

Memetic Governance of Complex Social Systems

A model and a replicable method

PhD thesis
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1 Introduction

1.1 Why

The constant shifts between philosophy, theory and practice have always been a part of my educational journey. Perspectives, sense making and operational action on steering and coordination of organizations has fascinated me for the last 25 years.

Through these years I have experienced a difference in how practitioners navigate and make organizations work, and how some theoretical scholars at universities and other educational institutions make sense of organizational life. The complexity of operational practice, and what I see as academic simplification of reality in traditional reductionist and positivist theory, has led me into studies of complexity, evolution, cognition and pragmatism applied in social systems.

The ongoing world integration, resulting from the interchange of worldviews, perspectives, products and ideas, has strongly contributed to this complexity of operational practice during this period. Globalization represents increased communication and the dynamics of more and more closely connected and interdependent countries, markets and societies. The different social systems we belong to co-evolve and adapt to contexts of constant change, and at the same time these social systems are reciprocal causes of the same transformations. We supply input and output to our local and global markets and environments, creating dynamics that have influence the world over. In the social systems we belong to, other persons with different educational, cultural and social backgrounds increase interaction and mobility, adding even more complexity to the world.

In this context of complexity, how can governance be executed in a world where the public, private and third sectors are changing rapidly? How do we, as persons, act together in all types of social systems, both locally and globally in a more and more interwoven world?

Traditional reductionist and positivist mindset and hierarchical approaches to governance tend to fail in practice due to these changes, and we see signs of a “governance sclerosis” where national and global organizations are struggling to produce intended outcomes in an effective and efficient way.

To reduce the gap between *governance theory* and *governance practice*, there is a need for new approaches that embrace the complexity that comes with practice in a

globalized world. I hope this thesis will be a contribution for one such approach.

This thesis is an interdisciplinary effort to create a *replicable model and method for governance of complex social systems*. The thesis combines philosophical, theoretical and practical work.

The term *governance* is used both in private and public sector, and refers in this thesis to the systemized steering and coordination of social systems¹, perceived and treated as combinations of *hierarchies, networks and markets*². Today, different interpretations and applications of the term governance are applied in different social systems *locally, nationally, regionally and globally*.

Governance is a more expressive term than *government*, which refers to the *governing* body of a social system like the international community, the nation-state, a business entity, tribe or any other constellation of people who are bound together. Governance is what a government does. Governance is the exercise of steering and coordinating. When the term is applied in the private sector, labeled *Corporate Governance*, it is often treated as a general term for formal management systems, cohesive policies, processes and decision-rights within different areas of responsibility. When Governance is applied in the public sector, it often refers to a standard insuring that the needs of the public are served efficiently and effectively.

In this thesis I am *developing a method for how governance can be executed* within complex social systems in a complex world. The phenomenon of increased complexity and globalization has become a powerful influencing factor in how we *think, talk, decide and act* together in all types of *social systems*.

To reduce the gap between *governance theory* and *governance practice*, there is a need for approaches that embrace the complexity that comes with globalization. In this thesis I develop a *memetic approach* for doing so. *Memetics* is the study of how memes spread in social systems and how they impact *agents*. *Memes* are sustainable information units influencing and forming individuals, and through that impacting social systems spreading successfully within them. The individuals become *carriers* of memes that affect how they think, talk, decide and act alone and with others.

¹ A prerequisite of a social system is interaction of at least two persons. On the other end of the scale we can treat all individuals on the globe as a social system. In sociological systems theory there are different perspectives of what constitutes a social system. Talcott Parsons(1951) focuses on action, Niklas Luhmann focuses on communication, and Jürgen Habermas applies the term ‘communicative actions’, merging the two. A more indept approach to systems will follow later in this thesis.

² Williamson 1975

In this thesis, *memes* are developed into heuristic tools and cognitive templates that form and process subjective thoughts, communications and actions, both individually and collectively. The memes are experience-based models for agents problem solving, learning, and discovery.

Agents are individuals and groups of individuals in different social systems. I regard the agents as free and goal-directed entities that maximize “utility”, “benefit” and/or “fitness”³. They have cognitive limitations. They only have local knowledge, and cannot foresee the global or long-term effects of their actions. Agents act in their environment and interact with each other according to certain rules, determined by their goals and knowledge⁴. Agents are therefore bounded rational⁵. They lack the ability and resources to intentionally create optimal solutions. Instead, they apply their rationality to what they perceive to be the choices available to them. Agents thus seek satisfactory solutions, rather than optimal ones.

In this thesis, I will discuss how the method ‘memetic governance of complex social systems’ highly influences the focus on individual agents. Agents are *carriers* of knowledge they have acquired previously, they are free and they are operating on bounded rationality, creating emergent collective effects. I argue that it is possible to design for a desired emergence, where predefined *knowledge agents*⁶ interpret predefined heuristic memes that influence how they perceive and process their world and thus think, talk, make decisions and act, both individually and collectively.

My hope is that this in turn will lead to a complementary way of allocating resources and exercising control and coordination in social systems producing effects in association with others structures and processes of governance of social systems.

In this thesis, I have developed a method for how predefined memes can be infused into social systems through processes where free and bounded rational knowledge agents are regarded as participants and players that impact the system based on their own subjective agency. I show how different arenas for the diffusion and adaption of memes can be developed. I treat memes as forms and templates, open for knowledge agents’ interpretation and the evaluation of individual and collective present situations, desired situations and means to get from present to desired.

The main task of this thesis is to merge an improved version of *Memetics* with the intentions of “classical governance”, creating a replicable method, which is potentially applicable on all aggregation levels, from local to global social systems. With the method presented here, I seek to balance a designed and planned approach to

³ Heylighen, 2009

⁴ Heylighen, 2009:6

⁵ Simon, 1957

⁶ Stone, 2012

steering and coordination with emergent factors that are always present when human agency takes place. This thesis is about design for emergence.

1.2 What

This thesis seeks to develop a model and a method for Memetic Governance.

My philosophical and scientific core has during the long process emerged to be:

- *Evolution* (Darwin 1859, Veblen 1898, Schumpeter 1911, Alchian 1950 Boulding 1961, Campbell 1965, Aldrich 1979, Mckelvey 1982, Heylighen 1991, Heylighen 2007c)
- *Complexity* (Ashby 1956, Simon 1957, 1962, Bertalanffy 1968, Prigozhin & Stengers 1986, Kaufmann 1993, Holland 1992, 1996, Axelrod & Cohen, 1999, Heylighen 2002, 2008)
- *Cognition* (Campbell 1974 , Heylighen 1990, Thagard 1996, Varela, F. J., Thompson, E., & Rosch, E. 1991, Heylighen, Rosseel & Demeyere (eds.) 1990, Heylighen , Heath , Van 2004)
- *Pragmatism* (Sanders-Peirce 1878, 1888, James 1890, Mead 1934, Dewey 1938, Rorty 1979)

My work has also been influenced by:

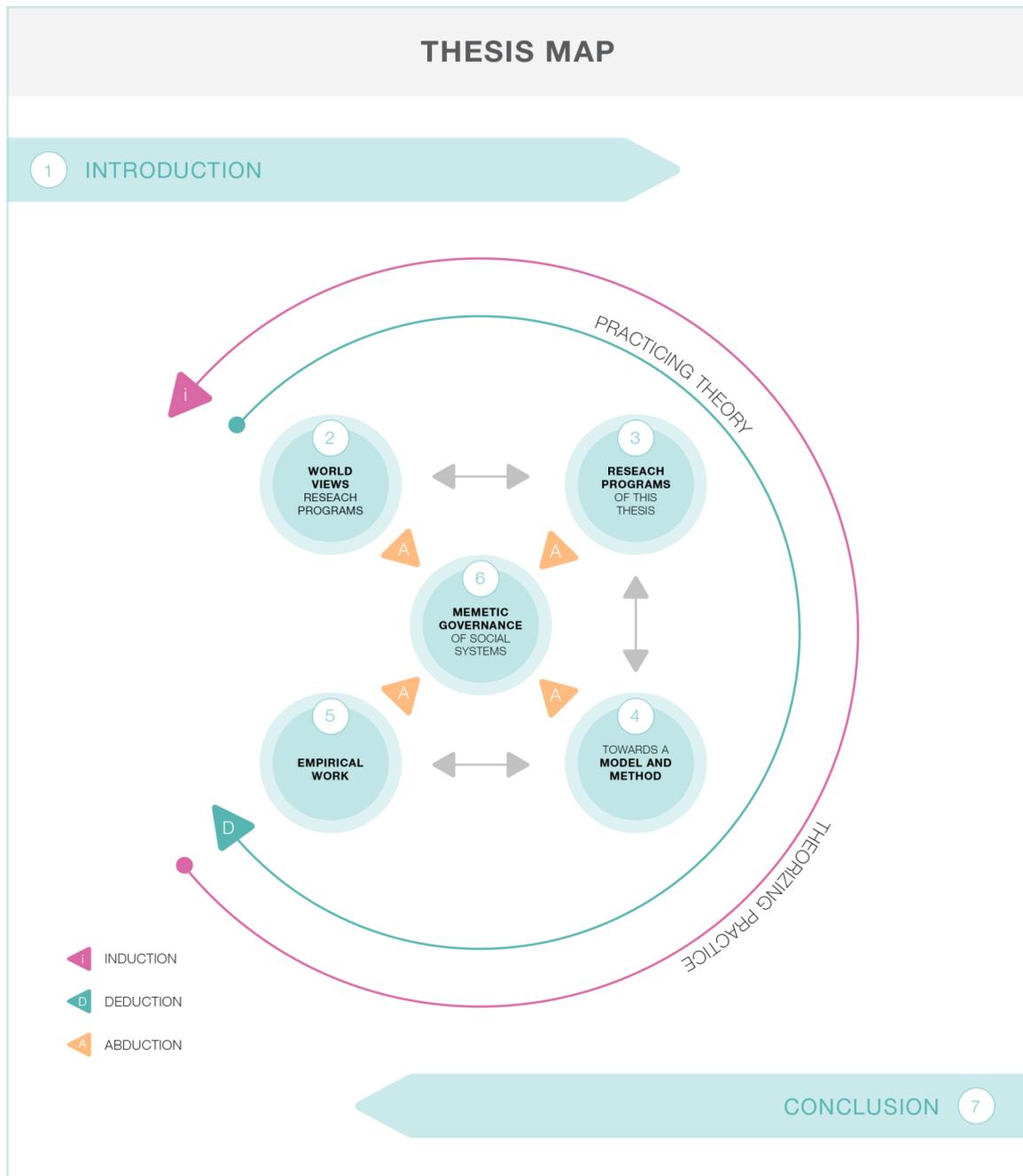
- *Sense making* (Weick xxxx, Snowden xxxx)
- *Iconography* (Schiller xxxx, Gunter xxxx)
- *Flow* (Csikszentmihályi xxxx, Nakamura xxx, Snyder & Lopez 2007)
- *Improvisation* (Johnston 2006, Nachmanovitch 1990)

These philosophical and theoretical perspectives will in this thesis be positioned into an *ontological and epistemological* framework. The term *research programme* is introduced during this process. A research programme can be defined as *scientific contributions circling around an epistemological and ontological hard core* (Lakatos 1978).

Memetic Governance is a term that is introduced and developed through this thesis. An exploration and examination of the current status of the Memetics and Governance as research programmes will be conducted.

My hope is that this model and method will lead to a complementary way of governance of social systems.

1.3 How: Induction, deduction and abduction



This thesis has taken me through a lot of reasoning. I have tried to think about people

and processes in different social systems in a hopefully sensible way. I have used my ability and awareness in both establishing and verifying signs out there in the complex world.

I have both changed and justified my understanding, beliefs and actions. This based on a constant shift in reasoning between philosophies and theories on one side, and practice in the empirical field of complex social systems on the other. The trial-error process has included theoretical reviews of my philosophical and scientific core, theoretical and conceptual operationalization based on the reviews, model and method development, and application in practical and operational contexts.

I have applied both *induction* and *deduction* on in my reasoning, but also *abduction*.

Inductive reasoning is progression from particular specific signs to broader generalizations. Articulating and/or supporting theories and hypothesis based on empirical findings is an inductive process. Theorizing practice is making generalizations based on signs.

Deduction is opposite starting out with generalized hypothesis and/or theories. Based on the understanding of these, we can evaluate specific signs and relationships between them in the empirical world. To reach specific understanding, and navigate accordingly, through validation of signs based on generalized hypothesis and/or theory, is a deductive process. Practicing theory is to allow our thinking and action to be informed by our deductive reasoning and understanding.

Abduction is thinking in laterals like analogies, metaphors and parallels. It is possible to describe signs by looking for other signs that fit our initial interpretation, seeing patterns of relationships. Through lateral extension of abstractions of one sign, new signs are made sense of. An iconic and simplified representation of one sign through the extension of its abstraction, can be used as an analogy, metaphor and parallel for making sense of other signs.

I have applied inductive reasoning taking into account all my practical learning from the empirical cases forming the thesis. This learning has influenced my theoretical orientation, the shaping of both the paradigm and the research programme of this thesis. I have been theorizing my practice.

I have also used deductive reasoning. My practice is heavily influenced by the generalized philosophies, theories and hypothesis. Specific signs and relationships between them are in my empirical work evaluated based on these generalizations. This has again influenced my thoughts and actions. I have been practicing theory.

Based on both the inductive and deductive reasoning, I have used abduction devising a replicable model and method for governance of complex social systems. This is a synthesis of all the previous theoretical and empirical work in the thesis. Mixed patterns of relationships have been drawn together. The model and method is developed through trial-error processes in a blend of philosophy, theory and practice.

This has, for the last 10 years, not been a linear process, but more an interactive mixture of abstract studies combined with operational practical work in different empirical fields around the world. The research question that have been developed during this process is:

How is it possible to design for a desired emergence within and between active human agents in social systems?

Answering this research question has been an exercise with lateral extensions of abstract and concrete signs that hopefully have been made into a fusion through a replicable concept.

1.4 Outline

The thesis is organized in two parts: One philosophical and theoretical, and one conceptual and practical.

In part I, I position and discuss the philosophical and theoretical perspectives behind the model and method developed through this thesis. Based on this positioning and discussion, I develop some assumptions and principles for further empirical and operational work.

