UNIVERSITY OF TAMPERE
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An Interpretation of Complexity – No one likes touch typing

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ABSTRACT

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This thesis examines how complexity thinking is understood and how it relates to two other administrative science's key concepts – efficiency and uncertainty. At the same time, thesis was discerning towards an alternative interpretive framework based on philosophical hermeneutics and general complexity. The aim of this study was not to deny, demystify, or impose clearer dichotomous (categorization) thinking; it was to contemplate new ways complexity thinking claims to be producing an understanding.

The main objective of this thesis was to elucidate different presuppositions in the philosophy of science; how they affect, for instance, what we can depict in the first place, and how this relates towards what is truth and what is knowledge. Thesis challenges some of the taken for granted stands and conceptualizations in regard to the three concepts – complexity, uncertainty, and efficiency; concepts that forge administrative science's reality. How they together, separately, and in relation to elsewhere constrain what can be e.g. said, seen, or thought. Hence, analyses enunciated meanings and contexts that provide, for instance, novel interpretations. Furthermore, thesis examined these questions in relation to complex adaptive systems approach – how it depicts reality. Moreover, thesis showed how certain constraining understandings are evident inside it.

The end contribution and conclusion was an interpretation; an interpretation that illustrated complexity and the other two concepts in regard to the first one – inside an alternative interpretative framework. Interpretative framework depicted some exemplifying principles derived from Edgar Morin's general complexity and Hans-Georg Gadamer's philosophical hermeneutics. Thesis showed how we can use them in order to position ourselves in a more 'complementary', a less mutilating way, in conjunction with other understandings.

TIIVISTELMÄ

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Tutkimuksen tavoitteena oli tarkastella kompleksisuusajattelun luomaa ymmärrystä ja sen sijoittumista suhteessa kahteen muuhun hallintotieteen keskeiseen käsitteeseen – tehokkuuteen ja epävarmuuteen. Tutkimus avasi käsitteiden historiaa, vaikutteita sekä rakentumista hahmottaen samalla kohti vaihtoehtoista tulkintakehystä. Tutkimus ei pyri kieltämään, paljastamaan tai jollain tapaa asemoimaan selvempiä kahtiajakoja eri tieteellisten lähestymistapojen välillä, vaan kuinka ymmärrystä luodaan.

Päätavoitteena tutkimuksella oli avata erilaisia tieteenfilosofiaan pohjautua ennakkokäsityksiä, jotka vaikuttavat tutkimusten mahdollisiin tulkintoihin. Koskien muun muassa mitä voimme ilmentää alunalkaenkaan sekä kuinka tämä heijastaa sitä, miten sijoittaudumme suhteessa tietoon ja totuuteen. Tutkimus haastaa osittain itsestäänselvyyksinä pidettyjä käsityksiä ja käsitteellistämisiä suhteessa kolmeen tarkastelun kohteena olevan käsitteeseen: kompleksisuuteen, epävarmuuteen ja tehokkuuteen. Nämä konseptit ja niiden luomat käsitykset vaikuttavat keskeisesti hallintotieteellisen todellisuuden muodostumiseen, mitä voidaan sanoa, nähdä tai ylipäätään edes ajatella. Analyysi toi esiin merkityksiä sekä konteksteja, jotka mahdollistavat lisäksi uudenlaisten tulkintojen syntymisen ja tarkastelun. Tämän lisäksi tutkimus tarkasteli tässä kappaleessa muotoiltuja käsityksiä suhteessa kompleksisiin adaptiivisiin systeemeihin ja kuinka CAS:sin käsitys kuvaa ja rajoittaa todellisuutta.

