual life".

[71] Barrett R. 1998. *Liberating the corporate soul: building a visionary organization,* 67-71

[72] Mintzberg H. 1984. Power and organizational life cycles. *Academy of Management Review,* 207, 221, 220 Exceptions to this statement are closed systems and meritocracies which "can escape temporary state of intense politics."

This engagement results in conflict created through engagement and feedback loops varying in magnitude and scope changing the organisational condition and structure as a result thereof. For example, organisations could change focus from one of service to external constituency to one based on ideology (identity) and at a later stage to a system that becomes an end in itself.

[73] Drucker PF. Sep/Oct 92. The New Society of Organizations. *Harvard Business Review,* 100

and organisation than on emergence] with a more decentralised structure [with redundancies built in], even though this will reduce its efficiency[74] and the level of centralised control.

The need for an improved understanding of 'the how and why' of change is not an end in itself, but is developed as a means for leaders to cope with high rates of change. In this thesis, the need for change is considered in the context of one organisational process - that of strategising, or strategy formation[75]. Strategising can be used in the sense of "knowing by gaining control", while acknowledging that individual theories may not give adequate meaning to behaviours, e.g. such as those of states, financial systems, organisations, within in the context of the recent financial crisis[76].

There is a relationship between each of the concepts (supporting the dimensions of the model) and strategy formation, as they are each influenced and defined by the other i.e. how an enterprise is organised affects its ability to strategise[77]; e.g. a central top-down determined strategy is likely to be more prevalent in the context of hierarchical, control oriented organisations.

The ultimate purpose of strategising and organising is to "change behaviours of people, rather than being ends themselves" "in pursuit of organisation purpose and competitive advantage"[78]. The use of discourse (whether by consensus or coercive power[79]) to agree shifts in, for example, structure, resource allocation, and even organisational intent, reflects the socially constructed negotiated nature of organisational arrangements.

1.3.1.1 Unit of analysis

The unit of analysis switches between the individual, one or more individuals working within the context of the group, the individual as part of a group, and the group as an organisation. The framework, as a set of definitions, does suggest an interrelationship of frames of

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[74] Perrow C. September 1999. Organizing to reduce the vulnerabilities of complexity. *Journal of Contingencies and Crisis Management,* 150

[75] Strategising and strategy formation are reflected upon as one process with different levels of uncertainty built into the outcomes depending where on continuums the organisation and its leader is placed.

[76] For this thesis, the author does not assume control from an organisational viewpoint, requiring the thesis to connect such theories (not subsumed) and through that our understanding of behaviours through organisational learning processes. The processes and systems must be designed to support decision making, problem solving and strategising in the realm of the unknown.

[77] Pye A, Pettigrew A. 2006. Strategizing and organizing: change as a political learning process, enabled by leadership. *Long Range Planning,* 584

[78] Ibid.585, 588

[79] Ibid.586 The relationship between strategising and organising "can be conceptualised as a political learning process". "Power as a relationship concept is defined through the structurally unbalanced exchange of possibilities of action amongst a set of individuals and/or collective actors".

reference appropriate for the analysis of different units of analysis i.e. the individual in a socio-cultural frame, while the neoclassical frame[80] is applied to the group[81] in a complementary fashion. As the integration of societal and organisational forces is proposed at the individual level of experience, the socio-cultural frame of reference was deemed appropriate as the primary frame of reference within the model. The frame of reference changes from socio-cultural to neoclassical when we switch analysis from controlling the outcome to adapting[82] to the environment, and analysing properties of the group.

For this thesis, that means that the analysis of concepts is equivalent to looking at the properties within the model (socio-cultural), but the analysis of the model (as a whole) is equivalent to analysing the properties of the system (neoclassical). An example of a property of the latter is the characteristic of an open system. Similarly, possible limitations of the model refer to the properties within the system (of the concepts), and the system as a whole. The concepts are discussed in Chapter 2 and 3, while limitations set out in Chapter 4 refer to the model as a whole.

If technology is considered to be the main driver of change in urbanisation (as a group of variables), a reference to a socio-technical frame of reference would refer to the interaction between a socio-cultural frame (the individual) and a neoclassical frame (of technology). Using an example of the relationship between technology and urbanization, Bailey posits that "the explanation between technology and urbanization does not exclude individual decision

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[80] Boisot M, Canals A. 2004. Data, information and knowledge: have we got it right? *Working Paper Series,* 10 Neoclassical refers to the assumption of rationality and that agents are not subject to "communicative or data processing limitations".

SMITH VL. 2003. Constructivist and Ecological Rationality in Economics. *The American Economic Review,* 480. Similarly, the neoclassical paradigm refers to the concepts of rational choice, self-interested market competition; focus on the long-term, equilibrium, frictionless competition.

One could also contrast the terms by referring to micro-sociological action theory relevant to the integration of meaning at the level of individual; and macro-sociological and system theory perspective when the unit of analysis reflected upon is the organisation or wider society of organisation in an economy and socio-political paradigm through use of a heuristic model.

The heuristic model at the level of the individual would not assume rational behaviour (applying a socio-cultural frame), while when looking at a variable as a group or 'whole', similar behaviour is assumed within categories.

[81] Bailey KD. 1972. Sociocultural verus Neoclassical Ecology: A contribution to the problem of scope in sociology. *The Sociological Quarterly,* 38, 41 "The ecological complex is a frame of reference which consists of population, organisation, environment and *technology* each representing a group of variables and a set of properties respectively". This is done in order to explain *correlations* of variables and not variance in a variable.

[82] Ibid. 39

making at all but rather depends on it". The explanation as "empirical generalisation depends on the study of human action"[83].

The explanations in Chapter 4 therefore depend on the conceptual analysis in Chapters 2 and 3, enabling generalizations about individual actions. The existences of properties in the model depend on the generic relationships as set out by the continuums.

1.3.1.2 Morphology as an approach

In socio-cultural analysis, the correlations (i.e. not the cause) of variables are determined, in order to interpret what proportion of the variation in the dependant variable[84] is *explained* by the independent variables. This is consistent with the morphological approach and Analytical Hierarchy Process (AHP) as applied in a morphological field.

Morphology as an approach can be used to synthesize strategic alternatives that exist on the same conceptual level. In order to establish coverage of the 'whole' field of possible alternatives, the relationships between the concepts are established. Although this demands independence between aspects (at conceptual level), the discussion of dependencies, correlations, and performing such at levels of discourse, will illustrate the perceived dichotomies and that there are continuums between concepts that form part of the three dimensions selected.
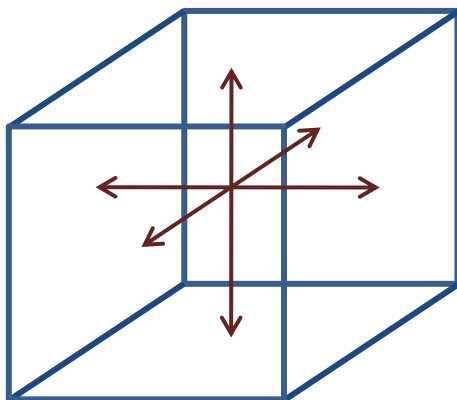
Figure 4 Identifying relative positions

Within the morphological box[85], based on the three model dimensions, three main vectors are used to create the structure based on selected concepts. The relationships that define the

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[83] Ibid. 45

[84] Ibid. 42

[85] Shape not literal

concepts transform the shape that the structure takes[86] within a 3-dimensional cube as boundary for the structure. In this structure, tension also exists between 'I', 'we' and 'organisation', and between the organisation (as social construct) and 'environment' respectively, as layers or levels[87] of analysis[88]. A position is a coordinate in the space, while tensions are represented by the distance between positions on the respective 'continuums', and movement between alternative positions in such 3-dimensional space.

This resultant combined structure enables leaders in organisations to place events and statements of intent about organisational direction at points in the three-dimensional space (similar to creating coordinates[89]), and use such representation to reflect on positions of individuals, teams and the organisation as a whole. Mapping current and intended positions[90] would provide a basis for analysing actions, as well as potential consequences of intended actions that are expected to produce change.

Similar to formation in strategy, the morphological approach enables creation of form with which the participants (in a workshop setting or otherwise) can engage. The interaction and relationships between phenomena, ideas and actors (and their expectations), and factors (physical or otherwise), in such space is supported by communication (reflected upon as a process and a system), providing a medium and description as to 'how' change is facilitated.

1.4   Proposing a model

The thesis proposes a model for the analysis of strategic decision-making that incorporates:

    a)   The level of uncertainty that the individuals within the organisation, and therefore the organisation, can cope with,

    b)   The attitude of leaders to control or to allow the emergence (and behaviours resulting from such) required to adapt to the environment, and

    c)   Productivity and innovation are pursued as a means of achieving the dominant organisational objectives, (and change is designed to achieve such)

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[86] Zwicky F. 1966. *Entdecken, Erfinden, Forschen*, 120 adapted from description of concept of 'energy'

[87] Weick KE. 1995. *Sensemaking in Organizations*, 72, 75

[88] As stated before, organisations, society at large and the environment form part of life i.e. they are not separate although they can be discussed separately.

[89] Used as noun

[90] Positions of individuals, teams, parts of the organisation and the organisation as a whole, in this 3 dimensional space.

as 'dimensions' of the model. Using the underlying concepts as a starting point, the thesis develops the dimensions and framework[91]. The discourse within and between layers of analysis[92], creates tension which, when resolved[93], supports institutional leaders in the analysis of strategy for organisations operating in high rates of change.

1.5   Research Questions

This leads to the research questions in relation to analysis of strategic decision-making:

i)   What are the major theoretical concepts that support decision-making in conditions of high rates of change?

ii)   What model could be designed to tie together these selected concepts in a coherent framework?

iii)   How does the framework assist *institutional* leaders in coping with high rates of change that challenge cognitive activities in a socially constructed environment?

1.6   Methodology

Constructivism as a social theoretical point of view is the basis of the research methodology. This not only guides the basic position of the researcher, "but also determines what gets constructed as research problem, what theoretical procedures get used and what constitutes observations and evidence". It also provides "analysis that helps placing theories in context, rather than turn them into axioms that transcend the confines of time and space"[94].

The introduction has already set out two philosophical dimensions (objective/subjective worlds and socio-political/economic systems), that form part of the framework of the model. In addition, it is necessary to add another conceptual assumption, i.e. communication in a socially constructed environment (in organisations) is more general than either action or experience. It seems plausible that the strategic decision making processes, in which

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[91]   Popper K. 1963/2007. *Conjectures and Refutations: The growth of scientific knowledge,* 421 "Dialectic is a theory which maintains that human thought develops in a way characterised by the dialectic triad: thesis, antithesis and synthesis". The author of this thesis is not certain that the thesis will support the requirements of dialectic method. The framework may provide a synthesis of how the dimensions are related, with the objective being coherence of understanding by leaders supporting analysis of decision-making. That in itself does not exclude that there are some remaining contradictions.

[92]   The 'I', 'We' and 'organisation' represent the levels of analysis in the context of an environment characterised by high rates of change. Although the environment itself is another level of analysis, for purposes of the thesis it is assumed to be characterised by high rates of change and treated only as such.

[93]   The thesis uses 'strategy formation' as an on-going process. For the purposes of a snapshot at a point of time the term 'resolved' is used, accepting that is only true for that point in time.

[94]   Mir R, Watson A. 2000. Strategic management and the philosophy of science: the case for a constructivist methodology. *Strategic Management Journal,* 950, 941, 943 "The separation of researcher (subject) and phenomena under investigation (object) is not feasible" as philosophical positions of researchers determines their findings (Mir and Watson quote Berger and Luckman as having popularised this approach). This is consistent with a position that organisational reality is socially constructed.

attributions are made, contested and remade are communication processes[95]. This thesis uses *communication* as the system of representation of the situation, in order to keep internally consistent assumptions. This would allow conclusions based on the narrative analysis of such system, and the definition of challenges to the set of systems described would include those applicable to communication systems[96].

Chapter 2 will set out the theoretical concepts supporting the third dimension (being the individual within the more self-evident contextual and organisational forces discussed above) based on a literature review. It will also develop a discourse supporting the interplay with the organisation, and society at large, integrated at level of the individual decision maker.

Chapter 3 develops the model further by developing a view of strategy formation and change that is consistent with the individual and organisational concepts, in order to enable analysis of strategic decision making.

Chapter 4 will reflect on the theories and assumptions inherent in the model development which leads to the definition of possible inherent limitations of the model. Furthermore, it sets out the use of the model as a system using the continuums developed in previous chapters as the basis, or core, of the model. The thesis seeks to demonstrate that the purported analysis of strategy, based on the theoretical model, supports a view of reality in organisations situated in environments characterised by high rates of change. Any proof of the latter is, however, excluded, as the purpose is model development not empirical testing. The aim is to develop a view on the logical coherence and interpretative usefulness of the model.

Certain additional vocabulary has been chosen from early modern philosophers and used in the current context of post-modern philosophers, in order to enrich the discourse and contrast alternative models of perceiving and thinking about the world and organisations. Complexity has been used as a theme that enables the author to describe the rapidly changing environment, and provides a vocabulary that supports the discourse.

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[95] Stichweh R. 2000. Systems Theory as an Alternative to Action theory? The Rise of `Communication' as a Theoretical Option. *Acta Sociologica (Taylor & Francis Ltd),* 10

[96] This position is not consistent with Luhmann's position that we can't step outside a communication system but necessary for the argument made for being deliberate in actively constructing a social system supported by communication and action.

Chapter 2
Selection of Variables
A description of the third dimension of the model and synthesis of variables

2   Selection of Variables

Naturally, organisations as part of society, and strategy formation, as a process which is located within organisations, can only be discussed within the context of the current society and the current environment. The latter as a rapidly changing environment that is characterised by uncertainty, arising from the scale of change and variability in global, national and local context, which impacts on organisational decision-making.

This chapter will set out the three model dimensions based on categories selected, and selected key variables which are subsets of these categories. The selection is based on developing a notion of reality through abstraction and conflict, supported by theories of communication and cognition[97].

The intention is to provide the reader with definitions and conceptual language used, before using these concepts in supporting strategy formation in the next chapter, and in chapter 4, using the notion of the system as a whole.

2.1   Categories

A 'constructivist' approach has been taken, in which interactions of actors, observers and the selected system exist in that the interactions create patterns that are the system. The interplay is between organisational and contextual forces, with the 'individual' making sense and integrating such forces at the level of individual experience and actions. "Abstraction and conflict are encouraged in the decision process" to resolve plurality and possible incompatibility of theories (inter alia in strategy, cognition and communication), supporting the concepts.

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[97] Mir R, Watson A. 2000. Strategic management and the philosophy of science: the case for a constructivist methodology. *Strategic Management Journal,* 941, 943

The proposition is that societal and organisational forces are integrated at the level of individual experience, as depicted in Figure 5.
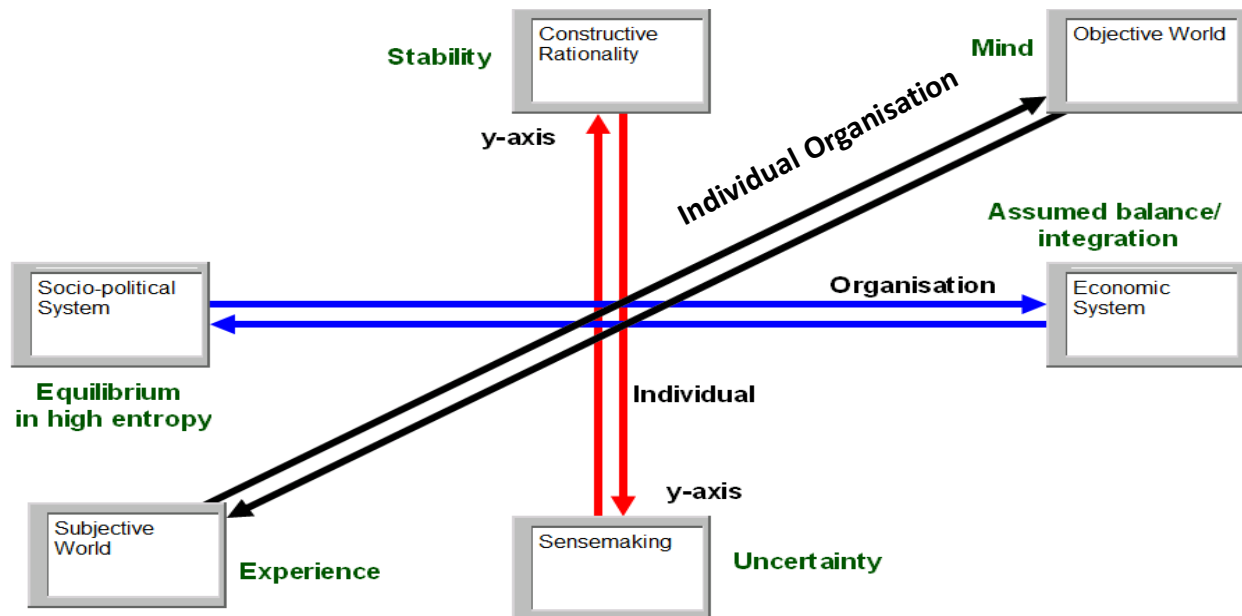
Figure 5 Adding the Individual as y-axis

The objective is to distil variables that enable integration of concepts, by selecting variables that have characteristics supported by existing theories, associated with a particular world view e.g. a variable that has subjective qualities, deals with the socialisation and uses sensemaking under conditions of uncertainty.

In order to develop these variables, the thesis reflects on capturing how the context reduced to a system description[98] is encapsulated in a model (systems dimension), the capacity for integration as described by individual complexity (experience dimension), and the mechanism for integration being communication (the third dimension).

2.2 Integrated at level of individual experience

2.2.1 System description and continuums

The purpose of a description of a particular problem situation as a system is to support the decision-making process. The system description is not an end in itself.

The world can be described as a whole[99], requiring observers to look at the whole, reflecting a Monist ontology stating that "every event is causally connected with every other"[100].

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[98] To which a problem statement is added when strategy formation is discussed in the next chapter.

[99] Blackburn S (Ed.) 2008. *The Oxford Dictionary of Philosophy,* 238 "Parmenides and Spinoza each believed that there could only be one kind of self-subsistent, real thing".

However, even when looking at the world as a whole from different perspectives, by displaying it in pictures[101] that have different possible connotations, different responses from the reader's perspective are evoked, each valid from the respective reader's perspective.
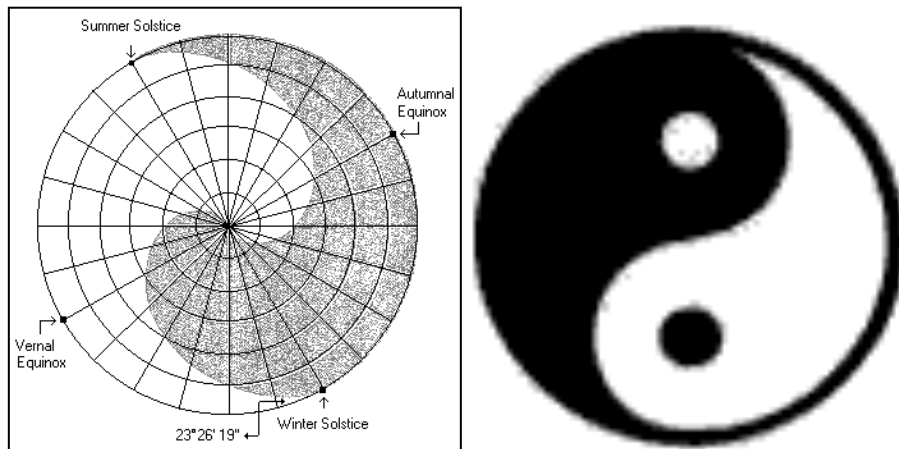
Figure 6 The value of two

The pictures above are representations of one whole that has the *duality* of different perspectives or sides. Wheatley feels that "positioning things as a polarity doesn't help" [102], stating that, "We need to stop drawing lines of opposition and try understanding the 'and' of one and one"[103]. While she may be correct, this thesis will attempt to use polarities to enable us to derive a richer understanding of the whole and *not* as a method "to see the parts as different aspects of reality"[104]. On a conceptual abstract level the use of synoptic philosophy provides a way to a synthetic worldview, embracing both thesis and antithesis such as *analysis and synthesis*, action and reaction, explication and implication, phenomenon and noumenon, visible and invisible, just to name a few"[105]. The challenge for this thesis is to establish relationships of concepts and therefore the frameworks to the level of individual experience.

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[100] Ayer AJ. 1970. *Language, Truth and Logic,* 150

[101] Matthysen M. 2008. Sacred Geometry. 6,7 The above pictures were extracted from this presentation.

[102] Wheatley M. 2006. *Leadership and the New Science: Discovering Order in a Chaotic World,* 46

[103] Ibid.46 She believes in spending the time formerly spent on detailed planning and analysis to create the organizational conditions for people to set a clear intent, to agree on how they are going to work together, and then to practice to become better observers, learners, and colleagues as they co-create with their environment.

[104] Ayer AJ. 1970. *Language, Truth and Logic,* 151

[105] Christian JL. 1998. "Philosophy: An Introduction to the Art of Wondering". *Synoptic philosophy* .

Definition of "*Synoptic* comes from the Greek words 'sun-optikos', ('seeing everything together') and together with the word philosophy, means the love of wisdom emerging from a coherent understanding of everything together".

Studies[106] have shown "that meaning and concepts are socially and historically mediated, but unlike what many post-modern philosophers suggest, they are not the result of arbitrary social conventions. They are indeed realized through non-arbitrary, species-specific, bodily grounded experiences that are at the basis of consensual spaces and inter-subjectivity. The results show the fundamental and intimate co-definition of minds and bodies"[107]. The latter suggests a concept of duality which is based on perceived dichotomies.

A further reason for *using insights from reflection on the duality* of things such as processes and structures through other means, including those of mathematics, lies in the nature of mathematics i.e. mathematics can help to describe the operation of a process or shape without proposing that it is the computational basis of the process or shape[108]. This characteristic of mathematics supports structure, but at the same time confines knowledge to structural aspects, as ''it fails to give us any further insight into the nature of whatever it is that has these structural or mathematical characteristics"[109].

Weick reflects on duality, in describing sensemaking, as a process akin to trying to decide whether the seed or the corn came first, while it is germination that creates the whole. The seed is described as a "form-producing process" with "action that creates conditions for further actions"[110]. Form-producing is akin to creating structure to enable engagement with the system, either in its parts or with the system as a whole. In the context of considering different perspectives of the whole, it is the action of considering the different perspectives, and the process that changes the perspectives, that allow us to create meaning. The duality of *description* and *theories* lies in the nature of both of these i.e. limited ability to describe the

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[106] Freeman WJ, Núñez R. 1999. Restoring to Cognition the Forgotten Primacy of Action, Intention and Emotion. Journal of Consciousness Studies, xv "Moreover, even after language emerges in humans, the study of colourful constructions that seem to defy logic, yet have compelling utility in social communication, exposes to view the rich alternatives to traditional logic that are characteristic of human mentation. Some of these impressive mechanisms of every day human cognition are analysed through the study of spontaneous gestures, conceptual systems, unconscious and effort less inference-making, metaphorical thinking, speech–gesture coordination, and natural language understanding. The arguments in that paper propose new forms of understanding human semantics and the nature of concepts, revealing the primary role played by bodily grounded experiences in making meaning and abstraction possible.

[107] Ibid.xv

[108] Ibid.xvi Numbers and other symbols resulting from the measurements of its electrochemical activities "can be modelled by mathematics to provide compelling insights into brain dynamics, as well as by natural languages and the use of metaphor. But this doesn't mean that the language of the brain is mathematics or logic. For example, one may describe the operation of the lens of the eye by using the Fourier transform without proposing that the lens computes it".

[109] Andres J, Mausfeld R. 2008. Structural description and qualitative content in perception theory. *Consciousness and Cognition,* 309

[110] Weick KE. 1995. *Sensemaking in Organizations,* 51

whole and, at the same time, be encompassing of the tensions inherent in choosing one or the other. This thesis uses the tension between various (sometimes seemingly opposing) perspectives as a method for reflection. The mirror does not just reflect, but shows more. For example, a person looking in the mirror would not just see his reflection, but also the environment.

The ability to *look at something from a distance* may show more context[111] to the item focused on, reveal paradoxes and assumptions and, by implication, create a 'richer' understanding of the actors, relationships and the system itself.

The 'opposite' categorization can also be discussed as part of ratio-nality (hyphenated to highlight *ratio*) as defined. The intention of the discourse is to separate the parts for discussion, reflect on the characteristics of 'the other side of the coin' and put them together as a whole again. The duality of sides means that they are not necessarily symmetrical (as the metaphors of a coin or mirror would imply). This is caused by positive (amplifying) or negative (regulatory) feedback relationships that are not equivalent (neither in amplitude nor in nature/function) [112]. The use of 'opposites', or duality, as used in this thesis, also furthers the understanding of the 'and' of the relationship between the parts as well as the whole system. The principle of trying to view a situation from different perspectives supports the objective of increasing our understanding of the situation and possible consequence, even if the principles themselves do not lend themselves to falsification[113].

Having established a basic position, the discussion of duality in respect of the purpose of the methodology underlying analysis and synthesis, is in that context. "Analysis is defined as the *procedure* by which we break down an intellectual or substantial whole into parts or components. Synthesis is defined as the opposite *procedure*: to combine separate elements or components in order to form a coherent whole"[114].

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[111] Ayer AJ. 1970. *Language, Truth and Logic,* The fact that we need an example does not assume a logical relation between the example and the abstract concept; "it shows merely that our intellects are unequal to the task of carrying out very abstract processes of reasoning without the help of intuition".

For example (on viewing from a distance), viewing a sand corn through a microscope allows us to conclude about that corn only; while viewing the sand corn embedded in the beach from 100 meters distance would enable us to reflect on it as part of the whole beach, without knowing the detail of the sand corn.

[112] Wheatley M. 2006. *Leadership and the New Science: Discovering Order in a Chaotic World,* 78-9

[113] Farr J. 1985. Situational Analysis: Explanation in Political Science. *The Journal of Politics,* 1092

[114] Ritchey T. 1991. Analysis and Synthesis: On scientific method - based on a study by Bernhard Riemann. *Systems Research,* 1

Through analysis, we look at the composition (or structure) to *build* a "*conceptual model* of the system using effect to explain (something about) cause". Alternatively, we begin with an analysis of *function* of the system in order to determine "what the system accomplishes" breaking up the functional processes into tasks, which the system must solve. With regard to the latter, the assumption would then be that the system which solves all the tasks (i.e. solves the problem) must produce the desired effect[115].

The availability of knowledge governs, to a large extent, which procedure (analysis or synthesis) we apply to a given system[116]. A second layer of each of these methods stems from separating the objective or purpose of applying the procedure as a subset of the procedure chosen i.e. dealing with structure or the functional processes. The assumption here is that this sub-categorisation applies to synthesis as it does to analysis.

Attempting an order in this thesis would require dealing with a problem description and a system description sequentially (chosen in this order), although these co-exist in the sense of duality as described.

The *principles* that we use to describe and understand the system "must be obtained inductively" [117] and not by mere deduction[118] as relationships between thoughts, word and experience are complicated. The process of analysis does not ignore the inherent risk of induction i.e. inferring the whole from a part (which may be pre-selected segments of the seen), and that we don't know what we don't know (although what we see is not all that is there; we behave as if there is no other source of uncertainty)[119], which is inherent in the analysis procedure.

The system, constructed with input from the participants, would follow procedures that support analysis[120] (describing parts of the system) or synthesis (when dealing with the system as a whole) as thinking modes (described by science). Using an adaptation of

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[115] Ibid.14,15, 17

[116] Ibid.19

[117] Ayer AJ. 1970. *Language, Truth and Logic,* 47

[118] Ibid.47 Ayer did conclude that "it is not possible to deduce all our knowledge from 'first' principles' ". Philosophy would then be the "study of the reality as a whole" that implies "that the philosopher is equally concerned with the content of every science". The Sciences would be the piecemeal investigation of that same reality.

[119] Taleb NN. 2007. *The Black Swan: The Impact of the Highly Improbable,* 50

[120] Ayer AJ. 1970. *Language, Truth and Logic,* 23 "Philosophical analysis is very largely a matter of exhibiting the inter-relationship of different type of propositions". In Ayer's terms that does not predicate existence. The validity of scientific and common-sense beliefs is an empirical matter. In that sense his conclusion was that philosophy's "function is to "bring to light the presuppositions of science".

Einstein's insight, that 'a problem cannot be solved within the frame in which it was created'[121], the duality of the procedures requires us to reflect through synthesis, and to develop alternative states of the system as a whole. If the resultant system states are coherent, then "every change can be shown to be completely determined within a single system of causes"[122]. Looking back using post-modern frame of sensemaking, multiple perspectives and retrospective logic would enable deduction of several paths that could have led to the current situation i.e. a purely historical perspective. However, it is when multiple systems of causes are to be considered as applying at the same time, that the complexity of deducing the existence of the thing studied (as suggested by Spinoza) from the essential attributes and modes of the system[123] must be challenging, if not unlikely.

A system description based on situational analysis, is initially based on an open system that "starts from the description and analysis of the situation in which agents find themselves and try to identify and understand the physical, social and psychological conditions that make those practices possible, and the relevant actions intelligible. The goal is to construct a carefully argued, meaningful *analytical* narrative of human actions and their conditions of possibility"[124].

Social organizations [125] are systems defined as "a set of roles *tied together by the channels of communication*" [126], and encompass, inter alia, the content and meaning of messages, the nature of value systems, as well as human emotions[127]. In that context, "communication is central to, and constitutive of, social organisation"[128].

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[121] Einstein A. "Michael Moncur's (Cynical) Quotations"

"The significant problems we have cannot be solved at the same level of thinking with which we created them".

[122] Hampshire S. 1951. *Spinoza,* 47

[123] Ibid.47

[124] Neves V. 2004. Situational analysis beyond 'single-exit modelling'. *Cambridge Journal of Economics,* 933

The initially open system becomes closed as factors and variables are selected for analysis and others are disregarded. In this context the systems, once described, could be considered closed in their relationship to their environments in as far as they are self-referential.

[125] Boulding KE. 1956. General Systems Theory - The Skeleton of Science. *Management Science,* 58

Human level defined as " the individual human being considered as a system" which not only knows, but knows that he knows and uses language and symbolism.

[126] Ibid.60

[127] Ibid.60

[128] Pentland BT, Feldman MS. Sep/Oct2007. Narrative Networks: Patterns of Technology and Organization. *Organization Science,* 784

The use of imagery in addition to symbols (some of which are numbers), and network structures in schematics, describes layers of systemic 'language' that, when used in interconnected ways, would add to the dialogic 'experience' of participants in *communication*[129] (and therefore in the setting of a workshop). Gardner's original typology of intelligences is also arranged in order of the system layers[130].

In 'perceptual control theory' the higher system tells the lower system what to perceive, altering the reference perception, but does not tell how to act or what actions are required[131]. This thesis will not be able to solve whether *control* hierarchies are better than *command and control* hierarchies, but simply reflects on the hierarchy in action. The use of higher level analysis does, however, allow use of concepts defined by lower level systems, while noting that higher levels incorporate those below it[132], accepting that the empirical world is "far beyond our ability to formulate"[133]. For example, reduction defined in closed and mechanical cause and effect systems can be, and is still, used in higher more complex system descriptions, as are the concepts of an open system, entropy and equifinality, to name a few. The interplay between different levels provides an increase in complexity without which one cannot make sense of the environment. There is no intention, however, to attribute "knowledge on one level (e.g. group) to become knowledge about the next level (e.g. organisation)"[134] (although if one is not consistent it can happen), as concepts must apply to the level of the phenomenon as well.

The thinking processes discussed can therefore also be articulated in the context of '*organisational* change theory'[135], [136] defining an organisation as a higher-order system.

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[129] Boje D, Al Arkoubi K. 2005. Third Cybernetic Revolution: Beyond Open to Dialogic System Theories. *TAMARA: Journal of Critical Postmodern Organization Science,* 139

"Systems are not just dialogue between players, systems are dialogic in their language forces, in the opposing centrifugal (deviation-expanding) and centripetal (deviation-counter-acting) forces".

[130] Gardner H. 2006 Multiple Intelligences: New Horizons,20 Gardner added 'naturalist' as an 8th Intelligence, but differs from system frameworks in not accepting 'spirituality', and not yet accepting 'existential' as further categories.

[131] Richardson KA, et al. May 2001. The Coherent Management of Complex Projects and the Potential Role of Group Decision Support Systems. *System Mexico,* 29 In this theory it is the alignment of the actions (at a lower level) with the reference perceptions (of a higher level) that

[132] Boulding KE. 1956. General Systems Theory - The Skeleton of Science. *Management Science,* 61

[133] Ibid.62

[134] Andersen JA. 2008. An organization called Harry. *Journal of Organizational Change Management,* 179 The conceptual level refers to theories and ideas about the phenomenon.

[135] De Wit B, Meyer R. 2001. *Strategy Synthesis - resolving strategy paradoxes to create competitive advantage,* 145-8 Mintzberg and Westley set out three approaches to such change: procedural planning, visionary leadership and inductive learning. Each of these approaches implies alternative process

Finally, assuming that we are able to produce a system description through appropriate modes of thinking, we are likely to have made several selections, or choices, that seem part of the methodology, but are actually part of the views of the world that we are part of. This is illustrated by noting possible *limitations to the system* described, based on effects of selectivity in astronomy.

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characteristics. In that context Mintzberg et al. confirm that the *procedure mode is deliberate and deductive*, the inductive learning is *informal and emergent*".

136 Pearsall J (Ed.) 2001. The New Oxford Dictionary of English, 481, 932 "Deductive reasoning is characterised by the inference of particular instances from a general law", "while inductive is characterised by the inference of general laws from particular instances".

Selectivity results in a lack of a complete view and balanced perspective.

Table 1 Limitations of any system description

	Astronomy	Comments
1.	"It was natural to investigate the brightest visible objects;	We focus on what we can see first or on the largest object without such necessarily being important.
2.	We are located in a very special spot in our own galaxy;	"Our immediate and easily accessible surroundings may not contain a representative sample of the universe".
3.	The galaxy itself is very special;	"Its contents may not embrace all objects found elsewhere".
4.	The length of the periods of observation necessary is longer than we have i.e. we are likely to picture material members of the universe as much steadier objects than they actually are;	A situation may appear ordered during the slice of time (in overall time) that we observe it – but over time order could be the exception.
5.	Human deficiencies and prejudice play a role;	Judgement and prior experience may predispose us to favour certain outcomes.
6.	The interpretation of data recoded is subject to variations of viewpoint"[137].	Multiple perspectives are possible resulting in varying interpretations.

Any system description would be subject to the effects of selectivity and would need to reflect on how the expected bias is dealt with, to reduce potential impact on the complete view and balanced perspective.

Recognising that we find ourselves in a special galaxy still requires us to *address the right problem*. That requires leaders/participants to make a choice of the mix of the problem

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[137] Zwicky F. 1948. Morphological astronomy. *The Observatory,* 129 Column 2 (Astronomy) and all quotes in column 2 in table 1 are attributed to Zwicky, while the other comments represent the author's views.

components that can then be analysed and developed (with the risk of garbage-in-garbage-out, endemic in all non-quantified problem structuring methods (PSM)[138]). The first reduction made here, is that starting the decision-making process in an 'Anarchic' decision mode[139] cannot be resolved by any tool.

In situations where the structure of the system is known, or already developed, participants would use process to resolve remaining uncertainty/ambiguity[140]. In both situations, the purpose of the process is to be able to identify the cause[141] of the problem and to explain[142] it in order to build a coherent system of knowledge.

The assumption here is that a coherent model or knowledge structure will assist the decision-maker in dealing with the complexity of the situated problem[143]. The goal would be a reduction in the complexity of the world, to a simple description of the system, derived from factors affecting the situation. The participants would clearly only describe their special galaxy.

2.2.2 Capacity to integrate at the level of individual experience

"Even a simple act of observation, with its consequences, is a prototype for all intentional behaviour. Here we have a fresh insight into the story of observation in quantum physics, as a circumscribed yet highly instructive microcosm of the relation of the observer to the world. And this is not only in relation to the material systems being acted upon, but equally to other

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[138] Ritchey T. 2006. Problem structuring using computer-aided morphological analysis. *Journal of the Operational Research Society,* 800

[139] Choo WC, Johnston R. 2003. Innovation in the Knowing Organisation: A Case Study of an e-Commerce Initiative. 8 "In the anarchic mode, when goals and alternatives are both unclear, decision situations are like 'garbage cans' into which problems, solutions are dumped by participants as they are generated".

The complexity of resolving such ambiguity can be discussed as part of the process (as set out in sensemaking theory).

[140] Ibid.6

Uncertainty is used here to denote situations that require further information, while ambiguity cannot be resolved by further information.

[141] Hampshire S. 1951. *Spinoza,* 35 Cause is taken to be anything which explains the existence or qualities of the effect.

[142] Ibid.35 Explain is to show one true proposition is necessary consequence of another.

[143] Wilkinson A, et al. July 2003. Background and dynamics of the scenarios. *Journal of Risk Research,* 372

Situated problem is used in this thesis in the same way as "situated risk, which proposes that risk should not be considered as a phenomenon in itself, but as a frame that produces contexts that link an object (a source of potential harm), an object at risk (a potential target of harm) and an evaluation (implicit or explicit) of human consequences. As such, risk is a relational order by means of which connections between people, things and outcomes are constituted".

observers, and the social interactions that are required for validation, interpretation, and acceptance or rejection of the meanings that emerge, constituting the traffic of minds"[144].

The description to others is, by nature, socially constructed, and shows that concepts are developed based on prior concepts, as well as comparison to other events or actors. The decision process would similarly be a socially constructed process, although separating out the steps in the process and concepts as if they were reality and involved discrete events. The steps and sequential logic indicate a rationalist linear approach, which is in contrast to reality which is socially constructed.

To ensure that the social construction is solidly embodied into the individual who has the task of integrating it with previous experience, it makes sense to limit the number of factors and variables:

1. Limits in our cognition and personal ability to comprehend (as set out in Gardner, Bloom and Jaques frameworks) entirety of system as described;
2. Ability to communicate results to other participants, and later to other parties (as set out in section on communication) [145].

To support above categories, the ability to chunk or subsume information for further analysis/synthesis (as set out in sections on rationality, knowledge) is essential.

There are limitations in our cognition and ability to comprehend that are placed on the average person by human physiology through evolution :

1. Working memory capacity is limited to about 7 chunks of information (rule of thumb 7 plus or minus 2)[146];

2. People are only able to make quick decisions with a small handful of objects at a time[147].

It may be interesting to note that memory capacity is two seconds, which then describes the cause of the limits e.g. our ability to take in/and reproduce numbers sequentially (auditory). Gladwell describes the higher capacity of Chinese languages, which have letters for numbers,

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[144] Freeman WJ, Núñez R. 1999. Restoring to Cognition the Forgotten Primacy of Action, Intention and Emotion. *Journal of Consciousness Studies,* xvii

[145] March JG. 1994. *A primer on decision making: how decisions happen,* 10
March suggested the following categories: attention, memory, comprehension and communication.

[146] Miller GA. 1956. The Magical Number Seven, Plus or Minus Two: Some Limits on Our Capacity for Processing Information. *The Psychological Review,* 7

[147] March JG. 1994. *A primer on decision making: how decisions happen,* 11

enabling quicker pronunciation. There is "a relationship between time required to pronounce numbers in a given language and memory span of its speakers"; Cantonese are said to have a memory span of about 10 digits[148].

There are exceptions to these rules. Gigerenzer quotes an example of a reporter (Shereshevsky) who couldn't forget anything and, as a trade-off, was unable to produce a higher level of awareness associated with gist, abstraction or meaning[149].

In concept mapping, the limitation to working memory of participants is relevant when considering the number of relationships, i.e. in this case limited to two or three concepts[150]. In the following table, the total information bits are set out.