In part II, I strengthen the model and method through several case studies I have done in different *public and private organizations* around the world. Parts and wholes of these organizations are regarded and treated as *complex social systems*. Part II will end up in what is labeled *A Replicable Model and Method for Memetic Governance of Complex Social Systems*.

Part I: Philosophical and theoretical

In Part I chapter 2, I explore overall perspectives from which we regard and interpret the world. I will go into terms like *worldviews, paradigms, research programs* and touch upon two main streams within philosophy and science. In this thesis these streams are labeled *The Objectivist and Subjectivist Research Programme*. They are characterized in many different ways in the literature. Based on the different elements in this chapter I will enter a discussion on methodology and research design. My approaches in Chapter 2 are influenced by all the other parts of the thesis, but as a written end product, chapter 2 functions as an ordered background for chapter 3.

In Part I chapter 3, I will define and clarify this thesis philosophical and scientific core along the dimensions developed in chapter 2. My philosophical and scientific backdrop will be described and discussed. I present my understanding of the main contributors and key concepts within four disciplines. These four disciplines are as mentioned earlier *complexity, evolution, cognition and pragmatism*. I will also discuss the status and challenges with the *Memetics, Governance*, and the term *Social*

Systems. I will give my perspectives on how to best understand and apply these concepts for this thesis' purpose. Chapter 3 also contains an identification and exploration of other sources for a *Memetic Governance Model and Method*. These are as mentioned above *Sense making, Distributed Cognition, Iconography, Flow and Improvisation*.

Part II: Conceptual and practical

In part II chapter 4 I take all the above into account when I create some assumptions and principles for practical work. I will apply my understanding of the philosophical and scientific directions along three different aggregation levels: *Macro, Meso and Micro* levels of Social Systems. In this chapter I will also discuss the terms *model and method*, and describe a replicable tool applied in the cases described in chapter 5.

Part II chapter 5 is a presentation of the main findings from several case studies. I will explain how these case studies were done, and also discuss my empirical approach in relation to my philosophical and scientific position stated above.

In part II chapter 6, I apply all the previous chapters in a conceptual description of a *replicable model and method for governance of complex social systems*. Here I will present “the what” and “the how” in relation to steering and coordination of macro, meso and micro levels in social systems. The guidance from the theory in Part I, and the practical and operational work from the cases in Part II, will inform this work.

Part II chapter 7 is summarizing the thesis. I will restate the main purpose for the developed of the governance model and method, recommend future research and suggest practical applications of the concept.

2 World views and Research Programmes

2.1 Introduction

This chapter positions, explores and examines the philosophical and scientific core for this thesis. I will try to put the central and essential assumptions for my work into a broader philosophical and scientific context.

2.2 Ontology, Epistemology and Methodology

Different sciences have different *ontologies*, *epistemologies* and consequently different *methodologies*. Ontology defines the fundamental categories of reality. Domain ontology, as distinct from formal ontology, is related to focus of study. A biologist who studies ants in natural science, differentiates the ants' constituent parts, actions, interactions and contexts. Similarly in social science, a sociologist will have implicit and explicit presuppositions about categories of reality that are fundamental and related to the cultural and human systems they are studying. Where formal ontology says something general about reality, domain ontology says something specific about different areas of reality.

Epistemology defines how we can know and reason that reality. In domain ontology, each research field has specific epistemologies. The theoretical maps (read epistemology) applied by the biologist studying ants in natural science, are traditionally different from the maps applied by the sociologist studying how humans interact in social science.

The methodologies of each of these two scientists operate on different systems of investigative techniques within their focus of study. The biologist and the sociologist traditionally apply different procedures for accomplishing and approaching the phenomena they focus on. They use different scientific methods, studying different domains with specific epistemologies and ontologies.

Despite the traditional division between natural- and social science, is it possible to make useful theoretical generalizations about governance of social systems, crossing the different epistemologies? I believe it is. I hope it is feasible to make a contribution to Governance as an analytic framework, developing and applying techniques for inquiry on steering and coordination that both acknowledge the epistemologies within both nature and culture sciences, and integrate the traditional division between them, but still examine facts and make discoveries without slipping into the trap of over-generalization or orthodox determinism.

Through history there has been a development in ontology, epistemology and methodology. Francis Bacon made his crucial *experiments* in natural science, and Max Weber made his methodological division between *interpretation*, *understanding and explanation* in social science. John Locke and David Hume's *empiricism*, René Descartes' Realism, Auguste Comte's *positivism* and the *pragmatism* of Charles Pierce, George Herbert Mead and John Dewey are contributions, among many others, of different approaches to the philosophy of science.

In the development of social sciences, there have been two main paths. The first states

that human action and interaction are explained solely through the epistemology of *The Objectivist Research Programme*, accumulating true knowledge through the verification and falsification of *objective* facts. This scientific approach presupposes that the facts are out there, waiting to be discovered. It is often combined with the presupposition that we can perceive the world as a series of neutral signs, and make interpretations of these signs as measurable evidence subject to specific principles of reasoning.

The second, and younger, *The Subjectivist Research Programme* states that social science should be measured by different scientific standards, based on progression and on the ability to explain from multiple positions, rather than having one idealized and deterministic ideal based on rigid, but in practice impossible, attempts to isolate social variables. There are many ways to Rome, which is a benefit according to the latter approach. Different scientific approaches produce different scientific results. Different epistemologies lead to different methodologies that enrich our understanding of the fundamental categories in our world.

The Objectivist and Subjectivist Research Programmes rest on different worldviews.

2.2.1 What is a worldview?

The work of Clea
Heylighen
Leo Apostel, Clea

2.2.2 What is a paradigm?

Kuhn

2.2.3 What is a research programme?

In the 1960s and 1970s, when Karl Popper and Thomas Kuhn were heavily influencing the academic discourse in all sciences, one man was trying to synthesize Popper's strong *falsifications* and Kuhn's *paradigmatic approach* by introducing the term *research programme*. The Hungarian philosopher Imre Lakatos, at the London School of Economics, defined a research programme as *scientific contributions circling around an epistemological and ontological hard core*. This hard core can be regarded as equivalent to an academic attractor, around which different contributions in a field revolve. Each of the traditional research disciplines in the natural, social and human sciences has these academic attractors – axioms and presuppositions, which are, reinforced by scientists contributing to the field. These contributions are often in opposition to those of other scientists contributing to other hard cores.

Lakatos suggests that instead of working with sole verification or falsifications of hypothesis, or total neglect of one paradigm in favour of another, we should ask whether one research programme is better than another depending on the purpose of the research. Problem shifts within a research programme make it sustainable without changing the paradigm. A problem shift is a change in the auxiliary hypotheses within

a research programme, to explain, on the one hand, obvious contradictions, and to create novelty and new insights on the other.

A degenerative research programme is recognized through lack of growth both theoretically and empirically. Instead, proponents produce a protective belt of auxiliary hypotheses that do not lead to the discovery of novel facts. *A progressive research programme*, on the other hand, experiences growth, the discovery of stunning novel facts, the development of new methods and more precise predictions.

2.2.4 Main aspects of The Objectivist Research Programmes

The Objectivist Research Programme	The Subjectivist Research Programme
Modernism	Post-modernism
Naturalism	Culturalism
Functionalism	Deconstruction
Structuralism	Post-structuralism
Foundationalism	Reflexivity
Logical Empirism	Constructivism
Cartesian Science	Hermeneutics
Newtonian Science	Phenomenology
Reductionism	Holism
Realism	Nominalism
Scientism	Anti-Scientism
Experimentalism	Pseudo-Science
Traditionalism	Post-Traditionalism
Absolutism	Relativism
Positivism	Anti-positivism
	Interpretativism

Compiled by author and adapted from Holden and Lynch 2004, Stavrakis 2009, Hussey and Hussey 1997

2.2.4.1 Objectivist ontology, epistemology and methodology

The Objectivist Research Programme has commonalities in epistemology and an ontology derived from logical and mathematical coding of sensory acquired information.

The different contributions are gates into myriads of explanations and interpretations

of different foundations in the history of philosophy and science since Plato's dialogues.

Isaac Newton transformed and enlightened physics and science (Newton 1687, 1672). René Descartes' established the realist school (Descartes 1637, 1644). John Locke and David Hume developed empiricism (Locke 1690, Hume 1739). Francis Bacon made his crucial experiments in physical science (Bacon 1620). August Comte described an epistemological perspective of *Positivism* in *The Course in Positive Philosophy* (Comte 1830-1842) building on the above historical contributions within the research programme. His ideal for the physical science methodology was also adequately developed for the coming of social sciences.

Émile Durkheim, commonly cited as the principal architect of modern social science, rejected some the details of Comte's philosophy, but kept and improved his methods (Durkheim 1919). The social sciences became a reasonable extension of the physical sciences into human contexts with the same standards for objectivity and causality (Wacquant, Loic 1992).

The Vienna Circle, a group of scientifically trained philosophers and philosophically interested scientists, further developed the positivist research Programme in the period of 1924 to 1936.

The strong and sustainable development in ontology, epistemology and methodology through history, has hereinto made The Objectivist Research Programme one of the central strands in the fabric of western thought.

According to the Programme, scientific truth is the only source for knowledge. Empirical evidence is verified objective data sensed by the scientific researcher, tapping into an objective, ordered and sensible world "out there".

Ontologically objects and events in the world are autonomous of the observer's perception. Reality exists independently from the knowing subjects. Reality is composed of discrete objects and events that can be ordered and aggregated hierarchically, e.g. particles constitutes atoms, that constitutes molecules, that constitutes cells, that constitutes organisms, that constitutes humans, that constitutes social systems, that constitutes societies.

These objects and events are in addition causally connected. The relationship between a cause and an effect can be determined through *reduction*. Complex systems are the sum of their constituent parts. An account of the whole can be reduced to accounts of the individual parts. What exists is made from a small number of foundational substances that can be predicted because they behave in regular ways.

The Objectivist Research Programme makes a strong division between the researcher and the object of research. This division is critical for making unbiased investigations, and enables the scientists search for objective facts. The reliability and validity of any theory, is a function of empirically testing its correspondence to reality – a reality that is ordered with governing rules that exceeded all contexts. Science is a tool for

tapping into reality based on defined research goals. Theories make explanation and prediction of observable facts derivable. The ideal is to articulate science in a 'perfect' logical language in correspondence to reality. Facts should be tested through falsification and verification and data should be measured, weighted and counted.

In spite of its formidable success The Objectivist Research Programme has been heavily criticized as a reactionary science especially unable to understand and explain dynamics within social systems. The main critique within the social sciences started in Germany as political-philosophical dispute in the 1960ies – *Der Positivismusstreit*. Due to its resistance to changes in the way we make sense of the world, positivism was accused of being rigid and ridiculous (Anderson, 1996). Especially the *hermeneutics* and what later got the label *post-positivism* articulated different forms of criticism that later became competing research programme.

2.2.5 Main aspect of The Subjectivist Research Programmes

The Subjectivist Research Programme consists of different philosophical and scientific schools developed along, but mostly after, the objectivist approaches to epistemology, ontology and methodology. Phenomenology, hermeneutics and constructivism are three of many labels that constitute the programme.

Phenomenology can be regarded as the study of the structures of consciousness from the first-person point of view. Edmund Husserl's (1911) phenomenological approach influenced the shaping in the phenomenological philosophies of Martin Heidegger (1913, 1959), Maurice Merleau-Ponty (1962), and Jean-Paul Sartre (1960, 1989). They all argue it is impossible to view consciousness as a simple scientific object of study. Phenomenology is alternatively an inductive, descriptive approach that gives subjectivity a privileged position. The study of essences, the science of phenomena, and the exploration of human experience are all example of phenomenological projects. Edmund Husserl (1913) did not argue that the mind creates the world; neither that reality exists apart from the passive mind. He took an intermediate stance between absolute and relative ontology, arguing for the relativity of our epistemologies. The structure of perception, thought, memory, imagination, emotion, desire, bodily awareness and social activity are highly subjective, but directed of experience toward things in the world.

Martin Heidegger (1913, 1959) was more focused on existence than experience, and turned the Husserl's phenomenology away from subjective psychology and towards a more objective ontology. Heidegger's theory of *Dasein*, the presence and existence of non-dualistic human being is not about neither subjectivity nor objectivity, but more concerning the dynamics between them in the sense making of being in the world. Authentic choices are always made on individual sense making, but in a collective world.

Merleau-Ponty (1962) was focused on the whole body as the mean to know the world. This was a deviation from the tradition of locating mind, brain and consciousness as the main tools for creating knowledge. The body is an incarnated subject that makes continuous elaboration within its ever-present world frame. This elaboration is pre-conscious and predictive of the ontology of the world. Phantom pain in lost limbs, where a non-existing part of the body is sensing itself and the world, are one of many illustrations in his work.

Jean-Paul Sartre (1960, 1989) argued that the authentic in our lives is life experience, not knowledge. Narratives and plays as experiences have equaled value as discursive writing and thinking. Inspired by Kant, he introduced the terms "the in-itself (*en-soi*) –the unconscious" and "the for-itself (*pour-soi*) – the consciousness". "En-soi" is solid, self-identical and passive "*Pour-soi*" is fluid, nonself-identical, and dynamic.

We are always beings "in situations". The mix of "en- and pour-soi" forms these

situations, and is impossible to determine. This mix is the ontological foundation of our freedom according to Sartre.

Hermeneutics is another major philosophical part of the Subjectivist Research Programme. Hermeneutics is derived from the German word “heuriskein” - to discover. Hans G. Gadamer (1960) was one of the main contributors to the method of solving problems for which no formula exists. Hermeneutics is based on informal ways of making sense of experiences, and employing iteration, trial and error, in finding useful solutions or findings in a research field. The intention of a hermeneutic interpretation is to understand the meaning of a research subject. The ongoing dynamics between parts and wholes is crucial in this process. Reality is relative to how different researchers make sense of the world and subject matter. As for the phenomenologists preconceived ideas color these researchers perception and understanding. These predetermined ideas and presuppositions are essential for making sense and create understanding, including what we are looking for, but also a hinder with the possibility of excluding relevant signs we are not focused on.

In addition to Hermeneutics, Constructivism argues that we as humans generate knowledge and meaning from our interaction between our experiences and our ideas. Ludwik Fleck (ref) introduced the notions of *Denkkollektiv*, collective thinking and *Denkstil*, thinking styles. Evolution of thought is based on collective assumptions about objects, denkstil. These assumptions are shared for practical and social reasons, and through that thought collectives, denkkollektiv, are stabilized and conserved (Trenn and Merton, 1979).