Tutkimuksen tuoma lisäarvo lepää edellä mainitun lisäksi myös loppupäätelmissä. Loppupäätelmät ovat tulkinta, joka muodostuu luodun ja kuvatun tulkintakehyksen sisällä tarkasteltaessa kompleksisuutta sekä toisaalta tehokkuutta ja epävarmuutta suhteessa kompleksisuuteen. Tämän ohella luotu tulkintakehys esitti useita havainnollistavia periaatteita, jotka johdettiin Edgar Morinin yleisestä kompleksisuusteoriasta ja Hans-Georg Gadamerin filosofisesta hermeneutiikasta. Näiden eri osien avulla tutkimus kuvasi, kuinka pystymme sijoittamaan itsemme vastavuoroisella tavalla, joka on vähemmän vääristymiä luova osana muiden tulkintojen luomaa ymmärrystä.

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1. Introduction

> The world does not speak. Only we do. The world can, once we have programmed ourselves with a language, cause us to hold beliefs. But it cannot propose a language for us to speak. Only other human beings can do that. (Rorty, 1989: 6).[1]

We live in a time that is characterized as being hectic; a time that is immersed in constant change where problems have only become ever more complicated. As the time passes this has only been estimated to reach invariably more prevalent forms; defining the working environment for those trying to solve problems. (Prime Minister's Office Finland, 2014.) This is not just concerning the ageless questions or the big problems; it will impinge itself not just on governments but on local decision makers; it will affect public sector as well as the private and the third sector; not just managers but ground level workers as well (e.g. Ministry of the Interior, 2006, 2010b, 2014). Hence, it demands solutions that can combat these problems and questions posed by it. One of the research areas to step up to these tasks are complexity related theories that offer us novel ways to conceive change, boundaries, development, environment, innovation, interaction, and knowledge – among other things (see e.g. Andriani, 2011; Boisot, 2011; Cilliers, 1998; Morin, 2008; Stacey, 2010). It will offer us new ways to find certainty, efficiency, and scientific knowledge amidst these uncertainties, inefficiencies, and relativistic options that appear to smother us; options that seem to deprive us of our ability to base our decisions on a discernable level of clarity and certainty (see e.g. Gell-Mann, 1994; Morçöl, 2012). But is this complex operational environment, words used to describe it by the Finnish Government (Ministry of the Interior, 2010a), merely a new thing, a state of reality we have slowly reached, or just a new way of conceptualizing the problem?

The aim of science is to be a systematic procedure acquiring and raising new knowledge within the limits set by the scientific community; it produces truths or at least truths that are more "truthful" than the previous ones (Niiniluoto, 1984b).[2][3] On the other hand, when a manager, a decision maker, or a society calls scientific community to help with a problem, then, he is asking – if not ways to

[1] Citation represents Rorty's view on truth that was based on the work of Friedrich Nietzsche; even though the world is out there, the depictions of the world are not. For the purpose of this thesis it is noteworthy to say that even though Rorty perceived hermeneutic task as an up keeper of conversation, in which the task of conversation is relativistic, for Gadamer it represented a quest for knowledge.

[2] Each scientific community has "a stake in defending their quasi-monopoly over knowledge claims" (Maguire, 2011: 87).

[3] In this paragraph I will enunciate the problem in a rather straight forward way. Consider these relations again after you have read the thesis.

solve it – ways to understand the problem; not to bring uncertainty and more complications into the mix, unless it helps as a stepping stone on the ultimate mission of seeing, solving, or understanding the problem.[4] Whenever a company manager or a political decision maker executes a decision he has to have if not the only truth, then, an aspect of clarity and certainty[5] he can impose on the decision in order to answer why it needed to be done – to not appear inconsistent or arbitrary. After all, what use is a philosophical contemplation – what can you really know – for a decision maker who has to make some kind of decision anyway? We aim for solutions (what we perceive as knowledge and truth) or at least means towards it. The way knowledge and truth are perceived also shapes the expectations imposed on certain scientific faculties – what kind of knowledge they are expected to produce, in other words, what is seen helpful in a set of scientific disciplines (see e.g. Kuhn, 1970; Macintyre, 1999).