Table 2 Human limitations

Description of test	Bit channel capacity
Two-dimensional dot plot[151]	4.6
Pitch and loundness[152]	4.8
Chunking of information[153]	4+/- 1

An ability to deal with a limited amount of information only, suggests that the number of variables we cope with at the same time is restricted. Analytic Hierarchy Process (AHP), for example, assumes that we are best at doing binary comparison of two variables to establish their relationships. Miller found that our accuracy decreases for any particular variable, as the number of variables increases and *more dimensions* of information are given (not more

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[148] Gladwell M. 2008. *Outliers: The Story of Success,* 228

[149] Gigerenzer G. 2007. *Gut Feelings: Short cuts to better decision making,* 22-23

[150] Novak JD, Cañas AJ. 2006. The Theory Underlying Concept Maps and How to Construct Them, Technical Report IHMC CmapTools 2006-01. 6 "The limiting feature here is that working memory can process only a relatively small number of psychological units (five to nine) at any one moment. This means that relationships among two or three concepts are about the limit of working memory's processing capacity. For example, if a person is presented with a list of 10-12 letters or numbers to memorize in a few seconds, most will recall only 5 to 9 of these. However, if the letters can be grouped to form a known word, or word-like unit, or the numbers can be related to a phone number or something known, then 10 or more letters or numbers can be recalled. In a related test, if we give learners 10-12 familiar but unrelated words to memorize in a few seconds, most will recall only 5-9 words. If the words are unfamiliar, such as technical terms introduced for the first time, the learner may do well to recall correctly two or three of these."

[151] Miller GA. 1956. The Magical Number Seven, Plus or Minus Two: Some Limits on Our Capacity for Processing Information. *The Psychological Review,* 7

[152] Ibid. 8

[153] Jones DM. 2002. The 7+-2 Urban Legend. *MISRA C Conference,* 5

information) [154]. This suggests that the there is a limit to the number of *factors* and, a second limitation, in the number of *variables* owing to the number of relationship that can exists between such.

Chess champions are said to be able to cope with three variables simultaneously when competing in tournaments or against the supercomputers[155] (3 to the power of 3 being 27 possible combinations).

Using the lens of computational complexity to support the use of *three or more objects* as complex, defining things that "tend to make problems hard include: making *sequencing* decisions that depend not just on where you are but also on where you've been; …; and *interactions among three or more objects or classes of constraints*" [156]. Clearly, such limitation also exists in the use of narrative analysis.

"The gap between 'simple' and 'complex', between 'order' and 'disorder' is narrower than thought before"[157]. The *number of independent variables* which, through differential equations, are able to determine solutions generating the observed temporal sequence of temperature, explaining the variation in (historic) climate, is only 4[158]. Cowan describes a capacity limited focus of attention where, the "limit in this focus averages about four chunks in normal adult humans"[159].

Catastrophe Theory (Rene Thom) posits that when there are more than five parameters in an analysis an outcome cannot be calculated[160]. As this thesis does not attempt to prove either theory (but accepts for the sake of the argument the limitations of Catastrophe Theory), it can only state that any results from the use of a model would not be useful when the analysis

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[154] Miller GA. 1956. The Magical Number Seven, Plus or Minus Two: Some Limits on Our Capacity for Processing Information. *The Psychological Review,* 8.

[155] Cleary S. 2008. Interviews on Theory and Backgound of Eidos.

[156] Tovey C, A. 2002. Tutorial on Computational Complexity. *Interfaces,* 38-9 The '…' indicates a part excluded from this quote i.e. "dividing up work or resources evenly, splitting a set of objects into subsets, where each subset must satisfy a constraint; maximising or minimising intersections or unions of sets".

[157] Prigogine I. Jun87. Exploring complexity. *European Journal of Operational Research,* 98

[158] Ibid.98

[159] Cowan N. 2000. The magical number 4 in short-term memory: A reconsideration of mental storage capacity. *Behavioral and Brain Sciences,* 91, 114 a mean memory capacity of 3 to 5 chunks is suggested which, "appears to coincide with conditions in which chunks are held in focus of attention at one time".

[160] Pol E. December 1993. Theoretical Economics and Catastrophe Theory: An Appraisal. *Australian Economic Papers,* 264 Pol paraphrased Thom as follows "in cases where the equilibrium values of x can be regarded as the solutions of a static unconstrained optimisation problem and the number of parameters is less than or equal to five, it is possible irrespective of the number of behaviour variables involved to classify the type of catastrophic sets that can occur".

attempts to look at more than five variables at the same time, but most likely at even less than that, for the average human being to understand.

Within such a frame, there is a further continuum expressed through how we *understand* the world i.e. purely within the mind, by imagination creating knowledge of forms through the processes of abstraction and generalization, or at the other end of that continuum, through the senses from the forms of matter[161]. This thesis supports that there is a *continuum* and duality of these positions in developing its own rationalist constructivist position.

In a way, the above are cognitive limitations that assume the mind is a machine or computer. In a constructivist rationalist frame, there are further important considerations owing to the evolution of the human being:

1. Evolution has capacitated us to deal with fight/flight/freeze situations e.g. if we have an option, we would run when we see a Tiger (flight creates an immediate response without thinking);

2. Evolution has predisposed humans for processing face-to face communication (assumption of evolutionary psychology[162]).

"These evolved capacities are indispensable for many important decisions and can prevent us from make errors in important affairs. They include the ability to trust, to imitate, and to experience emotions such as love". "The evolved brain keeps us from looking too long and thinking too much"[163] which, when stated as automatic decision-making, seems often to be better in many than cases deliberate decision-making[164].

While we set out to *look at the individual* in the following categorization, the discourse is not intended to lose sight that it is the pattern of reciprocated heedful action[165] that creates a joint situation of interrelations among activities as a system[166]. "What is critical is the relationship created between two or more elements. Systems influence individuals, and individuals call

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[161] Freeman WJ, Núñez R. 1999. Restoring to Cognition the Forgotten Primacy of Action, Intention and Emotion. *Journal of Consciousness Studies,* x

[162] Proctor RWV, Kim-Phuong. 2006. The Cognitive Revolution at Age 50: Has the Promise of the Human Information-Processing Approach Been Fulfilled? *International Journal of Human-Computer Interaction,* 267

[163] Gigerenzer G. 2007. *Gut Feelings: Short cuts to better decision making,* 55, 58

[164] This issue has not been resolved in literature.

[165] Weick KE, Roberts KH. 1993. Collective mind in organizations: Heedful interrelating on flight decks. *Administrative Science Quarterly,* 368

[166] Ibid.363

forth systems. It is the relationship that evokes the present reality"[167]. Regarding the latter, sensemaking theory[168] gives us some insight in how we cope with our environment. The theory, in a way, compensates for our limitations, assuming we have necessary information, and reflects on how we resolve confusion/uncertainty.

The fuzziness in the discourse can be compared to results from the basic universal fuzziness: that we cannot measure wave properties and particle properties, which are the duality of matter, at exactly the same time[169]. In some way we compensate the fuzziness by focusing on one or other property (in science), and do so in our thinking processes as well. To understand how participants in a workshop setting (or otherwise), could deal with increased complexity, the individual's ability to deal with information both from a perceptual and conceptual understanding will be set out by reference to two frameworks that describe patterns of thinking, which reflect the difference in how people's minds handle inputs[170].

The first framework is set out in Figure 7. Bloom describes six thinking levels that enable us to categorise thinking: from the very basic processes of memory to the very creative process of abstraction (equivalent to focus on the particle). The ability to use our senses enables us to use our multiple intelligences (Howard Gardner classification) to sense the wave properties of the particle. The relationship between increasing complexity and increasing use of our senses would then allow us to create the duality of our understanding of reality which, by definition, must be fuzzy. We can allocate a knowledge category to the layers in the matrix, but would know that this is purely conceptual.

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[167] Wheatley M. 2006. *Leadership and the New Science: Discovering Order in a Chaotic World,* 36

[168] The theory itself is not uncontested but provides a useful frame for discussion.

[169] Ibid.36

[170] Beck DE, Cowan CC. 1996, 2006. *Spiral dynamics: mastering values, leadership, and change,* 169

Multiple Intelligences (Gardner classification)	New Bloom's Taxonomy: Six Thinking Levels						Krathwohl reclassification
	Remember (recognise, recall)	Understanding (Interpreting, exemplifying, classifying, summarising, inferring, comparing, explaining)	Applying (executing, implementing)	Analysing (Differentiating, organizing, attributing)	Evaluating (Checking, critiquing)	Creating (Generating, planning, producing)	
I enjoy… (i.e. I learn better by …)	Concrete → Simple →				→ Abstract → Complex		…. Knowledge
Linguistic/Verbal reading, writing & speaking							Factual Conceptual
Logical/ Mathematical working with numbers & science	Clear categorization, Presented in an orderly manner						Factual Conceptual Procedural
Visual/Spatial painting, drawing, visualising	Pictures, relationship to each other						Conceptual Procedural
Bodily/ Kinaesthetic doing hands-on activities, sports & dance	Use body to convey ideas emotions; Learn through physical involvement						Procedural Metacognitive
Musical making & listening to music	Pitch, rythm, rhyme With music						Conceptual Procedural Metacognitive
Interpersonal working with others	Heightened ability to perceive; learn from own verbal participation and working in groups						Conceptual Procedural Metacognitive
Intrapersonal working by myself	Reflect on how material affects you Keep a journal						Conceptual Metacognitive
Natural	Items from nature in examples; play sounds						Metacognitive

Figure 7 Bloom's taxonomy and Gardner intelligence model[171]

Each individual's ability to think and sense will be different. This is important, as the action of the individual, based on perception, moves the individual from being an observer, to actualising one part of the observed system into his individual reality[172].

The second framework, presented by Jacques, suggests "seven levels of complex thinking required by different jobs"[173]. An individual's complexity of mental processing (PC) refers to the maximum level of role complexity at which an individual, based on his current level of

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[171] Pirrozo R. 2008. Strategies for enhancing co-operative learning and developing higher order thinking skills. used in presentation by Herd S. 2008. Creating Webs of Engagement for Adolescents. *From inclusion to belonging,* 23

Gardner H. 2006 Multiple Intelligences: New Horizons, 8

This matrix is a grid that combines the developmental Higher Order thinking skills, with the varied areas of personal strength or Multiple Intelligence. The success of this grid is in its strengthened ability to provide a framework in which students are able to be either directed towards areas allowing success or for students to select their own personal program, offering great engagement with school.

The author of this thesis has adapted the presentation of the slide to include 'New' Bloom's taxonomy, added Krathwohl's classification and the continuums reflected on the horizontal axis.

[172] Wheatley M. 2006. *Leadership and the New Science: Discovering Order in a Chaotic World,* 37

[173] Beck DE, Cowan CC. 1996, 2006. *Spiral dynamics: mastering values, leadership, and change,* 169

mental complexity, can work which, in turn, is dependent on his/her particular stage of development and experience.

Jaques uses four types of mental processing[174]: declarative, cumulative, serial, and parallel, that "can be observed in *each* of two different orders of information, *symbolic* and *abstract*, used by adult subjects; they are recursive and maintain their hierarchy of complexity."[175] An individual's capacity to perform work consists of a two-part procedure: observing the type of mental process used, and then the order of information complexity[176].

Learning and experience can allow you to change the way you think when you change levels of abstraction (see thinking levels set out above) and, through use of different mental processes to support such thinking, increase the level of complexity that the container holds.

Parallel processing of information is also the beginning of an elementary understanding of how we process:

1. *Logogen* or verbal matter (text reading and listening) sequentially;
2. *Imagen* or nonverbal matter (sounds in environment, seeing, smell, taste and feel) synchronic[177].

Any communication that addresses both parts of the sensory system in a coordinated manner could be said to positively support the access to memory[178], assuming a certain personal complexity on the participant's part. The latter supports an ability to interpret the information.

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[174] King SW, et al. 2004. Conceptual Capability and Family Business Survival: An Application of Jaques' Stratified Systems Theory in Family Business. *MBA Department, Frostburg State University,* 3 "process by which you [an individual] take information, pick it over, play with it, analyze it, put it together, reorganise it, judge and reason it, make conclusions, plans and decisions, and take action."

[175] Ibid.3

[176] Ibid.3

[177] Najjar LJ. September 15, 1995. Dual Coding as a Possible Explanation for the Effects of Multimedia on Learning. *School of Psychology and Graphics, Visualization, and Usability Laboratory* Allan Paivio's Dual coding theory.

[178] Ibid., 5 However the information may be stored in the brain i.e. not discussing that part of the 'dual coding' theory.

Table 3 Orders of mental complexity[179]

Order of mental complexity	Subject matter of thinking	4 Phases in *each* order of mental complexity		Order of Information complexity	Type of reasoning
Universal	Whole societies or worlds and using Concepts of concepts	1 2 3 4	**Declarative** **Cumulative Processing** **Serial processing** **Parallel processing**	Abstract	Unrelated assertions Related assertions Linear Non-linear
Conceptual Abstract	Ideas about ideas, words about words			Abstract	
Classes	"Using words as symbols to represent concrete objects which are not present in the environment"[180].			Abstract Symbolic	
Specifics	Concrete things		Cumulative	Symbolic	
Specifics Explanatory Gesture	Simple mental complexity		Declarative	Symbolic	

We must therefore be aware that participants in a workshop setting, discussing a particular problem, will have different 'time spans of discretion' and are likely to be effective at different levels of work. In a workshop, participants are asked to analyse problems (and parts thereof) which have different levels/types of complexity and abstraction[181].

The next section intends to link the two frameworks through the concepts of limited attention and visual literacy.

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[179] King SW, et al. 2004. Conceptual Capability and Family Business Survival: An Application of Jaques' Stratified Systems Theory in Family Business. *MBA Department, Frostburg State University,* , Jaques E, Cason K. 1994. *Human Capability,* concepts adapted

This thesis has not attempted to develop a metric to show personal complexity of a person, nor their ability to cope with the complexity of the situated problem through the use of a tool (accepting the given PC).

[180] Brause A. "Summary of an investigation of presidential elections using the Jaques/Cason construct of mental complexity", 2 2000. www.requisite.org/Press%20Release/BrauseSummaryFinal-MBedits1-20.doc.

[181] We do not have to measure PC of each person (however interesting that would be from point of view of a longitudinal study although it is unlikely to be useful as a measure of effectiveness of the model itself).

Bostrom definitions for short-term memory (post the very short term numeric loop) "seems to consist of a brief component that can last up to 40 seconds if there is an opportunity for rehearsal (prolongs life of stimulus in the short-term system)" and long-term memory, which is not activated until at least 60 seconds after the presentation of a stimulus;"[182] clarify the scope and time-frame in which the human filters interact with the environment.

This sets the context for listening (selection and retention of aurally received sequential data, incorporating both the short-term and long-term memory[183]) for which technology can provide support. In the same paper Papa and Glen state that "listening ability and listening training strongly influenced productivity with new technology"[184]. In the context of this thesis, the listening capability of participants would have an influence on the acceptance (and understanding) when a facilitator uses the model, to support an analysis of strategic decision-making. Combining listening with visual representation, enables participants to *use sequential and parallel processing* capability, using abstract and symbolic information processing.

Assuming that the facilitator's skills are consistently applied throughout the workshop, some of the difference (to expectation) in output/outcome would result from different listening capabilities of the participants *(without ever being able to show or quantify such).* Although Beatty and Payne report a "fairly strong relationship between cognitive complexity and listening comprehension" [185], the assumption would be that the mental complexity would be challenging to all participants, once we enter into the discussion of three or more variables, while differences between participants that occur at lower levels of complexity will not affect the results of any workshop significantly. This thesis does not seek to validate that assumption.

In the visual/virtual memory spaces, the use of the visual cortex enhances memory capability. Visual literacy has been defined as "the critical ability which will enable (people) to use

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[182] Sypher BD, et al. Fall 89. Listening, Communication Abilities, and Success at Work. *Journal of Business Communication,* 294 The test performed by the authors focused on listening in relation to other social cognitive and communicate abilities such as cognitive differentiation, self-monitoring, perspective-taking, persuasive arguments.

Levine M. 2002. *A Mind at a Time,* 93. This author uses 2 seconds for short-term memory, describes an active memory (that necessary to support activity busy with) and a long-term memory.

[183] Sypher BD, et al. Fall 89. Listening, Communication Abilities, and Success at Work. *Journal of Business Communication,* 294

[184] Ibid.295

[185] Ibid.294

visual images accurately and behave appropriately, including skill set of interpreting, understanding and appreciating meaning of visual messages as well as using visual thinking to conceptualise solutions to problems"[186]. The spatial capacity in our thinking (Gardner) is enhanced through such visual literacy[187].

Although one could separate the discussion on separate parts of working memory further, the cognitive processes could be regarded as "working across continuous dimensions so that many (if not all) tasks require an interaction between several components, even if one is utilised to a greater extent than another"[188]. A linear relationship between an increase in complexity and increased use of sense is unlikely, but it is likely that the enhancement of any of the components would increase the capability of an individual to deal with more complexity. Depending on the individual, different components may be enhanced so that the result of the engagement results in a balanced understanding of the whole, which is what we may strive for.

All of these statements have one purpose i.e. "for the output of any physical theory to be consumable by human perception, its *output must at some point be aligned with our capacity to understand it*"[189]. The conclusion for this thesis is that increases in complexity, at the same time as enhanced use of our senses, will improve our capability to deal with complex problems.

This links back to our need to develop our knowledge structure of what is out there, improving our ability (in theory) to help us to perceive, see or process information, as well as to retain relevant parts and to deal with a higher amount of complexity. *Any model which enhances such ability over time allows us to build a new capability.*

The question that has to be answered is *whether the model can increase the participant's innate ability to perceive, recognise patterns and understand concepts*. In addition, the basic

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[186] Roblyer MD, Kirby Bennett E. 2001. The Fifth Literacy: Research to support a mandate for technology-based visual literacy in preservice teacher education. *International Society for Technology in Education,* 9

[187] Therefore the conclusion is that any tool set which enables us to decode (messages) and encode/communicate visually (and enable parallel processing), will enhance learning and understanding of the senders of the message, as well as the recipients thereof. Participants create a picture of reality using visual capacity (and other senses), and increasing mental complexity would be part of what makes the individual's consequent understanding a '*rich*' experience. Of course, coding is also 'fixing' in the sense that meaning is reduced in some way or another. For the same token, decision making is reduction in itself.

[188] Rudkin SJ, et al. Jan2007. Executive processes in visual and spatial working memory tasks. *Quarterly Journal of Experimental Psychology,* 97, 80 e.g. "visual cache as static passive memory and spatial component as the active rehearsal mechanism, rehearsing dynamic information about movements and sequences of movements".

[189] Montague R. 2007. *Your Brain Is (Almost) Perfect. How we make decisions* 260

learning proposition that learning through enactment of a situation, and experiencing the consequences of our actions, can create personal satisfaction and effectively fix memory[190], may also have an impact.

The discussion in such an evaluation would be about average performance; as Miller correctly states, "I do not know how to explain superior performance"[191] i.e. some of such variance could possibly be attributed to the heedful operation of a collective mind.

There are primary underlying techniques that enable participants to manage complexity. For example, through support by the computational strength of the analytical hierarchy process, a binary evaluation of relationships between variables can be established in order to develop a system description (in part and in whole).

At the other end of the continuum of theories, lies making sense of the environment through our senses, perception and learning, incorporating the world from experience[192]. The power of a self-organizing system vests in its ability to affect and be affected by the environment. The higher the level of complexity it can contain within the constraints of internal cohesion, the closer it can represent reality[193].

To avoid creation of a new theory, this thesis adopts sensemaking practice as a guide as to appropriate model characteristics in order to assist us in coping with our environment and our limitations. Table 6 in Chapter 4 sets out the use of sensemaking in applying the model.

When dealing with a problem situation, the model's use of perceived dichotomies, appropriately categorised, can help with focus on selected variables. Even though there is a limit to personal complexity, part of the limitations can be dealt with through appropriate use of communication models and applying modes of cognition that take account of characteristics of the situation.

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[190] Peterson RT. Sep 2007. An exploratory study of listening practice relative to memory testing and lecture in business administration courses. *Business Communication Quarterly,* 287-288

[191] Miller GA. 1956. The Magical Number Seven, Plus or Minus Two: Some Limits on Our Capacity for Processing Information. *The Psychological Review,* 82 In his case relating to musically sophisticated persons.

[192] Freeman WJ, Núñez R. 1999. Restoring to Cognition the Forgotten Primacy of Action, Intention and Emotion. *Journal of Consciousness Studies,* xv

[193] Hampshire S. 1951. *Spinoza,* 75, 78, 80 This is precisely owing to the system's ability to cope with greater possible variety owing to internal change, and relatively greater exchanges with the environment.

2.2.3 Communication models supporting creation of meaning

Because decision-making, even on an individual level, rarely happens in isolation, interaction with other actors on the team, and the balance of the organisation, requires communication.

A team, defined as "consistent multiple actors", adds the issues of coordination and communication and further complexity, when the assumption of consistency between team members is invalid (owing to different preferences, conflicts of interests or identities[194]). However, treating multiple decision-makers as teams, can be justified by seeing teams as approximations, simplifications and as contracts (agreeing to operate together after inconsistencies are removed through bargaining, side payments and agreements in the initial stage of decision-making)[195]. "From a standpoint of theories of decision-making, teams are essentially equivalent to single actors"[196] and their response is treated as a collective response arrived at through a narrative discourse. The stability of teams assumed in such an assumption is, of course, a considerable assumption.

Systems are ways of organising our thoughts about the world (and do not refer to things in the world). As such, systems are seen as a whole, and the patterns in each such whole are used to understand/describe the processes involved. Organisation can be described by notions such as wholeness, growth, hierarchical order, as well as by laws, such as Malthusian law (that the increase in the population is greater than its available resources), and that there is an optimum size (determined by length of communication)[197].

Any communicative event is distributed over at least two participating systems[198]. Stichweh, following Luhmann, goes on to posit that "the continuous modelling of change processes and a systematic description of world society are only possible in terms of communication theory" [199]. More specifically, "global processes of generating scientific hypothesis, of validating and falsifying theories, of informing about research findings are communication processes that are very selective about which action events in science come to light"[200].

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[194] March JG. 1994. *A primer on decision making: how decisions happen,* 104

[195] Ibid.104

[196] Ibid.104

[197] Van Bertanlanffy L. 1956. *General Systems Theory* 44- 45

[198] Stichweh R. 2000. Systems Theory as an Alternative to Action theory? The Rise of `Communication' as a Theoretical Option. *Acta Sociologica (Taylor & Francis Ltd),* 11 Stichweh, as student of Niklas Luhmann, would draw on that experience.

[199] Ibid.12

[200] Ibid.12

Conceptually, communication is more general than either action or experience drawing conclusions of the situation based on the narrative analysis of such system[201].

This thesis needs a concept which has the characteristics to enable transition between system levels, as well as between elements of a system. *Communication,* as such a concept, is used by Boulding as a third dimension, in addition to mass and energy, when considering the structured nature and abstract measures of organisation[202]. The motive of communication is ever changing, as the levels get more complex; also as the motive gets more abstract, it gets more detached and less emotional. However, "motivation itself is individual and not organisational"[203] and, in rational theory, that would mean that abstraction as a process is used by individuals to create meaning. From a constructivist rational position, the motivation (and thereby emotional perspective) would influence the meaning that is created[204].

Communication theory reflects a process point of view which is consistent with the definition of organisation chosen. This does mean that, even though an analysis of events or ingredients is set out separately, they are not separable from all other events according to such theorists[205].

The tension reflected in the following discourse will reflect on a spectrum of communication models and modes of cognition respectively, which each reflect on two underlying different objectives: (i) in the information processing mode of cognition, an *argument* is judged "to be good on the basis of its logic, coherence, consistency and non-contradictory nature"; while (ii) in the narrative mode of cognition, "a *narrative* is judged to be good if it is interesting, plausible and believable"[206].

At the one end of the continuum (characterised by objectivity and rationality), the Shannon-Weaver model of communication is based on communicating a message, which entails a source, a transmitter, a signal, a receiver and a destination. The communication process, then, is one of communication source, the encoder, the message, the channel, the decoder and the

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[201] Refer to assumption as set out in introduction.

[202] Boulding KE. 1956. General Systems Theory - The Skeleton of Science. *Management Science,* 56

[203] Andersen JA. 2008. An organization called Harry. *Journal of Organizational Change Management,* 179

[204] This position acknowledges the difference between Haberms (in support) and Luhmann without trying to resolve it.

[205] Arnold V. Winter 87. The Concept of Process. *Journal of Business Communication,* 33 and consistent with the definition of the organisation chosen

[206] Boland RJ, Tenkasi RV. Jul-Aug 1995. Perspective making and perspective taking in communities of knowing. *Organization Science,* 353

communication receiver, with the order of the process changing based on the situation[207]. If we focus on the role of the sender, the nature of the receiver, and message content, the discussion would meet Aristotle's model of the speaker, speech and listener[208]. At its basic level, the information in the Shannon-Weaver model can be defined as dots and zeros transmitted, which is close to an ideal system of symbols in which "every clear and simple idea would have a single symbol"[209]. This model is also called the conduit model, which assumes objective knowledge, realised in a rational process[210].

In the conduit model, any loss of transmission, hearing and reaction, could be described as "noise" in the system, which causes lack of control (assuming that *control* or *control and command* of action is primary purpose of communication). Moreover, there is channel capacity i.e. "the amount of information that a communication channel transmits in a fixed amount of time"[211]. This quantity is measurable in a physical system but "experimental psychologists have no *a priori* means of determining the channel capacity of a sensory, cognitive or motor system" [212]. This position assumes an information processing or paradigmatic view of cognition i.e. "a rational analysis of data in a mental problem space and a construction of *deductive* arguments"[213] to create knowledge.

The importance of the concept of information processing is that "the language of information processing provides an analysis of psychology that is congenial to physiology because it places emphasis on different levels of processing and the time course of their activation"[214]. The three stages of processing at a very simplified level are:

1. Perception - sensory processes, perceptual organization and identification;

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[207] Arnold V. Winter 87. The Concept of Process. *Journal of Business Communication,* 34

[208] Ibid.34

[209] Hampshire S. 1951. *Spinoza,* 21

[210] Boland RJ, Tenkasi RV. July - August, 1995. Perspective Making and Perspective Taking in Communities of Knowing. *Organization Science,* 354

[211] Seow SC. Sep2005. Information Theoretic Models of HCI: A Comparison of the Hick-Hyman Law and Fitts' Law. *Human-Computer Interaction,* 318

[212] Ibid.319

[213] Boland RJ, Tenkasi RV. July - August, 1995. Perspective Making and Perspective Taking in Communities of Knowing. *Organization Science,* 353

[214] Proctor RWV, Kim-Phuong. 2006. The Cognitive Revolution at Age 50: Has the Promise of the Human Information-Processing Approach Been Fulfilled? *International Journal of Human-Computer Interaction,* 257, 278 This approach is based on brain activity. The article concludes using Posner's (1986) quote that through "emphasis on the common language and concepts Information-processing approach provides for integrating across different domains, levels, systems, and disciplines. Information-processing language, inter alia, allows integration of knowledge". The thesis sets out that this does describe but one part of the continuum.

2. Cognition - attention (includes phenomena of categorization, cueing benefits, task switching, strategy choice), memory, problem solving, decision making;

3. Action - response selection and response execution[215].

The above does not intend to imply that action follows perception and cognition in a linear processing model. The risk in models built on linear concepts (or described as such), is that they can lead to linear thought.

In the analysis of communication by language, we accept that "in common rationalist doctrine error and uncertainty are due to the lack of clarity of ordinary spoken and literary languages, which are not designed to convey clear and distinct ideas"[216]. The tension in our understanding would be created by the constructivist rational choice position, where the cognitive mode is narrative, and we attribute error and uncertainty to fundamental ambiguity and sociality of language.

This takes us to the other end of the continuum, where it is acknowledged that our systems of communication generally are not dots and zeros transmitted, and the system of dots and zeros used does not lend itself to analysis as to whether the transmitted information was heard and understood by recipient; furthermore, we cannot extrapolate what is causing the recipient to act, even if he acts as intended. The latter describes a situation that is not a linear transmission of existing meaning[217]. Noise in that sense is created in the selection and frame with which we listen and perceive, created by what is not selected for interpretation and meaning (either deliberate but most often involuntarily). At the same time, the social construction of meaning implies that we do not make meaning without this noise and that the noise is an essential part of the meaning.

In addition, the sensory experience can block out any thinking action if the fight, flight or freeze response is activated, owing to a perceived threat to one's physical security. This would probably also be correct for a perceived threat to one's emotional security, which creates a type 'noise' that blocks out the message, as listening ability is impaired. In both examples the recipient may move to action without allowing time for processing the cue. This sensory experience can also be applied to individuals in the organisational setting. It is clear from examples of air crashes, and other similar stressful incidents, that human beings have

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[215] Ibid.259

[216] Hampshire S. 1951. *Spinoza,* 21

[217] This statement is made acknowledging that Luhmann would have a different view.

limited channel capacity[218], which is exacerbated when different language capability and context are added to the situation.

If we limit our view of communication to the rational perspective, we could view the result of *noise* as a lack of expected result, and thereby lack of control. Because *noise* in an organisational environment can occur at each of the communication stages, *noise* created in earlier stages of a communication situation can be carried forward to later stages, and possibly amplified further if it is not adequately dealt with.

When we switch the radio on to listen to a programme, we ensure that the frequency of the channel is tuned exactly to the right wavelength, to ensure the best reception. Yet, when we listen to somebody talking to us, we aren't always on the same wavelength. The adage 'it is not what I say that matters, but what you hear me say that is important', requires us to focus the discussion on how to enable the same wavelength, as well as on an enablement of 'noise free' listening to the message. The application of sensemaking may allow us to deal with the former, while an intuitive understanding of the receiver may improve our ability to deal with the latter. Without making it the subject of further discussion for this thesis, in the latter example, the person trying to impart a message/knowledge has to first address the recipient on his emotional level, ensuring his needs are identified and, if possible, addressed. If such individual needs are respected, the recipient is likely to be unconsciously open for the balance of the message (and the sender has enabled management of the noise).

Weick talked about four people being present in any two-way communication in which we perceive in another's mind: "imagination of our appearance to the other person, the imagination of his judgement, some sort of self-feeling"[219]. Berlo recognised that meaning is not in the message, but *created in the message user*. That is why "it is impossible to determine in advance and with certainty the impact of any bundle of words upon the receiver of them"[220], expressing the non-linearity of the process. Communication, then, is a true dynamic process, because the sender adapts the message (and his own meaning), hoping to achieve a pre-determined goal in the communication. This would be in line with Weick's

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[218] Gladwell M. 2008. *Outliers: The Story of Success,* 177 - 201

[219] Weick KE. 1995. *Sensemaking in Organizations,* 22

[220] Bowman JP, Targowski AS. Fall87. Modelling the Communication Process: The Map is Not the Territory. *Journal of Business Communication,* 27-8 I would posit that using more senses (visual, music etc) does amplify the meaning in the receiver (but not change it).

quote "how do I know what I think, till I see what I say"[221]. I would even replace 'think' with 'mean' in the context of the above discussion[222].

In the balance of section 2.2.various applications of communication models and resultant organisational forms are considered to illustrate the workings of the communication/sensemaking continuum.

Weick uses four levels of sensemaking i.e. individual (intra-subjective), intersubjective (the self gets transformed from I into We), the generic subjective (the social structure) and the extrasubjective (level of symbolic reality which is subjectless)[223]. *Organising* as a concept "lies atop the movement between the intersubjective and the generically subjective"[224], while the "*communication activity is the organisation*" [225], which allows use of control (generic subjective) and *innovation* (intersubjective), as dominant tensions in the system of organising. This describes the essence of the narrative mode, at the one end of the continuum of cognition (compared with the information processing mode), and language games models on the one end of the communication continuum (contrasted with the conduit model)[226].

If economic integration is the mechanism for integration in free markets, then economic theory focuses on productivity and innovation as drivers of change[227]. For the purpose of this thesis control[228], as desired organisational outcome, has been split into standardising (as activity supporting increase in productivity) and diffusion of such *new* standard in the market (in the organisation and economy) to contrast the difference between inter-subjective and generically intersubjective. Where the standards have been adopted internally and become

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[221] Weick KE. 1995. *Sensemaking in Organizations,* 12

[222] Drucker PF. Feb 2006. What executives should remember. *Harvard Business Review,* 151 Part of communication requires reflection on the mode of communication. You need to know whether you are a reader or a listener and adapt your style to the recipients preferred mode i.e. if I'm a reader, I interact better having read what you want to say to me before you do so.

[223] Weick KE. 1995. *Sensemaking in Organizations,* 70-72 The discussion is based on Wiley's levels of analysis.

[224] Ibid.72

[225] Ibid.75

[226] Boland RJ, Tenkasi RV. Jul-Aug 1995. Perspective making and perspective taking in communities of knowing. *Organization Science,* 353

[227] Drucker PF. Fall 92. The post-capitalist world. *Public Interest,* 94

[228] Weick KE. 1995. *Sensemaking in Organizations,* 72 Control designated as generic subjectivity split into an intersubjective process necessary to implement the innovation and a generic process (as form) to focus energy on productivity.

part of the routines of the organisation, they reflect generic subjective forms[229] of organisation.

Similarly, for the purpose of this thesis, innovation[230] has been split into the activity of innovating, as intersubjective form, and creating as intrasubjective form, reflecting the tension inherent in the bridging activities between (social) forms created by innovation and control.

These continuums also describe the organisational z-axis in the proposed model, characterised by activities and modes of cognition supporting *innovation* on the one hand, and control or *standardising (as precursor to diffusion)* on the other hand.
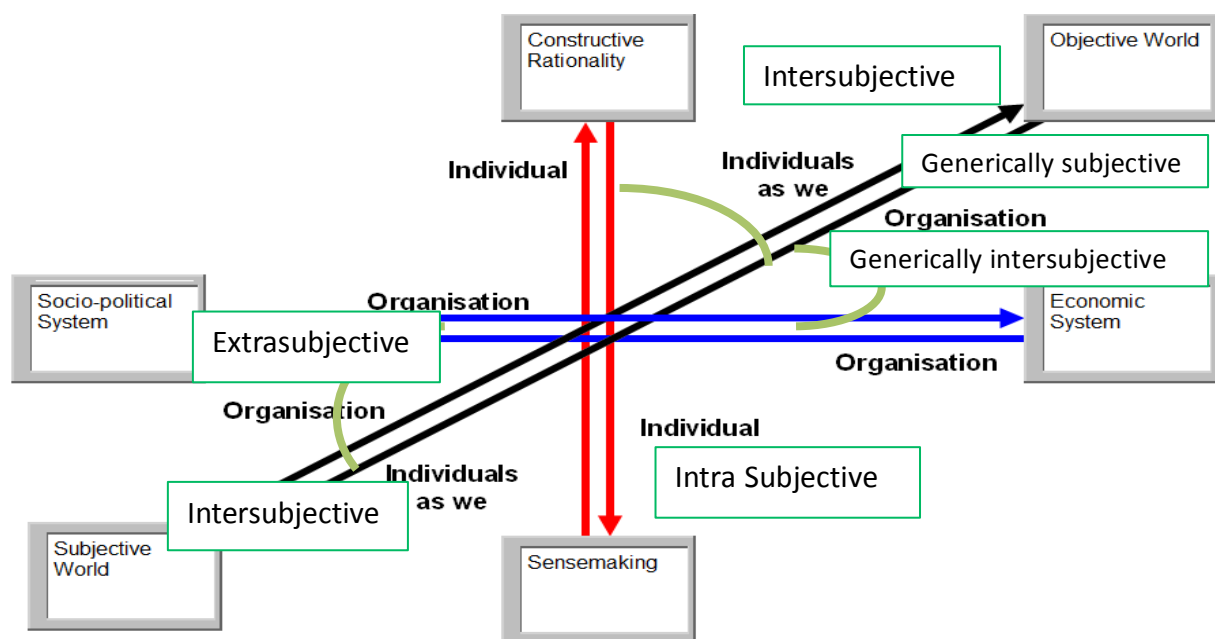
Figure 8 Organisational forms created by bridging activities

This Z-continuum therefore denotes both the individual as 'We' (cognition and objective/subjective), as well as the organisational activities and interactions with individuals (denoted by y-axis), seeking to establish an identity within the organisational context. The latter is based on the premise that life and system worlds are integrated at the level of the individual in modern society. Luhmann asserts that in such society "individuals are encouraged to identify themselves with their own preferences, to assert them as rights to

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[229] Ibid.74 The forms are periodically reaffirmed intersubjectively.

[230] Ibid.72 Weick considers innovation as the second part to the dominant tension in organisations.

themselves; [while] all that is expected of them is that they declare their identities and make them available by communication"[231].

This identity is established by interaction with others in the organisation. The interaction of individuals at the intersubjective level assumes knowledge about each other, about each other's preferences, identities and knowledge[232]. Any variance from that assumption would create the need for an additional step in the process, to achieve at least a perceived level of consistency that can be achieved in workshop settings where alignment takes place. Failing alignment, we would act on assumed knowledge, beliefs, and motives of others. An actor would seek confirmation of the communication, which is assumed to be received when the actual experience converges with the perception[233].

The communication begins with the second participant, who interprets the projected identity, "understands and in the act of understanding projects the difference between information and utterance on the first participant. In this respect any communicative event is retrospective"[234]. Understanding the sentence does not necessarily mean the recipient has understood the message, but reflects a reaction to the perceived identity, as well as the message. Boisot hypothesises that the key to the understanding of the message is enough prior contextual background knowledge[235]. Any strategy process or problem-solving initiative would require a rich understanding of the context in which the problem is to be solved. In Weick's terminology, it makes sense to have *a common frame for discussion* (even if we check outputs by changing frames at a later stage). That does not mean that a chosen *frame* of discourse is objective, or not biased in itself.

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[231] Luhmann N. 1996. Complexity, Structural Contingencies and Value Conflicts. IN Heelas, et al. (Eds.) *Detraditionalization,* 67

[232] March JG. 1994. *A primer on decision making: how decisions happen,* 107

[233] Ibid.113

[234] Stichweh R. 2000. Systems Theory as an Alternative to Action theory? The Rise of `Communication' as a Theoretical Option. *Acta Sociologica (Taylor & Francis Ltd),* 10

[235] Boisot M, Canals A. 2004. Data, information and knowledge: have we got it right? *Working Paper Series,* 4
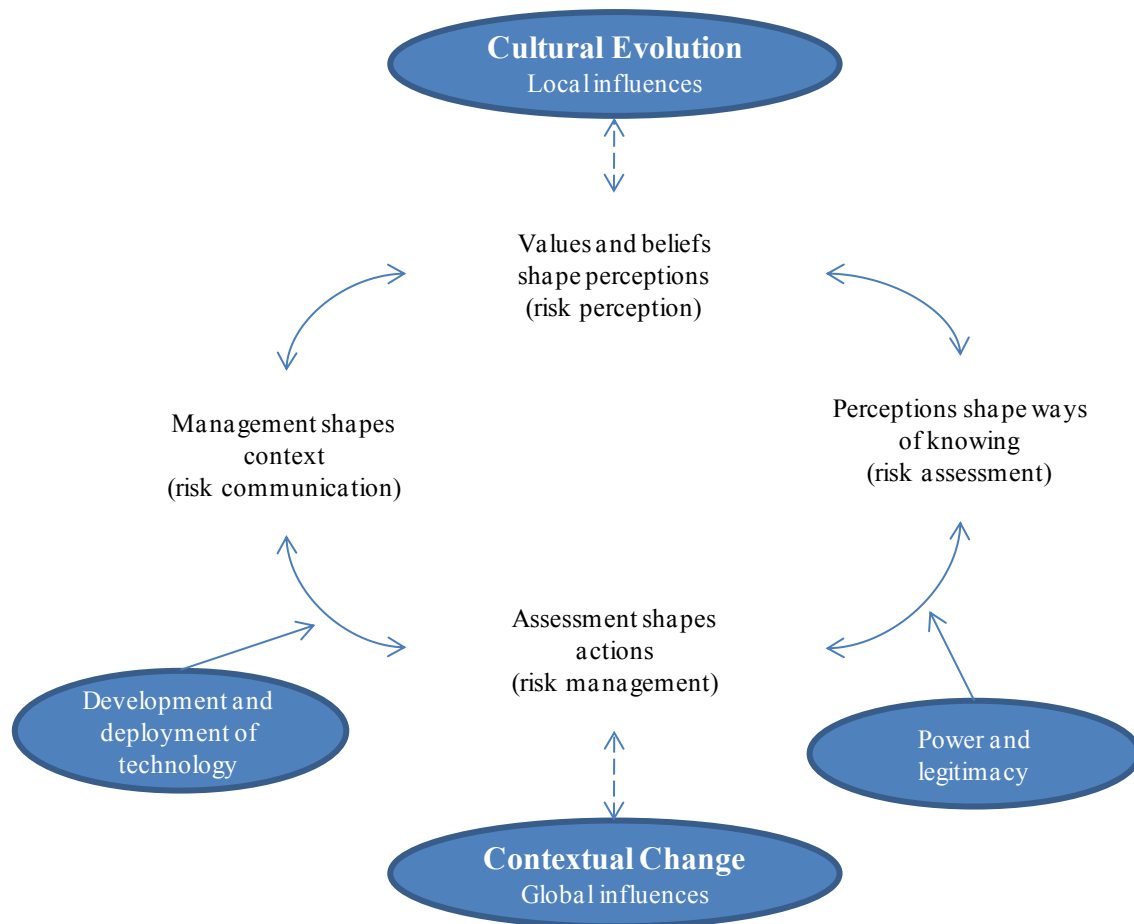
Figure 9 Link between cultural evolution and contextual change in organisations[236]

If the frame of discourse were to be *risk,* "how society and individuals frame, assess, manage and communicate *risk* is influenced by perception as much as by objective fact"[237], illustrating the "inseparability of context, culture and perception, together with the role of the organisation of knowledge and development of technology"[238]. From a conduit communication model and information-processing model of cognition, any distinct difference in social situations, as well as context, would be regarded as noise. In the rational constructivist position, participants would be conscious of these differences and respectful of possible impacts in structuring their communication. This framework can be adapted, based on the context of the situation, culture of the participants and objective of the communication.