As constructivist, Jean Piaget (1953) described three different types of mental structures that influence how we make sense of the world:

- Behavioral (or sensorimotor) schemata that organize patterns of action that we use to represent and respond to objects and experiences
- Symbolic schemata that are images or verbal mental codes and symbols we apply to represent different aspects of these experiences
- Operational schemata that are internal mental activity to process objects in our thinking

J. L. Austin (1955, 1962) reasoned that the way we talk is not only passively describing a given reality, but it can change it. In *How to Do Things With Words* (1962), he describes speech acts like: “I name this ship the *Queen Elizabeth*” and ““I take this man as my lawfully wedded husband””.

As the other contributors to The Subjectivist Research Programme George Kelly, in his book *The Psychology of Personal Constructs* (1955), argues that people are like naive scientists seeing the world through particular lenses. These lenses are a function of subjective systems of construction, which they use to anticipate the world. Our experiences are new, but at the same time familiar to the extent that it is construed

with historically derived constructs: Siting Heraclites: “We step, and do not step, in the same river”.

Paul Feyerabend draws attention to epistemological anarchy. In his book: *Against Method and Science in a Free Society* (1975), he argues that rigid methods limit the scientist’s contribution to the progression of science. Science started as a liberating movement, but has become more and more rigid and dogmatic as an outdated ideology. Feyerabend argued against any kind of intellectual hegemony. Multiple methodological approaches to world should be allowed based on different theoretical assumptions. Competing or successive scientific theories and epistemologies are ‘incommensurable’, meaning impossible to measure or compare. Thus they should exist as complementary approaches.

Thomas Kuhn was as Feyerabend also concerned with ‘incommensurability’. In “The Structure of Scientific Revolutions” (1962), he discusses how one scientific paradigm precedes and succeeds another paradigm. The new paradigm cannot be proven or disproven by the rules of the old paradigm, and vice versa. The evolution of scientific theory does not emerge from the gathering of facts, but from altering intellectual conditions and options. Normal science builds within frames, axioms and paradigms that are not questioned properly. Scientists should always articulate their paradigm, evaluate key paradigmatic facts and assumptions, and test these against their empirical data.

But in the same period there were strong influential philosophic voices that argued there is no absolute truth or validity neither in science nor in ordinary sense making. The French post structuralism at the end of the 60ies laid the foundation for the development of what was later labeled as postmodernism. Michel Foucault (1924-84) and Jacques Derrida (1930-2004) introduced terms and philosophical approaches like *discourse*, *déconstruction* and *differance*. Truth and validity have only subjective value based on presuppositions, perspectives, focus perceptions and considerations. What exists for the subject is subjective. Reality is a function of conscious and/or unconscious selection of signs and data. There is always an interaction, exchange of signs, between the subjective observer and the subjective observed. Subjects and events in the world are thus colored by this interaction.

Every *discourse* should be exposed to *deconstruction*, and the only meaning of both perception and language is the *differance*: Sensation and words have meaning only because of contrast-effects with other sensations and words, consistent with the post-modernists.

Based on all the above Lakoff and Johnson (1999) articulate their paradigm in *Philosophy in the flesh*. They include the latest research from cognitive science and embrace empirical testing. Three major findings in cognitive science is, according to Lakoff and Johnson, revolutionizing western thought:

- The mind is inherently embodied.
- Thought is mostly unconscious.
- Abstract concepts are largely metaphorical.

“Our metaphors provide subjective experience with extremely rich inferential structure, imagery, and qualitative "feel," when the networks for subjective experience and the sensorimotor networks neurally connected to them are coactivated. They also allow a great many of the words of sensorimotor experience to be used to name aspects of metaphorically conceptualized subjective experience.” (Lakoff and Johnson 1999:35).

“Science is a social, cultural, and historical practice, knowledge is always situated, and what counts as knowledge may depend on matters of power and influence. Accordingly, we reject the simpleminded ideas that all science is purely objective, that issues of power and politics never enter into science, that science progresses linearly, and that it can always be trusted. Moreover, we strongly reject the myths that science provides the ultimate means of understanding everything and that humanistic knowledge has no standing relative to anything that calls itself science. But this does not mean that there is no reliable or stable science at all and that there can be no lasting scientific results.” (Lakoff and Johnson 1999:48)

Based on the above The Subjectivist Research Programme has several sources to gain knowledge. No single empirical evidence can justify one objective truth. To try to understand what is happening in one specific social system is more important than to prove causal relationships and fundamental laws of regularities in general.

What summarize The Subjectivist Research Programme is the circling around description, interpretation and analysis.

- We describe our subjective lived past experiences
- We subjectively interpret experiences by relating their features in subjective context.
- We analyze our experiences subjectively selecting significant characteristics for further elaboration.

2.3 Summary

Both the Objectivist and Subjectivist Research Programme are backdrops for the paradigms and research Programmes in this thesis. One of the questions I will investigate further is how *Complexity, Evolution, Cognition and Pragmatism* relate to these opposite approaches to reality.

3 Research Programmes of this thesis

3.1 Introduction

This chapter defines and clarifies this thesis philosophical and scientific core along the dimensions developed in chapter 2.

3.2 Philosophical and Scientific Backdrop

3.2.1 Complexity

3.2.1.1 Complicatedness, Reduction and Simplicity

The art of simplicity is a puzzle of complexity.

Douglas Horton

Complex tasks require complex organizations. Complex systems theory (CST)⁷ is based on philosophical foundations other than traditional reductionist theory. In contrast to the Cartesian tradition, which emphasizes the study of each part in a system, parts of a whole are always perceived together, as presented in the introduction on systems in chapter 1.1.

Instead of studying isolated cause-effect mechanisms, the objects of study are patterns (simple and complex), links, communication and mutual dependency within systems and their constituent parts.

Social systems consist of individuals and groups of individuals. These groups and individuals are *agents* that produce *effects*. Agents often employ separate strategies to achieve goals. Emergent, intended and non-intended effects are created within the system when these separate strategies are brought into action within the same timeframes.

A social system is considered complex when there are high levels of interaction and interdependence between different agents' actions and the effects they create. Actions and effects in the present have significant impact on potential actions and effects in the future. Due to this, there is often a delay related to the agent's expectations of cause and effect; actions are taken now with expectations in mind, but the effects of those actions (on their own or combined with the effects of other agents' actions) may take time to develop.

⁷ Ashby (1956); Bertalanffy (1968); Simon(1962); Kaufmann (1993); Holland(1992); Prigozhin & Stengers (1986)

3.2.1.2 Nonlinearity

3.2.1.3 Adaption

3.2.1.4 Situated and General

When we study CST we can focus on general aspects of a category of systems, or we can study the individual characteristics of a specific system.

The latter, referred to as *situated complexity*, assumes the inherent contingency and subjectivity of a system as well as deep, clearly identified and specific complexity. Explanation is possible, but only explanation that is local in time and place. Idiosyncratic⁸ particular events tell us more about a specific system than generalized theory.

In contrast to this, *general complexity* highlights the generalized rules that demonstrate emergence and are applicable across different systems (Holland 1995). The aim of this approach is to identify and understand patterns we can draw generalizations from. An example of such a rule might be ‘follow those close to you’ or ‘keep your distance’. This applies on a general level across natural and social systems, like a flock of geese flying south for the winter, a crowd of people leaving through the gates of a stadium, or in fashion following the trends, but still keeping your individuality.

General complexity and *situated complexity* have in common that they both deal with the understanding and construction of patterns. These patterns may be deeply complex, characterized by complex and contingent causes, but they may also be simpler, featuring, for example, linear causal links. They may be heavy patterns that are persistent, distinct and easy to recover, but they may also be light patterns that are hard to detect, as they are more discontinuous, oscillating between emergence and disappearance⁹.

CST is a cross-scientific approach to exploring and explaining different physical, biological, ecological, digital and social systems, and possibly the relationships between them. CST can be applied on different aggregation levels, depending on what we define as the system we are studying. One way to recognize complex systems is to look for:

- The hierarchy of parts within wholes that are simultaneously parts of greater wholes
- A high degree of links between the parts
- A high degree of interdependence between the parts

⁸ By idiosyncratic, I here mean a distinctive or peculiar feature or characteristic of a place or thing.

⁹ Teisman et al 2010: 38

- Constant change and emergence over time, also called evolution
- Parts that constantly change or adapt to their surroundings
- Parts that have limited input from the whole of the surrounding system¹⁰.

Examples of systems that can be regarded as complex are the world markets, biotopes, the Internet, anthills, organizations, the human body, the nation state and the European Union, among many others.

3.2.1.5 Scale

The degree of complexity we perceive depends on our epistemological representation: what is complex in one scale may be more ordered or disordered in a representation of a different scale. The aggregation level we apply on the system we study defines the level of complexity. A map of 1:1000000 is less detailed than a map of 1: 1000, but covers a wider area. Narrow focus tends to increase complexity, and broad focus tends to reduce it. If we aggregate on a high level we cannot perceive many details. If we are operating on a low aggregation level, we perceive different and more complex information. The closer focus we have, the more details we perceive.

Hierarchies can be regarded as systematic aggregate levels in human organization. From the top of an ideal hierarchy it is possible to control behaviors on a large scale. Leaders at the top of the chain have no need to narrow their focus to make things happen further down the chain of command. The agents at the top of the chain of command need limited information on the microstates of those agents lower in the hierarchy to make the system work. General perspectives and high aggregated analysis are sufficient to inform decisions and execute actions. This is opposite to ideal networks, where different symmetric and asymmetric informal lines of horizontal communication and control exist. Each individual part of a network can be relatively simple, but the behavior of the network as a whole may be very complex.

The level of detail we take into account when we describe and understand a social system is a function of how much information we need. The more detail, the more information, the more complexity. Scale is about aggregation levels and distance: The more distance, the less information. The more simplicity, the higher aggregation level.

A real-life organization can be regarded as a *balance of hierarchies and networks*. When designing an organization for a scale operation (e.g. making T-Fords along a production line or an army marching), man has traditionally applied a strong degree of hierarchy and specialization. If we are primarily concerned with adaption and change within a complex environment (e.g. selling insurance through autonomous agents in the field), we insert a higher degree of network dynamics into the design of our organization and give the individual parts, the agents, a more autonomous role.

¹⁰ Vada, 2009

The success of an organization as a social system depends on both *complexity and scale*. The ability to achieve balance between these two desirable but incompatible features defines an organization's success.

3.2.1.6 Large Numbers

3.2.1.7 Agents, Agency, Emergence

A complex social system is made up of many agents who act and interact with each other in unpredictable ways. A complex social system adjusts its aggregated outputs to the environment it sits within. These outputs are based on agents' communicative action, and create emergent and partly unpredictable aggregated effects. The system is complex when the interactions between the constituent parts, and the interaction between the whole and its environment are such that the system as a whole cannot be fully understood focusing on its parts in isolation,

Emergence refers to sudden change that occurs within a system in a non-linear way. In social systems, emergence is a consequence of the local interaction between agents. It derives from the collapse of built-up tensions, sudden mergers of formerly separate parts or the divergence of connected parts, resulting in changes of network connections. Creativity, learning and change occur when emergence forms a previously unknown solution to a problem and creates new outcomes. A complex social system is considered dynamic when the ongoing interaction of agents leads to emergent and self-organizing new effects that influence the whole system.

In a complex social system, order comes from the actions of interdependent agents who lead and follow each other based on the exchange of information and on the way they change and adapt to each other, rather than from the direction of a central authority. These dynamics are non-linear. The aggregated system is partly deterministic, but there is a level of individual agency that counters any possibility to accurately predefine outcomes of collective behavior. Each time an agent interacts with another, that agent is free to follow, ignore or alter the other.

Different agents within a social system resonate with each other and may augment the capabilities of the broader system, thus influencing the system's self-organizing capabilities. A transformative causation of micro-interaction is, in each moment, influenced by agents' memories of previous moments. Each moment is a repetition of the past for the agents, but with the potential for future transformation and continuity at the same time.

3.2.1.8 Microstates

Bill McKelvey regards the study of Complex Adaptive Systems¹¹ as the ultimate interdisciplinary science, focusing its modelling activities on how microstate events, whether particles, molecules, genes, neurons, human agents, or firms, self-organize into emergent aggregate structures (McKelvey, 1999). In organizations, microstates are stochastic events made by the constituent parts of the system(s) in existence there. They are determined arbitrarily, having a random probability distribution or pattern. Microstates may be analyzed statistically but may not be predicted precisely.

For physicists, particles and microstates are one and the same – the microstates of physical matter are atomic particles and sub particles. For chemists and biologists, microstates are, respectively, molecules and biomolecules. Microstates are “... discrete random behavioral process events in the eyes of organizational scientists” (McKelevey, 1999: 5).

He suggests a bottom-up approach focusing on microstates to make sense of organizations. Microstates can be events such as decisions or the communication of information. Chunks (or bits) of information could well be the microstates for decision science and electronic bytes may make good microstates for information science (McKelevey, 1999: 5).

In discrete, random, behavioral process events, agents have stochastic, nonlinear behaviors and change and adapt over time via stochastic, nonlinear dynamics. In these dynamics, an agent’s attributes or capabilities may be as simple as a single, simple rule. One such rule could be, as we saw when we discussed *general complexity*, the binary choice “Follow the other agent or don’t.” Either you follow the ones around you or they follow you. If they follow, you are the change agent. If you follow, others are leading the change. For example, when two crowds of pedestrians cross the street at the same time on the same place at a pedestrian crossing, this dynamic takes place. Individuals in at the front of the crowds on each side of the street find pathways through the crowd coming towards them. Other members of the same crowd subconsciously follow these paths because it is the most effective way to cross the street without bumping into member of the opposite crowd. On an aggregated *macrostate* level, emergent patterns manifest themselves based on individual strategies turned into action within the same timeframe, in the same context, based on a simple rule that can be general and applied into other social systems.