When we examine researchers using complexity theory in administrative science, the way they produce knowledge concerning complexity, it is in considerable amounts done by using complex adaptive systems theory (CAS). CAS is a line of thinking ascribed in restricted complexity (Morin, 2007, 2008; see also Thietart & Forgues, 2011: 53–54, 56) that has its historical line of thinking in positivism. A line of thinking where researchers create and compose the rules of conception how complexity is understood; among other problems, it does not force us to consider ethical issues in our way of producing science in its own uncertainty – the level of closure complexity claims to be producing (Alhadeff-Jones, 2008: 71–73; Morin, 2008; compare Popper: truth and certainty). What CAS claims to be offering is order amidst complexity,[6] but what kinds of order of social reality can we really offer? The way CAS can be capitalized e.g. as a method, a tool, or an application of course varies greatly – as well as its conceptualization does; furthermore, as does complexity theory in itself. This wide variety inside of complexity theory is due to the way its interpretations are differing – what is complexity exactly – as well as its heavy linkage with its historical development in biology, engineering, management, physics, et cetera (Alhadeff-Jones, 2008: 74); and further, the meld between these approaches.

This thesis contemplates different ways we are approaching complexity theory in administrative science in relation to two questions, which are also two key historical administrative concepts –

[4] See conversation concerning the rise of practicality problem in science; where political pressure has led scientific results to be increasingly bundled up with their practical usage.
[5] Since in most cases they are accountable to someone for their actions (people, stock holders, investors, et cetera).
[6] See Santa Fe Institute's (http://www.santafe.edu/) home site banner and mission statement: "Searching for Order in the Complexity of Evolving Worlds".

efficiency and uncertainty. In relation to which they seem to be now interrelated with complexity and offering solutions on the ways of resolving these related questions/ problems. In other words, the way they are conceptualized and applied for in their usage. These different premises, grounded in the philosophy of science, guide researchers in the ways they perceive knowledge and obtaining knowledge possible, as well as their relation to practice (Kakkuri-Knuuttila & Heinlahti, 2006: 131). The way we conceptualize complexity, as well as certainty and efficiency, affects what we perceive to be the 'truth', the kind of knowledge that will help us towards this truth, and what kind of knowledge, and hence the truth, is 'useful' in our quest for better problem solving, decisions, and eventually construction of reality. In order for us to understand this process we need to examine not just the way our conceptualization is build but the way these concepts are build. Presuppositions built inside these concepts and how these presuppositions affect what we perceive complexity, efficiency, or uncertainty to be; and, furthermore, what this means when we build knowledge that effects our reality. This thesis will contemplate questions related to the philosophy of science, in the administrative science context, showing the current way of conceptualization related to these three concepts while holding complexity as the main viewing angle. Moreover, at the end of this thesis I will describe an alternative interpretative framework how to understand complexity and display how it would affect interpretation related to complexity, in addition to the other two concepts of efficiency and uncertainty – providing the contemplation to the research question.

1.1. Research background, question, and contribution

> Studies on organization and management made their appearance at a moment in history when the natural sciences were not only well established; they were veritably basking in the string of spectacular experimental and theoretical discoveries that marked the first decade of the twentieth century (Juarrero, 2011: 155).

Administrative science[7] is a study of organizations, management, governance, and public policy (Stenvall et al., 2015: 47–51); grounded in a long-term conversation whether it is a science, an art, a

[7] There are numerous different terms that are used to describe what Stenvall, Johanson, Pekkola & af Ursin (2015) are referring to as administrative science. Terms such as public administration, administrative, management, or organization theory are often used interrelated and "loosely" in literature, although in fairness they can be given distinguishable characteristics. Furthermore, their usage sometimes differs in different countries. For this thesis it is not a purposeful aim to try to unify them or discuss their differences, which would mean a constant need to explain every time it is used in that particular literature in a diverging way; rather I will use the term the way it is used in that particular literature I am referring to. And at the start and in the end I will use the term administrative science as it is the term used by the faculty I am studying in; making it also more distinguishable for the reader.