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[236] Wilkinson A, et al. July 2003. Background and dynamics of the scenarios. *Journal of Risk Research,* 370 Figure 2

[237] Ibid.370

[238] Ibid.370

Boland et al. differentiate between perspective-making and perspective-taking as two processes which support our perspectives of the world[239]. The conduit model of communication and information processing mode of cognition are allocated to perspective-making, while the language games model of communication and the narrative mode of cognition support perspective-taking (owing to their characteristics). The processes require a particular sequence i.e. that perspective must first be made from within the community, strengthening its unique knowledge. Once such perspective is integrated into the community of knowledge and individual knowledge structures, it can be used to surface and reconcile dissimilarities with other perspectives, through perspective-making in the narrative mode/language games model. The description does not state how items are first perceived, nor how perspective is first generated, i.e. from within the mind by imagination or derived through the senses from the forms that matter[240]. Sensemaking theory supports the duality of these two concepts, as they are realized through "non-arbitrary, species-specific, bodily grounded experiences that are the basis for consensual spaces and inter-subjectivity i.e. a fundamental and intimate co-definition of minds and bodies"[241]. The latter description reiterates the concept that integration of meaning based on contextual forces takes place at the individual level of experience.

The conclusion from this discourse suggests that in addition to the usual processes supporting control, organisational forms should seek to support activities that foster innovation through creativity, imagination as well as perspective-taking, in order to attempt to tackle more complex decision-making problems.

Whereas the discourse has reflected on an individual's capacity to cope with increasing complexity and organisational forms and activity interplay, the next two sections would deepen reflection on theories that support selection of individual and organisational concepts that support the desired integration at an individual level. In Chapter 3 the concepts will be applied in one organisational routine, that of strategy formation.

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[239] Boland RJ, Tenkasi RV. Jul-Aug 1995. Perspective making and perspective taking in communities of knowing. *Organization Science,* 356

[240] Freeman WJ, Núñez R. 1999. Restoring to Cognition the Forgotten Primacy of Action, Intention and Emotion. *Journal of Consciousness Studies,* x

[241] Ibid.xv

2.2.4 Rationality and complexity

The discourse in this section is designed to show a continuum between rationality, and a constructivist rational position (equal to position arrived through complexification) which takes account of the socially constructed reality.

Spinoza defined 'Ratio' as "genuine scientific knowledge, which is knowledge of the second kind or level and by definition consists of adequate ideas"[242]. This is opposed to *perceptual judgements* (considered by Spinoza to be comparatively fragmented and disconnected), *ideas of imagination* (relatively incoherent and unsystematic), *sense-perception* (neither complete nor coherent knowledge), where the order in which ideas become associated is not an order of logical necessity, but so-called *knowledge based on testimony, habit and memory* lodged in our passive minds through repetition[243]. Spinoza sees "*common notions* as logically necessary to the conception of extended things and therefore the foundations or starting points, of our genuine reasoning and of scientific knowledge". *Second order,* or *reflexive knowledge*, is obtained "by the statement of the reasoning by which we get to know the cause of things"[244].

The definition used by Spinoza is in line with the information processing mode of cognition where, through deductive logic, "emphasis is on the rational analysis of data in a mental problem space"[245]. Rational concepts in the conduit model come from within the community of knowing, order being imposed through clarification of concepts, and developing causal relationships about concepts. Rationality would then lie in the process itself, as well as the choice of concepts.

Ratio could also be "the concept of creating a portion or part. In 'ratio-nality' (hyphenated to separate the underlying concepts), we divide life into parts"[246]. "To be rational is simply to employ a self-consistent accredited procedure in the formation of one's beliefs"[247]. Perhaps, in an attempt to be in control of our own destiny, we attempt to create a reality through which we can cope, by choosing particular concepts. These concepts support such reality, dividing

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[242] Hampshire S. 1951. *Spinoza,* 94

[243] Ibid.88-91

[244] Ibid.99

[245] Boland RJ, Tenkasi RV. Jul-Aug 1995. Perspective making and perspective taking in communities of knowing. *Organization Science,* 353

[246] Boldt LG. 1993. *Zen and the Art of Making a Living: A Practical Guide to Career Design,* XXX viii

[247] Ayer AJ. 1970. *Language, Truth and Logic,* 100

or compartmentalizing our life in such a way that the parts seem rational in relation to each other, by "being placed in connexion with other ideas in a larger system of knowledge"[248].

From an organisational form point of view, March defines rationality in relation to processes of choice as "a particular and very familiar class of procedures for making choices", leading to rational theories of choice "which assume decision processes that are consequential and preference based". The framework[249] suggested by March for decision-making through rational procedures, includes questions of possible alternatives/actions, expectations (consequences from alternatives and their likelihood), and the preference and decision-rule, which denote a strict logical sequence in the model.

The above seems eminently logical and *rational*, noting that choice itself is the object of the process through which change is initiated[250]. That process can be built on 'thought', which creates a starting point that, by definition, is personal to each one of us. We make choices about beliefs that we adopt, and preferences we have[251]. Choice can, but does not have to, be regarded as being rational from another party's perspective. It is when it is regarded as being rational from more than one perspective (can but must not be more than one person), that one could say it meets the rational choice criteria, to be applied in an agreed context and situation.

As beliefs and preferences are personal to the decision-maker, so too would be the decision. The ability of a decision-maker to execute is not limited by this, although the success of the outcome may be impacted by an imperfect procedure. If a decision-maker follows this framework, setting out consequences of the suggested alternative (based on guessing the future state of the world[252]), he can set out his judgement, the merits of which depend on his personal values and experience[253] and how he will feel about the future world[254]. Mental

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[248] Hampshire S. 1951. *Spinoza,* 106

[249] March JG. 1994. *A primer on decision making: how decisions happen,* 2-3

[250] Ibid. 62, 63, 67, 211

March refers to 'individualistic' cultures which exhibit strong effects of socialisation as opposed to 'social'cultures, which exhibit strong elements of individual deviance. When combined with the statements that identities are formed by social processes and meanings are socially constructed, it seems evident that assumptions underlying how we make decisions will be cultural themselves (the way 'we' do things). For Western Societies that means that the cultural character of rationality and decision-making based thereon are part of such Socio-political Systems. Similarly, this characteristic is unconsciously embedded in organisations formed through social construction, in these Societies, and imposed by the social processes.

[251] Frankl V. 1992. *Man's Search for Meaning,* 75 Choice in itself is the first and last conscious thing we do. "Everything can be taken from a man but one thing; the last of the human freedoms—to choose one's attitude in any given set of circumstances, to choose one's own way".

[252] March JG. 1994. *A primer on decision making: how decisions happen,* 3

[253] De Bono E. 2004. *How to have a beautiful mind,* 33

rules, or logic, posit human reasoning as a series of 'If X, then Y' constructs that, put the *focus on form rather than content*[255].

Within the rationalist frame, one would break unfamiliar situations into *familiar* pieces, thereby assuming the availability of familiar pieces and relationships to whoever is making the description[256]. Such pieces can be equated to schemata, the recognition of which is part of the process of decision-making. Testing the assembly of the pieces into the whole, and the relationships, becomes *key* to whether *consequent* explanation of the elements is valid. In that process of *division,* by not assuming that familiar elements are the only way of dividing the whole, we can avoid "precluding a possible better explanation" [257]. Please refer to the Cognitive Processing model, depicted as Figure 13, for further discussion on unfamiliar elements and surprises.

Mental rules provide *familiar elements*. Within the organisational framework, or between parties within the organisation, familiar objects would be the organisational processes and tools in which the rules are embedded.

In a world of perfect knowledge "all alternatives and all consequences as well as all preferences are known, precise, consistent, stable"[258] and endogenous. Any variation from these known factors introduces uncertainty. An increase in uncertainty, or variation in potential outcomes (riskiness), requires the decision-maker to trade-off certainty with the expected return.

A snapshot individualistic view of rational decision-making would then conclude that, for decision tools to emulate rational choice theory, they would try *to reflect assumptions with regard to knowledge, actors in decisions, preferences by which consequences are evaluated, and the decision rule by which an alternative is chosen, and any trade-off of risk/return.*

In a less than perfect world of limited cognitive ability and incomplete information, limited (bounded) rationality still enables decisions to be made in terms of consequences for

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[254] March JG. 1994. *A primer on decision making: how decisions happen,* 3

[255] Westbrook L. 2006. Mental models: a theoretical overview and preliminary study. *Journal of Information Science,* 566 Westbrook looks at mental models, which use semantics as basis for reasoning rather than the syntax of mental rules. Both support aspects of information seeking that depend more on logic than intuition.

[256] De Bono E. 1967. *The Use of Lateral Thinking,* 44

[257] Ibid.42

[258] March JG. 1994. *A primer on decision making: how decisions happen,* 5-7

preferences (logic of consequences)[259]. In this world, decision-makers in a rational frame look at alternatives *sequentially,* having divided them into parts (ratio), owing to cognitive limitations (of attention, memory, comprehension, communication[260]). Important here, is the sequential consideration of the situated problem in its components.

Decision-makers adapt aspirations or targets, and do so "not just to the level of reward but to the rate of change of reward with a predisposition to dissatisfaction, which creates a strong stimulus for search and change in situations where it exists"[261]. We tend to call that search and change 'progress', without necessarily being clear of what we mean by that.

The following is an extract from Benjamin's ninth thesis from the essay 'Theses on the Philosophy of History' that express a disillusion with what we define as progress:

"A Klee painting named 'Angelus Novus' shows an angel looking as though he is about to move away from something he is fixedly contemplating. His eyes are staring, his mouth is open, and his wings are spread. This is how one pictures the angel of history. His face is turned toward the past. Where we perceive a chain of events, he sees one single catastrophe, which keeps piling wreckage and hurls it in front of his feet. The angel would like to stay, awaken the dead, and make whole what has been smashed. But a storm is blowing in from Paradise; it has got caught in his wings with such violence that the angel can no longer close them. The storm irresistibly propels him into the future to which his back is turned, while the pile of debris before him grows skyward. This storm is what we call progress"[262] [263].
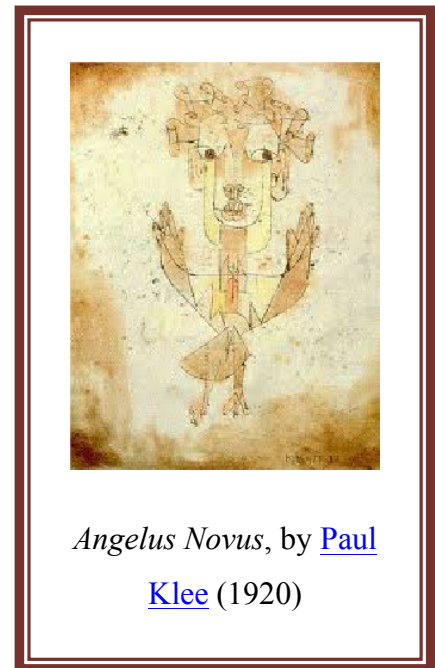
Angelus Novus, by [Paul Klee](#) (1920)

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[259] Ibid.9, 57

[260] Ibid.10

[261] Ibid.23

[262] Benjamin W. 1940. "Angelus Novus" 24 October 2010

http://en.wikipedia.org/wiki/Angelus_Novus December 8 2008

In the museum (Neue Nationalgalerie Berlin) that housed the painting (December 2008) it was separated in an antechamber with the quote in German filling a large part of the wall on the left of the painting and no other objects in that chamber. Clearly, interpretation of a picture such as the one above can be manifold, but once you have read the quote, you may find it difficult to see it differently.

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In this quote and interpretation of Paul Klee by Walter Benjamin, lies much of the challenge of discourse on change and this thesis. Progress is measurable when you agree on a baseline, and what you need to change based on an agreed goal or objective. So what do we do? We reduce goals and objectives to relate preferences to a single scale[264], making measurement possible and outcomes comparable, in an attempt to arrive at a best solution. The rationalist assumption includes, inter alia, that all preferences are equal.

From a physical science point of view, "the procedure of physical science reduced certain phenomena of the natural world to expressions of a few simple mathematical laws; philosophers were interested in discovering how far and on what basic human reason could be applied with similar success in other fields"[265]. "In making any prediction, we are able to consider a limited set of data; what we do not take into account, we assume that we are entitled to ignore as irrelevant"[266]. The use of numbers and mathematics is core to using concepts in describing the environments, establishing measurement scales, measuring work performed (through processes), and reporting outcomes of decisions or activities in support of problem solving, serving one's own interest or a combination thereof[267]. The derived concepts are synthetic propositions that could be used to assert causal connections[268].

Rationalists argue that "there are some truths about the world that we can know independently of experience"[269], ascribing properties to all objects (even those not observed), allowing us to deal with "our" reality. This ascription of properties happens when we introduce new variables, identifying a categorization (change indexation e.g. time, geography, systems, perspective, identity), or an identification of a regularity through the combination of variables (functional rule that points to a relationship between 'explanatory

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[264] March JG. 1994. *A primer on decision making: how decisions happen,* 19

[265] Smith TV, Grene M (Eds.). 1967. *From Descartes to Locke,* 1. Exploring Descartes.

[266] Ayer AJ. 1970. *Language, Truth and Logic,* 150

[267] March JG. 1994. *A primer on decision making: how decisions happen,* 16-18

[268] Ayer AJ. 1970. *Language, Truth and Logic,* 150

[269] Ibid.73

variables (attributes) and other variables (predicted)[270]). This concept of transferring knowledge from one context to another, can lead to misconceptions[271].

The above discourse is supported by theories such as Subjective Expected Utility (SEU) Theory, which operate on being able to maximise the expected value of a state of the world "through consistent preference ordering of all possible states of the world, and a prior probability distribution of exogenous events"[272]. This state reflects our belief of how an individual is likely to act at the one (top) end of the y-axis, and the nature of organisational processes at the (far) end of z-axis, as reflected in Figure 5 and Figure 11.

"The rational theory of information-processing at the root of organisation system[273] thinking is focused on the centripetal, highly rational, deviation- controlling forces, and thereby missing the chaos of variety in the centrifugal forces"[274].

In this context of variety, complexity prevails where "the man cannot acquire full knowledge which would make mastery of the events possible"[275]. Theories such as systems approach and action theory "do not rely heavily (or at all) use concepts of utility or probability"[276]. The ability to provide meaning in life and systems world is further complicated by behavioural decision theory, which shows weaknesses in human decision making. There is, therefore, a need to develop and use of a concept that supports the other end of the y-axis as a continuum.

Through complexification, the reasoning tries to move from rationality as a driver (to support understanding of human nature) to increasing complexity to "derive more precise explication of constructs, where more coherent meaning structures are developed than the preceding ones"[277]. It is through the narrative discourse that the other part of the duality is introduced.

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[270] Aragones E, et al. December 2005. Fact-Free Learning. *The American Economic Review,* 1356, 1358 The association rule applying to categorization assumes that "if for any given observation, the value of certain attributes are within stipulated ranges, then the values of other attributes are within pre-specified ranges".

[271] March JG. 1994. *A primer on decision making: how decisions happen,* 12 "*Individuals and organisations* also use strategies such as editing, decomposition, heuristics and framing" to cope with human limitations in information and information-handling activities.

[272] Vazsonyi A. 1990. Decision Making: Normative, Descriptive and Decision Counseling. *Managerial and Decision Economics,* 319

[273] The application of system thinking as used by the thesis is wider than defined by Boje.

[274] Boje D, Al Arkoubi K. 2005. Third Cybernetic Revolution: Beyond Open to Dialogic System Theories. *TAMARA: Journal of Critical Postmodern Organization Science,* 139

[275] Grunberg E. 1978. Complexity and open systems in economic discourse. *Journal of Economic Issues,* 544

[276] Vazsonyi A. 1990. Decision Making: Normative, Descriptive and Decision Counselling. *Managerial and Decision Economics,* 318

[277] Boland RJ, Tenkasi RV. Jul-Aug 1995. Perspective making and perspective taking in communities of knowing. *Organization Science,* 356

Even though the rationalist position assumes that the observer is outside of the decision-making process looking in, this position is not what happens in reality when a decision is made. The reality is even framed by the observer's own position.

As this narrative moves towards the constructivist rational view, the fact is that, until any deduced general proposition can be experienced, it would remain a proposition, "as there is a possibility that it will be confuted in the future"[278]. Mental models are not a reality, but an extraction from such, and include the understanding of the individuals based "both on events they experience *and on narrative discourse*"[279]. It is the latter's social nature which enables participants in a discourse to update their own respective reality (and consequent mental models). From an organisational perspective, an indicator of relevance is then the "extent to which the mental model describes the knowledge base"[280], rather than reality.

It is by increasing the complexity in a particular *system,* that the representations appear to be closer to reality, accepting that "as complexity increases, selectivity and the instability of relations between the basic units of the system also increase"[281]. It is through "complexity thinking, as a method for understanding diversity", that we "acknowledge *the self-organising character of nature and of society"* and, thereby, any system that intends to describe such. "Not that there are no rules, but that rules are created, and changed in a relentless process of deliberate actions and unique interactions"[282]. In that context, when we accept that mental models and rules support the creation of *self-organising systems*, participants engaging in narrative discourse in a workshop would change the rules and the system (the system described in the workshop, as well as the system that they are part of), owing to actions taken (actions agreed as part of process and subsequent review, and those actions supporting their respective agenda's). In that description, the observer is part of the system.

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[278] Ayer AJ. 1970. *Language, Truth and Logic,* 72. As stated by Hume.

[279] Westbrook L. 2006. Mental models: a theoretical overview and preliminary study. *Journal of Information Science,* 566

[280] Aragones E, et al. December 2005. Fact-Free Learning. *The American Economic Review,* 1358

[281] Heelas P, et al. (Eds.). 1996. *Detraditionalization: Critical Reflections on Authority and Identity,* 64 Reference from Niklas Luhmann's *Complexity, Structural Contingencies and Value Conflicts*.

Luhmann's position was influenced by drawing on theories describing Autopoietic systems. Following Maturana & Varela, the statement has to be read in conjunction with a view that systems are closed in their relationship to their environment in that they are self-referential.

In that way a system would not have the natural capability of open system to organise at a higher level of in-stability and to interact with the lifeworld. Luhmann's view does not impact the self-organising character itself reflected upon here; it does impact what he considers part of such effort to self-organise.

[282] Castells M. 2000. *The Information Age Volume 1 Rise of the Network Society,* 74

It is important to state here that narrative discourse is an integral part of the process itself, thereby influencing the output. Rational logic would require our not betting everything that rational logic would be sufficient to resolve a complex problem. The use of cognitive *complexification* through "paradigmatic (information processing mode) analysis within a narrative framing of experience"[283] is an acknowledgement that we cannot manage uncertainty. What we are attempting to do is translate situations into chunks of risks and opportunities that provide a chance to manage.

From an individual's point of view, the discourse above provides support for the notion that *rationalising* and *complexification* as concepts form a continuum using communication as part of the process that assists in constructing our perspective. If we are primarily focused on rationalising our understanding of a situation in order to create coherence and eliminating tensions, the construction is supported by theories that reflect on the use of the objective description of the world and proposition that we develop such based on explication of what is already on our universal 'Mind'.

At the other end of the continuum of theories, the world is shaped by the society we live in, by reference to the natural world around us and we make sense of what is happing through actual experience. A tactical approach to improve the chance of success[284] could be "to start simple and to iterate towards complexity"[285], replacing abstract explanations with those grounded in experience. This sensemaking can be described as an attempt to deal with emergence in order to resolve ambiguity - concepts which require further explication.

The end of the Y-continuum has been labelled as sensemaking. Sensemaking, as practice and mindset enables individuals to operate across the Y-continuum, adapting action and reflection depending on where on the continuums (Y and Z) the problem is situated.

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[283] Boland RJ, Tenkasi RV. Jul-Aug 1995. Perspective making and perspective taking in communities of knowing. *Organization Science,* 356

Steinhart E. 2008. Teilhard de Chardin and Transhumanism. *Journal of Evolution and Technology*, 2

Teilhard de Chardin "observes that increasingly complex systems are emerging in our universe over time. We can plot this emergence on a graph with two axes: a time axis and a complexity axis. Teilhard refers to the emergence of increasingly complex systems as *complexification*. Today we are more likely to talk about *self-organization*".

The concept in this thesis has been adapted to reflect on a tension that requires one to evolve in line with the environment. The concept is not one of mental development per se but one of an ability to deal with more complex processes through experience and the creation of meaning in the interplay with other actors and the increasingly complex context of a systems-world that is continually reigned in by the lifeworld.

[284] Subjectively defined as objectives of the organisation.

[285] Vazsonyi A. 1990. Decision Making: Normative, Descriptive and Decision Counselling. *Managerial and Decision Economics,* 322

2.2.5 Emergence

Emergence is the creation of new (or unexpected or undetermined) properties (regardless of the substance involved)[286]. It is said to take place when there is movement between levels of organisation/ontology (physical-chemical, biological, psychical, sociological, as primary levels). There is not a unified theory of emergence, as there are different points of departure of different fields of study.

Stepping away, in order to perceive patterns or the picture, is part of the process supporting emergence. Our ability to read a map, or see an image, improves with distance to the detail. Moving *too far away*, then again, reduces cognition. Vester talks about deliberate attempts at fuzziness, in order to support pattern recognition[287] of the larger system, rather than getting too close to the problem by using only a crisp statement of its existence.

Starting at the far-end (using perspective of Figure 5) of the X- and Z-continuums, a Kantian frame suggests that emergence of "knowledge of forms is created intentionally within minds by imagination through the processes of abstraction and generalization"[288] (i.e. already there in Kant's terms). In this instance, the system would be perceived with reference to the pattern representation in the mind that recognises the coherence and consistency of the pattern. In this case, one would assume that the system is created by description. At the other end of the X- and Z-continuums, a system is a creation from senses, by reference to the forms of matter[289] "modifying the brain (i.e. integration as set out in the Y-continuum) through sensation, perception and learning, thereby incorporating the world through experience"[290].

There are no underlying patterns allowing us to use a system to predict the next pattern in advance, but they emerge all the time as we try to describe a system. Description is an attempt at explicating what we know which, in itself, can limit the emergence of new properties. The description of the system itself does not allow prediction. The use of a described system, as diagnosis, is therefore also not sufficient in explanation, and requires us to move to intervention (i.e. use an outside agency in a workshop setting or through facilitation) to break an existing pattern, or to install a new 'healthy' pattern. "To grasp

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[286] Emmeche C, et al. 1997. Explaining Emergence: Towards an Ontology of Levels. *Journal For General Philosophy of Science,* 145

[287] Vester F. 2007. *The art of interconnected thinking,* 54

[288] Freeman WJ, Núñez R. 1999. Restoring to Cognition the Forgotten Primacy of Action, Intention and Emotion. *Journal of Consciousness Studies,* x

[289] Ibid.x

[290] Ibid.xv

reality as a whole, it is not sufficient to perceive only details"[291], requiring us to move away from analysis, as a mode, to synthesis.

Emergence can be said to be the first step towards possible *innovation*. Yet, until we pursue the idea, in an unstable world i.e. one where "we may know the initial conditions, the future remains impossible to forecast"[292]. Emergence, as a single process, involves entities, which may be modelled by a formal framework and computational model.

For example, if we look at the 1990's there was little noticeable improvement in productivity, comparing outputs of economies using historic measurement methods[293]. Only when the methodology was updated i.e. the concepts underlying the change were understood[294], could analysts demonstrate to society the progress actually made i.e. the switch from production to service sectors. As measurement evolves after the item that is to be measured, there is a lag, and an inherent inability to measure change, ahead of the concept itself which is to be measured. Measuring the right thing gives leaders in an organisation comfort controlling (using mechanistic language), and enabling comparison of results to expectations. In the event of emerging concepts, any mechanistic notion would not allow us to cope with or understand change. The realisation that emergence is at play requires us to find a way of recognizing the change, by updating the conceptual filters (Kantian notion thereof), that allow us to recognise the change at hand (accepting that it is our way of looking at the issue that needs to change). Emergence will continue in complex environments whether we realise it or not. As stated before, too much structure negatively influences capturing of opportunities (as it reduces flexibility to act). Focus should be on the initial detection of emergent patterns even before a new strategy is formed. The new has to be formed knowing what is emerging all the time anyway[295].

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[291] Vester F. 2007. *The art of interconnected thinking,* 54

[292] Prigogine I. 1989. The Philosophy of instability. *Futures,* 399

[293] Castells M. 2000. *The Information Age Volume 1 Rise of the Network Society,* 88 observation of stagnant productivity in services as a whole.

[294] Ibid.91 e.g. changing calculation of inflation and including for the first time spending on software as an investment and as part of GDP.

[295] Eden C, Ackerman, F, Cropper S. 1992. The analysis of causal maps. *Journal of Management Studies*, 314

"Reductionism in the initial construction of maps is necessary if emergent properties are to be analytically rather than intuitively discovered". It is one's capability to recognise patterns in the environment or on a map that distinguishes the analyst's approach.

The act of knowing is discussed further later in the thesis (page 67).

The example of the changing measurement of productivity by production, to include service oriented sectors, suggests that emergence of a *concept* is possible and necessary. Such new concept, or realisation based thereon, would not necessarily be explainable, other than by a change in the frame of reference, based on the updated perception and conception, by participants, of the problem. New concepts evolve when circumstances that invalidate previous concepts change (held to be valid until proven otherwise).

From a risk perspective, "historic catastrophic events are clearly visible (Chernobyl, 9/11), while new *risks* are diffuse, silent processes that continue almost invisibly until too late"[296]. Any ability to make the invisible silent processes transparent, and to define higher-level concepts, possibly could be considered emergence on a localised scale.

If emergence is defined as progress (bearing in mind the difficulty of agreeing what that is), the question of the source (endogenous or exogenous to the system being evaluated) of the influence can be raised. Endogenous generated emergence can be seen in Boisot's proposition[297] that a discontinuous jump in a living system's own learning process is accounted for by "insight", or extracting informative patterns from data and converting them to knowledge. In the context of the application of a decision tool such as the model proposed by this thesis, the recording of insights by participants could be considered as emergent properties, although it would be difficult to isolate the causal factor for the insight in the setting of a workshop (or otherwise). The insight may also be an explicit recording of previously held tacit knowledge (assuming such can be explicated other than by observing). A Decision Support System "is not descriptive, because it does not inquire into the workings of the human mind"[298]. The proposed model as a decision tool is prescriptive in terms of process and sequence as it requires application of modes of cognition that are appropriate in the situation[299].

The higher the level of system we try to describe, the higher the number of mental models we try to use (assuming models at lower system levels are available and appropriate for use),

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[296] Wilkinson A, et al. July 2003. Background and dynamics of the scenarios. *Journal of Risk Research,* 371

[297] Boisot M, Canals A. 2004. Data, information and knowledge: have we got it right? *Working Paper Series,* 27

[298] Vazsonyi A. 1990. Decision Making: Normative, Descriptive and Decision Counselling. *Managerial and Decision Economics,* 318

[299] This sequentiality moves the process into 3rd level (abstract) or 7th level (symbolic) of 'mental processes' described as levels of personal complexity in terms of Jaques Stratified System Theory referred to earlier (Figure 9).

with a consequent increase in complexity. The number of models used can decrease usefulness when complexity is too high for the participants to understand[300].

Whatever causes the outcome, if we crack a big problem, we do more than the ordinary. The paradox may be that we need to exceed our current understanding in order to break the current paradigm, which requires increasing complexity in order to simplify at a higher level of abstraction (Kantian notion) but achieve this through embodiment by reference to experience and through narrative discourse. The reference to our senses, in a narrative discourse, usefully combines well with the limits of our understanding, as we refer to these other abilities, without necessarily being able to explain the source of our knowledge.[301]

In a world of emergence, it makes sense to consider the impact of the concept of *equifinality*[302], as the result of an interaction in a workshop, and the processes that can be used to deal with a particular problem may vary, but the outcome is still the same. Emergence does not exclude explanation post the fact, although it is not a deterministic process. As such, the process can be explained but the adequacy of the explanation is undecided; for the purposes of this thesis, this does not invalidate the output.

The concept of emergence has therefore been positioned at the left of the x-axis depicting the Social-political system/Organisation continuum in Figure 11. This concept does indicate individual and organisational requirement for flexibility and adaptation as a capability to capture opportunities and deal with risks as they arise. This does require further consideration of the emergent properties of 'strategy' and organisation in formation, dealt with in the next chapter.

The balance of this section considers ways of dealing with uncertainty and ambiguity.

The risk in our fast-moving world is "time pressure, which encourages people to seek confirmation of expectancies, to cling to their initial hypothesis, and to prefer the narrative mode of thought to one that is pragmatic and more data driven"[303], rather than approaching

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[300] Mintzberg HA, Bruce; Lampel, Joseph. 1998. *Strategy Safari: The complete guide through the wilds of strategic management,* 177"Every failure of implementation is also, by definition, a failure of formulation ".

[301] Ibid. 167

The individual holds a schema, while the group holds a frame based on shared social construction. Either or both of these can prevent interpretation of reality, resisting contrary evidence, introducing frame blindness that may be relevant here as a limiting condition. It makes it difficult to see that we have to exceed our current understanding.

[302] Morgan G. 1997. *Images of Organization,* 41 Ashby's concept.

[303] Weick KE. 1995. *Sensemaking in Organizations,* 153

decision-making in a structured manner, applying different thinking modes throughout the process.

We try to solve problems of ignorance by adding data/information and problems of ambiguity by belief and/or action driven processes[304]. This means that a process supporting the problem-solving discourse would require participants to recognise whether they lack information, or are in a situation where more information is unlikely to resolve the ambiguity.

In order to further categorise situations/problems "based on different levels of uncertainty"[305], this thesis adopts a model developed by Olson et al.[306], differentiating situations based on predictability of the outcome, and the degree of change represented by the number of alternatives.
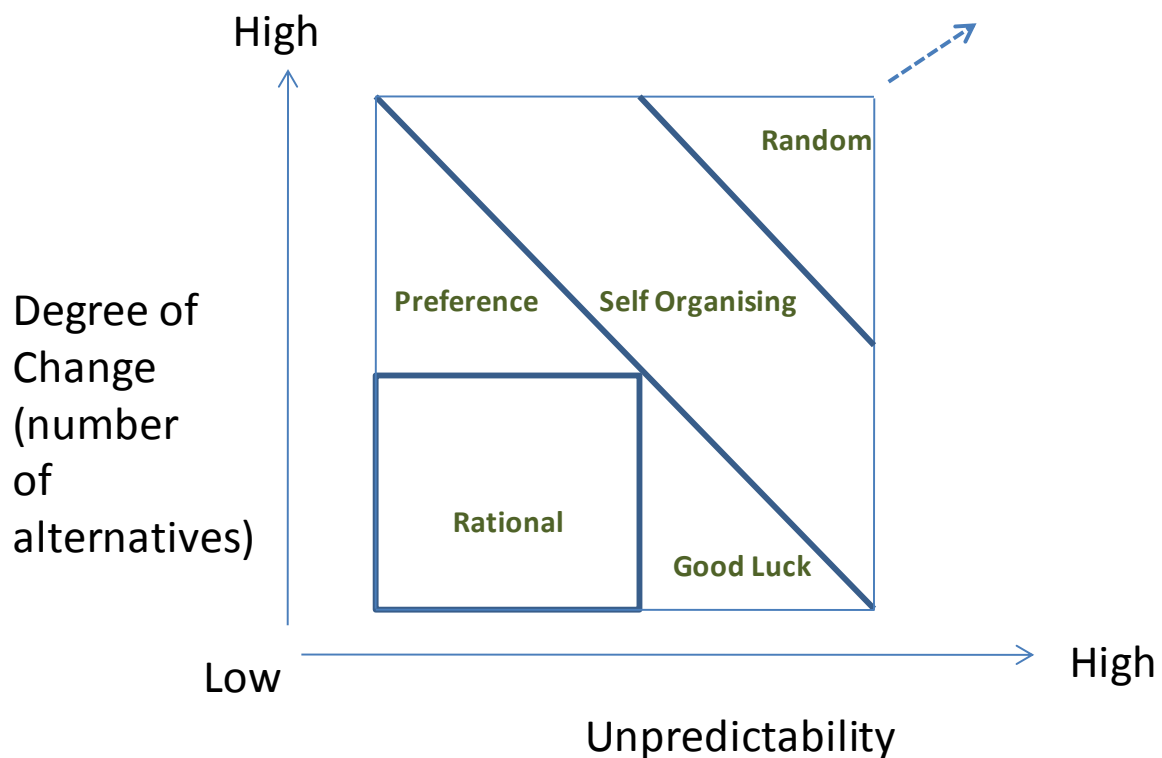

Figure 10 Decision-making under conditions of certainty and uncertainty [307]

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[304] Ibid.133

[305] Olson EE, Eoyang GH. 2001. *Facilitating Organization Change: Lessons from Complexity Science. Practicing Organization Development,* 63

[306] Ibid.63

[307] Ibid.63, Figure 3.2 adapted

Conditions for emergence are more likely to exist in the self-organising and random areas of the above model, although we are more likely to recognise emergence of a new pattern in a self-organising system, and not in a situation largely subject to random influences.

In the formulation of strategy, when decision factors are clouded by ambiguity and uncertainty, we should take action[308]. Weick supported this notion in sensemaking as one way of resolving ambiguity. Action, in this instance, seems to be indeterminate in nature, as the categorisation of the problem situation challenges our perceptual and conceptual abilities. In situations where the nature of the problem is unclear, we could try abductive thinking[309] to elicit the creativity inherent (intrasubjective) in individuals, hoping for innovation, which is also a key requirement in the strategy process. Statler et al. posit that this process is further supported by "aesthetically-rich experiences (encouraged e.g. by Art, plays, music, gymnastics) that engage the imagination and encourage critical reflection on existing assumptions about the organisation *(or system)* as such" [310].

When one tries to solve for situations of high uncertainty through action, to enable recognition of a pattern based on the action, it has the potential to resolve some of the ambiguity. Change, however, can either be large, or non-existent, as the impact of the action is unknown before the action is taken.

So a question to reflect on is why organisations spend time on developing strategy if it never happens anyway? A considered answer to such a rhetorical question would be possible after considering the integration of the concepts in strategy formulation as set out in Chapter 3.

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[308] Statler M, et al. 2002. Dear Prudence: An Essay on Practical Wisdom in Strategy Making. *Organization,* 21 based on Aristotle's postulates for practical wisdom.

[309] Psillos S. 2007. Chapter 14 - Philosophy of Science. *Philosophy of Science,* , Ayer AJ. 1970. *Language, Truth and Logic,* 642

Scientific realism put the "issue in proper perspective by arguing that it rests on an abductive argument, *aka inference to the best explanation"*.

[310] Statler M, et al. 2002. Dear Prudence: An Essay on Practical Wisdom in Strategy Making. *Organization,* 22

2.3 Interplay
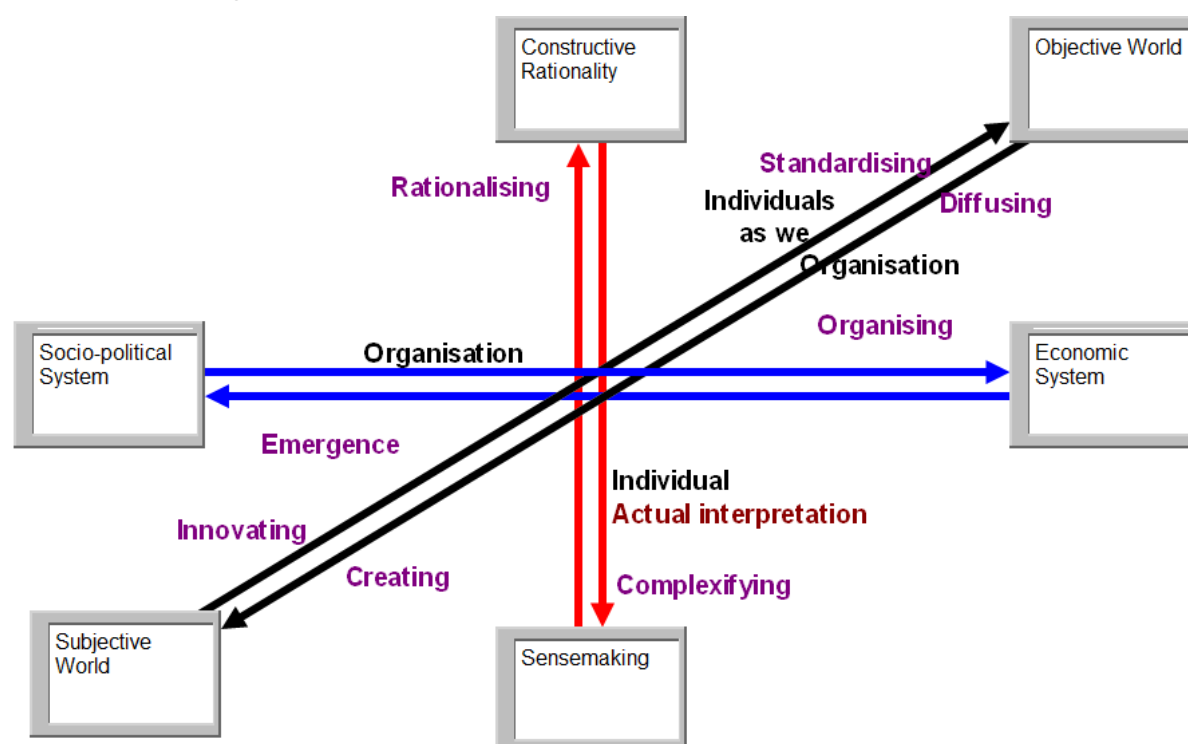
Figure 11 Tensions reflected as interplay between categories, concepts and change theory

Using Kant's definition of synthetic judgement, the notion of interplay is tantamount to "adding to the concept of the subject a predicate which has not in any wise been thought in it, and which no analysis could possibly extract from it"[311].

The interplay based on the model and concepts developed seeks to illustrate that it is more than one force that is driving change (there are contextual, organisational forces and the individual within such frame reacting and acting as part of the interplay between the forces) that can result in embedded (in organizational process, routines, culture) or embodied change.