Based on the above, *macrostates are aggregated dynamics constituted of the microstates*. Macrostates are more stable and predictable. One example of a macrostate would be how a Police unit behaves under certain stable conditions, such

¹¹ A complex adaptive system (CAS) is in this thesis the same as a social system. Complex adaptive systems are dynamic networks of interactions and relationships not aggregations of static entities. They are adaptive in that their individual and collective behavior changes as a result of experience.

as executing routine work on a crime scene, or how the High Court formally handles a criminal case. Simple and predictable “rules” apply, but how each police officer or judge behaves, and what they think and choose to communicate under these macrostate conditions, is made up of stochastic and unpredictable microstates.

In a similar way, in the field of physics, how pressure, temperature and volume behave inside a balloon in thermo-dynamic equilibrium is a macrostate. How the atoms and molecules constantly change their behavior under the same stable conditions is stochastic and unpredictable, and represents the microstate. The distinctive features of each atom or agent influence its behavior.

3.2.1.9 Variety and Connection

Distinction is related to variety. Distinct agents within a complex social system behave differently. Over time these differences in behavior create increased disorder in the system, which can be labeled ‘entropy’.

Conversely, connection is related to redundancy. The distinctive agents are not independent. The agent’s knowledge of other agents in combination of general rules in the system, as exemplified above, opens up for a determination of agents’ behavior on a macrostate level. The system becomes stable when the agents’ behavior in sum is unaffected by small perturbations and disturbances. Connection leads to order. Conversely, connection is related to redundancy. Distinct agents are not independent. As shown above, each agent’s knowledge of other agents, in combination of general rules in the system opens up for a determination of agents’ behavior on a macrostate level. The system becomes stable when the sum of the agents’ behavior is unaffected by small perturbations and disturbances. Connection leads to order, labeled *neguentropy*.

Complex social systems are defined through a combination of order and disorder. When a system is impossible to model and predict, it is asymmetrical and disordered. This is the case when no agent within the system can provide adequate information to predict the properties of the other agents.

When one agent’s attributes and behavior can be generalized onto other agents’ attributes and behavior, we get the opposite phenomenon: symmetry and order. It becomes easier to model and predict the system. The degree of similarity between the parts’ properties defines the degree of symmetry of the whole system. Uniform agents with uniform roles, values, capabilities, mental frames and behaviours constitute symmetric systems. Heterogeneous agents with heterogeneous roles, values, capabilities, mental frames and behavior constitute asymmetric and ordered systems.

I will apply *both situated and general CST* in this thesis, in the development of a replicable system for governance partly based on a complexity perspective. I will apply this perspective because I presuppose that the world and everything in it is ontological getting more and more complex. Traditional reductionist, positivistic, and mechanistic approaches to governance contradict the presuppositions I base my thesis on.

Many research studies and reports have addressed the increased levels of complexity in today’s organisational world. Globalization represents the increased

communication and dynamics between countries, markets and societies, which become more and more closely connected all the time. Organizations adapt to constantly changing environments, and at the same time these organizations are, intentionally or otherwise, the very cause of that same change.

In summary, organizations give and receive input and output to their local and global markets and environments, creating dynamics that have influence across the globe. In these organizations, individuals with different educational, cultural and social backgrounds increase their interaction and mobility, adding even more complexity to the world. Rather than elaborate further on these phenomena, I take an ontological and epistemological stand based in complexity sciences, and will develop a theory for governance within such a framework in combination with pragmatism and evolution theory.

3.2.1.10 Operationalization

3.2.2 Evolution

If I were to give an award for the single best idea anyone has ever had, I'd give it to Darwin, ahead of Newton and Einstein and everyone else. In a single stroke, the idea of evolution by natural selection unifies the realm of life, meaning, and purpose with the realm of space and time, cause and effect, mechanism and physical law.

Daniel Dennett

Below I will present the major contributions within evolutionary theory, briefly starting with Darwin and the other subsequent 19th century thinkers, before I take a leap to the 20th century, and the thinkers that have formed and applied the evolutionary perspectives in *social systems* until today. Based on this literature review, I later will apply central terms from evolution in the theory development of this thesis.

When Charles Robert Darwin published “On the Origin of Species” in 1859, he presented four premises and one conclusion.

The first premise was *inheritance*. All species inherit traits from their ancestors. Those traits that make it more likely to survive and reproduce, will be more present in a population over the following generations.

The second premise was *variation*. No individual within a species is alike. Darwin believed that variations arose as a result of the conditions of life, and that some variations were due to the use or disuse of organs. Genetics later broadened and sophisticated these perspectives.

The third premise was the *struggle of existence*. Darwin included increase and decrease of populations in response to various factors into his theory.

The fourth premise was *natural selection*. Survival is not a random process, but a function of the traits that help the individuals in specific contexts of time and space.

These individuals will, in turn, mature and breed, and transfer traits that fit to the next generation.

Darwin's conclusion was that species change over time, and are not static entities. Even minor changes in the environment would lead to species changes. Based on evolution, he argued that all organisms on earth shared a common ancestor.

3.2.2.1 Social darwinism

Herbert Spencer (1864) built on Darwin's ideas and applied evolution on a wide range of areas including sociology and "social development of humanity". Spencer argued that societies were developing from "lower" to "higher" forms through competition, and he included contemporary moral and political perspectives into his work. From today's perspectives most of Spencer's thoughts and ideas are strongly inhumane. Spencer was though one of the most influential English thinkers in the Victorian era. His work later motivated and legitimated ideas of racism, imperialism and later facism, and the struggle between national or racial groups (Claeys, 2000¹²). The modern term "Social Darwinism" was later closely connected to Herbert Spencer's thinking together with the work of Ernst Haeckel (ref), Thomas Malthus (ref) and Francis Galton (ref) among others. Because of the early and inhumane application of Darwin on human traits and "superior societies", a lot of social scientists are still reluctant to go into aspects of Darwinian thinking and apply it to social systems (Hodgson, 2004¹³).

In a historical perspective most of the theoretical applications of Evolution and Darwinism 19th century's on *human beings, social systems and societies* (Baldwin, 18xx, James 19xx) had *normative* aspect to them. They did not only describe *how thing was*, but also *how they should be*.

3.2.2.2 Evolutionary economics

Thorstein Veblen (1898) coined the term "evolutionary economics", and took *cultural variation* into account in his approach to economy. No "economic man", nor "universal human nature", clarified the variety of norms and behaviors in different

¹² The "Survival of the Fittest" and the Origins of Social Darwinism. Journal of the History of Ideas 61 (2):223-240

¹³ "Social Darwinism in Anglophone Academic Journals: A Contribution to the History of the Term" (pdf), Vol. 17 No. 4 (Journal of Historical Sociology): pp. 428–463, ISSN 0952-1909,, retrieved 2010-02-17, "Social Darwinism, as almost everyone knows, is a Bad Thing."

economic systems. Every culture is materially based and dependent on tools and skills to support the "life process". At the same time every culture have varied structures. These *invidious distinctions*, is related to the past, and fits cultural more than functional needs, according to Veblen. Consume and selection of goods and services is hence not only to satisfy instrumental needs, but also a symbol of status and belonging.

In "The Theory of Economic Development" (Joseph Schumpeter, 1911) the analysis of capitalism is comprehended as an evolutionary process of continuous innovation and 'creative destruction' (*schöpferische Zerstörung*). Capitalist economic development is a function of the destruction of *prior order*. Entrepreneurs introduce innovations that disturb and destroy markets, and existing technologies and means of production becomes obsolete.

Armen Alchian (1950) stated in his article "Uncertainty, Evolution and Economic Theory" that companies exposed to uncertainty and incomplete information should be primary focused on *adaptation* to their context rather than pure profit maximization.

In "Economic Development as an Evolutionary System" Kenneth Boulding (1961) focused on information and knowledge more than goods and services in economic processes. Economic development begins with ideas, plans, and attitudes in humans. Capital is human knowledge manifested in the material world. Knowledge and the growth of knowledge is the essential key to economic development.

3.2.2.3 Universal Darwinism, evolutionary epistemology and general selection theory.

A variety of evolutionary perspectives extend the theory of Darwinism beyond its biological domain, these can be labeled Universal Darwinism (UD). UD is a theory of the emergence of knowledge.

The perspective that biological evolution go before all (socio-)cultural (co-)evolution is crucial in UD. Biological evolution is a prerequisite for (Socio-)cultural (co-)evolution. UD studies the origin, evolution and mechanisms of all *cognitive capacities* of all biological organisms from within evolutionary theory. Darwinism can be used to study the *products of these cognitive capacities*. Gontier, N. (2006) labels UD evolutionary epistemology.

Evolution is a general iterative process taking place in all type of dynamic systems where variation is present and selection take place. This process can be conceived as *population-based units* that searches the space of possible forms. This space can be labeled *fitness landscape*. The units are *varied*. The various units that are *best adapted* to their fitness landscape will be *selected*. *Unfit* units will be excluded from the fitness landscape. Features of the fit units are *retained* and *diffused*. After those fit units are retained, they are subject to new variation starting new *iterations*. This *trial-and-error procedure* is an *exploration* for best solutions and an *exploitation* of the solutions that

work in each fitness landscape.

Due to the at that time revolutionary contributions of Darwin, most people still link evolution with development in biological systems. Evolution theory has, however, also been applied within social systems, and is recognized as useful frame for the explanation of social dynamics and change¹⁴.

Only those information units (ideas, means of communication, decisions and actions) with the greatest sustainability within a social system will be accepted and will therefore survive. In social systems, agents who mutually affect each other make conscious and unconscious choices about what are acceptable information units. It is possible to lead the choices through both formal and informal input of predefined information into the predefined social system. The information units that prove to have the most sustainability in a specific social system will spread within that system. Units with great sustainability and strength will also spread into other systems. Agents within a social system choose information units pragmatically, based on what they believe will work. The adaption of information units into the system is a function of what the constituent agents need and find useful, in other words the information units that fit them. Fitness of information units is thus a function of what the agents think they need within a social system, based on their own state, the system's state and events that take place within the system.

Evolution in this perspective is a trial and error process of variation and natural selection at all levels of complexity (Heylighen 1991). In this thesis I focus on variation and selection of information units that spread in a social system. Predefined information units are labeled *memes*. Memes are as we have seen sustainable information units that influence and form individual and collective systems and spread successfully within them. Memes are sustainable when they survive and have the capacity to endure over time as signs and/or objects¹⁵. These signs and objects are facts, information, and skills acquired by a person through experience and education; they are the theoretical or practical understanding of subject matter. Memes are knowledge that are selected.

3.2.2.4 BVSR

Campbell (1965) argues that all instances of fit owe their origin to the Darwinian

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¹⁵ If we treat memes as artifacts and behaviour, we can, from a pragmatic point of view, define them as *signs*, or memes can be regarded as manifested in the cognitive brain, the labeled *objects from a pragmatist* perspective. More on this under 2.2.3 Pragmatism

process that he called *blind variation and selective retention* (BVSr). He claims this process to be a universal trial and error process.

Before any system-environment fit occurs (including agent-system fits), 3 requirements have to be met: *blind variation, selection among variations and preservation and propagation of variations*.

The agent bears all the power of initiative and origination in his/her hands, but derive knowledge from the dynamics in the social systems he/she is a part of. That same system also adopts or rejects the agent. This is a process of *blind variation*. The choices of the agent and the choices of the other agents that constitute the social system have a degree of randomness. But in such cases, *selective retention* also takes place. The variants satisfy approximately consistent and/or stable social fitness criteria. If an agent wants to change or adapt to a social system, he/she will not try things out purely at random, but rather will have an expectation of what will work and what will not. This knowledge itself is the result of previous trial-and-error processes, where the experience of success and failure is selectively retained in memory, available for guiding later activities (Heylighen, 1991).

A BVSr process is fundamental to all inductive achievements, to all genuine increases in knowledge, to all increases in agents' fitness in social systems. Agents facing continual challenges and new environments must rely on ongoing BVSr in order to adapt to these new circumstances. BVSr processes among human agents are combinations of neurobiological evolution and instinctive selection of sign and objects labeled *among-organism selection*. Among-organism selection is considered as inborn instinct. Such behaviours are adaptations due to the among-organism BVSr of biological evolution.

Within-organism BVSr is considered as cultural evolution, like behavioural and cognitive achievements.

Learned behavior involves BVSr both within and among human agents.

Certain forms of knowledge rely primarily on within-organism BVSr, such as human invention, creativity and novelty. This learning is local and situational and can only take place because of inherent biological capabilities such as seeing, hearing, feeling, smelling and tasting and reasoning. Among- and within-organism BVSr are thus complementary rather than mutually exclusive. In this thesis I will apply the principles from BVSr in the development of a system for memetic governance. But first I will include perspectives from pragmatism.

When *Organizations and Environments* was originally issued (Aldrich 1979), it was the first book-length treatment and evolutionary explanation on the vital relations between organizations and their context.

In this landmark text the fundamental question was: "Under what conditions do organizations change?" Organizational *forms* are configurations of *goals, boundaries and activities*. The environment is regarded as concentrations of resources, power, political domination and other organizations.

Based on population ecology (Campbell, 1969), Aldrich uses six dimensions to describe the distribution of organizational resources in different environments. These are *capacity, homogeneity-heterogeneity, stability-instability, concentration-*

dispersion, domain consensus-dissensus and the degree of turbulence.

Natural selection mechanism takes place in the environment that in turn defines the organizational form. Form fitness is necessary for survival in different environments.

3.2.2.5 BVSR

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3.2.2.6

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3.2.2.7 Operationalization

3.2.3 Cognition

For a reflexive agent, reality can be divided into several parts not only by domain, but also by how she perceives it:

The reality as signs can be defined as “reality a”. When “reality a” is exposed to the agent’s neurological receptors (see, hear, feel, smell, taste), it becomes parts and wholes of a “reality b”. When the agent makes sense and becomes conscious of the parts and wholes that make up “reality b”, the added layer of consciousness transforms it into “reality c”.

When “reality c” is coded as a series of objects in the agent’s mind, it becomes “reality d”, and finally, when “reality d” is communicated to other agents as coded objects, it becomes “reality e”, which can in turn be a “new reality” for new agents.

All agents’ perception can be regarded as partial; they will always lose parts of reality in individual and collective journeys and loops through “realities a - e”.

The conscious or subconscious selection of “realities a - e” is based on influence from other agents within the social systems they are a part of. As agents, we are cultivated in such a way that we delete signs from “reality b” to “reality d”. What we regard as relevant for selection is also a function of our culturally-transmitted identity, beliefs, values and knowledge. An agent’s selection is led by a evolutionary need for biological and social survival, by reproduction and by neurological limitations. As agents, we make choices, consciously and unconsciously, based on what reinforces our sustainability as individuals and collective groups in the biological and social systems we operate within.