craft, or a profession[8] (Salminen, 2011: 309, question first posed by Waldo). Main interests for administrative research are effects that influence and shape action. In addition, how different policies can coexist and further how they affect different dynamics and interactions. (Stenvall et al., 2015: 49.) Some lines of thinking are committed to a more positivist ways of doing scientific research (Virtanen, 2011: 324–325); and further as others (Barrett, Powley & Pearce 2011: 193) note as well, in organizational studies research is still mostly committed to "a logical positivist view of knowledge";[9] trying to discuss the problem while distancing them from the object of the research. Seeking a way we can produce the last word or to find the "true reality behind the appearance" (Morin, 2007: 6). For instance, in sensemaking Weick holds on to an objective "real world apart from interpretation" (Barrett et al., 2011: 209). This research stands on the lines set out, among others – I do not mean invented – by Deleuze and Guattari (1994) and further reaffirmed, for instance, by Barrett et al. (2011: 194) that facts are a "competitive enterprise". An approach where value, such as efficiency, cannot be regarded as a value in itself, in other words, holding something worth of having intrinsically but as a (social) 'construct'[10], which is an interpretation[11], created through time.[12] By an interpretation I am not just referring to its current understanding but to the source of the concept as a dialogue, how it has developed through time and its position in relation to others.

In this thesis I will examine and problematize background assumptions of complexity theory and complexity theory's relation to two 'key' concepts of administrative science that are efficiency and uncertainty. The research question is: *what is the meaning we attach to general complexity by addressing it as a character of efficiency*. This question will reveal itself in a twofold way. Firstly,

[8] For instance, McIntyre, in his diagnosis of modernity, criticized public administration on the base of its development and aims, in other words, in its aspiration for scientific base; that was assumed in order to avoid going to be regarded merely as a social science in its aims at the betterment of governments. These 'sides' of betterments, i.e. where those seen as real betterments come from, are seen as those stemming from positivism (see e.g. MacIntyre, 1999; Overeem & Tholen, 2011; compare in Finnish administrative science history Ahonen 2011; Vartola, 2011).

[9] Logical positivism is strand mostly associated with the Vienna Circle (Kakkuri-Knuuttila & Heinlahti, 2006: 134); it has certain nuances, but for the purpose of this thesis it is regarded in the same way contradictory as positivism is.

[10] At this point it is adequate to mention that I will adopt the view of Gadamer (2013) in relation to social constructionism in this thesis, where knowledge is a dialog. In general, included in the theoretical grounds of 'social constructivism' are an extremely heterogeneous group of scholars that approach the subject in various, often conflicting, ways (see e.g. Hacking, 1999).

[11] Definition of interpretation will be provided in 1.4.

[12] Time should not be regarded as a unified story, some line, or a path. "Time is no longer primarily a gulf to be bridged because it separates; it is actually the supportive ground of the course of events in which the present is rooted. Hence temporal distance is not something that must be overcome. This was, rather, the naive assumption of historicism, namely that we must transpose ourselves into the spirit of the age, think with its ideas and its thoughts, not with our own, and thus advance toward historical objectivity." (Gadamer, 2013: 297). In positivism the aim is ahistoric that, in most simplified views, reduces time into a mathematic quantity (Turunen, 1995: 135–138).