It is *the movement from one level of communication to another* (generic subjective to the intersubjective)*, one sense to another,* and back, that creates that 'feeling' of tacit or implicit knowledge. It is "*implicitly relational knowledge*" the "explication or uncoupling of the connected elements, e.g. by conscious attention that, disturbs the taken-for-granted, implicit performance, or Gestalt"[312]. This latter uncoupling is the initiation of change, and the breaking up of existing categories or frameworks. The *process* that moves the interaction

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[311] Ayer AJ. 1970. *Language, Truth and Logic,* 77 As opposed to "analytic judgements [that] add nothing through the predicate to the concept of the subject, but merely break it up into those constituent concepts that have all been thought in it, although confusedly".

[312] Fuchs T. December 2001. The Tacit Dimension. *Philosophy, Psychiatry, & Psychology* ,324

between participants' levels of engagement is one of *communication* based on the interconnectedness of communicative action and social systems.

It is however, *knowing*, which is the active component in knowledge i.e. "acting in the sense that, in order to know something that the individual acts to integrate a set of particulars of which they are subsidiarily aware"[313]. If knowing is organising, then it is the act of knowing which creates the organisational distinctions that create the organisation, and forever changes what it was. As we keep *organising* in order to create the distinctiveness of the organisation (or in the strategy context, competitive advantage and sustainability), the one *constant is change*[314].

The organisational-level knowledge structure exists in a "mutually accommodating relationship with the social activity of organising"[315], where change develops from coupling and decoupling between cognitive and social activities[316]. That is why cognitive theories are interlinked with communication theories, though both are required to explain change and support activities that support such change.

If we accept "*knowledge structure* as a mental template consisting of organised knowledge about an information environment, that enables interpretation and action in that environment"[317], the potential that a "group of individuals may house knowledge about issues in a way that transcends the cognitive facilities of any one of them"[318], requires us to reflect on the concept of the organisation of groups of individuals. Argyris and Schoen posit that individuals learn on behalf of organizations, which was interpreted by Sun and Scott to mean that individuals initiate 2nd order change (of which strategy formation can be said to be part)[319]. Because individuals in a collective draw on the group or organisational heuristics and generic rules in their actions (being situated), they create a new set of circumstances, based

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[313] Tsoukas H. 2000. Knowledge as Action, Organization as Theory. *Emergence* 107 quoting Polanyi.

[314] Brilliant A. *Brilliant thoughts in 17 words or less*
A Pot Shot quote had the saying: "Doing it wrong fast is at least better than doing it wrong slowly"!

[315] Walsh JP. May-June 1995. Managerial and organizational cognition: notes from a trip down memory lane. *Organization Science,* 296 Walsh uses 'interpretive scheme' while in thesis 'knowledge structure' or 'schema' is used by the author.

[316] Ibid.296

[317] Ibid.286

[318] Ibid.286

[319] Sun PYT, Scott J. 2005. Sustaining second-order change initiation: structured complexity and interface management. *The Journal of Management Development,* 882

on their understanding of the '*knowledge gaps*'[320], to create opportunities. This is equivalent to moving from the level 2 level of analysis (the *we*) in Weick to level 3 (the organisation) and the movement, through communication, creates the need for breaking an existing mental model (and emergence as organisational concept), possibly as a reaction to the need for the organisation (and managers and leaders in it) to control. The ability of the 'we' to amplify the insights could result in innovation in the organisation, and create sustained change.

The concept is therefore not just one of leadership, but that of groups of individuals that have the knowledge to contribute to the solution. The question considered in developing the framework, was to reflect on processes that enable emerging opportunities to be captured, but not lose the organisational need to organise based on a wish to control outcomes in a more standardised manner (assumed that the latter would increase productivity). The process described is one of continuous interaction between the strategic intervention and actual interpretation, through sensemaking throughout the organisation within its context by those operationalising strategies.

The concept of organising has been selected as best describing the right/far-hand-side of the X-continuum (as depicted in Figure 11), supporting both the organisation and knowledge structure of the environment.

The balance of this section reflects on the concept of change. The analysis in this thesis reflects on *change* (refer to Figure 12) at various (but consistent) system levels[321]: How does society (excluded from this thesis), the organisation, the 'we', and individuals, deal with the concept of change? How can technology (tools) enable a subset of individuals in an organisation (institutional leaders) to cope with such high (assumed) rate of change in one organisational process (that of strategy formation)?

The model setting out processes of change was adapted from Wilkinson et al.[322].

1. Frame - values and beliefs shape perception (cultural evolution through local influences);

2. Assess - perceptions shape ways of knowing;

3. Manage - assessment shapes action (influenced by contextual change incl. global influences);

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[320] Using language of Choo's framework depicted in Appendix 2.

[321] Weick KE. 1995. *Sensemaking in Organizations,* 71

[322] Wilkinson A, et al. July 2003. Background and dynamics of the scenarios. *Journal of Risk Research,* 370

4. Communicate - management shapes context.

Each step is "influenced by perception as much as by objective fact"[323].
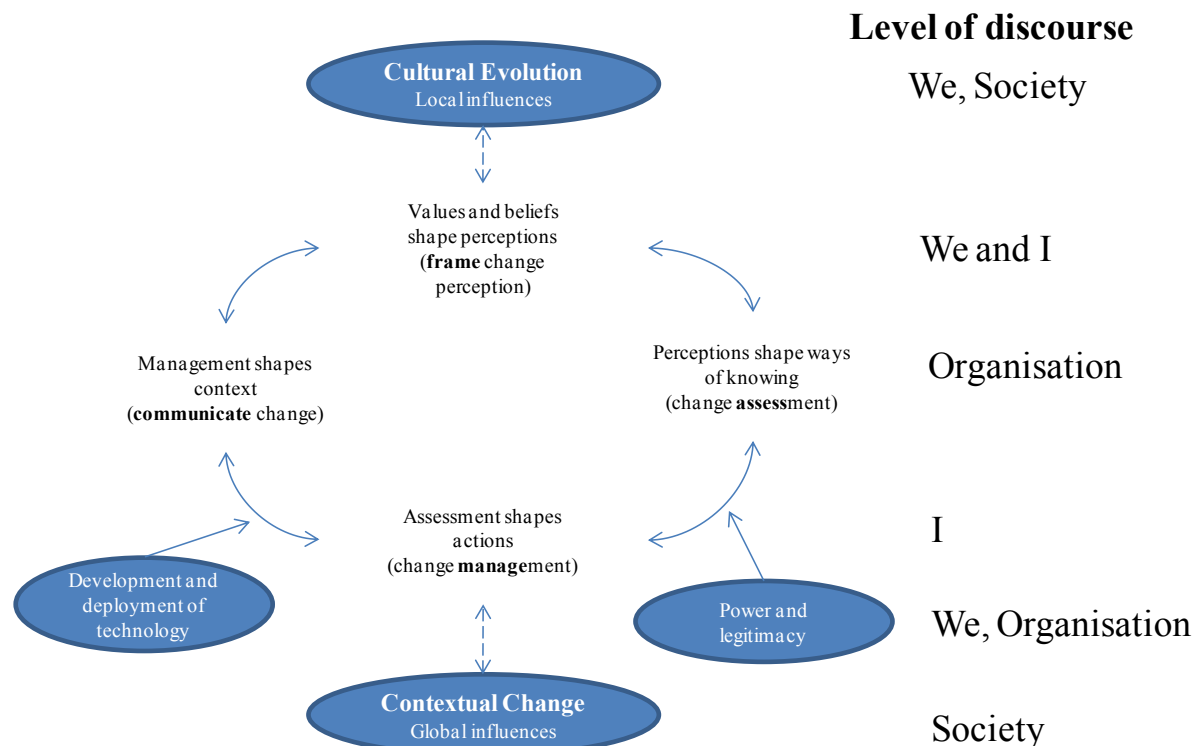
Figure 12 Process of change in organisation

Change, as a concept, can be approached by observing changes at various points in time (from the outside), or by placing yourself within the system and becoming part of the unfolding change[324]. In the latter context, organisations are an emergent property of change, with change defined as "the reweaving of actors' webs of beliefs and habits of action, as a result of new experiences obtained through interaction"[325]. The ability of the human to be reflexive in the cognitive domain[326] allows us to change roles from one of within change, to that of an observer of change, and the switching in itself can create emerging changed behaviours.

"Change could be seen as a path to a *known state*, with orderly, incremental, and continuous steps. A *transition* by comparison is a path to an *unknown state*, i.e. something that involves

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[323] Ibid.370 Links between cultural evolution and contextual change adapted from concept of risk to concept of changing.

[324] Tsoukas H, Robert C. Sep/Oct2002. On Organizational Becoming: Rethinking Organizational Change. *Organization Science*, 571-572

[325] Ibid.570

[326] Ibid.575

many simultaneous and interactive changes and adopting new ways of thinking, organising, or conducting activities"[327]. If we take this change in the context of a learning (Figure 16) or knowing organisation (Appendix 2 Figure 33), any *surprise* or closing of gaps has the potential to lead to a transition[328]. The adoption of a new routine has the potential for change to create a capability in the organisation, without which change may still happen but may lack structure and planning. In-between these states of change, a continual tension exists, as the concept of change itself is a dynamic concept that we cannot control. As a result, leaders would aim to create self-organising systems that reflect the potential for change waiting to be identified and amplified through organisational actors.

Organisation is an input and an outcome of the above human action "aimed at stemming change but in the process of doing so it is created by it"[329], where the process feeds of itself, acquiring momentum. As an evolutionary change process, it involves everyone in the organisation that can be led from the top, but not imposed from the top[330].

Employees exist in a complex learning environment, having to cope with changes in the environment and in their organisations. The understanding of our own human limitations, in dealing with such complexity, is a pre-condition for us to recognise and deal with the challenges of change in an appropriate way, and to accelerate change in organisations.

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[327] Marks ML. 2007. A framework for facilitating adaptation to organizational transition. *Journal of Organizational Change Management,* 724

[328] Tsoukas H. 2005. Afterword: why language matters in the analysis of organizational change. *Journal of Organizational Change Management,* 97

"Although cognitivists aim at taking "meaning" seriously, rather than overtly observable behavior (mere 'arm waving' as Stubbart and Ramaprasad (1990, p. 255) note, meaning has been primarily understood in terms of information-processing. Individuals represent the world in particular ways, which are stored as knowledge structures in the form of 'schemas' or 'scripts'. To understand intentional action one ought to look into the black box – the individual mind – to see how schemas operate. In a milder version of cognitivism, cognitive map research has aimed to represent managers' causal knowledge of a particular phenomenon, with the view of enabling managers to first surface their goals, beliefs and assumptions, secondly reflect on them and collectively agree on an aggregated map, and thirdly agree on a course of action for intervention (Eden and Ackermann, 1998). Eden & Ackerman call these maps 'causal maps' ". The difference in terminology is not an issue here. Tsoukas critiques concept and causal mapping as being cognitivist, which when dealing with static, standardised situations, supported by rationality, is a correct interpretation.

Tsoukas H, Shepherd J. 2004. Introduction: Organizations and the Future, From Forecasting to Foresight. *Managing the Future,* 6. This may still enable emergence when reflecting on such schemata although "discontinuities cannot be formalised".

[329] Tsoukas H, Robert C. Sep/Oct2002. On Organizational Becoming: Rethinking Organizational Change. *Organization Science,* 577

[330] De Wit B, Meyer R. 2001. *Strategy Synthesis - resolving strategy paradoxes to create competitive advantage,* 145 Leaders would want employees to be committed to continuous improvement, to continuously learn and to continuously adapt.

Our human limitations stem from our physical and mental capacity. Cognition (or cognition - get to know) is defined as "the mental action or process of acquiring knowledge and understanding through thought, experiences, and the senses"[331]. A cognitive map is a "mental representation of one's physical environment"[332] . Perception is "the ability to see, hear or become *aware* of something through the senses"[333], as set out in the diagram below.
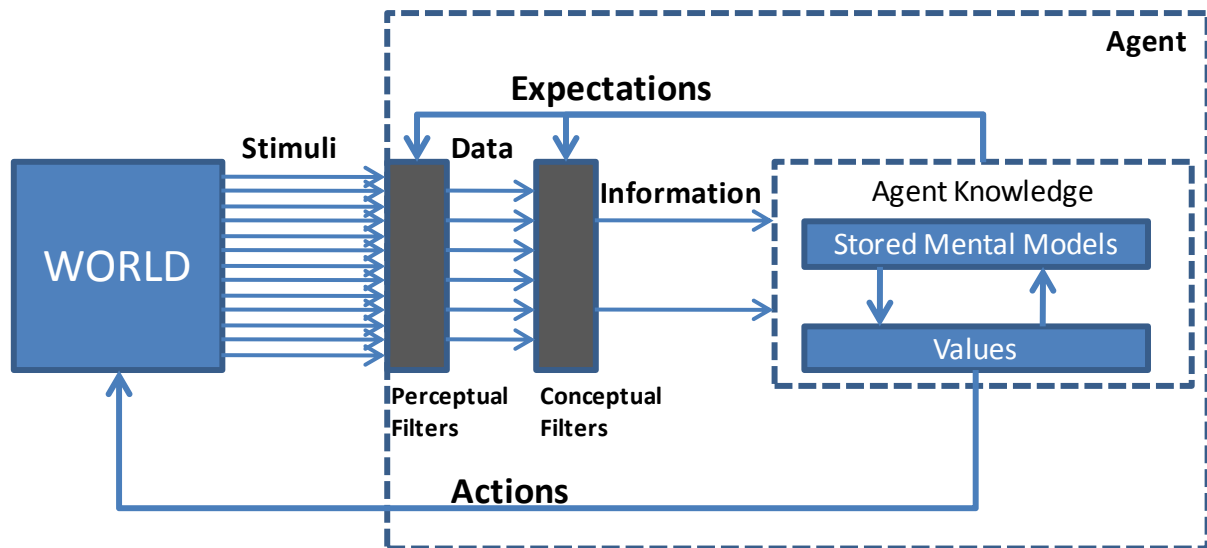
Figure 13 Boisot's model of information processing through perceptual and conceptual filters[334]

Perceptual is "the ability to *interpret* or become aware of something *through the senses*" [335] - a description which reflects a narrative mode of cognition. These descriptions seem similar, quite superficial and, therefore, require further analysis of the concepts.

Experience, as part of the shared mental models, does allow agents to "see through the problem, shortcut formally known procedures of reasoning involving a crude set of distinctions, in order to make more refined distinctions"[336]. The unpacking of the 'black box' of the agent (dotted line) allows us to "make sense as to how people make sense", and to visualize how core concepts discussed in this thesis fit together.

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[331] Pearsall J (Ed.) 2001. *The New Oxford Dictionary of English,* 355

[332] Ibid.356

[333] Ibid.1377

[334] Boisot M, Canals A. 2004. Data, information and knowledge: have we got it right? *Working Paper Series,* 9 Figure 1,

[335] Pearsall J (Ed.) 2001. *The New Oxford Dictionary of English,* 1377

[336] Tsoukas H. 2000. Knowledge as Action, Organization as Theory. *Emergence* 107 based on Schon.

"Individuals represent the world in particular ways that are stored as *knowledge structures* in the form of 'schemas' or scripts' "[337]. This suggests that such schemas influence what we see, as well as preconceptions we may have.

"A schema allows an individual to assess a situation without actively sorting through the myriad of complex environmental cues and relationships" [338]. In that context, a script (as a specialised type of schema) "bridges the gap between cognition and action by creating a *framework for understanding the situation and a guide for action* in the situation"[339] and focuses our attention on how to fulfil a routine[340].
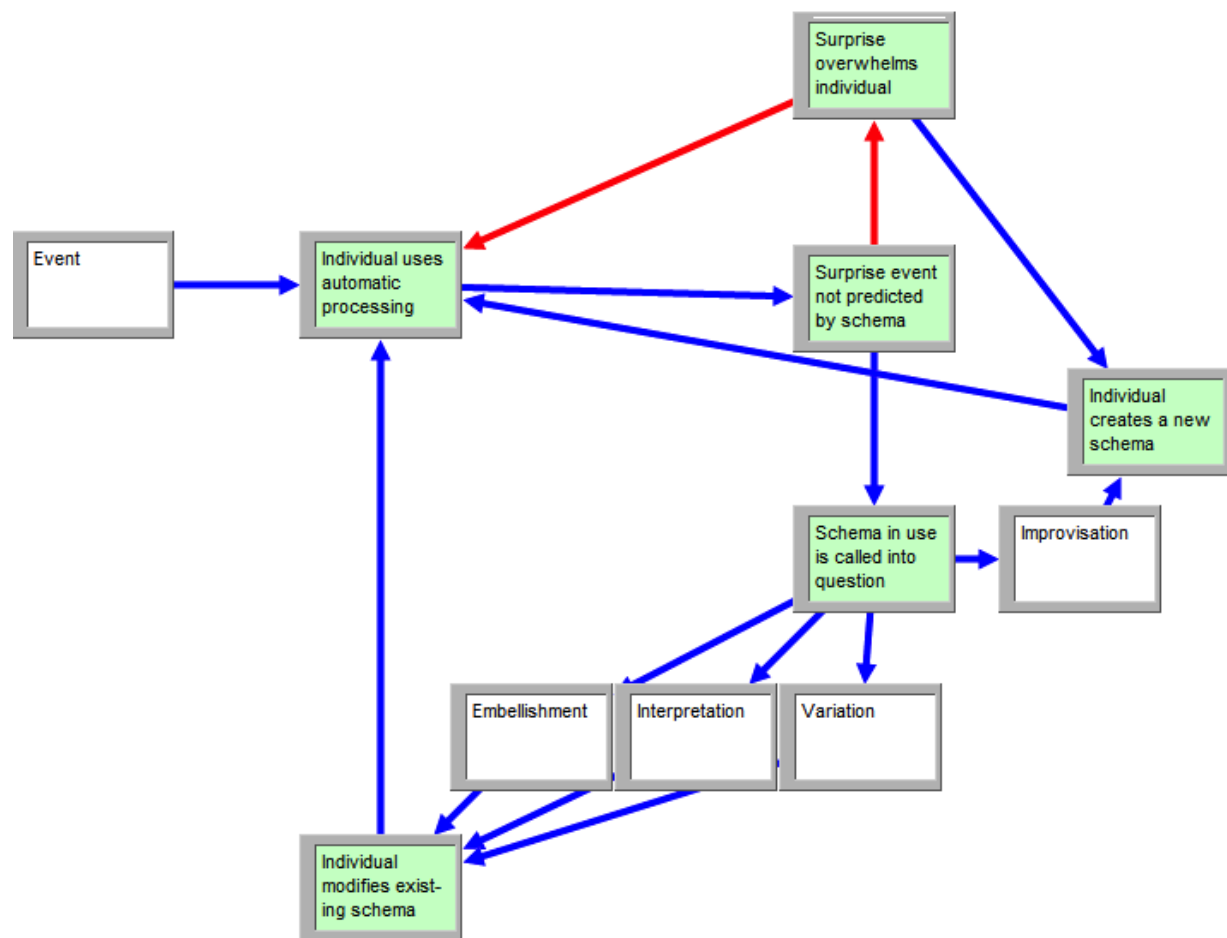
Figure 14 Cognitive processing model[341]

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[337] Tsoukas H. 2005. Afterword: why language matters in the analysis of organizational change. *Journal of Organizational Change Management,* 97

[338] Austin JR. Oct97. A cognitive framework for understanding demographic influences in groups. *International Journal of Organizational Analysis,* 343. A schema is a "cognitive framework that helps the actor organise his or her world and provide meaning and structure to incoming information".

[339] Ibid.343

[340] Stein J. Sep97. How Institutions Learn: A Socio-Cognitive Perspective. *Journal of Economic Issues,* 732

[341] Austin JR. Oct97. A cognitive framework for understanding demographic influences in groups. *International Journal of Organizational Analysis,* 346. Figure adapted from Austin. Stress, anxiety and physiological arousal are the primary causes of threat-rigidity.

Earlier, the thesis reflected on pattern recognition and how individuals cope with uncertainty. In the context of the above schema, individuals would adapt their current schema, through use of embellishment, interpretation, or by varying the existing schema in order to modify it. In these situations, there is a risk that the use of heuristics in decision-making may be inappropriate but is still likely to happen[342]. At best, as part of evaluating any problem, the *facilitator of a workshop would try to identify (and make transparent) the respective schemata employed by participants* in order to identify possible challenges to such schemata[343]. The purpose of the exercise would be to agree on a script to guide further communication and action of participants. Tacitly, we also incorporate our understanding of the dialogue (rather than the script itself), which *should* enable us to communicate more consistently.

In an organisational context, the question is who conducts the orchestra, and according to which script? Is it management of the organisation, through the individuals and processes reflecting the organisation or, by playing the music, does a new script emerge for all those playing and listening? Weick[344] uses the example of the jazz band, which plays without a conductor, its arrangement based on the relationships between members, and their reaction to each other and the audience[345]. An interesting (but useless) proposition would be to hold shareholders of a public institution accountable for the actions of the organisation i.e. as ultimate organ of the institution. Clearly, leaders tend to espouse that they are 'earning' maximum returns for the shareholders (as one of their definitions of success), forgetting that accountability rests with them, and the board of directors (as organ for the shareholders), for acting appropriately in the context of the organisation and the environment i.e. the public organisation must be a self-organising system.

Thus, this thesis has reflected on the relationship between the individuals and the organisation e.g. through communication, exchanging information etc., and the ability of the individual and the organisation to improvise when surprised. Weick sets out the continuum of improvisation, ranging from interpretation, embellishment, and variation, to improvisation,

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[342] Gigerenzer G. 2007. *Gut Feelings: Short cuts to better decision making,* 58

[343] It is a big debate in decision-making whether we can at all cognitively escape using heuristics at all. Much happens automatically and without thinking. To rework all these processes in a deliberate manner seems almost impossible. Therefore, this is the best we can hope to achieve.

[344] Weick KE. 1995. *Sensemaking in Organizations,* 125

[345] Weick KE. 2001. *Making sense of the Organization,* 284 - 303

moving through the range with "increasing demands on imagination and concentration"[346]. In the context of any facilitated workshop, improvisation would only be recognisable in hindsight[347], and requires a subjective assessment of the level of surprise.

If information is the key generator of wealth in post-industrial societies[348], is it correct to conclude that one needs information to become wealthy, and that the organisation needs information to create wealth for its stakeholders? One could reframe that question by stating that, in organisations which are primarily service based, *knowledge* is the key competitive advantage. If such knowledge resides with individuals, it is the organisation's ability to attract and retain the skill that supports its key products which makes it competitive. Secondly, if knowledge is embedded in the organisational processes, *we* (the We in the organisation) require an ability to embed new knowledge, and *change what is embedded* (when desired), to avoid a static 'script/routine' or 'schema'. Thirdly, following Edgar Schein's model of culture, the change needs to reflect in the values, attitudes and behaviours of employees, as well its artefacts, such as technology, for it to be sustainable. It is this collective meaning that exists through "agreed-upon canonical relationships between the meaning of what we say and what we do in certain circumstances"[349] which sets the base from which we change, through "the process of constructing new meanings and interpretations of organisational activities"[350]. "Institutions are, like all other social phenomena, at the individual level *mental constructs*. Changes of such constructs imply learning (remembering) or unlearning (forgetting) about an institution"[351]. There are, therefore, relationships (the measure and causality of which is not part of this thesis) between:

1. Routines of the organisation;
2. Culture of the organisation;
3. Culture perceived by employees;
4. The employees' own routines, values and personalities; and

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[346] Ibid.287

[347] Ibid.291

[348] Boisot M, Canals A. 2004. Data, information and knowledge: have we got it right? *Working Paper Series,* 5

[349] Tsoukas H. 2005. Afterword: why language matters in the analysis of organizational change. *Journal of Organizational Change Management,* 98

[350] Ibid.98 The definition of organizational change from as discursive point of view.

[351] Stein J. Sep97. How Institutions Learn: A Socio-Cognitive Perspective. *Journal of Economic Issues,* 732

5. The attitudes to change by the (institutional) leaders of the organisation (assumed to lead the change), who themselves have a set of routines, values and perceptions.

The change is generated by the interaction of participants in their relevant context. For example, in a setting of academics[352], the facilitator would be there to pose questions, asking the participants to reflect, and the collective discussion generates the insights. These insights can be taken forward by the participants and, if amplified by the organisation, become part of the culture (concept supported by Table 4). Particular to this example, could be that convincing academics that somebody but themselves knows more on a subject matter, is likely to be a challenge. Using their combined knowledge to create insights, which participants generate together, creates the meaning that exists, and forms the basis for the actions and next discursive engagement. The insight becomes as ingrained into the academics' mental model as academic facts, because the collective insight may be regarded as part of their new reality.

The change process that includes the new set of activities in the daily routine, increases the likelihood of such activities being embedded into the system. The deeper the level of embedding (i.e. Layer 3 in Figure 15), the greater would be the effort required to displace a previous insight but, once achieved, the new insight is anchored as well. "The environment imposes different restrictions on the use of distinct categories and routines", and therefore the "level of embeddedness in the coordination structure of links" differentiates the organisation[353].

Weick talks about 1st, 2nd and 3rd order controls that are embedded in the organisation. 3rd order premise controls are embedded in the fabric of the organisation, while 1st order controls are clearly visible (e.g. direct supervision), and 2nd order controls are programs and routines in the organisation. Schein's 3 layer model is more explicit in allocating controls to particular layers.

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[352] Carter H. 2009. Preparation for DBSA Change Process. Example provided by Heidi Carter when talking about culture change discourse at UCT.

[353] Schenk K-E. 2005. Complexity of economic structures and emergent properties. *Journal of Evolutionary Economics,* 232

Layer 1: Artifacts Visible organizational structures and processes (easy to observe and very hard to decipher)	Architecture of physical Language Technology and products Artistic creations Myths and stories, published values
Layer 2: Espoused beliefs and values Strategies, goals, philosophies (espoused justifications)	Propositions that were questioned, debated, challenged, and tested through action Consensus through shared social experience Rationalisation or aspirations for the future
Layer 3: Underlying assumptions Unconscious, taken-for-granted beliefs, perceptions, thoughts and feelings (ultimate source of values and action)	Implicit assumptions that guide behaviour, that tell group members what to perceive, think about, feel about things

Figure 15 Schein's 3 layers of organisational controls[354]

When we consider change as embedded in concepts supporting the proposed model in the context of this thesis, it is the increase of knowledge imparted to /through the organisation, that becomes the enabler (or base) for the individuals and organisation to effect change, initially in their own reality, and thereafter in the organisational context.

Learning of the 2nd order "concerns the institutions as structuration principles" [355]. It also involves the superimposed role of such principles, in governing thoughts and actions of individuals. The institutional change itself equals learning of the 2nd order[356]. Situational changes (e.g. shifts in authority structure, technological breakthroughs), can induce changes of habitual thought and behaviour.

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[354] Schein EH. 2004. *Organizational Culture and Leadership,* 26-36

[355] Stein J. Sep97. How Institutions Learn: A Socio-Cognitive Perspective. *Journal of Economic Issues,* 737

[356] Ibid.737
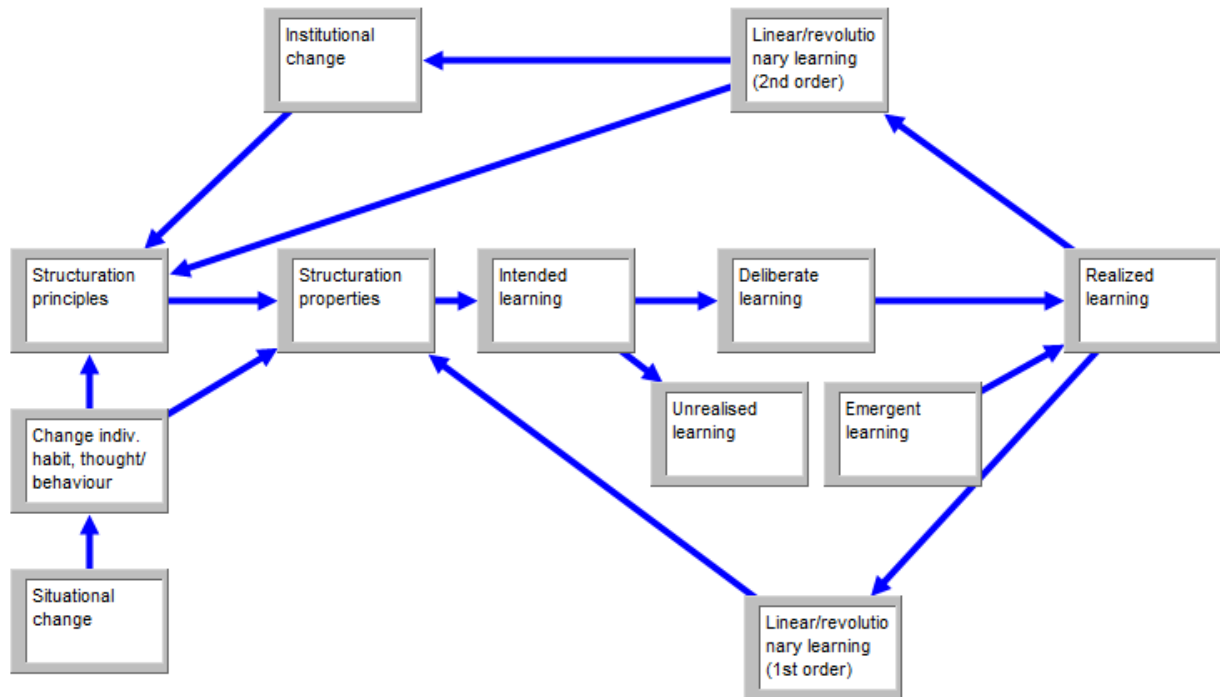
Figure 16 The institutional learning cycle[357]

The perceived and expected *feedback,* following from situational changes, can trigger revolutionary change in structuration principles (2nd order change) and/or properties[358] (1st order change).

If we accept this latter model, and are cognizant of the role and ability of individuals in institutions, the basis for change in organisations would be *imparting of knowledge to key individuals*. The magnitude of such change would be dependent on the nature of the principle and/or the properties being challenged, and possibly changed in the organisation, while the multiplier of change lies in the depth (number of hierarchies and people affected) of embedding of the principle/property being changed. The potential success of the sustained change required, lies in the improved communication of the knowledge throughout the organisation, which increases based on the number of key individuals that are part of the change process (assuming an information-processing paradigm of cognition). The constructivist rationalist position would see sustained change when the organisation, constructed through its members in narrative discourse, enacts the change that is desired.

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[357] Ibid.736

[358] Ibid.738, 737 "Linear learning builds on established knowledge through selection and retention within a collective, while revolutionary learning does not build on knowledge established in a collective. The latter can be seen as a process of deinstitutionalising or unlearning in which anomalies with established knowledge embedded in structuration principles and properties are discovered".

In the *transition* phase "changing the mental structure and involves cognitive restructuring, semantic redefinition, and new standards of judgement" [359] through the following elements of systems change:

1. Disequilibrium - result of internal or external forces;

2. Symmetry breaking - break down existing patterns of interaction or system habits;

3. Experimentation - create new forms or configuration to reformulate the system;

4. Reformulation - select a new configuration[360].

"Replacing an existing belief (i.e. another belief takes the place of the original) indicates incremental change, whereas belief eliminating (the whole memory structure doesn't exist anymore) is equivalent to a revolutionary schema change". Changing, as 'task verb', combines the ontological properties of unlearning i.e. discarding, replacing and reducing[361], and is used in that context in this thesis. Organisational unlearning or changing, as a dynamic concept, applies to beliefs and routines[362], where the change of artefacts is coupled with a change in beliefs and routines to facilitate unlearning[363]. Routines (Figure 23 and Figure 24 below) are a source of learning and therefore unlearning. The concept of routines also includes "decision-making techniques, management practices, and strategies" [364] that are part of the procedural memory (know-how) of an organization[365]. Such routines have the potential for generating changes by closing the *knowing-doing gap,* as a pre-cursor to goal-directed adaptive behaviour.

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[359] Akgún AE, et al. 2007. Organizational unlearning as changes in beliefs and routines in organizations. *Journal of Organizational Change Management,* 800-801 Middle of three steps in change model: unfreezing, transition, refreezing.

[360] Ibid.800-801

[361] Ibid.798

[362] Ibid.798, 797 Beliefs include knowledge, frame of reference, models, values, and norms. Formal and informal behavioural routines, procedures and scripts include standard operating procedures, managerial and technical systems, capabilities and information-sharing mechanisms. Physical artefacts include tools, programming, features of products and product lines.

[363] Ibid.799, 800 Unlearning is the catalytic stage of organisational change, "a change in collective cognition and routines that coordinate organisational change process".

[364] Ibid.799

[365] Ibid.799

2.4   Meaning at organisational level

Motivation for change, i.e. 'the why' change exists, is based on individual needs, whether real or perceived, beliefs, as well as organisational intent[366]. The individual's needs can be divided into psychological, safety, belonging and love, esteem and self-actualisation[367] needs. These concepts can be transported to organisational concepts of, for example[368]: consciousness of financial survival, relationships, self-esteem (focus on improving corporate fitness), transformation (self-knowledge and renewal), organisation (internal connectedness), community (partnerships and supporting local communities), and society (servicing humanity and the planet), resulting in multiple possible realities for organisations in relation to desired positions for each of these. There are obvious trade-offs, but also feedback loops, between such concepts, which create the need for change, and support the change process when initiated. For example, organisations could be said to transition between various stages of their development (or life cycle) primarily through political engagement of internal and external actors[369].

The organisation is one such concept and, depending on the perspective one takes, its definition may change to suit the frame of the viewer. Similarly, organisational change is a concept that must be consistent with the definition of the organisation. Depending on whether the theory regards the *organisation* or *organising* as the key driver of change, the order in which definitions are designed must also be consistent. For example, in the use of discourse "to understand organisational change, we need to engage with it as a discursively constructed object"[370], which we know to be socially constructed. An individual snapshot description of

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[366] Mantere S, Sillince JAA. 2007. Strategic intent as a rhetorical device. *Scandinavian Journal of Management,* 407 Intent, beliefs and desires are examples of intentional states about the world.

[367] Valentine ER. 1992. *Conceptual issues in psychology,* 183, 189 Humanistic psychology (Maslow). An alternative to this would be Idiographic psychology, which sees most important unifying forces in "people as purpose and moral character, and human character as intimately related to, and an outgrowth of, social institutions". An interesting aspect of this practice is that it strives for "direct insight into the vital nature of things as articulated wholes involving the systematic description of the nature and development of consciousness and the inner unity of individual life".

[368] Barrett R. 1998. *Liberating the corporate soul: building a visionary organization,* 67-71

[369] Mintzberg H. 1984. Power and organizational life cycles. *Academy of Management Review,* 207, 221, 220 Exceptions to this statement are closed systems and meritocracies which "can escape temporary state of intense politics".

This engagement results in conflict created through engagement and feedback loops varying in magnitude and scope changing the organisational condition and structure as a result thereof. For example, organisations could change focus from one of service to external constituency to one based on ideology based (identity) and at a later stage to a system that becomes an end in itself.

[370] Grant D, Michelson G. 2005. Guest editorial: discourse and organizational change. *Journal of Organizational Change Management,* 7. Discourse is defined as "the practices of talking and writing, the

the decision is that, through using *a new/changed practice,* an initiative brings an object called 'organisational change' into being i.e. it becomes a material socially constructed reality[371]. In this paragraph, the need to reflect on the *concept* of the organisation, the concept of change in relation to organisation, and communication, has been reiterated.

"Risk (*making and taking*) is of the essence and taken by everybody (*in the organisation and as organisations are part of wider networks of that network*) who contributes knowledge. It is the risk of the unique event, the irreversible qualitative breaking of the pattern"[372], and chance of the unknown (both to the upside and downside), that could lead to success or failure of the organisation. The risks can, to some extent, be mitigated by uncovering and changing the organisational schemas[373].

Social organisations and humans, as two more relevant system levels, are part of the analysis inferring characteristics on each other. The proposition in relevant theories is that organisations either "have information stored in the processes of information transmission between individuals, in records of past events, and in organisational structure" [374] or, at the other end of the continuum, meet criteria for establishing a mind. The latter can be described by the collective mind, which lies in the patterns of behaviour in organisations, which serve as a code or vehicles to represent ideas, which in turn interact in a complex manner[375]. The patterns of behaviour are generated through individual action, informing social processes to produce this collective mind[376]. The relative truth (intentionally combined concept) is likely to be contained in the continuum presented in the organisational and change theory, which decision-makers have to understand in order to increase their knowledge structure of the whole.

2.5   Conclusion, implications

The consideration of abstract concepts to support the notion of integrating principles was appropriate, as it enables discourse, both on a rational level, and on a complexified system

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visual representations, and the cultural artefacts which bring organizational related objects into being through the production, dissemination and consumption of texts".

[371] Ibid.8

[372] Drucker PF. Jan/Feb59. Thinking Ahead. *Harvard Business Review,* 148-150

[373] Walsh JP. May-June 1995. Managerial and organizational cognition: notes from a trip down memory lane. *Organization Science,* 295

[374] Ibid.295

[375] Ibid.295

[376] Ibid.295

level. Including individual and organisational experience provides the room for experimentation necessary to enable innovation and change at organisational and individual levels.

The discourse sets out various rules and schema appropriate to decision-making in the context of high rates of change. It has also provided a sense of where cognitive limitations could prevent resolution of problems based on such limitations and where when sensemaking in social/subjective worlds actually requires focus on dealing with the right problem.

The model described is one that supports thinking about the world/problem context as if it is a system without declaring that it is a system[377]. Feldman[378] posits that it is the use of resources (incl. technology) and rules/schemas in their context that allow us to *separate resources* (here the individual and organisation respectively) *and schemata* (processes, routines and the model itself) *for discussion purposes*. This separation, although artificial, allowed us to try to understand what variables are relevant in decision-making and possibly causes change. The next chapter reflects on strategy formation as a subset of organisation, using the concepts defined and discussed.

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[377] Checkland P, Scholes J. 1990. *Soft Systems Methodology in Action,* 22

[378] Feldman MS. May/Jun2004. Resources in Emerging Structures and Processes of Change. *Organization Science,* 296 quoting Orlikowski

Chapter 3
Strategy formation
A description of process and analysis by discourse

3   Strategy formation

Naturally, organisations as part of society, and strategy formation as a process which is located within organisations, can only be discussed within the context of the current society. By necessity therefore, the model for analysing strategic decision-making would seek to reflect on the development of organisational strategies in the current dynamic environment. This rapidly changing environment is characterised by uncertainty, arising from the scale of change and variability in global, national and local contexts, which impacts on organisational decision-making.

The ultimate purpose of strategising and organising is to "*change* behaviours of people, rather than being ends themselves" "in pursuit of organisation purpose and competitive advantage"[379]. In this thesis, the need for *change* is considered in the context of one organisational process - that of strategising, or strategy formation[380]. Strategising can be used in the sense of "knowing by gaining control", while acknowledging that individual theories may not give adequate meaning to behaviours, e.g. such as those of states, financial systems, organisations, within in the context of the recent financial crisis[381].

Strategy formation as a process is anchored in discourse. It is therefore necessary to reflect on the process of strategy formation, choices inherent in such process and as a consequence of such process, as well as the discourse that forms part of the interplay. The use of discourse (whether by consensus or coercive power[382]) to agree shifts in, for example, structure,

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[379] Pye A, Pettigrew A. 2006. Strategizing and organizing: change as a political learning process, enabled by leadership. *Long Range Planning,* 585, 588

[380] Strategising and strategy formation are reflected upon as one process with different levels of uncertainty built into the outcomes depending where on continuums the organisation and its leader is placed.

[381] For this thesis, the author does not assume control from an organisational viewpoint, requiring the thesis to connect such theories (not subsumed) and through that our understanding of behaviours through organisational learning processes. The processes and systems must be designed to support decision making, problem solving and strategising in the realm of the unknown.

[382] Pye A, Pettigrew A. 2006. Strategizing and organizing: change as a political learning process, enabled by leadership. *Long Range Planning,* 586 The relationship between strategising and organising "can be conceptualised as a political learning process". "Power as a relationship concept is defined through the structurally unbalanced exchange of possibilities of action amongst a set of individuals and/or collective actors".

resource allocation, and even organisational intent, reflects the socially constructed negotiated nature of organisational arrangements.