3.2.3.1 Operationalization

3.2.4 Pragmatism

“When I use a word,” Humpty Dumpty said in a rather scornful tone,

“it means just what I choose it to mean – neither more nor less.”

“The question is,” said Alice,

“whether you can make words mean different things.”

Thinkers like Charles Sanders-Peirce, William James, John Dewey and George Herbert Mead are key contributors to the American philosophical movement that was initiated in the late 1800s.

Pragmatism emphasizes that ideas and concepts have to be empirically testable in order to have relevance and importance. Ideas without practical, concrete consequences are worthless. Only when ideas are linked to experience do they become true and relevant. Within pragmatism, thoughts are tools for action. Knowledge thus consists of models¹⁶ that represent reality in a way that maximizes simple problem solving. No model will ever be able to represent reality with all its relevant information. Several, often contradicting, models must therefore be applied simultaneously, in spite of any paradoxes that apply when taken together. The individual choice of models is a function of the goal aimed for or the problem to solve. The models that are applied to a problem must be experienced as subjectively relevant in order to produce solutions in a simple way. Alternative use of theoretical models will be without value in a pragmatic perspective and remove us from our reality instead of bringing us closer.

The Pragmatic Maxim¹⁷ sums up what can be regarded as the essence of the method of reflection:

Consider what effects, which might conceivably have practical bearings, we conceive the object of our conception to have.

Then, our conception of these effects is the whole of our conception of the object.

Following the Maxim, the meaning of a model should be a function of the predicted practical consequences that follow. The intellectual meaning of a model is made up of different associations and thoughts in the different contexts an individual operates within. The individual acceptance of the model is a function of the individual's ability to link relevant thoughts and associations to the model.

Pragmatism then becomes a method of reflection, which is guided by constantly holding in view its purpose and what it analyzes. Pragmatism is not a worldview, but a method of reflection having as its purpose to render clear ideas¹⁸.

According to Pragmatist thinking, the distinctions we make in sense making are subjective. Subjectivity can be linked to both individual self-interest and collective

¹⁶ In this thesis, a model is treated as something that represents or stands for something else

¹⁷ Peirce on p. 293 of "How to Make Our Ideas Clear", *Popular Science Monthly*, v. 12, pp. 286–302. Reprinted widely, including *Collected Papers of Charles Sanders Peirce (CP)* v. 5, paragraphs 388–410.

¹⁸ From Peirce's *Personal Interleaved Copy of the 'Century Dictionary'*, CP 5.13 n. 1, c. 1902

utility. Structures and boundaries that support or threaten the existence of the individual or the social system the individual is a part of will be perceived and interpreted subjectively. Subjectivity is partially predictable because of utility and individual perspectives on usefulness. Usefulness implies activity that supports or manifests existence¹⁹

Peirce's Sign Theory, or Semiotics, is about sense making, the representation or conveyance of meaning. The study of sign processes (semiosis) can be separated into Semantics and Syntax. Semantics describes the relationship between signs and to the things they refer to, and Syntax describes the relationship between signs in formal structures like language. Pragmatism then becomes the relationship between signs and the effects they have on those who apply them.

According to Peirce, a sign is a triadic relationship. A sign points to an object that gives rise to an interpretant.

A sign is something we can perceive with our five senses as a stimulus pattern that has a meaning. The part of the sign responsible for signification can be referred to as the "sign-vehicle". The object is whatever the sign indicates for the individual interpreter. The object is the subjective attachment to which what the individual interpreter sees, hears, feels, smells or tastes. The interpretant is the individual interpreter's understanding of the relationship between the sign and the object.

For Pierce, a sign is anything that stands for something in somebody's mind. This "something" is called the sign's object; the "somebody" is called its interpretant.

Examples of signs, objects and interpretants are:

Sign: Red light

Object: Stop

Interpretant: Somebody that has an idea that red means stop

Sign: Smoke

Object: Fire

Interpretant: Somebody that has an idea that smoke means fire

Sign: Fire

Object: Danger

Interpretant: Somebody that has an idea that fire means danger

Sign relationships are independent from physical relationships. They can be based on resemblance (icons) like pictures and concrete paintings, or conventions (symbols)

⁵Dewey 1998

like the bald eagle for USA, the cross for Christianity, the Star of David for Judaism or the font for a specific company (e.g., Coca-Cola, IBM, Google). Some signs (indexes) point to other objects via a physical relationship in time and/or space, like dark clouds pointing to the likelihood of rain, or a hitchhiker's thumb pointing to the need for a ride, and light pointing to food for Pavlov's dogs.

These three terms (icon, symbol, index) are not securely mutually exclusive, but a function of the sign itself and the actual meaning. What will be an icon for one individual might be an index for another. For example, a thermometer can be regarded as a piece of art (icon) or as a pointer to temperature (index).

Both semiotics and pragmatism recognize both the active and the subjective roles of an interpreter in its interaction with the world. Because all distinctions and boundaries are subjective, the world consists of signs rather than objects that exist independently from observers.

Hence, semiotics describes the structure of the world²⁰ and Pragmatism is a method of making sense of the world.

3.2.4.1 Operationalization

3.3 This thesis Ontology and Epistemology

Subject-object distinction

Knowledge is contextual

Limited generalizations

Laws of complexity

Instrumentalism

Epistemology

Action

Co-existence of determinism and indeterminism (design and emergence)

Nonlinear relations

Limited predictability

Reality as an emergent whole

Simple-complex: blurred phase transitions

Self-organization

Co-evolution

3.4 This thesis Methodology

Macro, Meso Micro Methodolgy

Black box and White box

Reductionism and holism combined

²⁰ Sharov, A.A. 2001. Umwelt theory and pragmatism. Semiotica, Vol. 2001, Issue 134: 211-228.

Use of analytical and deductive methods
Qualitative methodology
Induction, Deduction, Abduction
Model building (theorizing) and case studies

3.5 Preliminary summary

In combination all three of the above perspectives will influence choices related to diffusion and adaption of ontologically predefined memes. Complex systems theory, evolution theory and pragmatism are in this thesis the main inspirations for a further development of memetics into a science applicable for governance.

Making memetics a science with a clearly defined ontology, epistemology and methodology requires openness to other progressive research programmes; still trusting that memetics has something unique to contribute to the theoretical and practical world in its development toward a renewed scientific discipline.

3.6 What is Memetics?

Memetics is the study of how *memes* spread in *social systems* and how they impact *active human agents*.

Memes can be regarded as sustainable information units influencing and forming agents, and thus impacting social systems spreading successfully within them. A prerequisite of a social system is the interaction of at least two agents. On the other hand, we can treat all individuals on the globe as one social system. In between there are large and small groups, teams and organizations.

Individual human beings, also called persons, are in my work labelled active human agents.

Through *Memetic Governance* active human agents themselves interpret and select memes they find useful efficient and beneficial for their purpose. They become carriers of memes that affect how they act alone and with others, creating effects.

Memetic Governance is a suggested model and method, creating design for desired emergence, where predefined active human agents, in predefined social systems, interpret and select predefined heuristic memes. Heuristic refers here to experience-based processes and activities for problem solving, learning, and discovery.

3.6.1 Status of the research programme

Memetics is a post-positivist way to approach perception, thought, communication and social action. Memetics is derived from natural science and genetics, and uses the same research programme studying social diffusion and adaptation of sign/objects (

see 3.2.3).

Memes are sustainable information units manifested as signs and/or objects (along realities a-e)²¹. Memes can be regarded as signs and objects that influence and form individual and collective systems and spread successfully within them. Memes are naturally selected and adapted by human beings based on “competition” within our consciousness. The fittest and best-adapted memes will have a better diffusion than the ones which do not fit into the cultural systems they are competing within. In the literature of memetics, the term “competition” is not discussed in detail. To say that something like memes could be competing does not necessarily impose consciousness and intent to them. Animals in nature are not conscious of a competition either, but as observers we can apply the term competition to describe their interaction, diffusion of genes and adaptation to the environment within or among individuals, groups and populations. Memes as signs and/or objects in themselves do not have consciousness, intention or capabilities, but from the outside it makes sense to talk about competition among them. It is possible to talk about the diffusion, selection and adaptation of memes without implying that memes have human capabilities.

Human agents who, consciously or unconsciously, act as interpretants have memory where memes are stored. According to a memetic approach, each agent hosts thousands of memes. “Coca-Cola”, “Jesus”, “Kilroy”, “Taco”, “Orange”, “The smell of roses”, “Beethoven no. 5” and “Sex” are all some examples of memes in the general consciousness. The kind of memes we carry is a function of the cultural systems we are a part of. As mentioned above, we sense and interpret these memes according to “realities a-e” (see 3.1.1).

3.6.2 Challenges with Memetics

Based on the relationship between ontology, epistemology and methodology, a memetic formal ontological statement and definition of the world could be: Reality is memes. An epistemological question that follows would then be: How does memetics make sense of memes? Consequently, the methodological inquiry is: What investigatory techniques and procedures can be applied in memetics to approach

²¹ In Greek mythology, Mneme was one of the three original (Boeotian) Muses, though there were later nine. Her sisters were Aoide and Melete. She was the muse of memory. The evolutionary biologist Richard Semon wrote in 1904 “Die Mneme” – a book about memory where the meme was defined as “units for cultural transmission of experiences”. Nobel Prize winner Maurice Maeterlinck wrote in 1927 “The Life of the White Ant” where he mentioned “... engrammata upon the individual mneme”. A engrammata is a memory trace.

memes?

Two positions are most eloquent approaching these questions. On one side, *externalists* state that memes are observable artifacts and behaviour (signs). Outside the occurrence of the event, the practice of behaviour or life of the artifact, the memes have no existence (Gatherer, 1999). Memes are out here in the physical “pool” of the environment (Benzon, 1996).

On the other side, the *internalists* state that memes are manifested in the cognitive brain (objects). A meme is an information pattern, held in an individual’s memory, capable of being copied to another individual’s memory (Heylighen, 1998). The meme is a memory item, or portion of an organism’s neurally-stored information. The meme is identified using the abstraction system of the observer, whose instantiation depended critically on causation by prior instantiation of the same memory item in one or more organism’s nervous system (Lynch, 1998).

Based on these different positions and arguments on how to grasp memes, some contributors in the field also put forward that no one actually knows what a meme is (Augner, 2002).

Memetics has, in some academic circles, been regarded as an obscure philosophy and not a renowned science. This might be due to the lack of progression and growth in the field in recent years, philosophically, scientifically and in terms of empirical research. Memetics is regarded as a weak metaphor of the strong scientific discipline genetics; a metaphor that breaks down in its attempt of transitioning from nature science to social science. Attempts to establish memetics as a *formal ontology*, has been an over-ambitious failure.

3.6.3 Suggestions on How to Solve Them

Based on the above, I will make a suggestion how to revitalize memetics, and establish it as a renowned cross-scientific discipline.

According to the criteria above, we can argue that memetics today is a degenerative research programme. The ambition of memetics to be a formal ontology, hence with a “catch-all” epistemology, but without a proven methodology for empirical research, has created lack of growth.

As Robert Augner claimed in his book *The Electric Meme* in 2002, “No one knows what a meme is”. The ontological units of analysis are missing. It can be argued that the either/or discussion between externalists and internalists is hypothetical and counter-productive for bringing memetics forward as a discipline. In addition the term “meme” is never operationally defined, so it can be applied in empirical research. If you do not know what you are looking for, you cannot find it.

However, there have been previous calls for action addressing related concerns about memetics. Edmonds (2002), among others, argues that the theoretical statements of memetics are too vague to be empirically tested. Gil-White (2002) expresses that memetics suffers from conceptual confusion and not enough empirical work. Augner (2000) suggest urgently that memetics should follow the progress of evolutionary cultural studies more generally, as in anthropology. The clock is ticking for memetics.

The answers to these and other calls differ. Chielens & Heylighen (2005) introduce

four ways that memes adapt and four stages for memetic replication. They underline the importance of a *suitable memetic unit* for memetics to be tested empirically. Examples of such units can, according to them, be storylines; the different elements of stories can be seen as individual memes, or digital virus hoaxes like email messages warning for non-existing viruses.

Augner (2002) waits and hopes that neuroscience will be able to measure the electric difference between the different memes when fired as diverse impulses between the synapses in the brain. When you think of the meme “taco” or “Killroy was here”, different electric impulses fire, which can be distinct and determined, and can be differentiated, defined and measured.

Hull (2001) suggests that we should postpone definitional concerns in memetics, and start empirical research by developing different memetic theories influenced by the domains in which they are tested. He further argues that it is crucial to make distinctions between memes, on one side, and the detectable outward manifestations of specific memes, on the other. The observable attributes a meme creates are what should be investigated (the phenotype). Hull is also an exponent of having a clear goal every time memetic research is conducted.

The intention behind all these calls and answers is to strengthen memetics. The suggestions put forward grasp, from different angles, aspects that need to be in place in order to successfully renovate and revitalize memetics.

In the following, I will put forward three essentials, in addition to the ones above, in an attempt to make memetics applicable for governance, and to develop the discipline as a progressive research programme.

Firstly, it is necessary to define a clear, distinctive domain ontology with mutually-exclusive memes in each memetic research project.

Secondly, it is crucial to develop a more sustainable memetic epistemology, a scientific attractor around which different memetic research threads can revolve, despite any theoretical and empirical differences.

And *thirdly*, it is vital to define a clear, memetic, methodological framework with distinct criteria for validity and reliability. The epistemology of memetics should make sense of the diffusion and adaption of ontologically predefined memes and their influence on individual and collective states and actions. Each empirical researcher should make ontological predefinitions of memes every time they delve into a new empirical field. In other words, the units of analysis need to be defined. The researcher should obviously define what they are looking for. The epistemology of memetics should furthermore make sense of the correlation between individual and collective thoughts, communications, decisions and actions. There is also a need for an integrative definition of memes that repeal the front between the externalists and internalists. In addition to being seen as signs and objects, memes can be regarded as forms and cognitive templates that process subjective thoughts, communications, decisions and actions along ‘realities a-e’.

A distinctive investigatory technique can be developed based on previous work (i.e. Chilelens & Heylighen, 2005). These works should be enriched with stronger requirements of predefined meme ontology in research projects as argued above.