the object of the study is to bring into the foreground, through problematization, assumptions grounded in positivism and the philosophy of science. Furthermore, presuppositions of what is seen as useful are estimated from this perspective. As Peter Winch (1990: 3) argued, "any worthwhile study of society must be philosophical in nature". After all, in the context of social science (not to say only) every researcher makes ontological and epistemological commitments[13], the question is merely are they explicit or implicit (Blaikie, 2004: 768). Thesis contribution will be examining these stances through complexity related writings:[14] how they define and perceive complexity as a problem and what are the solutions to this problem that is posed by complexity. And, in addition, what line of thinking, in the philosophy of science, they are situated in and what kind of interpretation framework they are portraying (see Knuuttila & Heinlahti, 2006: 131–132). To further illustrate the point, the concept of complexity will be accompanied with shorter examinations of the two other concepts – efficiency and uncertainty – from which the latter is a shorter 'integrative' concept between the other two. On the other hand, in the contemplation concerning efficiency an alternative build in meaning of efficiency is shown, in which efficiency is seen in an Aristotelian sense of a moving force. The second aim of the study is to portray an alternative interpretative framework – it is going to provide the contemplation to the research question, towards which all these earlier parts build for – that I will examine in a context of general complexity, complexity related base will be gone through in the first part. It answers to a contemplation what it would mean for interpreting complexity this alternative way, how this different kind of interpretative framework would portray it; furthermore, in relation to efficiency and uncertainty inside this alternative interpretative framework. But because administrative science research is foremost interested in public policies and the effects of policy programs (Stenvall et al., 2015: 49), in this last part I will accompany these contemplations, in regard to complexity, into a related conversation that includes a comparison how it, the concept, is used in one of the Ministry's

[13] In philosophy, ontology is a branch that is concerned with the nature of what exists, theory of beings about what makes up reality (Blaikie, 2004a: 768), on the other hand, epistemology is concerned how humans accumulate knowledge of the world around them, what kind of knowledge is possible, and on what grounds it is adequate and legitimate (Blaikie, 2004b: 310–311); methodology refers to the ways it can be applied. Due to their interrelated nature discussing epistemology and ontology separately is tasking; as an answer to a question: what constitutes social phenomena, then, has direct results how we can acquire knowledge about the phenomena (Blaikie, 2004a: 768), henceforth, the necessity why we need to consider the philosophy of science – the presuppositions. Furthermore, understanding of what concepts 'are' is fundamentally related to this argument (see e.g. Margolis & Laurence, 2014; will be further elaborated in 1.3.)

[14] Murray Gell-Mann (1994), John Holland and John Miller (1991); Niklas Luhmann (1990, 2006); will be explained in further details later on (2.2.1.).

contemporary public policy contexts and what this alternative interpretative framework would correlate in that case.[15][16]

In general, going through these different stances, grounded in the philosophy of science, in administrative research is not a new thing (see e.g. Virtanen, 2011; Salminen, 2011). However, doing it in the context of complexity is not common (for exceptions see e.g. Cilliers, 1998, 2011; Stacey, 2010) and even less so in a Finnish context[17]. Even in complexity related theories outside of administrative science this line of inquiry has only started to pick up the space during the last few years; it has lead, among other things, towards a conversation where the dichotomy of general versus reductionist way of perceiving complexity has become a tentative conversation.[18] In this line of inquiry the aim is not to go through or analyze the effects, efficiency, or effectiveness of some policies; or evaluate the outcome of the usage of these three concepts; or to form and compare it in some quantitative way. It is to analyze different meanings attached to them, which are often hard to see due to researcher's closeness to them as they have shaped, and are presently shaping, the way researcher's current understanding of them has been formed (compare e.g. Bloch, 1992: historian's two pitfalls), which is why a research should choose certain focal points as different angles from

[15] I acknowledge that this kind of an angle of an approach is not the most reader friendly, as the reader's process of compiling and discerning the 'meat on the bones' is a toilsome task. It is a task where none of the paragraphs or chapters in themselves provides an answer; as them together do not provide it either per se. In addition, the line of argumentation is perhaps not the most 'preferred' one either, which accentuates the matter (see footnote 29). Perhaps the best advice I can offer for the reader is a sentence, which he/ she can reflect constantly on his/ her way forward, and that explains my intentions: *my aim is to ponder and explicate the conditions for the possibility of understanding as such; how this transforms towards our current understanding*. Hence, there are a lot of concepts and understandings we will touch upon and impinge ourselves into their understanding; concepts such as information or truth. But they are not the object of the study; they are 'byproducts' that should be viewed in relation to the sentence I just offered as an advice. How they relate to each other and what is the result of this. Henceforth, perhaps one could claim that my aim is to contemplate the way understanding is provided, presuppositions evident inside it, and the produced 'incoherence(s)' because of these; where my approach can be perceived to be bringing multifaceted viewpoints, acting as points of view for examining the problem illustrated before.