In that context this chapter will use the concepts developed in Chapter 2 *to reflect on strategy formation in relation to the three dimensions of the model*. The intention is to provide the reader with further definitions and conceptual language used in the strategy formation realm, before reflecting on the model development (and using such language in that description) in reflecting on the system as a whole in the next chapter.

3.1 Strategy formation as a process

A typical strategy process would rely on a set of tasks, such as those suggested by Thompson and Strickland[383], sequenced in order for the strategy formation process to create desired output, including an implementation plan. The obvious risk in making this statement or claim is that it "is the classic machine assumption, applied to strategy: produce all the parts, assemble them as specified, and out comes the strategy"[384].

TASK 1	TASK 2	TASK 3	TASK 4	TASK 5
Developing a Vision & Mission	Setting Objectives	Crafting a Strategy	Implementing & Executing	Evaluating & Monitoring
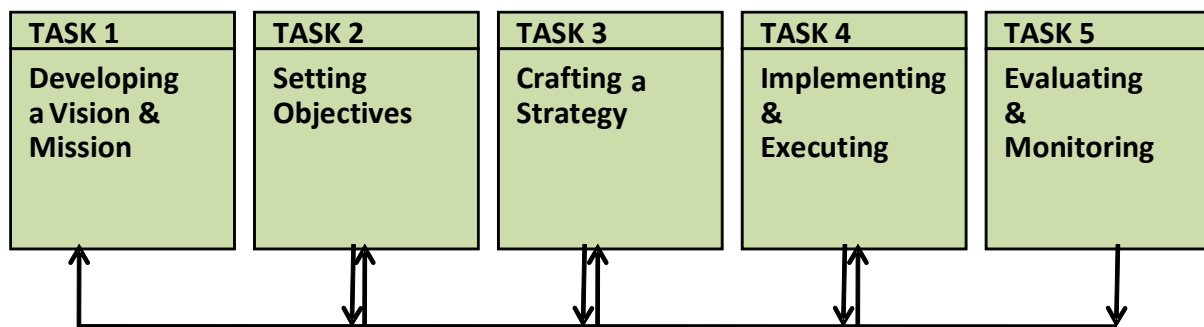
Figure 17 Strategy process

Although the topic itself provides opportunity for extensive discussion, the thesis has created boundaries for the discourse by selecting those aspects which initially assist in dealing with organisations as an open system[385]. The individual within a strategy process would attempt to

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[383] Thompson AA, Strickland A. 1999. *Strategic Management: Concepts and Cases,* extracted from Botha DF. 2006. Strategic Management Lecture. *MIKM,* Slide 53

[384] Mintzberg H. 1998. *Strategy Safari: A Guided Tour Through the Wilds of Strategic Management,* 56

[385] Grunberg E. 1978. Complexity and open systems in economic discourse. *Journal of Economic Issues,* 546, 542 Grunberg uses the term complex to "designate systems which conceptually defy the approach and procedures of even modern non-mechanistic physical and biological sciences". He views such economic system and open system as synonymous, one that is subject to unspecified ceteris paribus conditions, making it infeasible to interpret predictions.

Schenk K-E. 2005. Complexity of economic structures and emergent properties. *Journal of Evolutionary Economics,* 232 "Organisations as a system of economic coordination" then must in my view be subject to the same restrictions, making closure futile.

make sense of the situation (Y-continuum) based on an interplay with organisational and contextual forces, and teams, in an action oriented approach (Z-continuum). Meaning emanates from such interplay. The discourse on strategy formation reflects on whether deliberate or emergent processes are appropriate in the context of the current environment, which is characterised by high rates of change. This section would deal with developing an the understanding of situation and problem structuring aspects inherent in the first three tasks before the balance of the chapter deals with other content and process issues.

Intent[386], in the context of this thesis, can be expressed as the stated strategic intent[387] of the organisation[388]. Intent creates the room for discourse by different actors, on multiple levels of the organisation, with varied perspectives on context, content and process of strategy formation, making tensions visible in order to generate coherence.

3.1.1 Using situation analysis to describe contextual and organisational forces

Variables are not considered in isolation but developed as part of a system of relationships. This system is designed to be in 'balance' for it to reflect characteristics of stability that the organisation strives for (even in the context of high rates of change).

Using the principles of the probability-econometric model (based on linear simultaneous equation models[389]) the purpose of the analysis is to "visualise the outcomes of economic variables as being simultaneously determined by a system of economic relations"[390]. The system would be in various states of equilibrium in which the "economic variable outcomes are jointly or interdependently determined. In this context, interdependence and instantaneous

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[386] Mantere S, Sillince JAA. 2007. Strategic intent as a rhetorical device. *Scandinavian Journal of Management,* 407 "Intent, a psychological concept, is held by a conscious subject, capable of forming intentional states, mental states connected to external reality".

[387] Mintzberg HA, Bruce; Lampel, Joseph. 1998. *Strategy Safari: The complete guide through the wilds of strategic management,* 219 "Strategic intent sets general direction, defines emerging market opportunities, and provides rallying cry for employees. Boisot sees particular value in this concept in situations of environmental uncertainty:".. .strategic intent relies on an intuitively formed pattern or gestalt – some would call it vision – to give unity and coherence ...This yields a simple yet robust orientation, intuitively accessible to all firm's employees, an orientation which, on account of its clarity, can be pursued with some consistency over the long term in spite of the presence of turbulence".

[388] Mantere S, Sillince JAA. 2007. Strategic intent as a rhetorical device. *Scandinavian Journal of Management,* 407, 412. Strategic intent is a "rhetoric device for creating coherence between intents possessed by multiple intra-organisational actors" which when achieved equates to organisational strategic intent. Rhetoric is used in the sense of communicating a managerial conviction rather than a true collective intent.

[389] Funke J. 2001. Dynamic systems as tools for analysing human judgement. *Thinking and Reasoning.* The theory of linear simultaneous equation models has been applied in complex problem solving situations.

[390] Mittelhammer RC, et al. 2000. *Econometrix foundations,* 447

feedback determine outcomes for a set of dependent variables". That then allows the variables to be differentiated into

1. "Endogenous variables, whose outcomes are jointly or interdependently determined within the system through interaction with other variables in the system;

2. Exogenous variables, whose outcomes are determined outside and independently of the simultaneous system under study but that conditions the outcome of the endogenous variables;

3. Predetermined variables, whose values in the current period are predetermined and unaffected by outcomes of noise components in the current and future periods

4. Unobservable equation noise".

"Thus the system of equations consisting of two or more economic variables is determined jointly within the system as functions of exogenous variables, predetermined variables and equation noise"[391].

For example, in line with scenario theory, exogenous drivers as active variables would be more significant for the development of scenarios than the consequences that are reactive variables. Vester defined the active variables as the "effective control levers that will re-stabilise the system once a change has occurred"[392]. Vester does remind us that the explanation for a variable depends on "the position of the variable in the specific system", as in a "different system, the same variable would probably occupy a quite different position"[393], and therefore be explained differently[394].

The analysis is seldom carried out in isolation, but is used as a pre-cursor to problem structuring, and in combination with other analyses and discourse that are part of strategy formation.

The usefulness of situational analysis in a process supporting strategy formation "should be judged (as all models of explanation should be judged) by its ability to help us reflectively understand actual explanations"[395].

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[391] Ibid.448

[392] Vester F. 2007. *The art of interconnected thinking,* 228

[393] Ibid.229

[394] Ibid.229

[395] Farr J. 1985. Situational Analysis: Explanation in Political Science. *The Journal of Politics,* 1093

3.1.2 Problem structuring

Using a process approach to problem-solving, understanding the problem would either follow or precede the description of the system as a conceptual model. The approach to problem structuring can be split into "doing the problem right and doing the right problem"[396], acknowledging that the separation is 'arbitrary' with an 'implied fuzziness'.
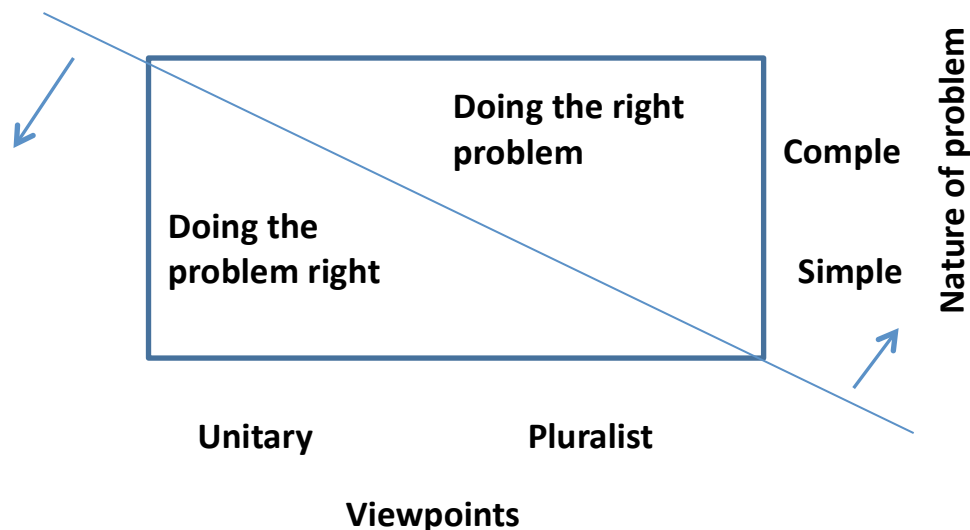

Figure 18 Complexity of problem structuring

Recognising that not all situations have clear goals and alternatives i.e. problems, solutions, participants, choices and the mix of each of these coincide, decision-makers would choose a mix as part of their decision-making process[397]. A problem in such a decision-making process is "simply the difference between what one has and what one wants"[398]. From a sensemaking perspective, "to label something a problem is to imply that is also something to be solved"[399]. It is therefore the act of the *labelling* of the gap, difference, or disparity which, when difficult to close and of significant matter to some agent, can cause the start of the decision-making process[400]. As a starting point of a decision (about finding and choosing

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[396] Curtis NJ, et al. 2006. Doing the right problem' versus 'doing the problem right': problem structuring within a Land Force environment. *Journal of the Operational Research Society,* 1302

[397] Cohen MD, et al. 1999. A Garbage Can Model of Organizational Choice. *Administrative Science Quarterly,* 16

[398] De Bono E. 1990. *Lateral thinking: A Textbook of Creativity,* 53

[399] Weick KE. 1995. *Sensemaking in Organizations,* 90

[400] Ibid.91 As children we discover that every object has a name by observing how adults label things. When we move from passive (recognizer) to active form of categorization, we produce different responses to different kind of objects. Dresch D. 2007. How labelling objects at different levels of abstraction influence object categorization. *Psychological Institute,* 7

courses of action in order to attain some goal)[401], the process would be designed to resolve uncertainty and ambiguity in the problem and in the situation, in order to arrive at a decision (assumed rational process).

The starting conditions and context of a search in a decision-making process, may be success induced or adversity induced, while the measurement of success (or failure for that matter) depends on the aspirations of the individual and those of the organisation, both of which vary over time, and against benchmarks of perceived peers (inside and outside the organisation)[402].

Failure of decision-makers to have sufficient knowledge to start a decision-making process, as set out above, is characterised as the 'anarchic mode', which requires a different approach to process. "Problems are worked upon in the context of some choice, but choices are made only when shifting combinations of problems, solutions, and decision makers happen to make action possible"[403]. An interesting analogy may be to decide whether the chicken or the egg came first, and to then analyse the system of reproduction. However, once you have the chicken or the egg[404], it does not matter who came first, as the system of reproduction allows you to achieve your objective i.e. reproduction. In an anarchic mode, we may, by starting the process of decision-making through belief driven or action driven sense-making, achieve a better understanding of the elements of the situation and define a goal or objective for further discourse. Using emergence as a concept, and as part of the process, requires an awareness of opportunities for identifying risks and opportunities as they arise. This does not suggest that the process itself is deliberate every time, but rather that emergence starts a process of engagement as and when patterns are identified that could lead to opportunities or risk.

Clarity in problem definition is a relative term in the mind of the participants. There are several ways of improving on clarity as the decision-making process is followed e.g. through the descriptions of frames that set the context in which a problem is to be resolved. By their nature, frames require discussion and decisions of what is included or excluded, the latter being key in making the problem manageable from a participant's perspective, owing to the complexity of the situated problem.

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[401] Choo WC, Johnston R. 2003. Innovation in the Knowing Organisation: A Case Study of an e-Commerce Initiative. 6-8

[402] March JG. 1994. *A primer on decision making: how decisions happen,* 31-32

[403] Cohen MD, et al. 1999. A Garbage Can Model of Organizational Choice. *Administrative Science Quarterly,* 16

[404] Popper K. 1963/2007. *Conjectures and Refutations: The growth of scientific knowledge,* Popper stated that an earlier kind of egg and an earlier kind of chicken came first.

The description of the structure of the system is a form of reduction, which assumes that there a simple system (or parts thereof), the structure of which can be used to arrive at conclusions or representations as to the whole. The system described would be one "in which there are:

1.   In principle links between a cause and its effects; *and*

2.   A cause which produces only a limited number of effects making it practically possible to trace the connections between the action and its outcomes over a reasonably long period of time and across reasonably large number of links in the networks we form; *and*

3.   Events that are not completely new i.e. some kind of repetition of the past or the present"[405].

The assumption that may be made by participants of a decision-making process, is that they have clarity of the problem and situation when, in fact, such clarity does not exist. This risk exists as "we infer the existence of events which we are not actually observing, with the help of general principles"[406]. As we are in a complex world, we accept that there is a risk that "much of what is learned is likely to be based on associations between actions and outcomes that are more fortuitous than casual".[407]

In a world where the systematic interrelationship of organisational phenomena cannot be resolved by rational models, reverting to models supported by computer simulation can provide the first step to *seeing* the interrelatedness[408]. This is not separate but in addition to using models, such as proposed by this thesis, to reduce options without eliminating complexity required to produce an approximation of reality. Any system description would be subject to the effects of such selectivity, and would need to reflect on how the expected bias is dealt with, to reduce potential impact on the complete view and balanced perspective.

Recognising that we find ourselves in a special galaxy still requires us to *address the right problem*. That requires leaders/participants to make a choice of the mix of the problem components that can then be analysed and developed. The first reduction made here, is that

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[405] Stacey R. Apr96. Emerging Strategies for a Chaotic Environment. *Long Range Planning,* 183

[406] March JG. 1994. *A primer on decision making: how decisions happen,* 90

[407] Ibid.90

[408] Cohen MD, et al. 1999. A Garbage Can Model of Organizational Choice. *Administrative Science Quarterly,* 16

starting the decision-making process in an 'anarchic' decision mode[409] cannot be resolved by any tool or process. The latter demands the use of 'emergent' strategies based on recognising and capturing opportunities.

If we accept that we may not have the answer, or understand the problem situation fully, a scientist-like attitude is required. Such an attitude requires one to be open to alternate outcomes, using a trial and error approach, and to strive for awareness of possible alternative options in an attempt to explain the unexplainable. With such attitude we hope for early detection of the unexpected in order to innovate.

Ways of dealing with the unexpected therefore include a change of perspectives, by viewing a situation through another lens, by introducing an understanding of possible delays of intervention to reaction, and through the use of different frameworks.

3.2 Multiple perspectives

That in a way describes a "framework"[410], which allows us to direct attention at will, allowing us to ask others to direct their attention in a certain way. The objective would be developing an understanding why and how the use of the continuums require and enable one to use multiple internal and external perspectives that may limit the risk of frame blindness.

Frameworks also "allow us to give names to things so that we can look for them, look at them, and notice them"[411], inter alia "by placing stimuli into"[412] them. Having names and symbols for things allows us to see them ("perception"[413]). "Perceptual frameworks categorise data, assign likelihoods to data, hide data, and fill in missing data" [414]. A characteristic feature of memory is that "uncertainty is absorbed by inferences"[415], which

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[409] Choo WC, Johnston R. 2003. Innovation in the Knowing Organisation: A Case Study of an e-Commerce Initiative. 8

[410] Weick KE. 1995. *Sensemaking in Organizations,* 4 A framework is "a generalised point of view that directs interpretation".

[411] De Bono E. 2005. *The six value medals,* 32, 3 Attaching symbols to frameworks can be powerful, when they become used as a common vocabulary they also become communication tools.

[412] Weick KE. 1995. *Sensemaking in Organizations,* 4

[413] Accepting that perception itself is a conceptual label.

[414] Weick KE. 1995. *Sensemaking in Organizations,* 109

[415] March JG. 1994. *A primer on decision making: how decisions happen,* 91

does suggest that perception based on inferences also edits, and deletes in order to create structure[416], and allows memory to cope.

A first categorisation of perspective would be on the basis of the hierarchical/influence role of the individual in the organisation (separating the individual from the collective as a member of a team). As the organisation's role and complexity continues to increase, the individual's aspirations (and their ability to move within the organisation, its network and to other organisations) change, and the role of management also changes. The roles of employees are not derived through origin or protected legal position, nor even on secure employment, but based on careers that link 'positions arrived at' to 'positions to be arrived at'[417]. One may accept, for the sake of discussing the relevant dimensions, that the role of management has two distinct components: one of *leadership,* and one of *managing,* although both can be, and frequently are, encompassed in one person.

Already this description suggests that multiple perspectives on the dynamics of change of individuals, as employees, managers and leaders – each associated with a different need and goal – and frameworks, are likely to be applied to the context and problem statement at Hand.

In the strategic choice paradigm *the 'how'* of leadership is, in essence, the alignment of the systems with the goals, "making necessary compromises with the constraints of reality that are compatible with the mission and vision"[418], and accepting the responsibility for such alignment.

In a more fluid *paradigm of change,* leadership is where the "CEO's real job is reinforcing and continuity of direction, relentlessly focusing on a few key messages which help employees keep their bearings in large, complex organisations in rapidly changing markets"[419]. The core of this statement is that messages are "direct and unmediated" [420] and are themselves stable, while everything else is subject to change.

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[416] Andres J, Mausfeld R. 2008. Structural description and qualitative content in perception theory. *Consciousness and Cognition,* ''Whatever we infer from perceptions it is only structure that we can validly infer; and structure is what can be expressed by mathematical logic.''

[417] Heelas P, et al. (Eds.). 1996. *Detraditionalization: Critical Reflections on Authority and Identity,* 67 Reference from Niklas Luhmann's *Complexity, Structural Contingencies and Value Conflicts*.

[418] Hsieh T-Y, Drucker PF. Spring88. Leadership: more doing than dash. *McKinsey Quarterly,* 69

[419] Eisenstat RA, et al. July-August 2008. The Uncompromising Leader. *Harvard Business Review,* 54

[420] Ibid.54

A second categorisation would be on the basis of function (both individual, as well as functional units and teams) that are charged with dealing with a subject matter in the organisation.

Furthermore functional areas can be treated as systemic areas across a sector, local, regional, international and world-wide and their influence reflected back into the organisation. Reflecting on this challenge using risk scenarios as an example, "there is growing awareness that insidious, complex and systemic risks cannot be simply controlled… . The illusion that we can control risk is being replaced by a recognition that we can only navigate and adapt to it"[421]. As the *systemic interrelationships* of global, regional and local systems increases, and as the atomisation of society (individualisation) expands, and as our ability to detect, monitor and measure changes increases (without necessarily understanding how to respond), and with technology being the enabler or diffuser of such change (without societies ability to reject the nature or speed of innovation)[422], the expectation for anybody to control seems farfetched. The principle established in the context of risk scenarios is also applicable to other tasks, characterised by high ambiguity, which leaders have to deal with i.e. in those circumstances leaders can only navigate and adapt in their increasing need to cope with change. To repeat for emphasis, the latter is driven by the nature and speed of innovation, primarily by others, as *society does not have the capability or see its role to reject innovation.*

For example, if the organisation were to be seen as a *natural system*, defined as "collectivities whose participants share a common interest in the survival of the system and who engage in collective activities, informally structured to secure this end" [423], goals relate to the survival of the system. On the other end of the continuum the organisation, when viewed as an *open system,* can be defined as "coalitions of shifting interest groups that develop goals by negotiation; the structure of the coalition, its activities, and its outcomes are strongly influenced by environmental factors" [424].

The measurement system at that end of the continuum would change to focus on the process of change that supports inter-subjectivity, quality indicators[425] and skills[426]. Even if an

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[421] Wilkinson A, et al. July 2003. Background and dynamics of the scenarios. *Journal of Risk Research,* 387

[422] Ibid.372

[423] Weick KE. 1995. *Sensemaking in Organizations,* 70

[424] Ibid.70

[425] Eisenhardt KM, Brown SL. Oct98. Competing on the Edge: Strategy as Structured Chaos. *Long Range Planning,* 788 for e.g. in Miramax the recipe/schema includes creating stories with emotional and cognitive

organisation could adopt this stance, it would co-exist in tension with the market reality (requiring productivity), which would continue to require an organisation to report profits, shareholder value etc. that are part of the rational paradigm. Leadership intrinsically will require management of the resultant tension, as internal and external behavioural norms will not be aligned.

The ability of individuals to act together in "contributing, representing, and subordinating actions that form a distinct pattern external to any given individual becomes the medium through which collective mind is manifest"[427]. It is less the ability of individuals to deal with complexity (although not unimportant) that helps in stressful situations. The ability of individuals to relate in a candid way, through their narrative skills, to share their know-how and experience with others, including newcomers, changes the capability of that interaction. Through that, the quality of mind, the likelihood of comprehension is improved and the incidence of error reduced[428]. For example, the power of the interaction in a workshop, if it is designed to achieve consensus, is in the narrative, within which differences can be aligned[429], without losing complexity to an undue extent[430].

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connection with any mature audience, stories which have flawed but sympathetic characters and a clear beginning, middle and end. Finally, that firm cost control exists.

[426] Vester F. 2007. *The art of interconnected thinking,* 101

[427] Weick KE, Roberts KH. 1993. Collective mind in organizations: Heedful interrelating on flight decks. *Administrative Science Quarterly,* 364

[428] Ibid.368

[429] O'Connor KP, Frederick A. 2005. The imagination: Cognitive, pre-cognitive, and meta-cognitive aspects. *Consciousness and Cognition,* 254

"Although there is only one world or ''reality structure,'' our meta-cognitive ability permits us to be absorbed in several possible worlds at the same time, and experience a sense of reality in relation to worlds which do not (and which we sometimes know) do not exist but which nonetheless by their non-existence inform perception. The same perceived attributes may be seen inside distinct and possibly opposing intentional contexts and projects so feeding distinct senses of reality. Intricately wound up with absorption is the intent of the person as personified by projects, positioning and doings in the world. This link is inescapable and nothing can be seen or imagined unless the person acts towards it to bring out its promise and possibility. Hence change in intentional context can change possibilistic context and vice versa. The possibilistic model then proposes that sense of reality can be changed from the margins upwards, as well as by perceptual ''fit'' downwards, and that this explains the easy co-existence of perception and imagination, and indeed the very ability to shift continuously over discontinuous environmental structures".

[430] Boland RJ, Tenkasi RV. Jul-Aug 1995. Perspective making and perspective taking in communities of knowing. *Organization Science,* 356, 361. "Complexification is achieved cognitively through the use of paradigmatic analysis within a narrative framing of experience". "Narrative is experientially grounded and that it is a search for ways to make issues and events of interest to the community sensible within its way of knowing. The causal implications and action sequences in narrative are the source of perspective making for the community, as members reflect upon the underlying logics, values and identities of the community of knowing".

From an organisational perspective, it is when "individuals and organizations are at the intersection of different discourses"[431], and organisations themselves are at intersections or nodes[432] to larger interrelated networked systems, that complexity increases in the systems and makes it difficult for individuals to cope. In that context the different perspectives provide support to strategy formation, acknowledging the expectation that strategies will continually develop based on the interplay of intervention and contextual and organisational forces.

Please visualise each 'spatial area' in Figure 19 as representing a subset of the cube that makes up the morphological space.
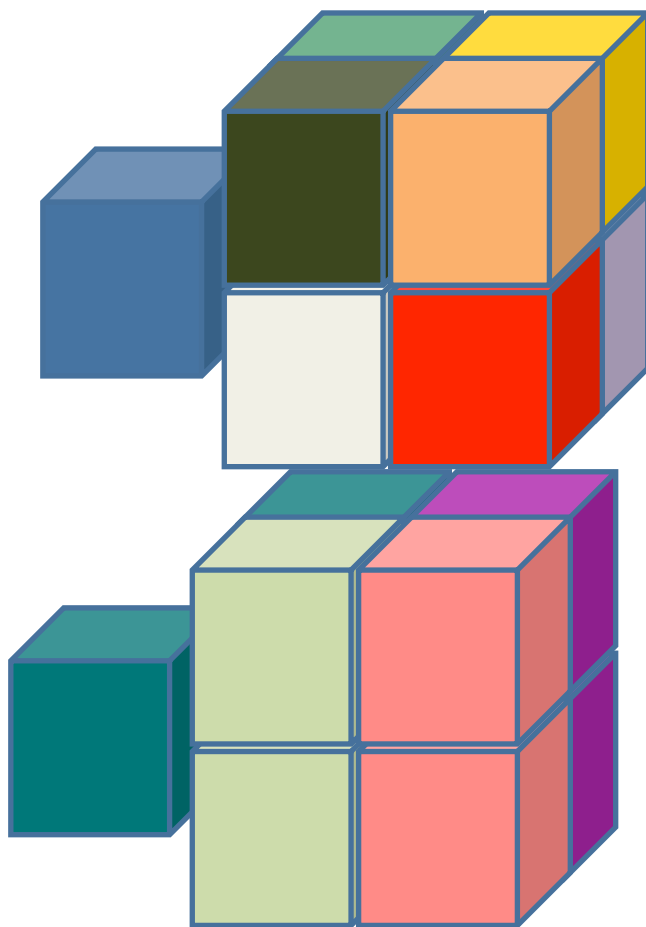

Figure 19 Dividing cube into multiple areas for purpose of discourse

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[431] Tsoukas H. 2005. Afterword: why language matters in the analysis of organizational change. *Journal of Organizational Change Management,* 100

[432] Castells M. 2000. *The Information Age Volume 1 Rise of the Network Society,* 187

Although the cube is split into 8 parts, 4 pillars have been used for the following examples as a further reflection on multiple 'actors' in Figure 19. The frame of reference established in Chapter 2 has been used as guidance.
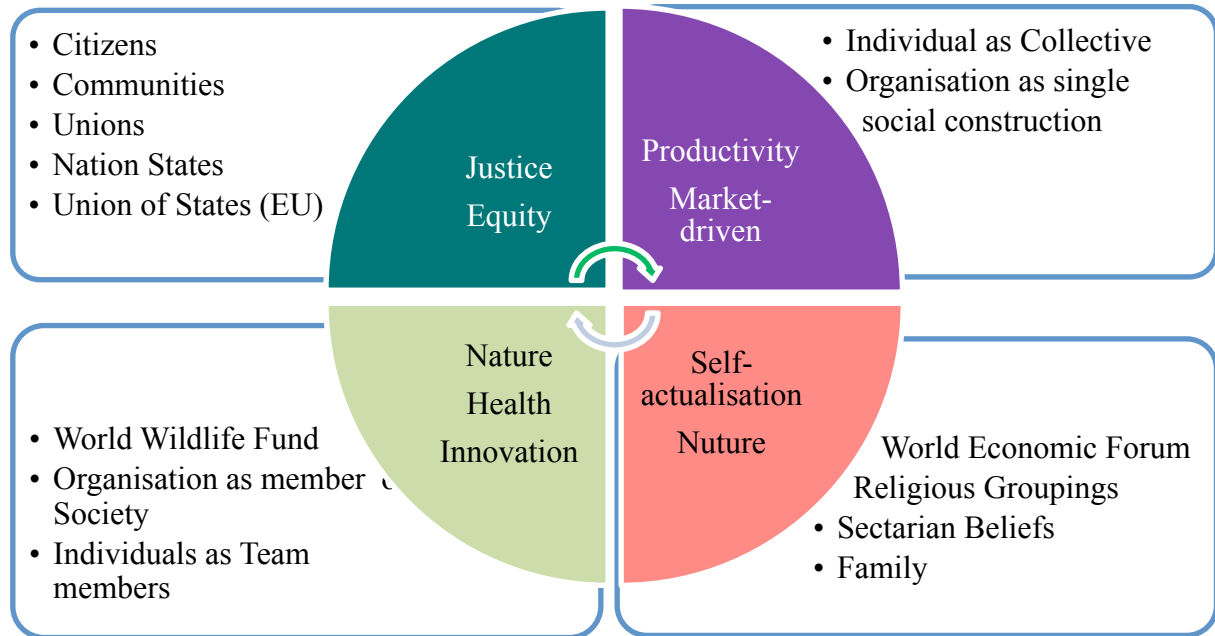
Figure 20 Actors within a complex pluralistic society

In order to reflect on perspectives in context, dominant objectives[433] have also been selected in the centre of the 'ball'. The observer would change his lens of viewing the *subject* depending on whether he is reflecting on exogenous or endogenous forces. As part of the perspective-taking, an objective of the bridging activities that create form, would be facilitating agreement on objectives in order to create social cohesion. In a complex pluralistic society the latter may, in many areas, be unrealistic.

Similarly, we can perform a common factor[434] analysis (generic and specific to a topic) and, at a second conceptual level of analysis, link actors and factors based on a situational analysis in order to provide a system description.

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[433] Acknowledging that there may be additional objectives and different views on which of these are dominant objectives.

[434] One would list many relevant factors but perform analysis of factors that are on a similar conceptual level.
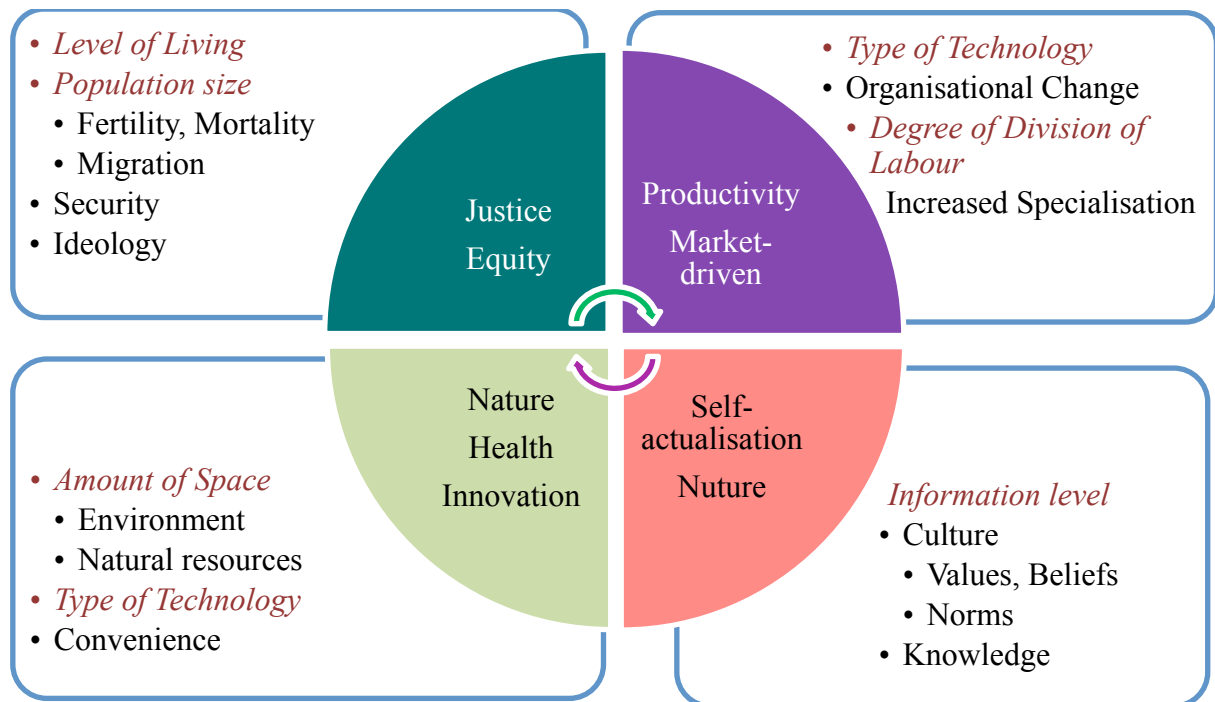
Figure 21 Variables describing level of living

The variables and their respective distribution (factors in italics) set out in Figure 21 have been derived from Bailey's heuristic model, describing a *level of living* of the society, as a concept to support macrosociological analysis of social systems[435]. These variables act as exogenous variables to organisations. In society "the level of a given variable imposes limits on the values of other variables because of their intercorrelations"[436]. It is suggested that this would similarly be valid for variables at the organisational level of analysis.

Strategy formation depends on the framing of the situation and the problem within such, by focus on the primary exogenous and endogenous variables. Strategy formation usually is enriched when the situated problem is viewed through multiple perspectives that the observer and participants of the process (and others) can provide. The next section will reflect on strategy formation as concept and process, linking it to a concept of change that will enable organisations to act in an environment reflective of high rates of change. The desired output from such analysis is a sufficient understanding, in order to make required choices before considering implementation of the strategies.

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[435] Bailey KD. 1982. Post-Functional Social Systems Analysis. *The Sociological Quarterly,* 509
[436] Ibid. 516

3.3 Strategy formation

The concept of *visioning*[437] allows organisations to pursue different roads to the destination, without losing sight of the desired destination.
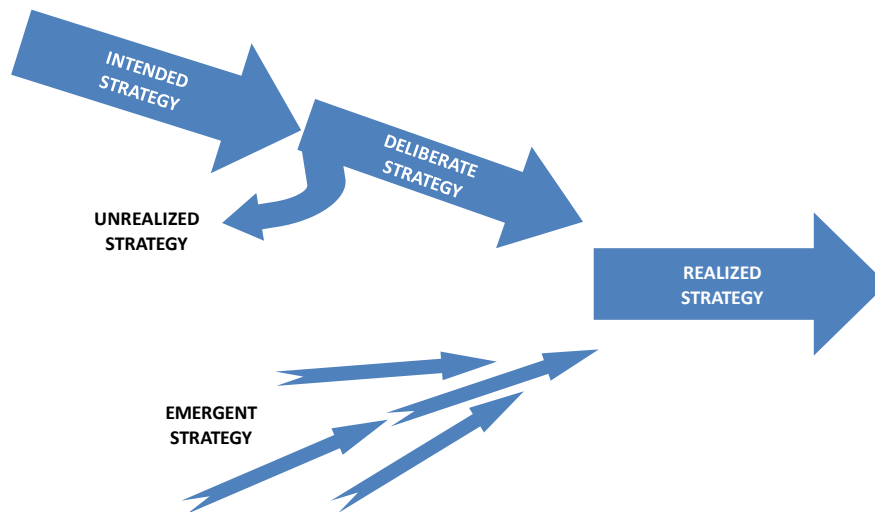

Figure 22 Intended versus realized strategy[438]

The concept of *emergent strategy* is linked to strategy as a pattern (i.e. developed in absence of intention), while a deliberate strategy assumes no unexpected and unplanned interference from the environment, with precise intentions being realized[439]. As neither extreme is likely, an appropriate strategy would reflect the nature of the situation and environment on a continuum between the extremes.

The continual act of strategy formulation plays a key moderating role (the latter being an assumption) in deciding where the organisation is to be positioned (assuming a deterministic frame of reference). When reflecting on organisational sub-systems, balance exists if the organisation's strategy is aligned to the subsystems (e.g. human, cultural, technology), or can exist (as balance is desired by a system out of balance), if actions of leaders (through

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[437] Shipley R, Michela JL. May2006. Can vision motivate planning action? *Planning Practice & Research,* The authors spell out how visioning can engage people in examining the connection of the vision's ends to their values and benefits of spelling out the 'how' of achieving a vision's ends. They also advise that "we don't really know that visioning works, because instances of its alleged effects have not been examined in experiments that hold constant the skill of the planner, the inclination of the community and many other factors that may explain successes attributed to visioning".

[438] De Wit B, Meyer R. 2001. *Strategy Synthesis - resolving strategy paradoxes to create competitive advantage,* The Strategy Concept: 15 Mintzberg and Waters; Slide extracted from Botha DF. 2006. Strategic Management Lecture. *MIKM,* Slide 33

[439] Quinn JB. 1980. *Strategies for Change: Logical Incrementalism,* as published in De Wit B, Meyer R. 2001. *Strategy Synthesis - resolving strategy paradoxes to create competitive advantage,* The Strategy Concept: 16

managing resource allocation) pull the sub-systems of an organisation towards an intended internal alignment.

In a frame that is not deterministic, visioning in an organisation does not give a direct link of the path to be taken to its achievement (and avoids the assumption of necessary causality i.e. the vision stated is one that is understood and can be followed). Practical wisdom (Aristotle's notion) suggests that, in a non-deterministic world, leaders adopt an ethical frame for dialogical activities. It is through such a frame that people make meaning, in terms of a process-oriented notion of the ethical good for a community that gives direction; without such, performance of an organisation cannot be sustained at all[440]. Using strategic intent as a rhetoric device provides such direction, without necessarily reflecting a collective view.

The concept of an ethical frame in the context of strategy, is supported by values[441]. Values are tacit knowledge, and are either declared as a preference, or are part of an implied value judgement in communication. Similar to logic, they can support a decision made, but "are not able to regulate decisions"[442]. "Aesthetically, a value system is purely positional or relative construct"[443]. For example, a personal value could be integrity, but the belief is that those leaders who exhibit integrity in their actions would be rewarded with the prize (however defined, normally position and/or money). "There is an argument that strategy-making is like creating ideologies, suggesting that tight control over core values allows loosely coupled systems to survive and cohere through idiosyncratic local adaptations"[444]. The use of values in this context would suggest that values are 3rd order controls that enable organisations to act in situations of high ambiguity, in which loosely coupled systems are more probable[445]. Coupled to that expectation is the assumption "that shared values would result in appropriate

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[440] Statler M, et al. 2002. Dear Prudence: An Essay on Practical Wisdom in Strategy Making. *Organization,* 17, 26 Effective strategic leadership involves working from the best possible scientific information as well as empowering individuals to respond adaptively to changing circumstances.

[441] Heelas P, et al. (Eds.). 1996. *Detraditionalization: Critical Reflections on Authority and Identity,* 64 Reference from Niklas Luhmann's *Complexity, Structural Contingencies and Value Conflicts.*

None of this means that it is clear that the values and ethics are the 'right' values and ethics. It is just that there is an orientation point which is not simply cost-benefit but some point or orientation which is seen as normative by a community.

[442] Ibid.65 -66

[443] Weick KE. 1995. *Sensemaking in Organizations,* 144

[444] Ibid.113 quoting Peters and Waterman (1982)

[445] Ibid.70 This does assume that organisation as part of a system adapt to the level of ambiguity that it (and its leaders) have to deal with in its structures, processes and environments. The definition of an organisation would be adapted as well.

employee behaviour in such a way that there would be less need for bureaucratic rules and regulations"[446].

"There may be circumstances where targeting values in an effort to effect change in assumptions and beliefs is appropriate, although value change can take a long time to achieve" [447]. Both ethics and values are something we have or aspire to. When we are unsure of a correct direction, our beliefs support sensemaking to guide interpretation and the collection of selected information. This is particularly the case in situations where there is too much information, and expectations are used to focus selection of information supporting such beliefs[448]. The process of strategy formulation is as much about clarifying expectations and beliefs of leaders, as it is about deciding on a coherent course of action. As the discourse attempts to set out, the beliefs of managers and the rest or the organisation will also be impacted by, and in turn influence, the strategic initiative. This is particularly so in an organisation that operates as part of a network, the complexity of which would make it unlikely that a command and control type environment leads to sustainable success.

Although we assume that "there is *no* confusion why change is necessary and that there is positive perception about leader's competence" [449] to inhibit the change target[450], leaders inherently hope that the classification of a problem *(situation)* is clear (enough) to enable an appropriate response.

In order to ensure analysis at the appropriate level of discourse and complexity in strategy formation, the organisation would also have to be classified in relation to the system of which it is part. The systems within the organisation, as well as those larger systems within which the organisation is to be analysed, are specified, and become part of the boundaries which are set. An appropriate classification of an organisation in the banking and financial environment (as well as one in the development finance arena), is one of a dia-logic system i.e. poly-logics of the various country's financial systems, the systems supporting many diverse client-sets in their languages, cultural contexts and countries in a networked society. The organisational system that is part of such a network, is forever evolving and subject to unexpected changes and forces, both centrifugal and centripetal, from exogenous and endogenous factors.