It is possible to say that all these suggestions bring memetics back to methodological reductionism, where it does not belong. I argue that *methodological reductionism and epistemological holism can be unified. In order to be analyzed, both physical and metaphysical units of analysis need to be predefined. Implicit in defining the units of analysis lies reductionism. To find the units' systemic interaction with its social system is the core of a improved memetic research programme. The axiomatic presupposition that memes influence the complex wholes they are become a part of, is a holistic and systemic perspective.*

To further strengthen memetics, the discipline should be open and must continue to be enriched with perspectives from other progressive research programmes. I will later go into three of numerous available sources that can successfully revitalize memetics. These three sources are *complex systems theory, evolution theory, and pragmatism*. But first I will introduce Governance as a research programme, before I connect it to an improved and applied version of memetics.

Chielens and Heylighen proposes a four-stage model for memetic replication:

- 1) assimilation of a meme by a host
- 2) retention within the host's memory
- 3) expression by the host through behavior, language or some other medium
- 4) transmission of the expression to one or more other hosts.

At each stage there is selection, in the sense that some memes will be successfully assimilated, retained, expressed or transmitted, while others will not. A fit meme must pass all stages. The different selection criteria are typically active at different stages of this replication process.

Chielens and Heylighens criteria:

- utility : the meme contains useful or valuable information.
- novelty: the meme is sufficiently different from already known memes
- coherence: the meme is consistent with the knowledge that the hosts already have.
- simplicity: since complex memes difficult to process, less important details tend to be left out.
- formality: the fewer contexts or background communicating hosts share, the more important it is to express the meme explicitly
- expressivity: the meme is easily expressible in the available languages or media
- authority: the source is recognized as being trustworthy
- conformity: the majority of hosts agree on the meme

- proselytism: the meme explicitly incites its hosts to spread it further

The first four of these are subjective and therefore depend on the host: what is useful or novel for one person may not be so for another one.

The next four are inter-subjective: they depend on the relations and forms of communication between hosts, and thus on the structure of the socio-cultural system.

The last one, proselytism, is an example of a meme-centered criterion, that depends only on the meme itself.

Simple examples of such self-promoting memes are viral sentences that contain a copy instruction, such as 'Copy me' or 'say me'.

Different paradigms exist to study the diffusion of memes:

- Chinese whisper:

“The Jamayans”: psychological experiments (Lyons & Kashima 2001, 2003)

- Simulation:

The agents and the memes used in simulations are generally too simple to be used as models for the higher cognitive, emotional and social dynamics that govern meme transmission among humans (e.g. Best, 1997) Gabora (1995).

- Collection of existing memes:

~ e.g. urban legends together with an estimate of their success e.g. the actual frequency with which a given legend is encountered on the web, or the likeliness that a person is to pass on the story to someone else (Heath, Bell & Sternberg, 2001). A shortcoming of the previous studies is that they work with rather vague and variable memetic units: "story elements", "traits" or "patterns of activation".

~ Hoaxes: pretended viruses on the net

I will take data from a study conducted by Norway's Police Academy studying a group of police managers that have attended Memetor Leadership Trainings at different times, during a period of six years. These data will be the source for my quantitative research,

The distribution of the Memetor memes in the Norwegian Police force have taken place in Leadership Training Sessions where the participants learn about them and apply them to what they perceive as individual and collective challenges and in goal achievements. The researchers²² at Norway's Police Academy applied Kirkpatrick's learning evaluation model²³ in measuring the effects of these Memetor leadership trainings.

²² Ragnhild Holm and Tove Kristiansen

²³ Kirkpatrick D. L. (1959). 'Techniques for evaluating training programs.' *Journal of American Society of Training Directors*, 13 (3): pp21–26.

3.6.3.1 Positivism and postmodernism

3.6.4 This thesis approach to memetics

3.6.4.1 Complexity and memetics

3.6.4.2 Evolution and memetics

3.6.4.3 Cognition and memetics

3.6.4.4 Pragmatism and memetics

3.6.4.5

3.7 What is Governance?

3.7.1 Status of the research programme

*“Humpty Dumpty sat on a wall, Humpty Dumpty had a great fall.
All the King’s horses, and all the King’s men, couldn’t put Humpty together again!”*

The epistemological and ontological foundations of traditional governance²⁴ can be seen as a degenerative research programme (Hajer and Wagenaar 2003; Sørensen 2006; Osbourne 2010), and there is a need for a new ways to look at fundamental categories in our world of social systems.

In Plato’s philosophical work²⁵ we can find the word $\kappa \upsilon \beta \epsilon \rho \nu \omicron \omega$ (kubernáo) meaning steering, driving and piloting derived from the Greek word *kubernan*. In Latin this was later translated into *gubernare* where the word *governance* has its origin.

Since the ancient Greeks’ application of the term, governance has been used to understand and harness dynamics in different social systems. The term gained increased popularity in the 1980s within the discipline of political science, where students started to apply the word as something else than *government* (Kjær 2004). Government had traditionally been regarded as the hierarchical exercising of authority, controls and coordination from a central state body, whereas the application of the term governance opened up and included other ways of looking at steering and coordination. Today thousands of articles within the social sciences investigate and apply governance to different social systems²⁶.

The Oxford Handbook of Governance (Levi-Faur et al, 2012) that presents a

²⁴ Hvordan vil jeg definere trad. Governnace (se The Oxford Handbook)

²⁵ Thirty-six dialogues and thirteen letters have traditionally been ascribed to Plato, though modern scholarship doubts the authenticity of at least some of these.

²⁶ Kjær(2004) found in the Social Science Index solely, 3629 articles covering governance from 1986 to 1999 within the Social Science diciplines.

collection of the latest social science literature on Governance, states that the term is also said to be a ".....buzzword, a fad, a framing device, a bridging concept, a slippery concept an empty signifier, a weasel word, a fetish, an approach, a theory and a perspective".²⁷ Governance is a versatile term used in connection with several contemporary social sciences.

Following Oliver Williamson's *Transaction Costs Economics: Governance of Contractual Relations* (1979), governance has traditionally been applied where social systems have been regarded as combinations of *networks, hierarchies or markets*. Rhodes (1996) identified six different categories of governance applications, two of which were governance as a *socio-cybernetic system* and governance as *self-organizing networks*²⁸. He argues that governance refers to self-organizing, inter-organizational networks and suggests that these networks complement markets and hierarchies as governing structures in authoritatively allocating resources and exercising control and coordination.

To drive or steer a more or less organized social system implies the notion of will and intention of a *driver*. The driver(s) must walk the fine line between intentional design of governance structure on one hand, and the emergent dynamics that take place among agents in a social system on the other.

3.7.2 Challenges with Governance

3.7.3 Suggestions on how solve them

3.7.4 Governance as a socio-cybernetic system and as self-organizing networks

In 1996, R.A.W. Rhodes wrote the article *The New Governance: Governing Without Government*²⁹. He argues that the context for where governance manifest, can be regarded as both a *socio cybernetic system* and a *self-organizing network*.

Governance "can be seen as the pattern or structure that emerges in a socio-political system as 'common' result or outcome of the interacting intervention effort of all involved actors. This pattern cannot be reduced to one actor or one group actors in particular" (Kooman 1993). A central government's capacity for control is limited in most social systems. Effects are created based on the sum of the activities of the parts

²⁷ Levi-Faur (2012) p. 3

²⁸ Governance as: 1) the minimal state, 2) corporate governance, 3) the new public management, 4) "good governance", 5) a socio-cybernetic system and 6) self-organizing networks

²⁹ Rhodes, 1996; R. Rhodes; The new governance: Governing without government. *Political Studies*, XLIV (1996). 652-667

involved in the behaviour. Based on this perspective, no single agent, such as a central government, can create effects entirely independently, as it lacks the relevant knowledge needed to solve complex challenges. In practice, no single agent is supreme or totally autonomous. Governance is a more encompassing phenomenon, because it embraces not only governmental organizations, but also informal, non-governmental mechanisms. According to Rhodes, citing Rosenau³⁰, we get governance without government when there are “regulatory mechanisms in a sphere of activity which function effectively even though they are not endowed with formal authority”.

Reputation, trust, reciprocity and mutual interdependence among agents are crucial in making governance work in networks. Self-organizing networks resist government steering, develop their own policies and mold their environments³¹.

3.7.4.1 Positivism and postmodernism

3.7.5 This thesis approach to governance

3.7.5.1 Complexity and governance

3.7.5.2 Evolution and governance

3.7.5.3 Cognition and governance

3.7.5.4 Pragmatism and governance

3.7.5.5

3.8 Social Systems

There are several definitions of the word *system*. Depending on the scientific tradition defining it, the term has different meanings. If we aggregate up to a general, cross-scientific level, we find definitions applicable for systems in both society and nature.

W. Ross Ashby defines system as a “*set of variables sufficiently isolated to stay [constant] long enough for us to discuss it*”³². The definition implies a perspective of

³⁰ Governance without government: order and change in world politics p. 3-6
Cambridge University Press 1992 Modern governance: new government-society interactions. Sage 1993

³¹ Political Studies (1996), XLIV. 659

³² "Mechanisms of Intelligence" Intersystems Publications 1981 edited by Roger Conant ISBN 1127197703

dynamic process on the phenomenon. The parts of any social system are in change as time progresses, and what we may regard as permanent is also in constant transformation.

Ashby's definition is applicable for *social systems* such as the High Court, Parliament and companies as well as the family unit, social circles, and smokers or non-smokers to mention a few, but also for *natural systems* such as the biotope, the ape population, anthills and the weather system. All are examples of systems in dynamic process. However, the speed of change and dynamics varies drastically from system to system. A formally-structured institution in society, such as the High Court, changes much more slowly than weather conditions, but both these phenomena, social and natural, can be regarded as systems.

The abstract properties of social systems can be seen as:

- *Structure*, defined by the constituent parts, links and relationships
- *Communication of signs*, which involves the input, processing and output of data and/or energy
- *Role and function*, which means the system is and does something for someone, intentionally or unintentionally.

If the whole arrangement of linked parts is characterized by a high degree of connectivity, the system is considered to be complex. The Internet is more complex than the relationship between two individuals in a room; both are complex systems, with varying levels of complexity³³.

The more links there are that communicate signs between parts, the more complexity there is in the system. This complexity is manifested through high levels of *interaction and interdependence* between the different parts, the behaviors of the parts and the effects they create.

A system manifests itself through the dynamic boundary between itself and its environment. Any system is less complex than the environment it sits within; systems are embedded in larger systems, with which they constantly interact as a part of that greater system's whole.

From an informal perspective, *reflexive agents*³⁴ are the subsystems that constitute the parts in social systems. Reflexive agents think, talk, decide and act based on the input they perceive. They *change and adapt* to their immediate surroundings individually,

³³ The degree of complexity is also a function of scale and scope. See discussion below in this chapter.

³⁴ Systems constituted of parts other than human agents, such as molecules and genes, are non-reflexive in their nature.

based on *subjective agency*. Based on the sum of subjective communication and action, the systems they are a part of *self-organize*. Agents employ various strategies to produce results, or effects. When agents bring different strategies into action in a system within the same timeframe, *emergent* effects are created.

Communication within a social system is a function of the agent's limited selection of all available information from the outside. They are dubbed *bounded rational* because they perceive only partial input based on their position in the system and their cognitive prerequisite (Simon 1957).

The criterion according to which information is selected and processed is *social and/or natural sustainability*. Agents strive for long-term or short-term sustainability by adapting to and/or changing other agents in the different social systems they are a part of (More on sustainability).

In addition, agents have specific *roles that are constantly reproduced* in their communications with their surroundings. If an agent fails to maintain its role, the role diminishes and the agent adapts to (or is absorbed into) the context she emerged from. For example, if an informal leader exhibits leadership behavior and others follow, she maintains the leadership role within the system she operates in. However, if that leader stops leading and begins exclusively to follow, she will be absorbed into the system as a follower. Another informal leader may or may not emerge, and the original leader no longer exists in that informal role.

The agents that constitute the system define its boundaries: "I am a part of...", "we are..." or "we work in...". Observers on the outside can also define systems that agents that constitute them are unaware of or disagree with: "He/she is a part of...", "they are..." or "they work in...". These social system definitions can be formal and structural, as in government institutions or in business entities, and they can be informal and cultural, as in groups of friends, smokers/non-smokers, parents, over-30s etc., within or outside of formal and structural systems.

All social systems, both formal and informal, are part of larger wholes. Their constituent parts are human agents, which in themselves are made up of *natural subsystems* with flesh, bones, circulation and nervous systems on one hand, and of *social subsystems* with beliefs, norms, cultural references, memories and personal stories or histories on the other.

Systems are interrelated with other systems through the sum of individual agents' memories and communications – the way they think, talk, decide and act. Social systems are therefore adaptive, meaning that they change with their surroundings. They are also influent, in that they effect change upon their surroundings, both within the larger wholes they are part of and the wider systems that form their surroundings. Individual agents that remember, think and talk are constantly shaping the development of their social systems, which in turn leads to a shaping of the wider contexts these systems are part of. All social systems are embedded in larger social systems, and adaption and/or change thus take place within and/or around any social system through the system's agents.

Based on the above approach, the way we choose to steer and coordinate have to be

different than if we regard organizations solely as formal hierarchies. How do we approach a set of sufficiently-isolated, bounded rational agents that stay constant long enough together for us to govern? What frame of reference do we apply to govern social systems? Our ability to ask and answer these questions is a function of the kind of worldview we are carrying.

3.8.1 Status of the research programme

3.8.2 This thesis approach to social systems

3.8.2.1 Complexity and Social Systems

3.8.2.2 Evolution and Social Systems

3.8.2.3 Cognition and Social Systems

3.8.2.4 Pragmatism and Social Systems

3.9 Other sources for a Memetic Governance of Social Systems

3.9.1 Sense making

When active agents construct and make sense of sensible and perceptible events³⁵, they *structure the unknown*³⁶. *How* they construct a coherent reality, *what* they construct, *why* and *with what effects* are the central questions for people interested in sensemaking³⁷.

Sensemaking happens within an agent's *frame of reference* as a general perspective based on *beliefs, attitude* and *position* they hold in different contexts. When signs are introduced into these frames, agents *understand, explain, attribute, extrapolate and predict*³⁸ their reality. On an individual level this can be referred to as the process of *understanding*³⁹. Sensemaking is both an individual and a collective process.