[16] As I once again acknowledge the difficulty for this kind of a thesis from reader's perspective, hence, in an attempt to provide more clarity towards my understanding, I will try to reflect myself and my reasoning – 'the guiding understanding or principles' – why I am doing this thesis. There are various alternating understandings concerning the way we produce understanding, and hence knowledge, in itself. The way we understand these different positions effects, for instance, how we can understand or solve problems in the first place. I perceive them evident in the way we have produced an understanding concerning different concepts, conceptualizations and problems. It effects how we can approach, solve, or understand the problem in the first place (in the case of this thesis, in complexity, efficiency, and uncertainty). Yet, as it is so often, we do not recognize these tensions radiating because of them, in other words, that are evident inside them. Henceforth, the way we approach it or any aspects of it, or rather of the reasons behind our inability to solve them, is caused by our inability to recognize these constructing 'elements' 'it' has, it's 'elements' have, or that are build inside our own argumentation – *how the interpretation has been constructed*. It is not to say there is only one interpretation, a better interpretation, or an interpretation that we should have.

[17] In the Finnish context any use of the complexity related theories is still extremely young in age, for instance, one of the first dissertations, in the context of public policy, was published in 2007 (see Jalonen, 2007).

[18] See, for example, conversation around the work of Edgar Morin.

which he then examines the object of the study and their meanings (Fay & Moon, 1977: 222–227; see also Morin, 2008: 49–52, 54–57, meta-points of views); furthermore, it will demarcate the research and show the context of the study. Related to this is one of the key aims of qualitative research: to bring into to the foreground those unspoken presuppositions (Thorpe & Holt, 2008: 5–7, 107). For administrative science this means, due to the fact that by its nature administrative research is a multidisciplinary study (see e.g. Stenvall et al., 2015: 49), that it is sometimes hard to trace, or rather form, some kind of unified historical conceptual representation as it will coercively involve demarcation. None the less, some kind of demarcation has to be made. As Max Weber (1994) would proclaim, research is always merely interested in a partial significant picture of an immensely complicated phenomenon. Henceforth, my interpretation is not the only one with some necessarily better elements; rather it is an interpretation ascending from the chosen concepts and the context I have chosen to compare it with; as context in itself can already be a research outcome in social science related fields of study (see e.g. Palonen, 1998).

Trying to problematize something that is deemed as the way to do is a problematization that "involves first and foremost a systematic questioning of some aspects of received wisdom in the sense of dominant research perspectives and theories", for instance, interpretation related theory is seen as a problematization friendly way (Alvesson & Kärreman, 2011: 45). Although it could be stated that every scientific research involves some form of problematization my understanding is closer to Foucault's one. According to Foucault (1985: 9), conceptualization of problematization is an "endeavor to know how and to what extent it might be possible to think differently, instead of what is already known". Rather than offering demystification[19] I will offer the reader a 'journey' for an interpretation that ultimately leads into a dialogue what this different line of thinking would mean. This does not correlate into a view that I would see problematization and criticality as an end in itself; a trivial quest that would have no purpose outside of philosophical pondering.[20][21] Instead, I

[19] A term Ricoeur uses for the hermeneutic line of interpretation advocated by Nietzsche, Marx, Foucault, et cetera. This mystification is a result from our own stories that create causality and intention as a byproduct in order for us to have constancy and identity. (Barrett et al., 2011: 190–192.) "The paradox of emplotment is that it inverts the effect of contingency … by incorporating it in some way into the effect of necessity or probability exerted by the configuring act … that only becomes integral part of the story when understood after the fact" (Ricoeur, 1992: 142 cf. Barrett et al., 2011: 191). Hence, to keep also in mind when we are talking about problematization, it should not be regarded in a strict sense of denying.