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[446] Balogun J, et al. 1999. *Exploring strategic change,* 41

[447] Ibid.41

[448] Weick KE. 1995. *Sensemaking in Organizations,* 148

[449] Walker HJ, et al. 2007. Factors influencing organizational change efforts. *Journal of Organizational Change Management,* 765

[450] Ibid.765

Compounded by the additional logics of development finance and political discourse, the organisational context further increases complexity, and possible change dynamics are reflected in such sets of *forces*. As systems (applicable to organisations) grow, one is well advised "to introduce metamorphosis and develop a new super-ordinate structure" [451] with sub-structures to support it[452] in their growth.

When reflecting on the systems within the organisation, dia-logic theory would have an impact on the structuring of teams (including executive teams at various levels), that are trying to achieve sufficient diversity for managing variety, but without creating chaos (owing to any lack in ability to communicate[453]). Dialogic theory could also be used to review structure, previously perceived useful, to ensure variety can exist "to enable participatory and emancipatory action that is aimed at engaging the community in bringing all the issues to the table and creating a free, true *organisation-wide* context for *organisation-wide* conversations"[454] and to build a strong common understanding and vision. Accepting, that this is a power-less way of discussing the matter[455], power and interest add further bias and variables for consideration that are part of the poly-logic described above.

Although a thorough analysis of the system would be undertaken, ultimately "the strategist will have to intuitively judge which vision for the future has the best chance of being created in reality"[456]. Mintzberg et al.[457] take this further by 'seeing beyond' constructing the future

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[451] Vester F. 2007. *The art of interconnected thinking,* 68

[452] Ibid.68

[453] Ibid.70 "A typical feature of the chaotic structure is poor communication – irrespective of the system's order of size".

[454] Weick KE. 1995. *Sensemaking in Organizations,* 145. The author of this thesis has replaced public with *organisation-wide,* which goes beyond borders of organisation to include the immediate network of stakeholders.

[455] Morgan G. 1997. *Images of Organization,* 154

The original idea of politics was for "society to provide a means of allowing individuals to reconcile their differences through consultation and negotiation". When applying this idea to organisations, "ways must be found to create order and direction among people with potentially diverse and conflicting interests".

Bernstein RJ. 1976. *The Restructuring of Social and Political Theory,* 187

Idealistically, one may apply Bernstein's point on the promise of practical politics and hope that individuals in position of power (whether through hierarchical position, access to resources or otherwise) would do "what is right and just in a given situation". Naturally, as other (e.g. personal) interests also influence the way the discourse develops, bias cannot be excluded from the decision-making process. The bias is already embodied in what one considers right and just, which may be at odds with various internal and external stakeholders. It is also likely to be embedded in the organisational processes designed to achieve consensus.

[456] De Wit B, Meyer R. 2001. *Strategy Synthesis - resolving strategy paradoxes to create competitive advantage,* 61

[457] Mintzberg HA, Bruce; Lampel, Joseph. 2005. *Strategy bites back: it is far more, and far less, than you ever imagined...* 141

itself. If we could identify attributes and practices that give an advantage, or eliminate a disadvantage, an organisation (through its leaders) would create change, to move towards changing those controllable (endogenous) factors e.g. policies, processes and resource allocation, with part of the success lying in the implementation[458]. The larger the system description designed (i.e. by including environmental factors which, by definition, are exogenous), the looser the coupling would become in the system that an organisation is considered to be part of. The concept of loose coupling is used to describe the duality of autonomy and interdependence that organisations have to reflect on, when dealing with strategy (which by definition is a complex problem).

The definition of *strategy of an organisation* selected in that context is "the pattern or plan that integrates an organisation's major goals, policies and action sequences into a cohesive whole. A well formulated strategy helps to marshal and allocate an organisation's resources into a unique and viable posture based on its relative internal competencies and shortcoming, anticipated changes in the environment and contingent moves by intelligent opponents"[459]. This definition focuses on internal conditions (resources, skills and attitudes of management), and the alignment with external conditions (environment, products, competitors), which must be maintained by taking advantage of any disequilibrium in the market. The use of the word alignment here does not assume a static view of the organisation, nor of the larger system that it is part of, or the world for that matter, but is used to motivate particular drivers of change[460].

The components of the strategy formulation (i.e. context, process, content) are set out in Appendix 1 across these three dimensions, as well as the assumptions that support the need for organisational change and diffusion in an industry i.e. the organisation can be influenced, or influence, based on its relative position in the market. This thesis hereafter deals with the impact of process and context on strategy formulation only, as content would differ in each situation[461].

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[458] March JG, Sutton RI. Nov/Dec97. Organizational Performance as a Dependent Variable. *Organization Science,* 699- 700

[459] Quinn JB. 1980. *Strategies for Change: Logical Incrementalism,* published in De Wit B, Meyer R. 2001. *Strategy Synthesis - resolving strategy paradoxes to create competitive advantage,* 5

[460] Participants choose for various reasons to subjugate their individual interests for the sake of the broader goals and for the moment.

[461] Weick KE. 1995. *Sensemaking in Organizations,* 132. The intention is not to ignore content through which meaning is generated, or that content is embedded in cues, frames, and connections.

Limitations on any strategic decision-making include cognitive[462] and *process* limits. The latter includes "timing and sequencing of imperatives (necessary to create awareness, build comfort levels, develop consensus, select and train people), that constrain the system yet ultimately determine the decision itself"[463]. The challenge is to be aware of these limitations and still be able to proceed with "flexibility and experimentally from broad concepts towards specific commitments"[464].

Organisations would *structure* differently, creating superordinate and substructures to cope with the level of change (in the organisation and the environment). For example, a substructure determined by decentralisation, typically brings the decision-making closer to the customer, with a consequent looser coupling. Hundsnes et al.[465] argue for a balance between decentralisation and centralisation, to establish balance between rigidity (centralisation drives the system towards too many and too strong linkages) and flexibility (decentralisation creates fragmentation which also reduces the strength and number of linkages).

Limits to cognition and process as well as different structures of organisations, make strategy formulation, as a complex space, even more challenging - encompassing "judgemental designing, intuitive visioning, and emergent learning. Strategy formulation is about transformation as well as perpetuation; it must involve individual cognition and social interaction; cooperation and conflict; it has to include analysing before and programming after, as well as negotiating during; and all of this must be in response to what can be a demanding environment"[466]. The challenge to leaders is to design a strategy process at

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[462] March JG. Jun96. Continuity and Change in Theories of Organizational Action. *Administrative Science Quarterly,* 285. Cognitive limits of individuals and organizations arise inter alia from cognitive bias, ambiguities of knowledge and desires, focus on the meta-task level (self) rather than the task performance level, anchoring bias.

McCalley LT. Jan2006. From motivation and cognition theories to everyday applications and back again: the case of product-integrated information and feedback. *Energy Policy,* 132. The paper deals with a goal hierarchy where attention on super-ordinate self-focused goal at the top of the hierarchy decreased attention from a task-oriented goal at the mid-level of the individual's goal hierarchy, which I equate with focus on the self in that context with 'noise'.

[463] De Wit B, Meyer R. 2001. *Strategy Synthesis - resolving strategy paradoxes to create competitive advantage,* 131

[464] Ibid.133

[465] Hundsnes T, Meyer C. 2006. Living with paradoxes of corporate strategy: A complexity perspective. *Journal of Organizational Change Management,* 445

[466] Mintzberg HA, Bruce; Lampel, Joseph. 1998. *Strategy Safari: The complete guide through the wilds of strategic management,* 373 Formation reflects on the ability to act first and then only reflect on and learn from that action.

Voyer J. 1994. Coercive Organizational Politics and Outcomes. *Organization Science,* 73

varying levels of complexity, in order to make the outcome practically applicable in the context of the organisation, having had due regard for the challenges of the environment.

This leads us to the third dimension of strategy, *context* (in which performance is situated), which deals with the environment (internal and external) of the organisation in which the content and process are embedded[467].

As part of the *context* of the situation, the appropriateness of the geographic/cultural context of literature and stories, must be validated in terms of culture in the country in which the ideas are to be applied[468]. As culture is local but stories and theories are often created in history, they may not be applicable in the local context[469].

Strategy is embedded in the local context of the environment (external) and firm (internal). The more local the formation and execution of an agreed strategy, the easier for a leadership to have taken account of local circumstances. It is the distance between formulation of strategy (this in a way assumes that strategy is not embedded) and execution that introduces "noise" into the system. Any increase in the coherence of the story (owing to formulating strategy closer to the action) will reduce communication risk, but increase the risk of possibly not seeing the whole map.

When I drive on any major road in Johannesburg on a regular basis, I know where the potholes are, and where taxis regard the two left and right lanes at intersections as optional for overtaking the other traffic. In the context of strategy, affected parties know the organisational pitfalls after a while, enabling a *process designed in context of an organisation* to produce the strategy (not a statement of quality but of output). Participants in the process, and executives, know most of the likely 'taxis' (e.g. certain board members, key shareholders, other stakeholders) that could overtake the process, to influence the direction the organisation wants to take. Being cognizant thereof, allows leaders to create an agreed output that can be *converted into an outcome (defined as improving viability of the organisation in the context of this* thesis*).*

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[467] De Wit B, Meyer R. 2001. *Strategy Synthesis - resolving strategy paradoxes to create competitive advantage,* 6

[468] Ibid.44

[469] For example, theories that assume optimism would have to be applied with care as, in my view, in South Africa we tend to err on the risk, or downside, rather than to natural optimism (the latter may be more descriptive of the US), even though they can serve us well e.g. recent financial crisis.

3.3.1 Developing the concept of change in relation to strategy

"The study of the process of strategy formulation involves analyses of both discrete and identifiable decision events and the pathways to and outcomes of those decision events, together with the connections between successive decisions over time"[470]. The process itself has certain elements, designed to produce an output and outcome. The elements of the process may be static, but how they are accomplished may change[471]. If, for example, the order of elements could be changed to support the type of question being answered, the outcome may improve. Such change can be assisted by exogenous factors e.g. "of the introduction of a new technology"[472], or the dynamic of interaction in the setting of the workshop, and result in output (a set of alternative actions) and outcomes e.g. new "opportunities suggesting an expansion of what is possible and worth trying"[473]. The dynamic interaction in a workshop is in line with the notion of organisational change set out in Table 4 (level 3 and 4) later. Feldman further concluded that the potential for change is in "the internal dynamics of the routine itself and in the thoughts and reactions of the people who participate in the routine"[474].

The process of engaging in strategy formulation "involves people doing things, reflecting on what they are doing, and doing things differently (or doing the same thing differently) as a result of the reflection"[475]. Here, the question to answer is whether the process of engaging with a particular subject allows the participants to change how they do things, and be more flexible in their future interaction. Of particular interest in the workshop is where the process could enable participants to identify decision-gaps (using Choo's language, refer to Appendix 2), as these are gaps that depend on sensemaking (as an on-going process) and not further knowledge or know-how in order to decide on action to be taken.

If the maxim *structure follows strategy* is appropriate, any change in strategy content could have the potential effect of changing the positioning of an organisation. We could look at the interplay inherent in this concept i.e. a theory of structure first (applicable if strategy is not

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[470] Pettigrew AM. Summer77. Strategy formulation as a political process. *International Studies of Management & Organization,* 78

[471] Feldman MS. Nov/Dec2000. Organizational Routines as a Source of Continuous Change. *Organization Science,* 612 Here the discussion is more generic about routines. Certainly the process of strategy has become routine and accepted in organisations today.

[472] Ibid.612

[473] Ibid.613

[474] Ibid.626

[475] Ibid.625 This is a description of double loop learning

predictable but adaptable), employed by companies such as 3M, and Miramax who, through 'a few simple strict rules' which determine the structure, create considerable flexibility[476]. The requirement for some structure has been explained before, to avoid a decrease in performance that could be catastrophic. The intention would be to allow the organisation to be adaptive, but to keep the identity in that.

The strategy is then situated in a complex, unpredictable world with a shorter-term outlook, requiring the organisation to position itself in a way that enables frequent change. The need for preparing the organisation for evolutionary management and long term strategic planning[477] does not disappear, but does require a different approach. *Change* that happens in the process of strategy formulation displays its emergent qualities (discussed under Chapter 2.2.5 and 2.3) i.e. it is important in the context of such a complex world that strategies emerge dynamically for an organisation to be effective.

Taking us back to the definition of strategy as "resource allocation" in the face of a dynamic[478] business environment, it is through the change of the strategy process (organisational routine) that resourcing is altered, which in turn alters the ability to enact new schemas in this context[479]. The 'emergent strategy' is, in effect, a constant adjustment of the strategic priorities and business capabilities mix which, taking account of the competitive environment, should enable the organisation to improve business performance[480].

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[476] Eisenhardt KM, Brown SL. Oct98. Competing on the Edge: Strategy as Structured Chaos. *Long Range Planning,* 788

Castells M. "Conversations with History" *Regents of the University of California*. 2001.

Castells, in an interview at Berkeley, stated that it is important to have values, but "not too many, few solid values" would do.

[477] Vester F. 2007. *The art of interconnected thinking,* 74

[478] The argument does not make the impact of power explicit - resource allocation through budgeting/planning is a negotiation, which if based on power could introduce bias to decision making. Considering the role of stakeholders is useful in providing multiple perspectives, but such also place multiple demands on the organisation that interact with might have been a purely economic decision.

Even more difficult to separate are power issues that influence group decision making processes designed to achieve a common vision, connecting plan and execution (loose coupling not only the result of lack of integration but also of resistance to change). The socio-political system referred to on a macro-social scale also influences micro-social context and interplay in the organisation based on perceived importance of such influences.

[479] Feldman MS. May/Jun2004. Resources in Emerging Structures and Processes of Change. *Organization Science,* 296. Resources in this context include physical, human and organisational assets that are difficult if not impossible to imitate.

[480] Marchand DA, et al. 2001. *Making the Invisible Visible. How companies win with the right information, people and IT,* 180. Strategic priorities (to be achieved) include: Appropriate mix of creating new business opportunities, delighting the customer, managing risk, managing costs. Business capability mix includes;

Any decision-making process that creates an avenue for managers to coordinate, release or redirect resources enabling them to 'do the work they think they are supposed to do' would, by rational logic, result in support of the process by managers (and any tools embedded in such). Flexibility, if created by the coordination and organisation, enables change, reacting to the environment and selectively pursuing opportunities.

The organisational routine can be characterised by ostensive[481], performative and artefacts aspects that interact and change continuously and endogenously.
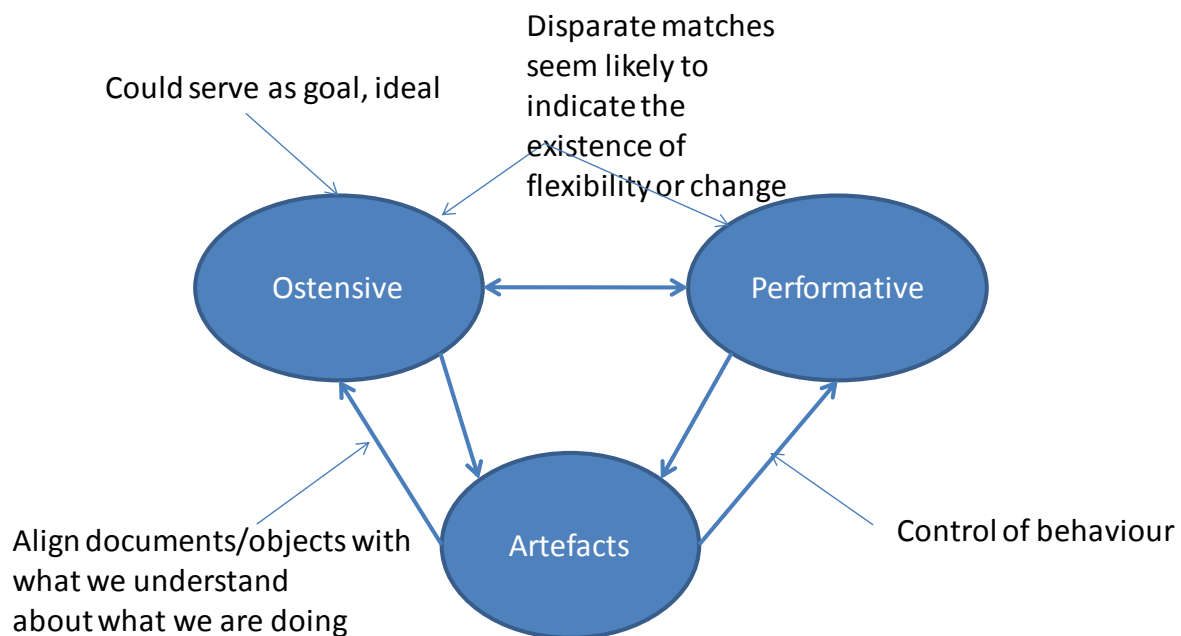
Figure 23 Organisational routines

"The practical effect of any particular rule or procedure (example of an artefact) is often quite remote from its original design or intentions, as the contextual details vary. Thus rules may be regarded as resources for action, but because contexts vary they do not determine performance"[482]. It is the organisation's "specific processes to integrate, gain, and release

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processes (not just strategy processes in this context), organizational structure, people, external relationships and information capabilities.

[481] Pentland BT, Feldman MS. Oct2005. Organizational routines as a unit of analysis. *Industrial & Corporate Change,* 795. Ostensive characteristics are the abstract patterns that participants use to guide, account for and refer to specific performance of a routine. Performative characteristics are the actual performance by specific people, at specific times, in specific places. Artefacts here are the codification or prescription of the routine, or defined wider all objects that participate in the routine.

[482] Ibid.797

resources in order to match and even create market change" that are defined as "dynamic capabilities"[483] and are strategic routines.

As deliberate instrument, rules can be used as instruments of change and stability. In the above case, rules are used as a "source of change: rules adapt to experience and change when experience changes; rules have an inherent capability to generate change merely by its on-going performance"[484]. This particularly may be necessary so as to link specific changes in delivery that are expected to improve performance, to necessary changes in attitude[485]. This is equivalent to fitting identities (power of decision-making) to situations (defining the issue) to determine behaviour (the appropriate rule).

The ostensive quality of the strategy formulation routine, as a dynamic system, "does not simply guide performance but is also created from performances"[486]. By definition, a dynamic system, in which ambiguity is high, would have loose coupling of system components, the nature of which could result in unexpected outcomes, and of a magnitude that cannot be foreseen.

The latter effect could also be due to 'loose coupling' between decisions, action plan, implementation[487] and effect. Changes that cannot be foreseen but still occur despite good information and analysis i.e. changes in outcome owing to the process of change (rather than just effectiveness and efficiency through a change in process)[488], require understanding of the concept of emergence (refer to Chapter 2.2.5). Strategies (the output) "inevitably exhibit some emergent qualities, and when largely deliberate, they often appear less formally planned than informally visionary"[489]. Strategy formulation, like creativity (or as creativity), creates new perspectives (see earlier as to framing of such) as well as *new combinations* (could also be defined as new knowledge[490]) that add to the knowledge structure.

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[483] Tsai C-F, Yen Y-F. 2008. A model to explore the mystery between organizations' downsizing strategies and firm performance. *Journal of Organizational Change Management,* 373 quoting Eisenhardt and Martin.

[484] Espedal B. 2007. Why rules rather than discretion: When the leadership intends to transform a desired policy into reality. *Journal of Organizational Change Management,* 103

[485] Hundertmark T, et al. September 2008 What winning looks like: The four archetypes of organizational health. *McKinsey Quarterly,* 30

[486] Pentland BT, Feldman MS. Oct2005. Organizational routines as a unit of analysis. *Industrial & Corporate Change,* 795

[487] March JG. 1994. *A primer on decision making: how decisions happen,* 196

[488] Feldman MS. May/Jun2004. Resources in Emerging Structures and Processes of Change. *Organization Science,* 307

[489] Ibid.307

[490] Nonaka I, Takeuchi H. 1995. *The knowledge-creating company,* 67
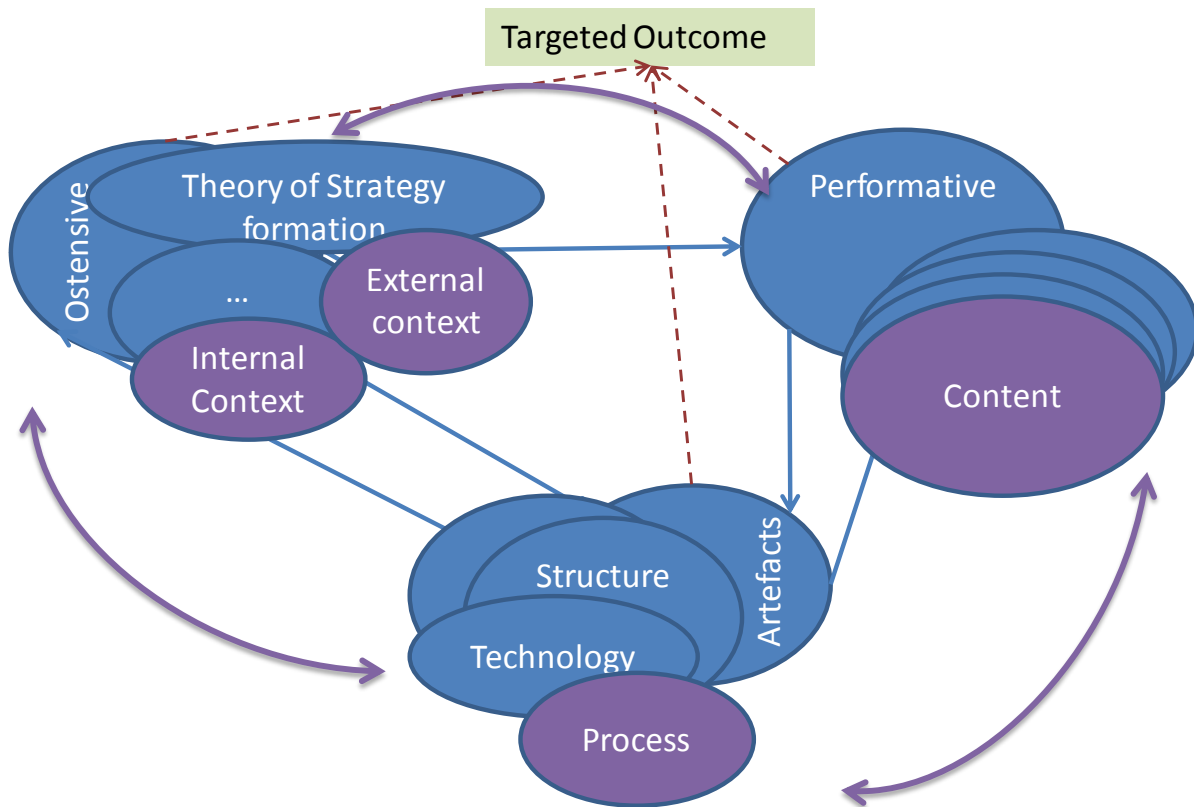
Figure 24 Strategy formation routine

Separating the concepts involved in strategy formulation into content, process and context, enables a visual representation of the layering of possible analysis[491]. The schematic allows us to focus on alternative drivers of change: being the ostensive, the artefact or the performative element of the organizational routine, the levels of analysis (in each of these elements), and interaction between such levels of analysis (both in elements as between elements), being further possible drivers of change. In that latter concept of *concept layering*, the differential speeds and trajectories of such aspects of layers (e.g. economic versus industry versus organisational context) introduce further levels of complexity. In the layers of analysis, we will find embedded elements (process in context or internal context in external context), that are "objects which can only survive because of their embedding in their

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[491] Pettigrew AM. Winter92. The character and significance of strategy process research. *Strategic Management Journal,* 9 Concept of layering and differential speeds, trajectories are based on this article.

One could imagine a top spinning on a table. As the top spins faster or slower, the direction of the spin towards the desired outcome is important, and the interaction is continuous, to retain the energy and start a new cycle of change.

environment"[492]. That means that layers of analysis, as well as elements that are embedded in their environment, have to be identified in order to determine possible levers for change.

3.3.2 Linking organisational change to strategic change

The following table intends to create a link of organisational change to strategic direction and concrete actions to conceptual thought.

Table 4 Organisational change

	Step	Required	Output	Change	Actors	Organi-sation (State)	Strategy (Direction)
	Concrete (actions)						
1	What are key values/beliefs in discourse	Resources	Common language	Communication/ Activities	I/We	People	…
2	Notice, distinguish, connect	Sensitivity to perceive *difference*	Local adaptation, opportunity	Trigger to new ideas	I/We	People	Facilities
3	Interpreted, reflection	Concepts, Selection of stories	Extended category	Challenge to existing routine/ categories through contention and conflict	We	Systems/ Rules	Programs
4	Brought into focus, amplified by managers	Culture encourages risk-taking, adoption of stories	Declarative statement or adopted	Legitimacy through political interaction and complex learning	Organi-sation	Structure	Positions
5	Adopted as new organizational categories/rules	Values Documented	Formal organisational system/ routine	Continual challenge and change to frame of reference	Organi-sation (collective mindset)	Culture	Vision
	Conceptual (Thought)						

Source: adapted from Tsoukas[493], De Wit and Meyer[494]

This would enable a layering of activities, as well as create a mapping of actions to the strategic issues agenda developed in Table 5. The transitions between the levels reflects the

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[492] Prigogine I. Jun87. Exploring complexity. *European Journal of Operational Research,* 99 adapted concept of embedding to use w.r.t. elements of organisational routines.

[493] Tsoukas H, Robert C. Sep/Oct2002. On Organizational Becoming: Rethinking Organizational Change. *Organization Science,* 575

[494] De Wit B, Meyer R. 2001. *Strategy Synthesis - resolving strategy paradoxes to create competitive advantage,* 147-148 quoting Mintzberg and Westley.

change in organisational forms inherent in inter-subjectivity and generic subjectivity (refer to Figure 8).

Routines (Figure 23 and Figure 24 above) are a source of learning and therefore unlearning. The concept of routines also includes "decision-making techniques, management practices, and strategies"[495], that are part of the procedural memory (know-how) of an organisation[496]. Such routines have the potential for generating changes by closing the *knowing-doing gap* as a pre-cursor to goal-directed adaptive behaviour.

Through changing beliefs[497], we enact changing routines, and vice versa, keeping the top spinning, and causing formulation of strategy to be on-going (as suggested by Figure 24). *Difference,* inTable 4, above, is not defined as bad or deficient, but simply as different to one's expectations (created by beliefs) or benchmarks (created by routines) set by the organisation or externally, which the I/we chose to amplify, selected from amongst other differences. Artefacts, in this context, are a result of prior learning, recording 'knowing' and acting as stimuli and memory[498] to the organisation.

The change processes (based on level in hierarchy) that affect the top two levels (level four and five in **Error! Reference source not found.**) could be considered strategic in outcome, ndependent of the initial intent. However, the process may start at any level in the organisation, in something as simple as a discourse aimed at why change is desirable. Mintzberg states, in the context of strategy formulation, "informed individuals anywhere in the organisation can contribute to the strategy process"[499] and that "*the floor of the organisation is where knowledge for strategy making lies*. The management function is to be in touch with 'all sorts of people' to champion "their initiatives and so stimulate the process by which strategies evolve"[500].

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[495] Akgún AE, et al. 2007. Organizational unlearning as changes in beliefs and routines in organizations. *Journal of Organizational Change Management,* 799

[496] Ibid.799

[497] Ibid.799, 800 as beliefs and routines are interrelated, varying the other as one changes (covariate).
In this context "beliefs explain the world in terms of cause-and effect relationships, in interpretive schemata that map the experience of the world as mental models, and cognitive frames".

[498] Ibid.799

[499] Mintzberg HA, Bruce; Lampel, Joseph. 2005. *Strategy bites back: it is far more, and far less, than you ever imagined...* 178

[500] Mintzberg HA, Bruce; Lampel, Joseph. 1998. *Strategy Safari: The complete guide through the wilds of strategic management,* 159

To ensure change is sustainable, all employees need to be involved. The concept of *sustainability* has elements of a social system i.e. energy, coordination and direction which, if not supported by the employees of organisation, would lead to a slow-down or stalling of the organisational momentum. This would mean that, for change to be sustainable, it must be embedded in the 'floor' of the organisation, including the routines of the organisation, and be supported by the leadership. One could conclude that sustainability in an organisation is achieved when "a collective social system naturally survives changes in leadership"[501], which supports the notion of a self-organising system in environments that are characterised by high rates of change.

"Human adaptation to *transition* occurs in two stages i.e. abandoning one set of assumptions and the developing a fresh set to enable the person to cope with their newly altered situation"[502]. It is the preference of individuals for change, their interest in the subject matter, as well as a propensity for risk taking, that causes such individuals to deal with mismatches in current behaviour (compared with the *perceived* norm)[503] to engage in a discourse (or being engaged by their peers), and to start the organisational process. It is possible to focus on any dimension of belief or routine, and to change it on an incremental basis, thereby increasing the rate of change (in its three dimensions of magnitude/amplitude, scope and pace[504]) at which leaders are ready (capable and attitude) to cope with organisational change.

Feldman referred to change as the "movement of the individual agent and the collectivities to which the individual belongs" [505], in their construction of understanding and relationship to the organisation and their own ideals and values[506]. Such movement is in line with Weick's levels of analysis, where it is the movement between generic subjective and intersubjective that causes change. The power of accumulated small changes embedded in the organisational

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[501] Mintzberg HA, Bruce; Lampel, Joseph. 2005. *Strategy bites back: it is far more, and far less, than you ever imagined...* 160

[502] Marks ML. 2007. A framework for facilitating adaptation to organizational transition. *Journal of Organizational Change Management,* 723

[503] Sun PYT, Scott J. 2005. Sustaining second-order change initiation: structured complexity and interface management. *The Journal of Management Development,* 887

[504] Tsoukas H, Robert C. Sep/Oct2002. On Organizational Becoming: Rethinking Organizational Change. *Organization Science,* 148-150 Pace is decomposed into timing of change and tempo of change.

[505] Feldman MS. Nov/Dec2000. Organizational Routines as a Source of Continuous Change. *Organization Science,* 625

[506] Ibid.625

processes, driving continuous improvement, enables competitive success[507]. The power of individuals to speak up about small failures, ask for help and to share ideas and best practices is granted by the leader and the organisational culture. For example:

1. Seeing the process of benchmarking as learning, and improve ways of operating[508] (and not to punish deviation) ;

2. Highlighting of discrepancy is good as it allows the organisation to try to understand and deal with it, including identifying changes that need to be made.

The preference of individuals to take risk is therefore closely linked to "the managerial mind-set that enables efficient execution (being close enough to the 'floor' of the organisation) as this mindset can also inhibit employees' ability to learn and innovate"[509]. This would be the case if there is reluctance by employees' to take the risk of taking up the manager's time, thereby preventing critical information and ideas from rising to the top[510]. The *relationship* between the employees and their managers, enabling a flow of ideas and information (both ways) is a critical enabler of change as set out in Table 4 and Table 5.

As reflection in itself requires discipline and time to be set aside, the fact that an organisation invests in slack time and resources that support disciplined thinking, would create the platform to achieve and sustain excellence[511].

In relation to "strategic situations *change* is typically the result of many small events and actions that are unclear, ambiguous, and confusing, with consequences that are unknowable"[512]. Moreover, "it is not the decision of the entrepreneur whether he wants to make risk-taking decisions with long futurity; he makes them by definition. All that is within his power is to decide whether he wants to make them responsibly or irresponsibly, with a rational chance of effectiveness and success, or a blind gamble against all odds"[513]. Understanding that some luck is always involved, and that we are not in control of destiny

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[507] De Wit B, Meyer R. 2001. *Strategy Synthesis - resolving strategy paradoxes to create competitive advantage,* 153

[508] Edmondson AC. July-August 2008. The Competitive Imperative of Learning. *Harvard Business Review,* 62

[509] Ibid.62

[510] Ibid.66

[511] Ibid.67 Organisation such as 3M have been heralded as examples by planning for 15% of 'slack' time in order to support innovation by their staff. Nordstrom K, Ridderstrale J. 2002. *Funky Business - Talent makes capital dance,* 224

[512] De Wit B, Meyer R. 2001. *Strategy Synthesis - resolving strategy paradoxes to create competitive advantage,* 383

[513] Drucker PF. April 59. Long-range planning. *Management Science,* 248,

per se, the *key assumption* still is that a structured process can help organisations and their leaders, when deciding on the desired path to the articulated vision. Part of the process of strategy formulation must then be to create clarity of understanding, and to remove ambiguity and confusion, where possible, to enable leaders in the organisation to define for "the entire organisation what the direction, the goals, the expectations are"[514], separating these from the day-to-day decisions managers make to achieve them.

Such direction will, by necessity, involve understanding what and how to change, which is facilitated by linking the change to the organisation's strategic issues agenda. Using Table 4 categories allows the following categorisation in relation to strategic issues:

Table 5 Strategic change

	Step	Output	Change	Strategic Issues Agenda	
	Concrete (actions)			What	How
1	What are key values, beliefs in new discourse	Common language	Communication/ Activities	Unwritten list of issues, aspirations, challenges	Identify these through discourse
2	Notice, distinguish, connect	Local adaptation, opportunity	Trigger to new ideas	Detecting and selecting small disturbances	Experience-based intuition and ability to detect analogies between sets of circumstances
3	Interpreted, reflection	Extended category	Challenge to existing routine/ categories through contention and conflict	Alter mental models, existing company and industry recipes,	Destroy existing perception and structures *Select* new stories
4	Brought into focus, amplified by managers	Declarative statement or adopted	Legitimacy through political interaction and complex learning	External or internal pressures force a choice at critical points Outcome on whether or how to proceed to action is unpredictable	Push for organisational attention; Build special interest groups *Adopt* new stories Influenced by context of power, personality and group dynamics
5	Adopted as new organisational categories/rules	Formal organisational system/ routine	Continual challenge and change to frame of reference	New frame of reference within which managers interpret what to do next	Shared memories; build a business philosophy, culture
	Conceptual (Thought)				

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[514] Ibid.242 "For this organisation to be functioning, two things are needed: knowledge by the entire organisation what the direction, the goals, the expectations are; and knowledge by top management of what the decisions, commitments, and efforts of the people in the organisation are".

Source: Strategic issues agenda adapted from Stacey[515]

The categorisation in the table does not intend to show a normative process, but purports to allow reflection as to how change in a strategic process unfolds. Through an on-going narrative discourse, the outcome itself does not become predictable, but the organisational readiness does improve. The lack of predictability is inherent in the structure of an open system, but does not remove the necessity to engage in the process of strategy formulation or decision-making[516].

Although initiated in level one and two, strategic change is the process/routine of change, supported by the organisation from level three. As in Table 4 above, only from level four do the changes become strategic in nature, as further action is possible owing to support by the organisation. Even if no action may be evident, learning (or unlearning) processes have taken place for participants, which could feed into the next process, increasing the decision-maker's readiness for change. That is why feedback mechanisms are not necessarily linear or proportional to the input.

The need for the behavioural support of change (a task with low programmability) is higher, as the ability to create a programmed change is lower, creating increased capacity for improvement based on support by leaders.

Having adopted a change process that reflects specific actions and expected outcomes, the probability of success (achievement of goals as defined by the organisational model) is likely to increase (an assumption of causality).

This conclusion is subject to several risks. The risk is that "our categories condition the disposition we adopt towards the world"[517] which, once we are *aware* thereof, allows reflection on any predisposition created by such categorisation. We do need to recognise that "awareness of a problem does not mean much - particularly when you have special interests

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[515] De Wit B, Meyer R. 2001. *Strategy Synthesis - resolving strategy paradoxes to create competitive advantage,* 383- 384

[516] Drucker PF. April 59. Long-range planning. *Management Science,* 242 Drucker refers to managers who are inundated with new information. "He (the manager) breaks down; and his breakdown will take either of the two forms known to any experimental psychologists. One is withdrawal from reality, i.e., "I know what I know and I only go by it; the rest is quite irrelevant and I won't even look at it". Or there is a feeling that the universe has become completely irrational so that one decision is as good as the other, resulting in paralysis. We see both in executives who have to make decisions today. Neither is likely to result in rational or in successful decisions".

[517] Boisot M, Canals A. 2004. Data, information and knowledge: have we got it right? *Working Paper Series,* 19

and self-serving institutions in play"[518]. Adding to this risk is that, in organisations under turbulence, where *change* is defined as nontrivial, rapid, and discontinuous[519], the result would probably also be unexpected[520]. The latter itself is not an issue if it were not for the possibility that the consequence of the change may be significant.

The organisational ability to cope with such revolutionary changes on a frequent basis would, however (in my opinion), be the exception. The organisational form, as it currently exists, is designed for stability i.e. its frame needs to weather changes, and still allow it to move forward. Similar to a solid car frame, too many heavy shocks reduce its life expectancy.

"Abnormal fluctuations have also been observed in many biological problems (growth rate near puberty) and indicating a catalytic effect, with a long induction period, as is the case in combustion"[521]. In a social context, Malcolm Gladwell has popularised a number of ideas from studies of complexity in 'Tipping Point' ("name given to the dramatic moment in an epidemic when everything can change all at once"[522]). He sets out dynamics of people, organisations and societies that are contagious, build up towards a change, and then a small, seemingly innocuous event seems to cause the resultant big effects that happen in a hurry[523]. In change theory, the inflection curve has an inflection point around which the forces facing us as individuals and organisations, as well as society, can change our ability to survive. "Social change is so volatile and so often inexplicable, because it is in the nature of all of us to be volatile and inexplicable"[524].

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[518] Taleb NN. 2007. *The Black Swan: The Impact of the Highly Improbable,* 47

[519] Yu BTW, Ming TW. 2008. Effects of control mechanisms on positive organizational change. *Journal of Organizational Change Management,* 396-397

[520] Gladwell M. 2001. *The Tipping Point,* 184

[521] Prigogine I. Jun87. Exploring complexity. *European Journal of Operational Research,* 101

[522] Gladwell M. 2001. *The Tipping Point,* 9

Examples of discontinuous change would include metamorphosis of the organisation into substructures or new superordinate structures in the:
  1. Organisation; e.g. Gore Associates (GoreTex) mentioned as an organisation which splits its substructures into units of less than 150 staff, enabling flat management structures and social coherence in the organisation);
  2. Society; e.g. the proposed new financial oversight structures for previously unregulated financial instruments and possibly Financial Institutions themselves.

[523] Ibid.7-9 setting out example of wearing of hush puppies and New York Crime rate.
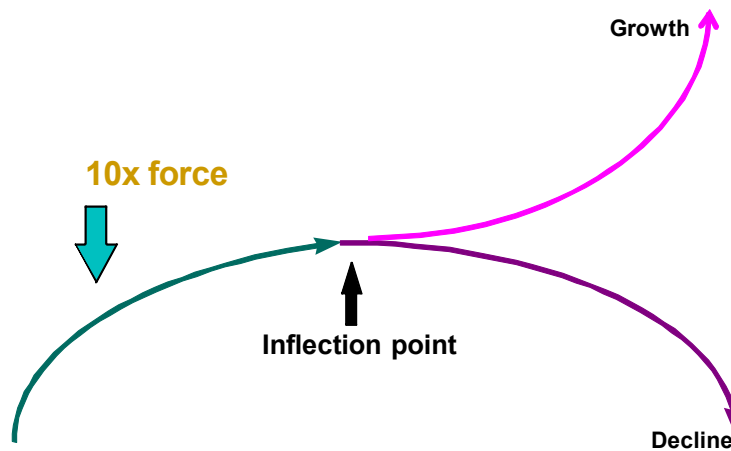
[524] Ibid.259

Growth

10x force

Inflection point

Decline

Figure 25 Forces around the inflection point[525]

Based on Drucker's analysis[526], society today is *(again)* at an inflection point (period), the nature of which will only be understood after the period of change which occurs 35 to 45 years after a fundamental shift in society. The real controlling resource in that *new* society is knowledge[527] i.e. the *knowledge society*. Any transition period bears challenges and opportunities that are new to society, and therefore the organisations that are part of it. New is not good or bad, it is different from before. As such, technological change has been an enabler of change designed by humans. The difference today, to 50 or 100 years ago, is that our enablers have become more powerful, resulting in a higher impact of changes (in addition to population density that increases the number of humans impacted by the technology). It is the *belief* that "tipping points are a reaffirmation of the potential for change and the power of intelligent action"[528], that makes this process so interesting, as "the world is not immovable, … and can be moved with the slightest push in just the right place"[529]. The recognition of tipping point as a phenomenon sounds easy, and sometimes is in hindsight (sometimes many years later), but the description is not meant to be used mechanically. As we are unlikely to know where to push in complex systems, the art lies more in the actors than the system.