According to Carl Weick, there are 7 central aspects of sensemaking⁴⁰:

Grounded in identity construction

³⁵ Huber&Daft 1987, p. 154 in Weick, K. 1995, p.4

³⁶ Waterman, 1990, p. 41 in Weick, K. 1995, p.4

³⁷ Weick, K. 1995, p.4

³⁸ Starbuck and Milliken 1988, p. 5 in Weick, K. 1995, p.4

³⁹ Ring and Rands, 1989

⁴⁰ Weick, K. 1995. Sensemaking in Organisations 17-61. London: Sage.

There is always an agent involved which makes sense of things, and this agent has been or is together with other agents when she is structuring the unknown. This agent's identity is a function of the relationship and interaction she has with others within her surroundings.

Depending on who the agent is from her own perspective, her focus on the world differs, as does her perception of it. This perspective is constructed by the agent herself, and by those she interacts with. If the agent's identity is confirmed through this dynamic and ongoing construction, lack of confirmation will **conversely** lead to a new sensemaking process recurring a new and different perspective on the agent's own perspective on her identity: *How can I know who am I am until I see what they do?*

The more variants of self the agent has access to, the more flexible she will be in different contexts with different others. But, as stated by Weick: a mutual self may cause problems for "consistency of one's self-conceptions", unless flexibility, mutability, and adaptability are themselves central elements in that self-conception⁴¹.

Retrospective

People can only know what they are doing only after they have done it⁴². The stream of experience⁴³ is continuous, and it is by stepping outside this stream we can make remembered episodes of what we have lived through before. **Going meta⁴⁴, means to abstract what has happened, or what is happening.**

The creation of meaning in the present is **hence attentional** to what has already happened. How we perceive what takes place now is a function of where we have been and what we have experienced before. Applied to hierarchies, the nature of time, context and sensing makes people create different meanings for events and projects, both on the top and bottom levels of organizations. *Because people typically have more than one project underway, and have*

⁴¹ Weick, K. 1995, p. 24

⁴² Weick, p. 24

⁴³ W. James

⁴⁴ *Meta* (from Greek: $\mu \epsilon \tau \acute{\alpha}$ = "after", "beyond", "with", "adjacent", "self"), is a prefix used in English (and other Greek-owing languages) to indicate a concept which is an abstraction from another concept, used to complete or add to the latter (<http://en.wikipedia.org/wiki/Meta>)

*differing awareness of these projects, reflection is overdetermined and clarity is not assured*⁴⁵.

Enactive of sensible environments

Both individually and collectively, we create, manipulate and change the environments we are part of. From an evolutionary point of view, humans have always changed their surroundings, not only adapted to them.

This applies for shorter periods of time as well: farmers cultivate nature in order to harvest their crop. A flight controller designs and organizes the airspace according to the most effective and secure way to make the aeroplanes take off, fly and land. A management group designs the physical structure and location of an office, the demographic profile of people, and ways to organize them structurally and culturally in the set-up of a new division. These environmental designs are not purely instrumental, mechanistic or predictive, because of emergent factors in the fields (see complexity chapter).

Based on the above, we cannot be ontological purists because we notice differently⁴⁶, we manipulate our surroundings⁴⁷, we understand things based on different mental frames⁴⁸, and we make different interpretations of reality⁴⁹.

Social
Ongoing
Focused on extracted cues
Driven by plausibility rather than accuracy

3.9.2 Distributed Cognition

Distributed cognition is an interdisciplinary study of mind and sensemaking that contributes a lot of new models and insights that refine the contributions from the other three perspectives presented above. It views a system as a set of representations, and models the interchange of information between these representations (memes). These representations can either be in the internal mental space of the participants or

⁴⁵ Weick, p.27

⁴⁶ Starbuck&Miliken, 1988 in Weick, p. 35

⁴⁷ Hedberg, Nyström & Starbuck, 1976 in Weick, p. 35

⁴⁸ Goffman, 1974 in Weick, p. 35

⁴⁹ Isabella, 1990 in Weick, p. 35

external representations available in the environment.

Distributed cognition combines different perspectives within philosophy, education, psychology, neuroscience, linguistics and anthropology. Distributed cognition deals with attention, language, learning and development, memory, perception and action (both externalist and internalist).

Cognitive processes are distributed across members of social groups; cognitive processes are distributed in the sense that the operation of the cognitive system involves coordination between internal and external (material or environmental) structures. According to distributed cognition, processes may be distributed through time in such a way that the products of earlier events can transform the nature of later events as in complex system theory.

3.9.3 Iconology

We think only in signs⁵⁰. Icons are symbols and simplified representations of more complex information. They store sums of coded information and can be powerful in their simplicity. The term is derived from the Greek expression εἰκών (*eikōn*) or "image". The degree to which images are permitted in different religions differs. Whether they are for instruction or inspiration, treated as sacred objects of veneration or worship, or simply applied as ornament, depends upon the tenets of a given religion in a given place and time⁵¹. Within the Christian Church, icons are paintings of holy figures. The Byzantine and other Eastern Churches used icons as aids to devotion in spreading the Christian Gospel. Christian icons correspond to biblical text and liturgy (*illustration*). The identification, description and interpretation of figural representations, whether individual or symbolic, religious or secular, is often referred to as *iconology*⁵²

3.9.4 Flow

3.9.5 Improv

3.10 Conclusion

⁵⁰ Peirce, Charles Sanders (1931-58): *Collected Writings* (8 Vols.). (Ed. Charles Hartshorne, Paul Weiss & Arthur W Burks). Cambridge, MA: Harvard University Press

⁵¹ *The Meaning of Icons*, by Vladimir Lossky with Léonid Ouspensky, SVS Press, 1999. (ISBN 0-913836-99-0)

⁵² <http://en.wikipedia.org/wiki/Iconography>

4 Towards a Memetic Governance Model and Method

4.1 Introduction:

By Macro I mean the global surrounding social systems where the case studies is conducted, typically a *national or international organization* with its own purpose, formal identity and structure. By Meso I mean the Cases, typically the different *Programs* that is executed in these different organizations, and finally by Micro I mean the composing components within each program including *themes, memes, activities, participants and facilitators*.

4.2 Assumptions and principles

4.2.1.1 Units of Analysis: Macro meso and micro

4.2.1.2 Aggregation levels

4.2.1.3 Black box. White box

4.2.1.4 Descriptive, Normative, Interpretative

4.2.1.5 Form, Process, Content

As we have seen in chapter 2.0, the questions “what is?” and “how do we make sense of what is?” are the doorway to the core philosophical themes *ontology* and *epistemology*. The question of “what is?” can address *content* and it can be argued that we give form to content when we make sense of what is.

Aristotle made a distinction between *logos and lexis*; logos, the logical substance in itself, or the *content* and lexis, the shape and configuration of that substance, or the *form*⁵³. If we follow Aristotle, then, it is possible to distinguish between *content* and *form* in all activities making sense of the world and everything that is in it.

In linguistics, the distinction between *syntax* and *semantics* follows the same path. Semantics is concerned with meaning and *content*, while syntax deals with the arrangement of words and phrases to *form* well-structured sentences.

In computer science, a program, and every static digital component in it, can be

⁵³ Reference on Aristotle

regarded as form. Different types of content can be processed through these forms.

In arts, the content of a painting can be analyzed, as can the way it is painted. Art science is as much about the ‘how’ as it is about the ‘what’. The Renaissance, Neoclassicism, Romanticism, Modern Art and the contemporary arts each represent different *forms* of painting, rather than *content*⁵⁴.

In education, the difference between *what* a teacher teaches and *how* s/he teaches it is crucial. The manner of teaching is about *form*, whereas the subject matter can be regarded as *content*.

The neural basis for how we process language in the brain is also a question of form and content. Some neuroscientists argue that there is no principled division of labour between parsing, the human sentence processing mechanism, on the one side and meaning interpretation on the other⁵⁵. Form is regarded as grammatical structure and content is regarded as meaning content as in linguistics.

Form affects content and content affects form in all sense-making through our thinking and communication.

4.2.1.6 Action, Communication, Communicative Action

4.2.1.7 Action Ontology

4.2.1.7.1 Memetic Governance

Based on the above memetic governance should take into account that social systems consist of individual and collective agents that produce effects, consciously and unconsciously, by exchanging signs in their individual and collective goal achievements. These signs are perceived through the agent’s five senses, and sudden changes occur when agent’s separate strategies are brought into action within the same timeframes. The social system is complex when there is a high level of interaction and interdependence between the agents. In these dynamics there are both microstates and macro states where local sign exchange and decisions takes place creating aggregated patterns that might be predictable based on specific “rules” of the social system.

Ontological predefined memes can act as tools for action where agents’ knowledge is contained in meme as mental models that maximize problem solving. The meaning of the memes is a function of the different microstates where the agents operate. Those

⁵⁴ Paul DiMaggio, Classification in Art. American Sociological Review 1980

⁵⁵ W. Ni et al. MIT Press 2000 journal of cognitive neuroscience: An Event-related Neuroimaging Study

Distinguishing Form and Content in Sentence Processing,

memes that make it more likely for the agents to cope better with others in microstates will survive. The various memes are selected in a balance between instrumental infusion into the social system by a facilitator and the agents' freedom to pick memes that are perceived as useful in the social system where agents operate.

4.3 Model and Method

In this chapter I will present how I connect the theory with the empirical cases in the thesis in a series of steps to hopefully acquire new knowledge. My choice of methods is a function of my epistemology. How do I grab valid and reliable signs in a dynamic and complex world? I argue that methodological reductionism and epistemological holism can be unified.

In order to be analyzed, both physical and metaphysical units of analysis need to be predefined. Implicit in defining the units of analysis lies a reductionism. To find the units' systemic interaction with its social system is the core of this thesis. The axiomatic presupposition that memes influence the complex wholes they are become a part of, is still a holistic and systemic perspective.

This thesis' theme is about memetic governance. My units of analysis are 1) the predefined Memetor memes, 2) their hosts (agents) and 3) the social systems these hosts are a part of. I will show that Memetor memes influence how individual agents in different social systems think, talk, decide and act individually and collectively.

I attempt to explain more fully, the richness and complexity of memetic diffusion, selection and adaption by studying it from more than one standpoint methodically. My method is a combination of qualitative and quantitative research.

I will strive for a deeper understanding of the diffusion, selection and adaption of memes, and how they influence human behavior. My contribution is the *why, what and how* of memetic governance, regardless of where and when. Hence I will focus on smaller and focused group of respondents in terms of interviews with few individuals in defined social systems in two global organizations that have worked with the Memetor Memes. This will be done in combination with studies of larger samples.

The predefined MEMES

Chielens and Heylighens develops four general criteria based on the ways memes adapt to their hosts.

In their work, four general criteria families are distinguished:

- Objective,
- Subjective
- Inter-subjective
- Meme-centered,

depending on whether the selection depends on:

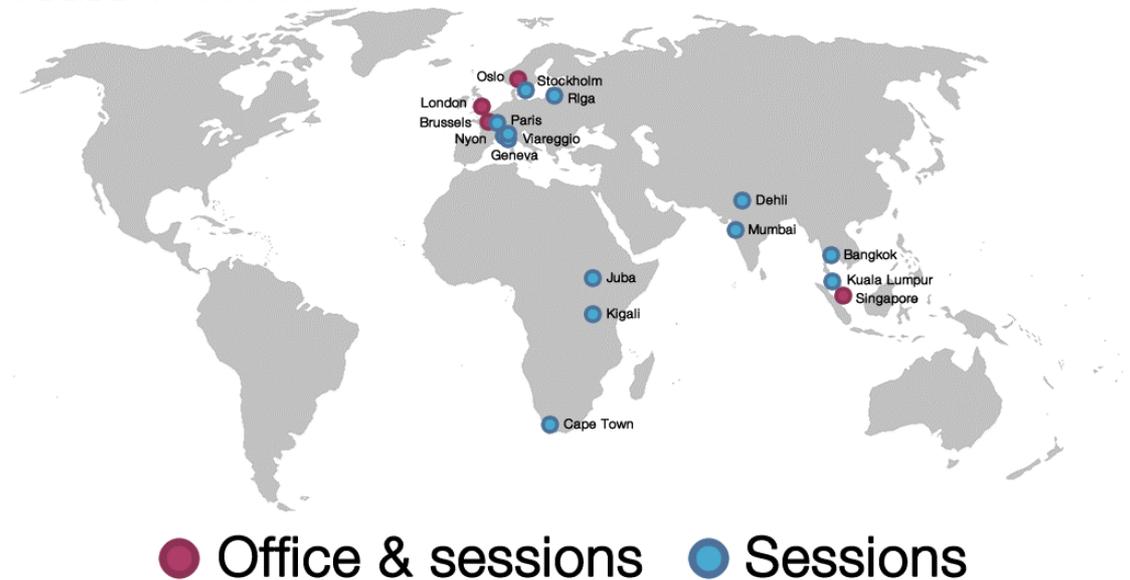
- Outside, objective reality
- The individual subject or host of the meme,
- The process of transmission between subjects
- or the internal properties of the meme itself.

4.4 Conclusion

5 10 years of empirical work in different social systems

5.1 Introduction

5.1.1.1.1 Where and When



The map of where *Memetor* has delivered

5.2 Why real living social systems vs. simulated systems?

5.3 What is empirical work in social systems?

5.3.1.1.1 Fieldwork vs. case studies vs. application of model vs. experiment

5.4 How was the empirical work in different social systems done?

5.5 Findings

5.6 Conclusion

6 Memetic Governance of Social Systems

6.1 Introduction

To reduce the gap between strategic intentions and operational practice, there is a need for new approaches that embrace the complexity most organizations face today. Memetic Governance applies a memetic approach for doing so.

As we have seen, Memetics is the study of how memes spread in social systems, and how they impact agents. Memes are sustainable information units influencing and forming people, and thus impacting social systems. From a memetic point of view, we are all carriers of memes that affect how we think, talk, decide and act alone and with others.

People can be regarded as agents with an *agency*. We often employ different strategies to achieve different individual and collective goals. *Complex* and *emergent* effects are *evolving* when these individual strategies are brought into action within the same timeframes.

As agents we are *carriers* of *skills* and *attitudes* we have acquired and developed through life. Based on what we carry, we maximize “*utility*”, “*benefit*” and/or “*fitness*” in the contexts where we operate.

As humans we have *cognitive limitations*. We cannot always foresee the overall and long-term effects of our actions. We act in our local environment and interact with each other based on our perception, our values and knowledge and the effects we want to make. Because we lack the ability and resources to intentionally create optimal solutions, we apply our *rationality* to what we *perceive to be the choices available*. We thus seek *satisfactory solutions*, rather than optimal ones and can in this perspective be regarded as *bounded rational*.

With this background, Memetic Governance is applied in *facilitated processes* where agents’ *thinking, talking, decisions and actions* are *developed* and *coordinated* to create desired effects as defined by the agents themselves and/or by others.

Through Memetic Governance memes are developed as *tools* and *cognitive templates* based on certain criteria. The tailored *heuristic memes* form and process *both individual and collective* thoughts and actions.

Agents *interpret* and *select* the Memetic memes they find *attractive* and *applicable* based on how they *perceive* and *process* their *environments*, their *strategies* and their *operational tasks* at hand.

The memes are *diffused* successfully when the agents evaluate them as relevant for themselves and useful for others. They are not spreading if they do not create desired

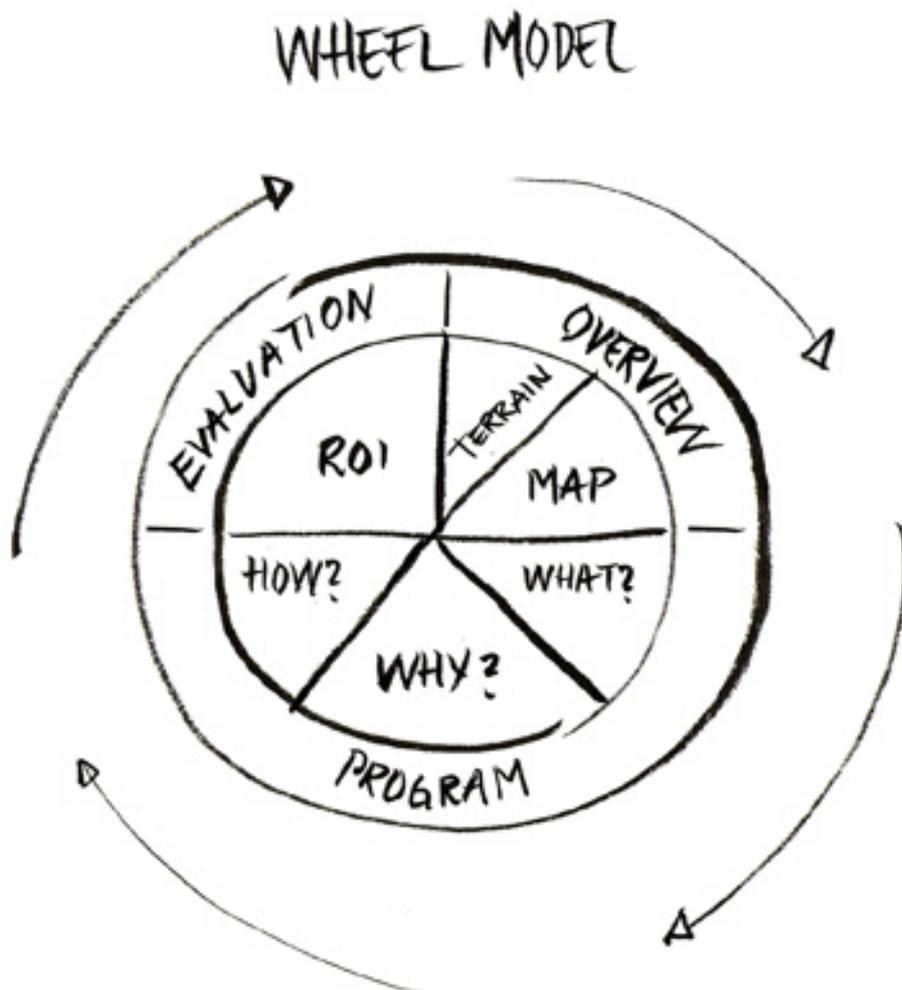
effects from the agents' points of view.

Order creation is taking place both on the individual level, through sorting and recognition, and on a collective level, through both *designed and emergent coordination*. The memes ease the cognitive load of making decisions that can be taken into action, and they speed up the process of finding satisfactory solutions to complex challenges.

With these perspectives, a memetic governance approach *facilitates strategy, leadership and mobilization* processes for desired outcomes. The concept release potential, and improve how agents think, talk, make decisions and act, both individually and collectively to achieve goals.

Memetic Governance is a complementary approach for allocating resources and coordinating social systems.

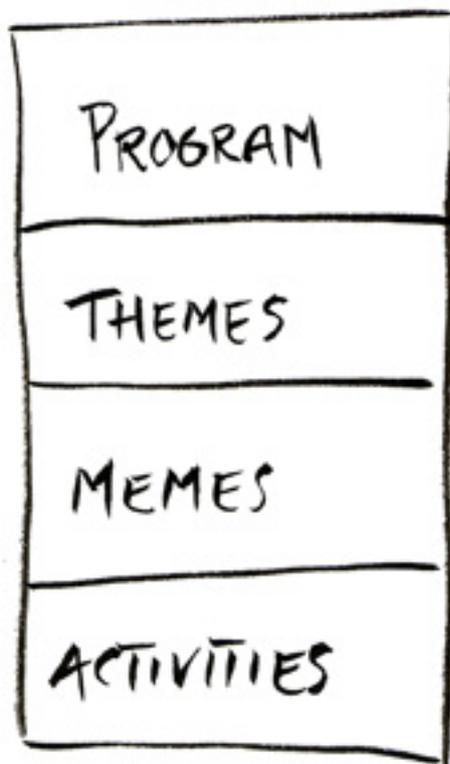
6.2 Meta models: Circle, Triads, Rectangle, Quadrant and Timeline

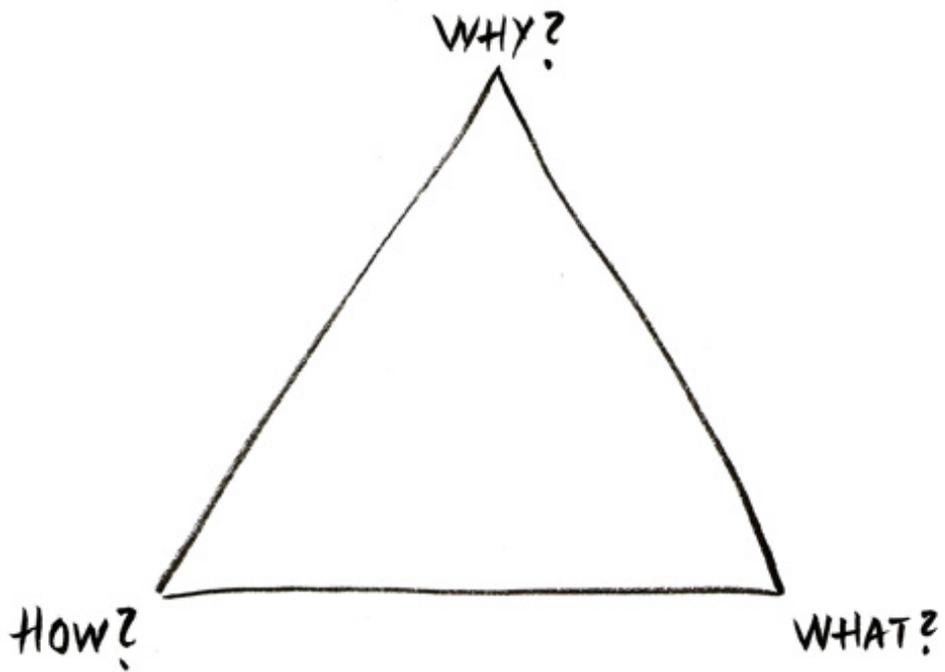
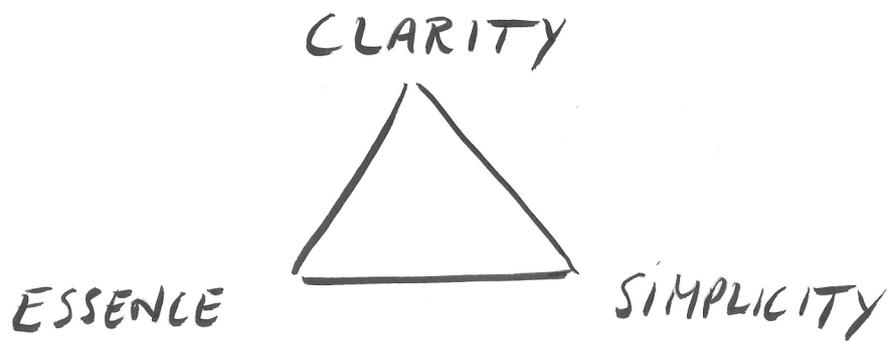


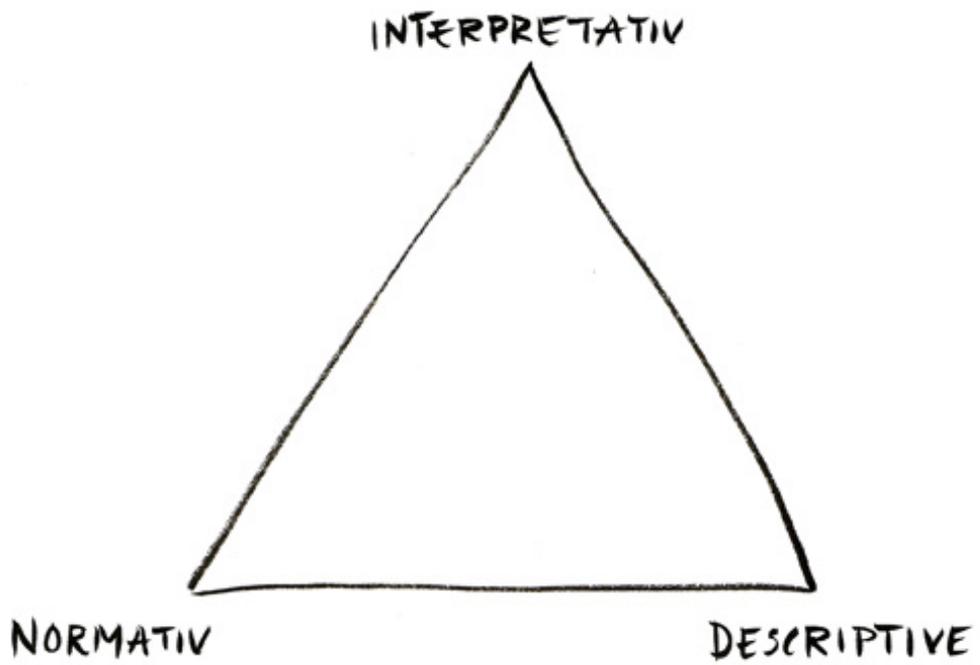
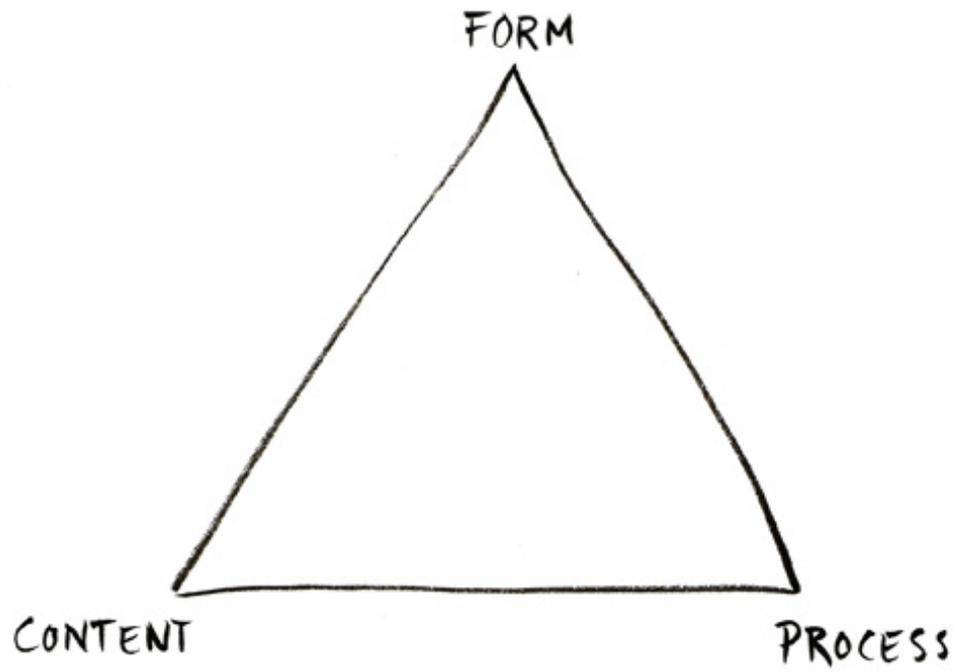
Memetor identifies areas that require strategic and operative improvement in your organization. We conduct 1:1 dialogues with a selection of key personnel from all levels, focusing on areas and interactions that they perceive as needing improvement. We then perform a quantitative survey to measure how the rest of the organisation perceives these areas and interactions.

Throughout the process, we identify where there are gaps between the present situation and the desired one, as articulated by the wearers who are aware of exactly where the shoes pinch.

Based on the results of the survey, and in close cooperation with Management, we design programs to reduce these gaps. All our programs are targeted, tailor-made and easy to implement and evaluate.







Circle:

The Kirkpatrick's learning evaluation model consists of four levels⁵⁶:

Reaction to the training

Reaction evaluation is how the agents felt, and their personal reactions to the training or learning experience

Learning of the training

Learning evaluation is the measurement of the increase in the agent's knowledge or intellectual capability from before to after the learning experience

Change of behavior after training

Behaviour evaluation is the extent to which the agents applied the learning and changed their behaviour, and this can be immediately and several months after the training, depending on the situation

Results of the training

Results evaluation is the effect on the business or environment resulting from the improved performance of the agents

6.3 Memes as forms for interpretation

6.4 Conclusion

⁵⁶ <http://www.businessballs.com/kirkpatricklearningevaluationmodel.htm>

7 Conclusion