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[525] Strümpfer JP. 2006. Strategic change frameworks. Extract from slides.

[526] Drucker PF. Fall92. The post-capitalist world. *Public Interest,* 91 based on analysis of time-frames provided.

[527] Ibid.93

[528] Gladwell M. 2001. *The Tipping Point,* 259

[529] Ibid.259

In systems where the pressure mounts, "a linear transformation system is turned into an interactively complex transformation system, and the previous loose coupling is replaced by a tight coupling", both caused by the steady loss of information "owing to limits on human resilience, attention, sensemaking and the complexities of technology"[530]. To avoid this loss in cues, when they are critical to survival, any response must address these limitations and manage the complexities. Part of such response could be an attitudinal change, combined with the appropriate (yet undefined) risk propensity of the leader, which together can assist in reducing loss of cues, and prepare the organisation to react to changes in the environment, and which in turn provide the opportunity to create a revolutionary change.

In this dynamic world, a dynamic concept of strategic management sees the organisation as an open system that has *dynamic processes,* by which it identifies and develops strategic resources on an on-going basis. The competencies of organisations include process capabilities, that enable organisations to develop internal resources or capabilities, to access new external resources, to define new organisational goals, and to coordinate changing arrays of available resources and capabilities in pursuit of an evolving set of strategic goals[531]. The role of institutional leaders changes, as decision-making is widely distributed, and needs to be brought into alignment with the information, expertise and other resources required to make good decisions at various levels of complexity in the decision-making process. The content is devolved[532] to managers, while the strategic boundaries and guidelines stay part of the leaders' mandate. *Leadership becomes a process for creating self-organising systems*[533], which is in line with the dynamic complexity of organizations and environment. "The objective is to enable better interpretation of and faster response to complex, dynamic environments and their attendant uncertainties"[534].

Using strategy formulation (as a routine defined in Figure 24) as an example, it cannot be said to be an ostensive aspect of organisational routine, or even an artefact, unless it is as living as the organisation it purports to represent. Organisations are described as constantly evolving, dynamic entities[535]. The strategy process, then, has to make use of all resources that

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[530] Weick KE. 1995. *Sensemaking in Organizations,* 131

[531] Sanchez R. 1997. Strategic management at the point of inflection: Systems, complexity and competence theory. *Long Range Planning,* 942

[532] Ibid.940

[533] Ibid.945

[534] Ibid.945

[535] Tovey C, A. 2002. Tutorial on Computational Complexity. *Interfaces,* 32 -33

allow an organisation to deal with living customers, dynamic markets and evolving technologies, by selecting participants to have a conversation about the situation and what to change, with committed and knowledgeable people[536] in a search for improvement.

With these conclusions, this thesis has started to develop a position that the workshops, as part of a larger on-going process, in time can become a 'schema' (holding general knowledge about objects, actions, and events[537]) through which the organisation enacts its alternative futures.

Such a schema, through enactment, can represent the dynamic nature of the 'living' world, with the ability to experience it in a supportive environment. In the context of a larger systemic environment, "a complex adaptive system consists of a number of components or agents, interacting with each other according to a set of rules, called schemas, in such a manner as to improve their behaviour and thus the behaviour of the system which they comprise"[538].

In the formulation of strategy, adoption of models such as the one proposed by this thesis requires training of managers at several levels in the organisation. Workshops across hierarchical levels are likely to generate ideas that managers can amplify, and when adopted by the organisation, cause the organisation to adapt.

When the routine is placed in the context of the rate of change, "time is central, and organisation drives strategic moves"[539], which is why we can equate *communication* of such changes by leaders, as *organising*. Time is relevant: by looking further into the past and further into the future, as well as defining the strategy around how often change is required, it relentlessly measures the outcome of changes, to adapt where required[540]. The challenge to change in social systems is that "stable systems do not exist in reality"[541]. We may, however,

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[536] Ibid.32 -33

[537] Westbrook L. 2006. Mental models: a theoretical overview and preliminary study. *Journal of Information Science,* 566

[538] Stacey R. Apr96. Emerging Strategies for a Chaotic Environment. *Long Range Planning,* 183

[539] Eisenhardt KM, Brown SL. Oct98. Competing on the Edge: Strategy as Structured Chaos. *Long Range Planning,* 789

[540] Ibid.789

Drucker PF. April 59. Long-range planning. *Management Science,* 241
"This lengthening of the time span of commitment is one of the most significant features of our age. It underlies our economic advances. But while quantitative in itself, it has changed the qualitative character of entrepreneurial decisions. It has, so to speak, converted time from being a dimension in which business decisions are being made into an essential element of the decisions themselves".

[541] Grunberg E. 1978. Complexity and open systems in economic discourse. *Journal of Economic Issues,* 544

observe apparent stability when we create a boundary on the situational analysis, by using a very short time frame or snapshot position when reflecting on a problem. Similarly, a very long time frame may support observations of relative stability as the system returns to its natural state of disequilibrium. The thesis is concerned with the change in the state of organisations and an approach that enables institutional leaders to cope with the rate of change in the environment.

Based on the discourse in the thesis, strategy formation is distinct from a mechanical cause and effect approach, and requires a more holistic approach in turbulent times. Such an approach is embedded in the structure of the whole framework and of the continuums (yet enabling consideration of change through the variation in time, speed of interaction and dualistic nature (categorical dichotomies) that are reflected in the poly-logics of the components). It will include the following characteristics:

1. The approach applies to the subject and also to the whole organisation.

2. The holistic approach would, in particular, consider low-mid management in their action to support strategic initiatives, and (in)voluntary reaction if and when their identity is impacted,

3. The unit of analysis is longer (time including feedback and reconfiguration owing to implementation) and more comprehensive than a workshop process itself. It is comprehensive as it is on-going, as strategy (and organisations) reconfigure as they develop,

4. Strategy formation includes execution and interplay - these change as they emerge, based on action/reaction of chosen intervention,

5. The organisation is seen as part of a network, and not on its own, requiring analysis of the whole in order to enable synthesis,

6. The proposed model ensures that coverage, as defined by selected variables and continuums, represents more of the whole[542]. The latter links coverage of the subject matter of strategy formation to morphology as discourse, shifts the picture based on

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Treating an organisation as an economic system does not, in itself, involve a reduction of complexity owing to the underlying assumption that all variables are interdependent. It does, however, move the discourse to abstract conceptual notions (e.g. stability, efficient market hypothesis) that co-exist in constant tension with observable phenomena. Organisations nevertheless seek to increase performance through standardisation driving efficiency, and therefore apparent stability.

[542] Ibid. 548 quoting Simon's approach to use "near-decomposable systems". One could consider, as this thesis does, accepting the predictive weakness in an effort to gain insights.

the vantage point of the analysis, as depicted by continuums, with the desired change of the focus of discourse,

7. The variables chosen contain a limited number of slow variables (those that act to structure the dynamics of the system through larger spatial-temporal scales e.g. values) and some fast variables (which, through smaller spatial-temporal scales, can overwhelm slow variables, e.g. individual preferences)[543],

8. The approach is qualitative rather than quantitative when emergence/innovation is sought after, with participants using sensemaking as a way of interpreting what they see,

9. The approach is a combination of process/routine (routines embedded in processes, activities) and attitude to pursue strategic intent, owing to the expectation that there is a loose coupling between intervention and desired outcomes,

10. At times it is necessary to act based on pattern recognition supported by beliefs and form meaning through the interplay of intervention and actual interpretation or sensemaking.

All of the above characteristics underline the need to build organisational capabilities that support "the key performance driver of organisation, *the ability to change*, not just in rare and massive transformations but rather relentlessly over time"[544]. Capabilities which, when shared across the organisation, in time become embedded in routines.

3.3.3 Choices and options

Any model needs to create useful boundaries. There is a trade-off between increasing complexity to present a picture that is closer to reality (as perceived), and limitations on cognition. The choice is required in order to enable decision-makers to make sense of the situated problem, and provide a basis for evaluation of alternative strategies.

The challenge remains a simple choice of variables that enable reduction of the system to relevant variables that have sufficient complexity to be close as possible to the reality it seeks to describe. The task then would be to develop combinations of variables to establish possible alternative strategies.

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[543] Plummer R, Armitage D. 2007. A resilience-based framework for evaluating adaptive co-management: Linking ecology, economics and society in a complex world. *Ecological Economics,* 65

[544] Eisenhardt KM, Brown SL. Oct98. Competing on the Edge: Strategy as Structured Chaos. *Long Range Planning,* 786

An example of a technique that enables combination of variables is Analytic Hierarchy Process. The purpose of Analytic Hierarchy Process (AHP) is to reflect on how it enables participants in a group decision making process (an example of which is a workshop), to create a "hierarchy as a special case of the more general system formulation, the network"[545], that describes the system as a whole. AHP encompasses paired comparisons in "a framework of logic and problem solving that spans the spectrum from instant awareness to fully integrated consciousness by organizing perceptions, feelings, judgements and memories into a hierarchy of forces that influence decision results"[546]. The strength of the approach is "deriving dominance or priorities from paired comparisons of homogeneous elements, with respect to a common criterion or attribute. Such measurements can be extended to non-homogeneous elements through *clustering*"[547]. The latter approach is part of the design of morphological analysis, as the observer is encouraged to look for different perspectives in the galaxy, to avoid the assumption that the immediately accessible surrounding contains a representative sample.[548] Similarly, the approach can be extended (as set out in design of AHP) to create a cross-consistency matrix between strategies and scenarios, which can be likened to looking for other possible galaxies, describing different contextual futures.

Based on the binary combinations of factors that make up feasible alternatives, a selection of possible strategies is required. As set out in the previous chapter, there will be limits to what the human mind can cope with. To partially mitigate the risk that identified solutions to the problem cater for the complex reality as described, we would wish to get a better view of the galaxy as a whole, in order to see whether we can develop a representative sample of possible strategies and scenarios.

Appropriate technology and methodology is required if one wishes to extend such natural limits using computational support. A discussion of technology is outside the scope of this thesis, while the example is restricted to a brief description of one such methodology. Ritchey confirms that the typical morphological field consists of 6 to 10 variables, which can contain between 50 000 and 5 000 000 formal configurations - far too many to inspect by hand[549]. In

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[545] Saaty TL, Vargas LG. 2006. *Fundamentals of Decision-Making and Priority Theory, with The Analytic Hierarchy Process,* 293

[546] Ibid.5

[547] Ibid.293

[548] Zwicky F. 1948. Morphological astronomy. *The Observatory,* 129

[549] Ritchey T. 2006. Problem structuring using computer-aided morphological analysis. *Journal of the Operational Research Society,* 795

AHP, as an approach, "errors can arise out of inconsistency of judgement affecting the final answer" [550]. To ensure appropriate complexity and mitigation of errors, "the number of elements should be large enough to enable one to make redundant judgements to improve the validity of the outcome. For this reason seven elements is found to be reasonable choice for high average priority and high validity" [551] when applying AHP. It therefore makes sense to limit the number of dimensions, primarily based on what the participants can cope with in the engagement process, and their the ability to determine concepts at an appropriate level of abstraction as well as the length of interaction required (including the knowledge required) to prepare a consistency matrix. This cross-consistency matrix enables comparison of "pair-wise relationships between conditions, growing at quadratic polynomial" "in order to create a solution space" [552] of a few hundred pair-wise evaluations for 100 000 formal configurations[553].

At another level of conceptual discourse, one would expect choice in the 'rational' area of the cube to be based on Utility Theory, while in areas of emergence and subjectivity, choice is expected to be driven by action or belief in order to determine patterns arising from such.

Whether supported by technology or not, the intention of developing combinations of variables is to identify options and to focus the *experienced[554]* mind to a process of pattern recognition of feasible strategies or scenarios. The use of the word 'feasible' indicates a reduction, because feasibility requires exclusion of other possible options, based on a choice, from the perspective of the participants. The application of such synthesis is, in its nature, associated with the application of a reductionist approach[555], while at the same time challenging participants who are developing the strategies and scenarios (whether in a workshop or otherwise), and the on-going narrative, to realise that complexity is deeper than expected, based on their own previous understanding.

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[550] Saaty TL, Vargas LG. 2006. *Fundamentals of Decision-Making and Priority Theory, with The Analytic Hierarchy Process,* 86

[551] Ibid.86 Saaty et al also provide a neural explanation of 'seven' elements i.e. "The most common duration time estimate for short-term memory (buffer delay) is 750 milliseconds and that for item-integration is 100 milliseconds. Their ratio is about seven".

[552] Ritchey T. 2006. Problem structuring using computer-aided morphological analysis. *Journal of the Operational Research Society,* 796

[553] Ibid.796

[554] Freeman WJ, Núñez R. 1999. Restoring to Cognition the Forgotten Primacy of Action, Intention and Emotion. *Journal of Consciousness Studies,* xv. The authors refer to "bodily grounded experiences" and the "fundamental and intimate co-definition of minds and bodies".

[555] Ritchey T. 1991. Analysis and Synthesis: On scientific method - based on a study by Bernhard Riemann. *Systems Research,* 1

This approach purports to open up the discourse to alternative strategies based on coherent combinations of feasible options. Choice of some specific option closes the discourse. Choices of strategies are necessary to provide direction to the organisation, and enable creation of the necessary order.

3.4   Organisational strategies and order

There is a relationship between each of the concepts (supporting the dimensions of the model) and strategy formation, as they are each influenced and defined by the other i.e. how an enterprise is organised affects its ability to strategise[556]; e.g. a central top-down determined strategy is likely to be more prevalent in the context of hierarchical, control oriented organisations.

Moreover, in situations with increasing complexity and under increasing time pressure, different decision-making models and methods would be appropriate, reflecting the various levels of order that exist in the system under review[557]. The positioning of the organisation against the proposed model would enable a categorisation of management methodologies to positions in the cube, which could assist in the selection of appropriate tools and frameworks, as well as evaluating possible shortcomings thereof. For example, based on research of organisational performance and health, McKinsey classifies successful organisational archetypes into market focus, execution edge, talent/knowledge core and leadership driven[558]. Similarly, Senge[559] synthesized specific system archetypes with attractors that can be assigned to parts of the cubes making up the framework, possibly improving our understanding of the "self-referential processes that create system identity"[560].

Even techniques such as Biomimicry[561] can be viewed by users as innovation based on copying nature's designs to products. I would suggest that this technique could even be applied to assessing the limits of organisational structure[562]. Decisions to increase structure

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[556] Pye A, Pettigrew A. 2006. Strategizing and organizing: change as a political learning process, enabled by leadership. *Long Range Planning,* 584

[557] Rahman N, De Feis GL. 2009. Strategic decision-making: models and methods in the face of complexity and time pressure. *Journal of General Management,* 46

[558] Hundertmark T, et al. September 2008 What winning looks like: The four archetypes of organizational health. *McKinsey Quarterly,* 19

[559] Morgan G. 1997. *Images of Organization,* 281-2 based on Peter Senge.

[560] Ibid. 282

[561] Benyus JM. 2002. *Biomimicry: Innovation Inspired by Nature*. 5

[562] The level of uncertainty in an organisation does suggest natural limitations to growth in structure, similar to that suggested by nature although we do not always heed that advice.

have a direct impact, with a gradual decrease in performance, but are "unexpectedly asymmetric" in that performance drops catastrophically with *too little structure*[563].

The trade-off between structure, to promote order, and flexibility to cater for the dynamic environment, is catered for in the second dimension (objective/subjective). A theory of the position of the locus, asymmetry, and range of optimal structures is provided by Davis et al., suggesting that the trade-off is between the "flexible capture of widely varying opportunities vs. efficient execution of specified opportunities"[564]. The trade-off inherent in the dichotomies of innovating and emerging (as opposed to standardising and organising) are in accepting inefficiencies to provide room for experimentation and/or to mitigate risk.

It would not help to increase flexibility beyond the point which the structure is not able to learn and adapt in the context of change. Systems are designed "to absorb or buffer disturbances and still maintain their core attributes"[565].

3.5   Meaning at organisational level

A major advantage of a process of reflection on strategic options, and the whole associated array of issues, may not be that we develop a strategy that we will actually execute as planned, (emergence puts paid to that) but we do know the terrain when we go through the process. That means we are more likely to respond adequately to unexpected emergenc(i)es when they occur. Complexities and ambiguities are better managed if we understand them better, rather than closing reflection off by saying that it is not worth strategising because we know the plan will never happen.

When considering the nature of disturbances that may arise, the question of meaning[566] for the ecology of organisations[567] arises as organisations are embedded in the context of society and life world. The change that was previously considered exogenous to the system (refer

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Bell D. February 1976. Welcome to the post-industrial society. *Physics Today,* 49

"Galileo referred to the square-cube law i.e. something doubles in size, it will triple in volume, but its shape will also change". While nature has set limitations on change of shapes, this is not the case for organisations.

[563] Davis JP, et al. 2009. Optimal Structure, Market Dynamism, and the Strategy of Simple Rules. *Administrative Science Quarterly,* 437

[564] Ibid.437

[565] Plummer R, Armitage D. 2007. A resilience-based framework for evaluating adaptive co-management: Linking ecology, economics and society in a complex world. *Ecological Economics,* 65

[566] Bailey KD. 1982. Post-Functional Social Systems Analysis. *The Sociological Quarterly,* 511 Also referred to as neoclassical frame of reference for research as unit of analysis is the population of organisations.

[567] Morgan G. 1997. *Images of Organization,* 391

Figure 21 above), would then be subject to discourse. As this discourse is beyond the scope of this thesis, such reflection will be limited to a depiction of the impact of changes.
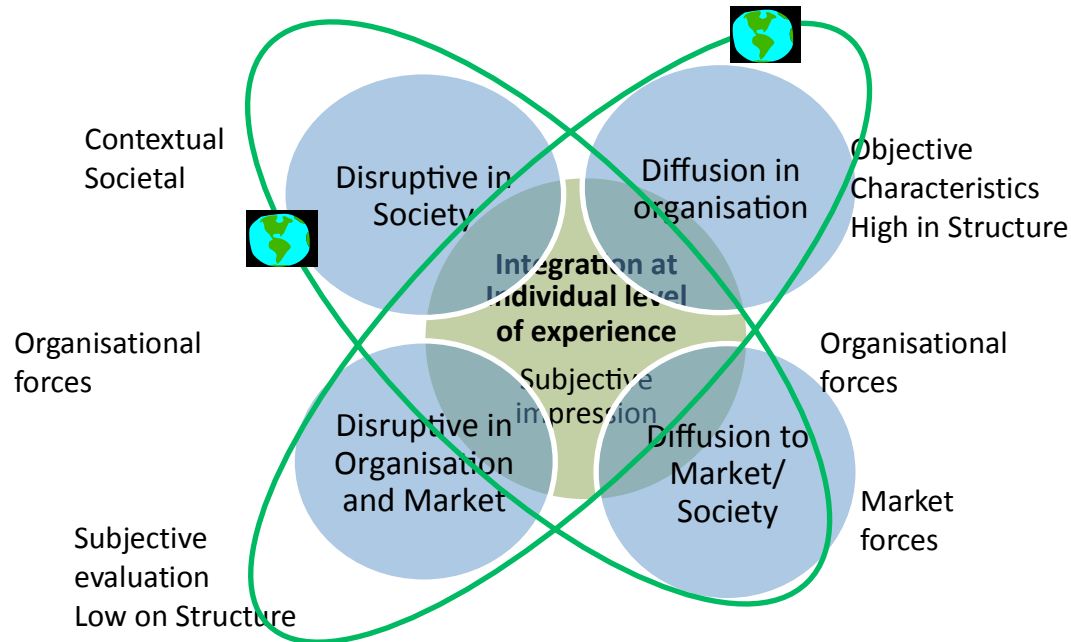

Figure 26 Impact of changes on selected parts of the lifeworld

The reflection is necessary in order to think whether any changes (and their possible consequences) interplay with wider contextual forces that reflect back on the organisation, and strategic choices that are available to it. Meaning would then be generated in that wider context.

3.6   The power of narratives

Narratives are created in group decision-making processes (such as workshops and facilitated processes of discussion and formulation - hereafter referred to as workshops) as well as by the on-going organisational routines over time. Part of a deliberate process is the engagement with organisational and external teams in workshops. The process of strategy formulation requires particular input, transformation and output. Reflecting on this process is possible with the assistance of the Decision Support Systems (DSS) and similar tools, requiring application of a particular methodology which typically based on the experience of the facilitator.

The organisational routine includes preparation for a workshop[568], the workshop itself as well as execution of the strategies post the workshop. A large amount of pre-work is required before the workshop begins, to ensure the problem is properly defined and manageable within the time period available for the workshop. Part of the preparation would be the selection of appropriate material that is synthesized sufficiently to enable participants to prepare for the workshop. This reflects a key assumption that the problem is *understood* by the arranger (assuming that this is the same person as the observer) of the workshop and the facilitator, before the workshop commences. The intention would be that participants have a similar level of knowledge about the subject matter and context, without constraining the discourse by pre-circulating information.

The real power of narratives is that they allow multiple interpretations over time. We can come back to them for more insights both from an organisational point of view and also as a basis for integrating such at the individual level of experience. Narratives are polysemic. The ambiguity created through the discourse and on-going narratives can be seen as troubling, or as the creation of space that allows difference. Boisot[569] argues that they could be the key to developing sensible strategic intent in turbulent environments.

3.7   Conclusion, implications

Reflecting back on the nature of continuums defined in Chapter 2, organisational order emerges from the interplay between 'strategy formation', as a deliberate process (along the Z-continuum), and the emergent and varied organisational and contextual forces (the X-continuum) at play over time. The process forms a narrative and provides some of the organisational stability, although the composition and iterations are often not deliberate. Strategies emerge, as would the institution created by the interplay.

The interplay results from continuous interaction between the intentional strategic intervention (along the Z-continuum) and its actual interpretation or sensemaking (Y-continuum) throughout the organisation, and its context by those - also by the leadership -

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[568] Ritchey T. 2006. Problem structuring using computer-aided morphological analysis. *Journal of the Operational Research Society,* 800 referring to non-quantified problem-structuring methods and models.
It is reasonable to assume that the quality of input (before and at the workshop) would affect the quality of the discourse and the output. This is generally an issue for workshops.

[569] Mintzberg HA, Bruce; Lampel, Joseph. 1998. *Strategy Safari: The complete guide through the wilds of strategic management,* 219 Boisot sees particular value in the concept of strategic intent in situations of environmental uncertainty: "This yields a simple yet robust orientation, intuitively accessible to all firm's employees, an orientation which, on account of its clarity, can be pursued with some consistency over the long term in spite of the presence of turbulence."

who are operationalising the strategies. The process of strategy formation provides opportunity for self-reflection by the decision-makers (the I as part of the Y-continuum), the team members (the We as part of the Z-continuum), and the organisation - embodied in the social constructs created through communication, processes and actions.

Chapter 4
A normative model and its implications
Developing a model for analysing strategy formation

4 A normative model and its implications

This chapter will briefly reflect on the development process of the heuristic model. The limitations of the model itself are related to this development process and underlying assumptions of the theories (and selected aspects thereof) on which the model is based.

The chapter will also set out the normative model and its implications. The description would build on concepts and language set out in the previous chapters.

4.1 Developing a heuristic model

The purpose of this section is to describe aspects of grounded theory used in model development, while using morphology both as an approach and a discourse. "Ideally, the model should be as complex as the behaviour it is modelling"[570]. Clearly the organisational and societal forces operate at different levels of complexity. If one assumes that an organisation will adapt based on the level of complexity that it can cope with, this in turn suggests that the analysis of strategic decision-making has to assess

    a)   Whether adequate complexity is present in the organisation, as well as

    b)   Provide support to an analysis of phenomena, actions in strategy formation and interaction strategies (including communication) of actors relevant to the decision process.

To enable such analysis, the model developed would similarly have to reflect requisite complexity[571] which, in previous chapters, is based on conceptual sophisticated variables, and

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[570] Bailey KD. 1982. Post-Functional Social Systems Analysis. *The Sociological Quarterly,* 519

[571] Bennet A, Bennet D. 2000. Characterizing the Next Generation Knowledge Organization. *Knowledge and Innovation,* 25 "Ross Ashby's law of requisite variety that proclaims to manage complexity one has to have more options, i.e., more complexity, than the thing managed".
One could deduce that requisite variety of variables is a necessity that enables requisite model complexity to deal with reality.

is set out hereunder based on aspects of the theories on which the frame of the model is based.

Grunberg posits that in empirical theories, the theory must "build upward from the observed phenomena and lowest level of generalization to higher level hypotheses and ultimately to real axiomatization". Relying on the deductive process, the validity of theorem is dependent on the validity of the process rather than on observations. Observations could not confirm or disconfirm them[572]. That means that the model[573] would not be subject to disconfirmation.

It was also useful to draw on aspects of grounded theory[574] that do not require a researcher to start with a hypothesis and enables him to draw on existing literature and theories. It is the new perspective or paradigm used that provides a change in insight. In this case the perspective was based on using perceived dichotomies as continuums, and concepts supporting such as variables. The "abductive inference must not only lead to a satisfactory explanation of the observed facts but must be related to the previous knowledge of the researcher". In this thesis the proposition was to ground the model in the life-world and systems-world, each one dependant on the other, while meaning is integrated at the level of the individual applying basic objective and subjective world premises of thinking (inductive and deductive respectively) to the discourse. The intention was to develop a frame for micro-sociological action aspects and enable reflection on macro-sociological and systems theory perspective without "leading researchers astray"[575] owing to the choice of coding paradigms.

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[572] Grunberg E. 1978. Complexity and open systems in economic discourse. *Journal of Economic Issues,* 554

[573] Even if just considered a tool rather than a theorem

[574] Kelle U. " 'Emergence' vs. 'Forcing' of Empirical Data? A Crucial Problem of 'Grounded Theory' Reconsidered" 7, 8, 13. The basic axial coding paradigm consists of four items: "conditions, interactions among the actors, strategies and tactics, and consequences". The process steps/ analysis of concepts and categories developed by Grounded Theory, as adapted by Anselm Strauss and Juliet Corbin in 1990, include:

(1) "*Phenomena* at which the action and interaction in the domain under study are directed,

(2) *Causal conditions* which lead to the occurrence of these phenomena,

(3) Attributes of the context of the investigated phenomena,

(4) Additional intervening *conditions* by which the investigated phenomena are influenced,

(5) Action and interactional strategies the actors use to handle the phenomena, and

(6) The consequences of their actions and interactions.

During axial coding the analyst tries to find out *which types* of phenomena, contexts, causal and intervening conditions and consequences are relevant for the domain under study.

This may lead to the construction of models of action which capture the *variance of the observed actions* in the domain under study and which can provide the basis for a theory about action strategies generally pursued in certain situations".

[575] Ibid. 20

The model development has been iterative, although the text set out in this thesis indicates a sequential approach. It has not been forced into a structure based on a set of empirical data, although many of the references on learning's in strategy formation (Chapter 3) are based on empirical research. The thesis indicates a selection of categories (properties of categories, conceptual aspects) and then concepts that are a subset thereof. The unique features of the model are provided by the combination of the concepts in a model for analysing strategic decision-making.

Owing to the underlying limitations of grounded theory and characteristics of models, the outcome of an analysis of strategy formation would not be subject to disconfirmation or empirical proof.

The model development does not claim to be an application of grounded theory, although it has drawn on aspects thereof. The model nevertheless provides a heuristic framework as basis for observing and analysing strategy formation.

In extending research beyond this thesis, it may be possible to use the model as a coding paradigm in grounded theory to gain further insights in analysing strategy formation.

4.1.1 Assumptions and beliefs

The proposed model reflects characteristics of a complex intentional behavioural system[576] (self)organised around a structure and processes designed to enable individuals to derive meaning. Any analysis provided on the basis of using the proposed model would be subject to the same limitations as such systems.

The assumption is that a coherent model or knowledge structure will assist the decision-maker in dealing with the complexity of the situated problem[577]. The goal would be a reduction in the complexity of the world, to a simple description of the system, derived from factors affecting the situation. In the same way that a system would be described by

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[576] Juarrero A. 2000. Dynamics in Action: Intentional Behavior as a Complex System. *Emergence,* 26,27

"When organized into a complex, integral whole, parts become correlated as a function of context dependent constraints imposed on them by the newly organized system in which they are now embedded". Juarrero refers to context-sensitive constraints embodying an intention that "synchronize and correlate previously independent parts into a systemic whole".

[577] Wilkinson A, et al. July 2003. Background and dynamics of the scenarios. *Journal of Risk Research,* 372

Situated problem is used in this thesis in the same way as "situated risk, which proposes that risk should not be considered as a phenomenon in itself, but as a frame that produces contexts that link an object (a source of potential harm), an object at risk (a potential target of harm) and an evaluation (implicit or explicit) of human consequences. As such, risk is a relational order by means of which connections between people, things and outcomes are constitute".

participants in a workshop environment, so the model would clearly only describe their perspective and a special galaxy that the users seek to understand.

The ability to perform an analysis, conscious of the nature of the system (rational, natural or open), and thereby the limitations of the system and the analysis, introduces the ability to see the *outcomes* as temporary approximations and avoids assuming such as literal reality. After all, "there are many ways of knowing, some of which are individually compelling but impossible to confirm through acceptable procedures of inference from empirical observations" [578]. The danger is when we enact such procedures at a collective level without the necessary consciousness; the procedures could be seen as legitimised (rather than assumed valid).

No matter how enticing the solution that participants have developed may seem, an organisational change based on such a solution would increase its chance of success only if the required speed of change ("of technology change, customer needs, competitors (re)actions, the firm's resources, IT strategies, etc.") [579] is in line with the ecology in which the organisation operates, and in which it supplies its products or services.

As the mental model is part of the whole, it would require satisficing rather than optimising, abstracting from reality that, as a principle, would also apply to the system recorded by such i.e. the system, by nature, can only satisfice. The use of the proposed model therefore also assumes that insights generated by it are generally satisficing and not optimising in their nature.

4.1.2 Limitations on scope of the model based on choices in its development

Any rule that is created and changed, by definition, involves some loss of information (as the whole phenomenon is not described by it), but provides a basis for further analysis. So we would "*speak of a system* only to the extent that the selection of subsequent events is, on one hand, highly selective but, on the other hand, not arbitrary"[580]. The choice of continuums

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[578] March JG, Sutton RI. Nov/Dec97. Organizational Performance as a Dependent Variable. *Organization Science,* 704 This excerpt reflects on the claim of exemption on rules of inference since Plato. Here the intention is to create conscious choice of key variables by the participants in a group decision making process (such as a workshop) without losing sight that such choice is exactly that and deselects other variables to avoid the discussion to be beyond the mental comprehension. In addition the quote leads into the subject of explaining new inferences that occur (without necessarily being able to state how or what causes these).

[579] Hidding GJ. September 2001. Sustaining strategic IT advantage in the information age: how strategy paradigms differ by speed. *Strategic Information Systems,* 18

[580] Luhmann N. 1996. Complexity, Structural Contingencies and Value Conflicts. IN Heelas, et al. (Eds.) *Detraditionalization,* 59

enables review of a system description and comprehensive reflection on perceived dichotomies in analysing strategy formation. It does therefore not seem arbitrary. Similarly, the concepts chosen do appear to support the functioning of the model. The discussion of the concepts selected, in principle, functions "as a *searchlight* to illuminate those features of the situation which clarify the subsequent actions"[581]. Even though the process of interaction is social in nature, the principle then guides further "inquiry by focusing our attention *on rational actions* in problem-solving situations"[582], setting out the initial conditions (framing and multiple perspectives) for further *deductive* explanations[583].

Applying the *transference* of a concept to reality to this model, reflects on "a main characteristic of a model then, i.e. that it is a reality of its own […] being structurally unitary and autonomous, the model very often imposes its constraints on the original and not vice versa."[584] It remains that we have to check our understanding of the territory (strategy formation) in order not to see the model only i.e. we must not get stuck in our own reality. Although it is probably desirable to drive by the map, as we cannot see the whole of the territory at all times.

We should use the tools at our disposal to achieve the purpose for which they were designed. The '*cognitive information processing*'[585] mode describes top-down theory-driven[586] models, while bottom-up data-driven models, driven by empirical data, are at the other end of the spectrum. At the other end of the cognitive continuum is the '*narrative mode*'[587], which describes communication as language driven models. A limitation of both types of models is that they depend on judgement as to what information and data respectively is selected, in order to deliver on their purpose. In each case somebody has to make that initial decision, on

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[581] Farr J. 1985. Situational Analysis: Explanation in Political Science. *The Journal of Politics,* 1090

[582] Ibid.1091

[583] Ibid.1091

[584] Westbrook L. 2006. Mental models: a theoretical overview and preliminary study. *Journal of Information Science,* 563; 565 Westbrook used Doyle and Ford's definition of a mental model in the context of information system design: "a mental model of a dynamic system is a relatively enduring and accessible, but limited, internal conceptual representation of an external system whose structure maintains the perceived structure of that system".

[585] Boland RJ, Tenkasi RV. Jul-Aug 1995. Perspective making and perspective taking in communities of knowing. *Organization Science,* 353

[586] Walsh JP. May-June 1995. Managerial and organizational cognition: notes from a trip down memory lane. *Organization Science,* 285

[587] Boland RJ, Tenkasi RV. Jul-Aug 1995. Perspective making and perspective taking in communities of knowing. *Organization Science,* 353

which further analysis of contextual factors will be based. This also had to be done for the purpose of this thesis.

Similar to any research project, a deeper understanding of the subject of the research develops, and has done so throughout the period of writing the thesis. This has led to adjusting the story, particularly in conjunction with visualising interplay and tensions that have provided insights, and the level at which the thesis can now be presented. In addition, "the method of constructing the map (methodology set out) developed based on the purpose of map construction"[588]. For example, a compass can give one the general direction, but cannot take a driver to a specific street address. The use of GPS coordinates, in connection with a map, is more appropriate. Any open system would require selective reduction to enable analysis which, in terms of model dynamics, could become self-referential. The methodology used in this thesis is deemed appropriate as the use of multiple perspectives and iterative analysis would assist one to mitigate possible frame blindness.

A reduction of variables and the number of factors that can be considered could, similar to a map, result in relevant parts being excluded from the model parameters. However, the ability to consider multiple variables across selected continuums of the model provide one with a model that enables reflection of requisite complexity, for the purpose for which is what designed.

4.2   The model for analysing strategic decision-making

The ultimate purpose of strategising and organising is to "change behaviours of people, rather than being ends themselves" "in pursuit of organisation purpose and competitive advantage"[589].

The proposed model can be seen as a system for analysing strategy formation[590]. This model derives its strength from the applicability of structuration theory, in accordance with which the "structural properties of systems are both medium and outcome of the practices they recursively organise"[591].

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[588] Cañas AJ, et al. 2003. A Summary of Literature Pertaining to the Use of Concept Mapping Techniques and Technologies for Education and Performance Support. 16

[589] Pye A, Pettigrew A. 2006. Strategizing and organizing: change as a political learning process, enabled by leadership. *Long Range Planning,* 585, 588

[590] The resultant model of reality is called knowledge (a relative truth based on the formalisation of thought of the author).

[591] Giddens A. 1984 The constitution of society: outline of the theory of structuration, 25

As there is a relationship between each of the concepts (supporting the dimensions of the model) and strategy formation, they are each influenced and defined by the other. This is also a truism for organisations as a whole. For example, if we reflect on the way strategy development is organised, how an enterprise is organised affects its ability to strategise[592]; e.g. a central top-down determined strategy is likely to be more prevalent in the context of hierarchical, control oriented organisations.

Noting that as a potential limitation, the interplay at individual and organisational level is supported by the use of discourse (whether by consensus or coercive power[593]) to agree shifts in, for example, structure, resource allocation, and even organisational intent, which in turn reflect the socially constructed negotiated nature of organisational arrangements.

In that context, the organisation as a system created by social construction, and its strategies to achieve a particular desired 'state' of the system e.g. organisational order, are emerging from the interplay between 'strategy formation' and the emergent and varied organisational and contextual forces at play over time.

The purpose of this section is to briefly describe application of the model in order to reflect on it, as a holistic system.

4.2.1 A system description

The system being analysed would be described in detail through a situational analysis. The description of the system creates boundaries, and reflects participants' common understandings of the relationships of key variables (and their effect) based on assumed correlations of factors. The selection of variables in the appropriate sector (being a spatial reference) of the morphological cube enables a reduction to an appropriate number of variables for consideration, and thereafter a discourse on the correlation of selected variables. One could document the results through a group decision making process (such as workshop), noting that they are based on achieving consent of participants and the quality of their input. The consent is documented by the process, and can be supported by toolsets setting out the situational logic, but not necessarily achieved by such.

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[592] Pye A, Pettigrew A. 2006. Strategizing and organizing: change as a political learning process, enabled by leadership. *Long Range Planning,* 584

[593] Ibid.586 The relationship between strategising and organising "can be conceptualised as a political learning process". "Power as a relationship concept is defined through the structurally unbalanced exchange of possibilities of action amongst a set of individuals and/or collective actors".

Organisations, as a whole, could be said to transition between various stages of their development (or life cycle) primarily through political engagement of internal and external actors[594]. The principles set out can be used to differentiate and evaluate options open to the organisation and where *rationalising* as a dominant process (tension) is appropriate, these can be evaluated based on their likelihood of success.

4.2.1.1 Reflecting on a normative model

The interaction and relationships between phenomena, ideas and actors (and their expectations), and factors (physical or otherwise), in such space is supported by communication (reflected upon as a process and a system), providing a medium and description as to 'how' change is facilitated.

The establishment of a hierarchy of variables for consideration by the observer (and participants) is developed by reflecting on organisational, societal and individual positioning in a particular sequence, which requires codification and abstraction of the system[595] in order to find possible strategies that can provide potential for diffusion. The complexity of selection of appropriate variables (relating to the three dimensions) in this model is reduced by reference to characteristics prevalent in subsets of the cube (imagine the cube to be split into 8 equal cubes). This enables an initial reduction to a manageable number of variables for further analysis and synthesis. In addition, communication processes and cognitive mode should be adapted to suit the objective of decision-making.

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[594] Mintzberg H. 1984. Power and organizational life cycles. *Academy of Management Review,* 207, 221, 220 Exceptions to this statement are closed systems and meritocracies which "can escape temporary state of intense politics."

This engagement results in conflict created through engagement and feedback loops varying in magnitude and scope changing the organisational condition and structure as a result thereof. For example, organisations could change focus from one of service to external constituency to one based on ideology based (identity) and at a later stage to a system that becomes an end in itself.

[595] Boisot M. May 2004. Exploring the information space: a strategic perspective on information systems. *Sol Snider Center for Entrepreneurial Research (Working Paper Series WP04-003),* 11 , 8, 26

"Codification draws distinctions and articulates boundaries between states or around objects. Codification is a precondition for the creation of objects and categories. It will be harder to codify fuzzy boundaries or objects than those that are well formed; the amount of data processing required to do so will be greater. *Abstraction* treats things that are different as if they were the same. It either associates or - if they are recurrent - correlates the objects or categories discerned or created by codification and allows one object or category to stand in for another, thus reducing the number of these that one needs for navigating in particular situations".

A flow similar to Boisot's i-space model is depicted although the framework differs significantly.
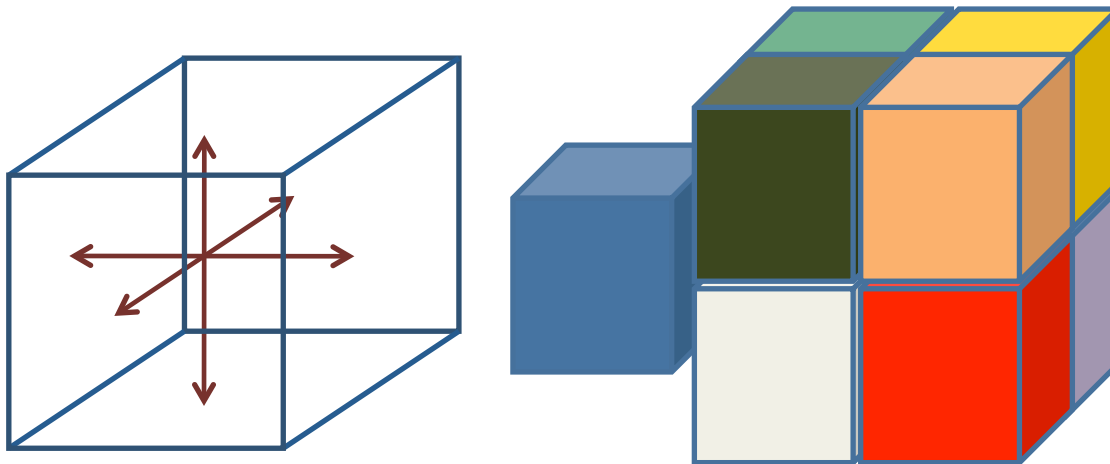
Figure 27 The iterative flow of discourse

This also depicts the iterative 'flow' of the discourse in an organisation as a whole. Owing to visual limitations, these will be depicted two-dimensionally hereafter.

4.2.1.2   Relative position in a 3-dimensional space

Where leaders in organisations place events and statements of intent about organisational direction at points in the three-dimensional space (similar to creating coordinates[596]), they can use such representation to reflect on positions of individuals, teams and the organisation as a whole. Mapping current and intended positions[597] would provide a basis for analysing actions, as well as potential consequences of intended actions that are expected to produce change. The following discussion intends to set out how these positions can be identified. Through a two-step process the relevant dimensions can be identified, and then reduced to relevant variables within such frame.
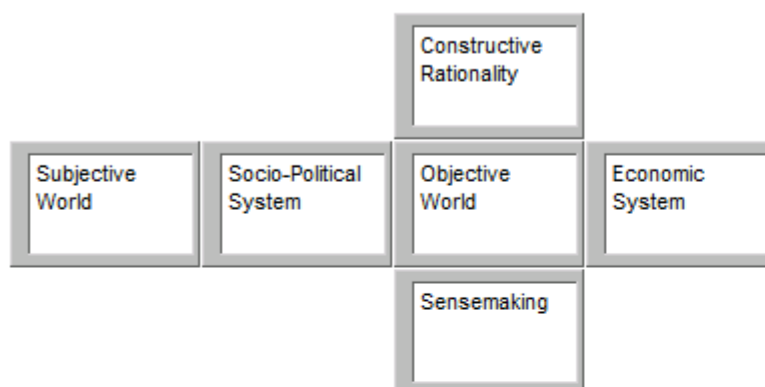

Figure 28 Example of morphological space for dimensions

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[596] Used as noun

[597] Of individuals, teams, parts of organisation and the organisation as a whole in this 3-dimensional space

The morphological space is described by the dimensions of the model. The combination of these dimensions and a route of resolving such are depicted in the following figure. Please bear in mind that the process of understanding a problem and its resolution is possible from any of the eight corners of the cube (creating 8 'spaces' within which it is feasible to start[598]). In the depicted case, the bottom left corner (or sub-segment) has been chosen as a starting point. For purpose of illustration, the combinations set out below have been derived based on methodology used for a lattice of data cubes[599] (making up the three dimensional cube).
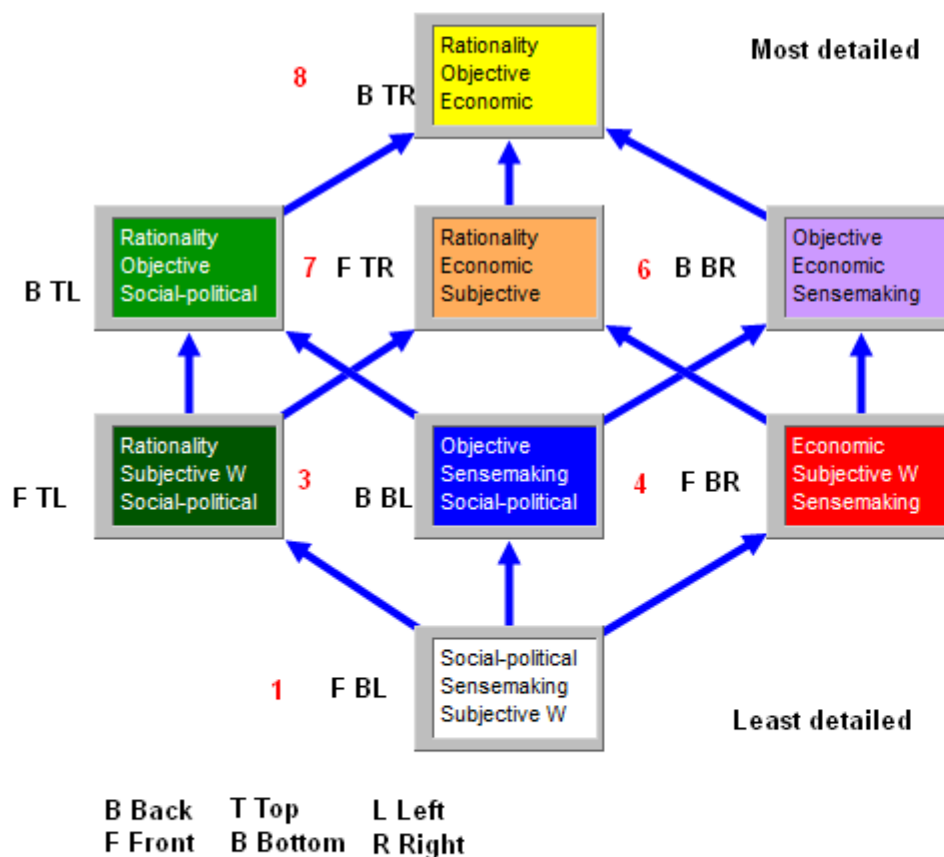
Figure 29 Developing model combinations

Boundaries are created for the system as a whole.

4.2.2 Interplay

If the subject matter of discussion is, for example, 'the impact of an electricity tariff change on the economy', the analysis would start with an intuitive understanding of the social

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[598] Bearing in mind that this is an iterative process, and not linear

[599] Stolte C, et al. "Multiscale Visualization Using Data Cubes",

impact[600] before moving to a more objectified (3, B BL), or economic (4, F BR) discussion of variables.

As previously stated, the purpose of economic analysis is to "visualise the outcomes of 'economic' variables as being simultaneously determined by a system of economic relations"[601]. In the proposed model for analysing strategic decision-making, the word economic can be replaced by contextual socio-political and organisational forces as well as the individual, team or organisation within such.

The system would be in various states of (dis-)equilibrium in which the variable outcomes are jointly or interdependently determined. In this context, interdependence requires an iterative analysis, changing one variable at the time and, as the capacity to cope with analysis is available or developed (whether human and/or supported by decision support systems), by changing multiple variables as the complexity of the situation demands. This analysis is performing by reference to 'tensions' in the system being analysed. The tensions can, similarly, be depicted as a morphological space to cover the system as a whole.
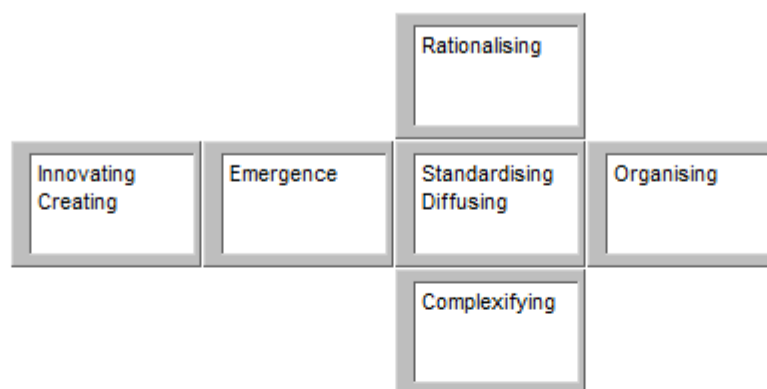

Figure 30 Tensions within the system

Sub-segmenting the 'space' that Figure 11 depicts (using perspective as depicted), you could imagine the 8 cubes, each with 3 variables. Combining the tensions in these eight cubes enables development of the following set of alternative combination of 'tension' variables, and a process flow intended to depict innovation.

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[600] In my view, the impact of individuals receiving access to free electricity (linked to Kilo-Watt Hours and not to a value) is indirect owing to the increased prices of products that consume electricity in their production). There is a significant impact on municipalities who have to continue delivery to these communities without having a concomitant increase in revenue from the fiscus.

[601] Mittelhammer RC, et al. 2000. *Econometrix foundations,* 447

In this context, "what actually makes equifinality distinctive in qualitative work is the fact that there are only a few causal paths to a particular outcome"[602]. The intention here was to show that limited feasible paths exist, without closing down possibility of other paths emerging through the narrative discourse supporting strategy formation within the organisation.
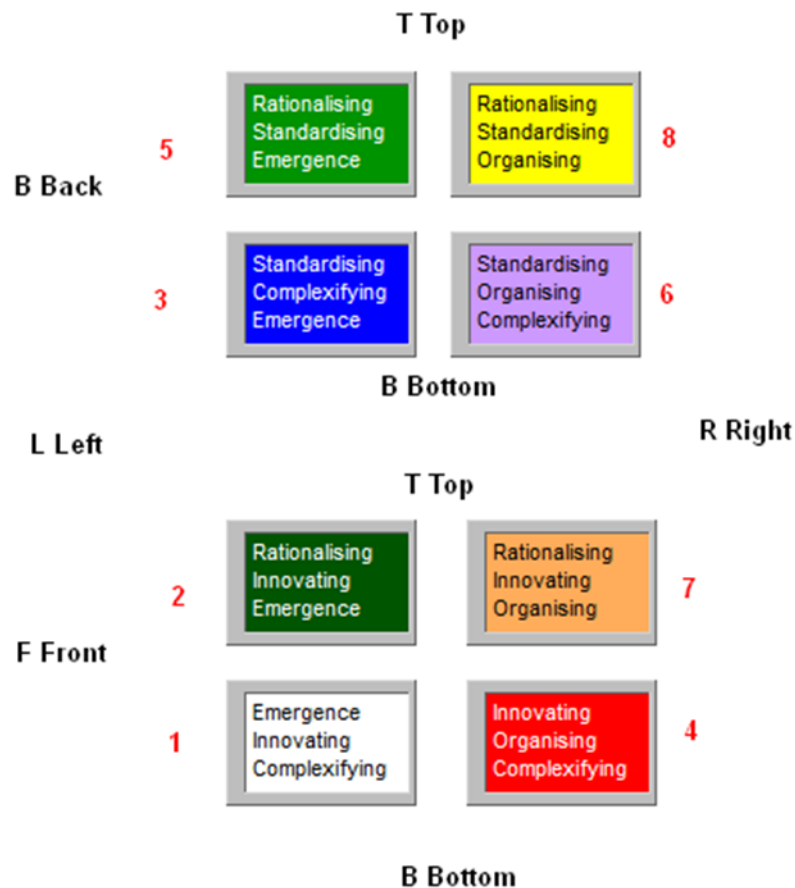

Figure 31 Interplay between tensions

With eight corners (of the cube), there are 16 different starting points of a discourse (and multiple more when considering starts at any stage of the process (ensuring requisite variety[603] in the system). Bearing in mind that, in order to evaluate the possible actions supporting a process of change, there are multiple directions and iterations that are possible - flowing through space - as depicted by the cubes from bottom to top, back to front.

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[602] Mahoney J, Goertz G. 2006. A Tale of Two Cultures: Contrasting Quantitative and Qualitative Research. *Political Analysis,* 237

"Within the typically more limited scope conditions of qualitative work, the goal is to identify all the causal paths present in the population". This presents obvious limitations to the work but presents boundaries to the system.

[603] Morgan G. 1997. *Images of Organization,* 112

Using the same direction of flow (from bottom front left to top back right hand space of the cube), the following flow could support a process of innovation:
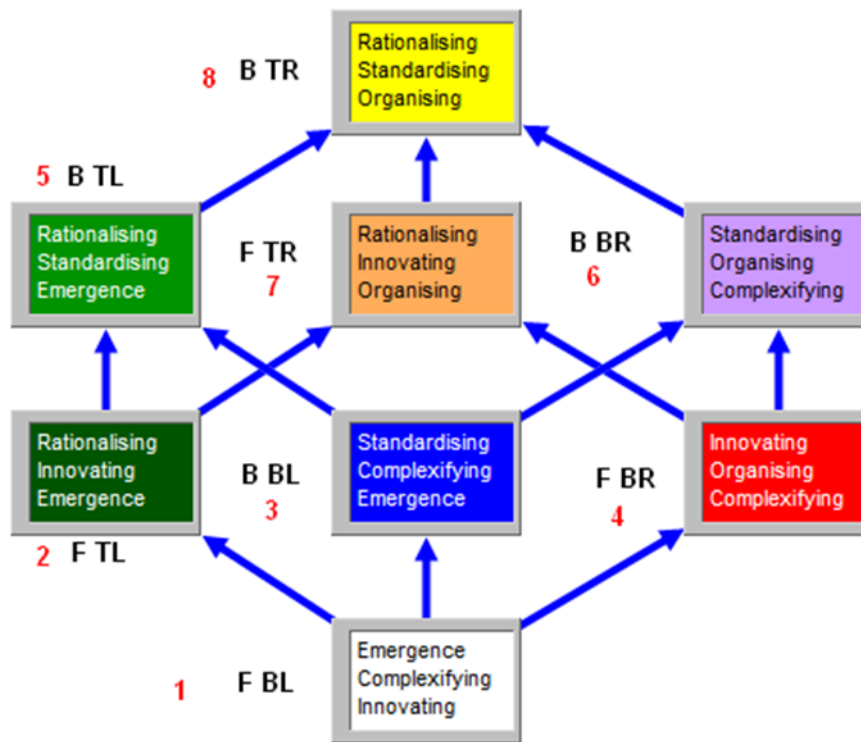

Figure 32 Using tension to innovate

This picture seems too abstract, until the model is applied in a real situation faced by organisation in South Africa late August 2010. For example, participants observe a particular incidence in the society e.g. increase in strike action. In order to make sense, the events leading to specific incidents are discussed (whether by workshop, leadership groups or otherwise), and the narrative discourse enables the observer to identify several patterns that could develop e.g. Strike Action could continue, Government could settle at a level of demand from Unions, or Unions can settle at the latest offer made by Government negotiators. Although the gap between the parties doesn't appear large, there are principle positions[604] at stake. Although these patterns do not provide direction for action by organisations, one pattern has to be chosen[605]. E.g. private schools have increased their security in order to protect their space and avoid strike action spilling over, using this opportunity to replace municipal bus services; larger companies could make alternative medical arrangements for their staff and sustain such after the strike; the impact on

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[604] Who has the power in government?

[605] Doing nothing would mean that impact is regarded as manageable or not relevant to organisations.

prospective salary negotiations in the private sector must be considered (and vice versa), as affordability of organised labour for the economy as a whole is at stake; related unions have come out in pre-emptive demonstrations, but should large corporates not do something in support of government? Individuals have volunteered their help to hospitals, for example in support of LeadSA.

The discourse improves readiness for possible interventions, choosing whether it is an individual activity e.g. rationalising, or an organisational process e.g. innovation, and then standardising based on the perceived pattern that is appropriate. Obviously, each situation is different and places a certain demand on the structure and processes of organisations, which have been discussed in previous chapters.

Suffice to reiterate here that, even within a particular organisational life-stage, there are different structures that can support the organisational objective. Perrow recommends that, in order to reduce the risk of serious failure (as an organisational objective), it may be necessary to structure the "system to be less complex and tightly coupled" (with more focus on stability and organisation than on emergence), with a more decentralised structure (with redundancies built in), even though this will reduce its efficiency[606] and the level of centralised control.

The process of change (Figure 12) does separate the contextual position of the organisation within society at large as part of the situational analysis. Using Kurtz and Snowden's language, their sensemaking framework enables discussion of how the model could be used to support an *appropriate sequence of sensing, analysing, probing, categorising and responding* "in order to come to a consensus for decision-making under uncertainty"[607]. Certain situations, however, require acting and sensing (as suggested by the sequence of tensions for innovation), and do not allow correlations of variables to be perceived, as set out in their relationships, before responding.

Clearly, in relative terms, we could enact part of what we perceive reality to be (and use the model for that purpose) in order to satisfy our inclination to control outcomes, but we would not know whether the result is useful and whether it was attributable to the use of the model.

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[606] Perrow C. September 1999. Organizing to reduce the vulnerabilities of complexity. *Journal of Contingencies and Crisis Management,* 150 The comments in brackets were added by the author of this thesisto link the example to dimensions of the proposed model.

[607] Kurtz CF, Snowden DJ. 2003. The new dynamics of strategy: Sensemaking in a complex and complicated world *Complexity,* 468

Table 6 Reflecting on sensemaking in the model

	Process step	Comments[608]	Limitation	Sensemaking[609]
1.	Model includes ability to evaluate multiple perspectives We can clarify our self-idea in making our assumptions clear We can project self into a non-threatening environment	We have to change perspective in order to reduce noise in communication Increasing perspectives can increase meanings	Perspective	Grounded in identity construction
2.	We describe a system at a point in time, but also enable reflection at future points in time If model supported by a dynamic system that enables change at any point, adding criteria, options etc. as we get better information or, context changes. Fast cycle review is enabled owing to dynamic nature	We extract cues from moments out of continuous flows	Snapshot/ moments Cognitive limits	Ongoing
3.	The model requires an entire system to be socially constructed. "If viable, the larger community generalizes these ideas". Both are encouraged throughout the discourse and the common understanding recorded. There is a further strength, in that consistent communication of agreed goals, strategies and implementation is more likely	"An organisation is a network of intersubjectively shared meanings" Alignment and sharing are social activities	Contextual Requires common language Communication	Social
4.	The model enables us to change frames and treat the system as open, even though boundaries are continually created	We create a frame into which we place cues	Boundaries Cues are limited	Focused on and by extracted cues
5.	We synthesize plausible strategies in relation to possible scenarios;	We try to move through pattern recognition, trying to stretch beyond the existing boundaries	Cognitive	Driven by plausibility rather than accuracy through narrative discourse
6.	Knowledge gaps are made transparent Appropriate questions direct attention to key factors for further analysis	We always find a logical rational explanation for what has happened, without acknowledging that we don't know; We try to understand the past to extrapolate the future	Historical view, Picture in our mind of what we remember Limited memory capacity Hindsight bias	Retrospective
7.	We can enact the situation and scenarios, enabling us to engage with such in a secure (workshop) environment; Externalisation enables objectification through the discourse (and behaviour)	We create the environment that then constrains our actions and creates the opportunities	We *select* moments in the process to represent *subjective* interpretation of externally situated information	Enactive of sensible environments

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[608] Weick KE. 1995. *Sensemaking in Organizations,* 18 - 62

[609] Ibid.17 for categories

The important conclusion from Table 6 above is that the model covers all aspects of sensemaking, seen as a whole.

To be considered useful in representing a portion of the socio-political and organisational context as described, the decision tool must reflect the dynamics of the system (e.g. model reflecting the organisation), but also allow the changing system to adapt. Usually, this can be done by "choosing some simple rules that reduce the complexity of the task to more manageable proportions"[610], as set out in the model for analysing strategic decision-making. The model could assist structuring of the decision process, by supporting participants in sequencing their thinking processes (choosing at which corner to start the process), adopting different thinking modes (in different parts of dimensions) to support different stages of the decision processes, as well as layering the complexity by layering analysis of factors and variables (moving from general to specific[611]), as well as reducing the number of relevant dimensions and variables[612] that are subject of the situated problem.

Once the initial system and the overall problem-solving and decision-making process are documented, the model, as a dynamic system, would enable participants to change factors, strategic options and environmental scenarios and, in discourse and/or individually, reflect on the impact of possible changes.

In an ideal situation[613], we can identify dependent and independent variables that contribute to organisational performance, allowing us to build a representative 'model' of reality. If organisational performance is a dependent variable, we require the identification of several explanatory variables 'imagined to be causally antecedent', and other dependent variables to 'model' the situation. In addition, in the use of the model, the participants in group decision making processes (such as a workshop) should look at the mutual effects between the variables, the organisational context (e.g. history of success), trying to avoid measures that are themselves causally connected.

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[610] Sanchez R. 1997. Strategic management at the point of inflection: Systems, complexity and competence theory. *Long Range Planning,* 945

[611] Grunberg E. 1978. Complexity and open systems in economic discourse. *Journal of Economic Issues,* 554 "Building up from the observed phenomena and lowest level of generalization to higher level hypotheses and ultimately perhaps to real axiomatization".

[612] That are considered at the same time.

[613] Grunberg E. 1978. Complexity and open systems in economic discourse. *Journal of Economic Issues,* 546

We would need to acknowledge that this assumes a reduction of the system to dependent and independent variables. The latter may be conceptually difficult as all dependent variables are dependent on other dependent variables.

However, at the same time, it is acknowledged, in order to cope with complexity a reduction is necessary.

The participants' ability (or lack thereof) to observe variables, and to do so over time, and their own possible bias in recollecting history and experience[614], impacts when establishing validity of the outcomes (outcome being the understanding of the system as well as factors to be influenced, and expected outcomes from the interactions). The fact that the underlying assumption (i.e. that we can identify dependent and independent variables) may be based on the choice of the researcher, does not in itself invalidate the analysis, but we consciously accept that it cannot be confirmed by the analysis[615].

The language of sensemaking domains does lend itself to discussions of situations where the model enables leaders to cross the boundaries of the situational domains. The creative tension in a workshop setting lies between innovation (by nature supported by bottom-up processes), and organising (supported by the top-down need to manage diversity and create order), when the discourse unconsciously (or consciously if it can be made transparent to participants) shifts between levels of intersubjectivity and generic subjectivity. The respective frames of reference of managers and subordinates may become transparent in such a discourse, exposing underlying beliefs.

The rationalist constructivist position would be that individual insights would be possible through the narrative discourse, which can be created by reference to one's own imagination or experience (by virtue of the duality of the discourse). Any insights that change the perspective of reality would, by their nature, create a change in individuals. "A transformation is a shift in how we experience the world, and these shifts happen continually, often just beyond our notice"[616]. It is easy to state that "you can't change people"[617], but the basic premise of this thesis is that you can, and therefore "need to consider who, actually, is doing the changing. The answer is the relationship"[618]. Although insight is individual, it is based on the relationship between the *I* and the *we*, and the group, through discussion, develops the insight, adding and changing what is proposed, until a group position emerges. A change in the joint reality created by such a position provides the base for change as a group, and possibly as an organisation (assuming the group position is picked up by the

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[614] March JG, Sutton RI. Nov/Dec97. Organizational Performance as a Dependent Variable. *Organization Science,* 700-702

[615] Ibid.700

[616] Zander RS, Zander B. 2000. *The art of possibility,* 96

[617] Ibid.50

[618] Ibid.50

organisation). A higher level of coherence in the story developed through the discourse would strengthen the perspective gained.

This would probably increase the individual's readiness, when faced with a decision that could move their organisations (at least in their debate of consequences) to other domains (without necessarily knowing such to be more desirable[619]).

Change is inherent in each of the situational domains, and would be supported by different types of communication and modes of cognition. The impact of change is expected to be larger when there is movement between the domains, and larger the more systemic the change is i.e. the higher in the hierarchy of systems it occurs (organisational, societal change). In the same way that a snowball starts as a small ball, and increases in size as it gains momentum, the more people are involved in the conversation the more they are affected by it. However, the heat of the sun (energy of the people expended in communication) can also result in the snowball melting. Coordinated activity and conceptualisation expend less combined energy, and let the snowball grow. Keeping the snowball (communication) moving is key; otherwise it will either freeze or melt.

It seems appropriate to apply this analogy to organisations as a whole, as well as to individuals within such organisations, and it is the activity of keeping interplay moving that can provide the synthesis of ideas. For example, the sequence of steps as suggested by Figure 32 would enable discourse on innovation to be effective, could indicate steps towards implementation (moving the organisation from innovation to standardisation), and also be based on multiple perspectives which (internal and external) actors have to consider (assuming such were not part of the original discourse). The group would change as the narrative discourse spreads (and interacts back with those that were part of the original discourse) in the organisation, and potentially diffuses into the market.

4.2.3 Consequences of applying the model in analysing strategy formation

In situations characterised by high rates of change, the design of an interaction – whether at individual or workshop level – would need to be cognizant of contextual and organisational forces at play. If the forces are unclear they would be documented in a situational analysis of some kind.

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[619] Kurtz CF, Snowden DJ. 2003. The new dynamics of strategy: Sense-making in a complex and complicated world *Complexity,* 468

Using the analogy of astronomy, which reminds us that we could be looking at a problem from one perspective, the model, as a process, assists one in looking at the same problem from different angles. It does this in a structured manner (i.e. perspective change and repetition in one analysis and, in a way, a memory test of what has already been covered), and reinforcing assumptions and key drivers throughout the process. With repeated use of the process e.g. in a workshop setting, the further layers of complexity can be added, enhancing the learning process and progress towards embedding a new process as an organisational routine. Openness to emergence of opportunities and an ability to capture such would require one to maintain an attitude as 'scientist', always looking for the unexpected.

The speed of change in external conditions (e.g. convergence of competing products and changing customer needs) determines the speed of change in internal conditions.[620] The emergent nature of the processes (consistent with the language model of communication) would imply that output and change in understanding from workshops (seen as events) feed into and structure further organisational discourse[621]. Where the process of engaging with a particular subject enables participants to identify decision-gaps (Appendix 2)[622] in strategy formulation, it would require different action. Owing to the nature of ambiguity, such gaps cannot be resolved by more information, but have the potential for resolution in a *narrative discourse*.

The facilitator, the observer, and other participants of the workshop, act as agents of change when 'communicating' results from workshops. This communication would, in all likelihood, have a higher level of coherence as

a) The story is developed through the discourse in a group decision making process (such as a workshop), and

b) The discourse supports the communication nature of the whole process of strategy.

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[620] Hidding GJ. September 2001. Sustaining strategic IT advantage in the information age: how strategy paradigms differ by speed. *Strategic Information Systems,* 7-8

[621] Tsoukas H. 2005. Afterword: why language matters in the analysis of organizational change. *Journal of Organizational Change Management,* 98 From a discursive point of view organizational change is the process of constructing and sharing new meanings and interpretations of organizational activities. Notice that, from a discursive point of view, language is not simply the medium through which change is brought about, but change occurs in language and, by doing so, language brings about a different state of affairs.

[622] Choo WC, Johnston R. 2003. *Innovation in the Knowing Organisation: A Case Study of an e-Commerce Initiative.* 10 Decision gaps are gaps that require sensemaking and not further knowledge or know-how in order to resolve action.

As a final comment for completeness purposes, strategy as a whole also includes implementation. When viewed in a 3-dimensional space by establishing the current and desired positions, the Model is also useful when crystallising more detailed sequential steps towards the desired position[623]:

1. Who has to know about this decision?

2. What does the action have to be so that the people who have to do it can do it?

3. What actions have to be taken?

4. Who is to take the actions (work assignments)?

Naturally, part of the implementation plan is communication. The result itself is subject to a cognitive limitation, as results are not always physically discernible (e.g. change in behaviour).

4.2.4 Conclusions

The proposed model for analysing strategic decision-making has been designed to meet the "*ecological* perspective, which includes concern with agency, intentionality, rationality and meaning" [624] and does not merely "reduce actions or decisions to situational variables" [625]. The methodology[626] enables description of the situation in various layers[627], e.g. socio-political and organisational layers such as "national government, departments or teams"[628], and establishes correlations of these with factors e.g. policy, procedure, and individual agents, integrating such with the individual level of experience.

This combination, in one framework, provides potential for better explanations of, and therefore understanding of, situations characterised by high rates of change. The model would enable analysis of strategy formation, identifying potential gaps in the process, as well as gaps in available information, knowledge and possibly decisions. The thesis has provided insights as to the required structure of processes that support closure of such gaps.

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[623] Drucker PF. March 67. The effective decision. *Management Review,* 55 The most time-consuming part of the decision process is converting a decision into action.

[624] Farr J. 1985. Situational Analysis: Explanation in Political Science. *The Journal of Politics,* 1094 "Situational analysis has been a prominent figure on the methodological landscape of political and social science".

[625] Ibid.1094

[626] Important continues to be that analysis is performed at similar level of conceptual aggregation

[627] Vester F. 2007. *The art of interconnected thinking,* 219 The use of layers refers to 'situational sensitivity', terminology used by Vester.

[628] Farr J. 1985. Situational Analysis: Explanation in Political Science. *The Journal of Politics,* 1096 Example used is the situational analysis in the Cuban Missile Crisis.

The possibility of enriching the understanding of the model with examples of application thereof, inter alia through a Decision Support System, is beyond that of a Master Thesis.

4.3 A synthesis of implications for leaders of organisations

The ultimate purpose of strategising and organising is to "change behaviours of people, rather than being ends themselves" "in pursuit of organisation purpose and competitive advantage"[629].

This section will set out insights and possible implications for strategy formation, for leaders operating in environments characterised by high rates of change.

4.3.1 Knowledge

The abstract concepts were enabled by the notion of integrating principles and discourse, both on a rational level and on a complexified system level. The inclusion of individual and organisational experience provides the room for the experimentation necessary to enable innovation and change at organisational and individual levels.

The model described is one that supports thinking about the world/problem context as if it is a system, without declaring that it is a system[630]. The separation between the use of resources *and schemata*, although artificial, allowed us to try to understand what variables are relevant in decision-making and possibly cause change.

The rules and schema appropriate to decision-making, in the context of high rates of change, provided a sense of where cognitive limitations could prevent resolution of problems based on such limitations, and where when sensemaking in socio-political/subjective worlds actually requires focus on dealing with the right problem.

The model, as schemata and decision tool, has to be of requisite complexity in order to support the purpose for which is what designed.

Strategic intent is about dialogical interpretation, "empowering individuals to respond adaptively to changing circumstances"[631], resisting temptation for behaviours that could lead organisations and leaders to reassume the fallacy that there is causality in such intent.

Organisational capability to adapt is based on *continuous interaction* between the intentional strategic intervention and its actual interpretation, or sensemaking, throughout the

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[629] Pye A, Pettigrew A. 2006. Strategizing and organizing: change as a political learning process, enabled by leadership. *Long Range Planning,* 585, 588

[630] Checkland P, Scholes J. 1990. *Soft Systems Methodology in Action,* 22

[631] Statler M, et al. 2002. Dear Prudence: An Essay on Practical Wisdom in Strategy Making. *Organization,* 26

organisation, and its context by those (also by the leadership) who are operationalising the strategies. An awareness of the possibility of emergence is associated with a scientist's attitude to experiments. In this way, the relative influence and power of different stakeholders can play a role but within a broad framework of tensions between the socio-political system and organisations within such, as well as the individual attempting to establish meaning. The assumption is that strategic intent enables one to exercise judgement on what is 'practically necessary'[632] to move the organisation, while when dealing in the realm of rationality, one would search for technical feasibility to support organising change.

4.3.2 Interplay

The proposed methodology of analysing strategic decision-making, enables description of the situation in various social layers, e.g. society and organisational layers, and establishes correlations with relevant factors impacting the problem context e.g. policy, procedure, and individual agents, to enable identification of relevant variables that provide opportunity for the integration of such with the individual level of experience.

Organisational order emerges from the interplay between 'strategy formation' as a deliberate process and the emergent and varied organisational and contextual forces at play over time. The interplay and change of form provide the insight and the impetus for change to the leader's understanding of the schemata employed, the schemata embodied in organisational strategy formation, as well as in decision-making.

The discourse provided the following insights:

a) Strategy formation is distinct from a mechanical cause and effect approach, and requires a more holistic approach in turbulent times,

b) The methodology can be embedded in organisational processes that are in narrative format - and repeated frequently - providing some of the organisational stability, although the composition and iterations are often not deliberate,

c) Strategies emerge, as would the institution created by the interplay.

4.4 Further Research

To deepen the leader's understanding of the efficacy of possible strategies, the theoretical analysis of strategy formation, and the model developed, support a view of 'reality' that could be enriched by further research, inter alia covering:

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[632] Bernstein RJ. 1976. *The Restructuring of Social and Political Theory,* 186

i)   A more detailed reflection on the theories of life world and systems world;

ii)   Use of the model as a coding paradigm, in grounded theory, to gain further insights in analysing strategy formation;

iii)   Why, and in what circumstances, does it make sense to use a Decision Support System such Eidos, Expert Choice or Vester's Sensitivity Model, in conjunction with such theoretical model?

4.5 Conclusion

The proposed model for analysing strategic decision-making meets the "*ecological* perspective, which includes concern with agency, intentionality, rationality and meaning" [633] and does not merely "reduce actions or decisions to situational variables" [634].

The combination of organising, standardising, rationalising, emergence, complexification and innovation as variables using a morphological approach, in one framework, to create structure from relationships enabled the creation of a normative model. This model can be used in the process of analysing strategic decision-making as a whole that is, incorporating both the intention and its implementation. Such a model provides potential for better explanations of, and therefore understanding of, situations characterised by high rates of change.

The model would enable analysis of strategy formation, identifying potential gaps in the process, as well as gaps in available information, knowledge and possibly decisions. The thesis has provided insights as to the required structure of processes that support closure of such gaps.

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[633] Farr J. 1985. Situational Analysis: Explanation in Political Science. *The Journal of Politics,* 1094 "Situational analysis has been a prominent figure on the methodological landscape of political and social science".

[634] Ibid.1094

Appendix 1
Dimensions of Strategy

Table 7 Aligning assumptions to strategic dimensions and organisational change

	Innovation	*Assumption*	Institutionali-sation	*Assumption*	Contexualism	*Assumption*
Context (the where) [635]	Nature of industry	Obvious opportunity/ threat	Degree of interrelatedness of organisation and key decision-makers to market	Uncertain environment; Opinion leader or follower	External environment	Boundary
Industry (environment)	Degree of centralisation and formalisation of decision-making processes	Varied according to stage of innovation	Internally competing patterns of values and a fluctuating balance of power; e.g. through new CEO	Opinion leader	Reasonable level of change; Growth in the world economy	Leadership skills and human resources;
Management	Complexity of tasks	Task can be managed	Diversity, complexity of activities	Subordinate structure created	Key individuals perceive and interpret changes in environment	Prepared to question and change how it does things and what it does
Firm	Size of organisation	Level of resources, slack	Large profitable	Early adoption	Global competition	Scale or organisation and geographic scope
Process (how, who, when)	Stage of Innovation	Manage trade-offs of initiation and implement-tation	Planned slack time for staff	Capacity to implement change	Key individuals i)recognise opportunities and threats ii)convince others of interpretation and appropriateness of proposed response	Mobilise resources

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[635] De Wit B, Meyer R. 2001. *Strategy Synthesis - resolving strategy paradoxes to create competitive advantage,* 6 sets out the three dimensions of strategy being *process, content and context*, which are not different parts but are distinguishable dimensions that interact reflecting the complexity of the process and any discussion. Only for discussion purposes, the dimensions are separated in order to manage the complexity.

	Innovation	*Assumption*	Institutionali-sation	*Assumption*	Contexualism	*Assumption*
Content (the what)	Type of Innovation	Obvious answer i.e. Benefits and methods clear and non-contentious	All staff filter information from environment and pass on ideas to respective managers	No behavioural barriers; Incentive aligned	i)Opportunities and threats ii) Response	Consistency of chosen strategy option with these

The above has been adapted from Webb and Pettigrew[636].

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[636] Webb D, Pettigrew A. Sep/Oct99. The Temporal Development of Strategy: Patterns in the U.K. Insurance Industry. *Organization Science,* 602-605
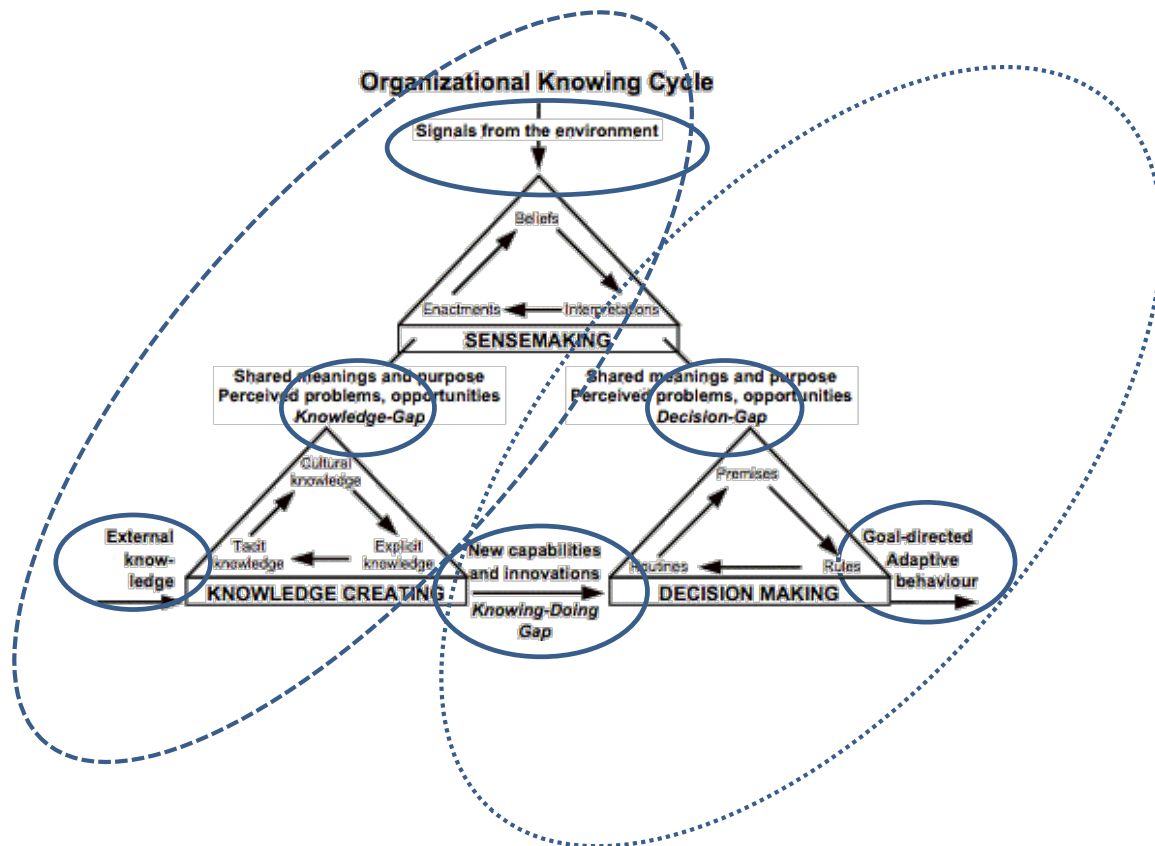
Appendix 2
Model of a Knowing Organization

Figure 33 The Knowing Organisation[637]

Choo's[638] model of a 'knowing organisation' provides a useful categorisation for discussion. The top left (large) oval is primarily focused on capturing knowledge, while the bottom right (large) oval is to decide '*what*' to do with the knowledge (including the new capabilities), that the individual and organisation acquires, including actions based on such knowledge acquisition.

This schema indicates the on-going process of capturing knowledge, getting consensus on gaps, achieving common understanding, and delivering possible implementation plans that have potential to move the organisation into more goal directed behaviour, on a structured

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[637] Choo WC, Johnston R. 2003. Innovation in the Knowing Organisation: A Case Study of an e-Commerce Initiative. 10

[638] Ibid.5-6

engagement basis. Moreover, this potential extends to the partners of the organisation and its stakeholders. The potential of agreeing gaps, and using a common language for participants, lies in the common understanding and communication of results of engagements (in group decision making processes such as workshops) on a consistent basis.

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