[20] Compare to introduction's second paragraph.

[21] Political decision makers, or the work life for that matter, can rarely rely on having unified scientific knowledge; at least on any knowledge concerning administrative, economic, or social sciences for their decision making processes (Kakkuri-Knuuttila and Heinlahti, 2006: 9). Henceforth, ability to distinguish between different kinds of knowledge, the way it is produced and the way it reflects on reality is crucial. Decision makers need an ability to distinguish between these diverging views (Kakkuri-Knuuttila and Heinlahti, 2006: 10–11; think about e.g. Sipilä's (A-Studio 2.12.2015) view

see it as a mean to identify and challenge assumptions underlying existing concepts, conceptualization and scientific theories; as a result, being able to create more informed and novel research (see e.g. Shenhav & Weitz, 2000: 393; compare Kakkuri-Knuuttila & Heinlahti, 2006: 161–177).[22] After all, would any of these concepts or their related theories bear a claim of providing some kind of impeccable 'truth' in its current understanding? Would someone claim that there are no defects with the current way we approach and deal with efficiency or uncertainty? Would someone claim there is nothing beyond our grasp related to complexity – making us able to say without uncertainty that the road we are on concerning complexity is an immaculate one? Henceforth, my aim of positioning alongside these different contexts and interpretations attached to them enables 'fruitful' examination, and will further lead into seeing new angles, and new possibilities, to create more informed and novel research.

1.2. Concepts and contexts

The conjunction between science and concept is crucial; one of the primary principles emphasized for students that are making their thesis is the exact definition of the concepts they are using (Virta, 2011: 114). This understanding originates from the ancient Greek where Socrates had discovered its bearings and Plato acknowledged the discovery of concept as "one of the great tools of scientific knowledge" (als Beruf, 1922: 9). Resulting in a statement: "and from this it seemed to follow that if one only found the right concept of the beautiful, the good, or, for instance, of bravery, of the soul -- or whatever -- that then one could also grasp its true being" (als Beruf, 1922: 10). And even though in Greece science was to advance politics, acting as a citizen of the state, one can see the purpose of concept, moreover, the reason in the background why their

on the problem of having on every turn all kind of different adjunct professor opinions). There are no final winners in scientific knowledge only temporary victories (Kakkuri-Knuuttila and Heinlahti, 2006: 70).

[22] Another reason, why we need to consider the way we produce science is because scientific research is always about argumentation and argumentation in this context is inevitably competition. Competition situations are inevitably social situations; they define how one competes and on what grounds; defining who ultimately wins. Hence, these social conditions are crucial for researcher's success. (Kakkuri-Knuuttila and Heinlahti, 2006: 13–14.) By attaching funding mechanisms, decision making and cultural acceptance into certain ways of producing knowledge and reality, then, we do not merely steer research; on a long run we predetermine what is seen as useful in science. Competition about science transforms into competition about succeeding in evaluations, measurements and in comparisons (Kakkuri-Knuuttila and Heinlahti, 2006: 71; think about Olli Rehn's, 2016 speech that we need to find new measurements in university funding – how to evaluate effectiveness. It leaves ways how it is done to the universities, but with delimitation how they can already in the start produce knowledge concerning this). Of course this already ignores the conceptual metaphorical delimitation it builds in itself by deducting interaction to competition.

importance is emphasized so much. In other words, semantic units [concepts] are the things we use to construct the world (Nietzsche, 1990). They are building blocks used to pave a way.[23]

It appears that I have chosen three concepts that are part of an endless debate; debate taking place inside these particular concepts, between the concepts, as well as in their relation to other concepts, not to mention between different paradigms; hence, each of them can be described as being bottomless pits of meaning. As explained earlier, and even though my explanation of complexity will be a much more extensive one, my aim in each of these concepts is to only go through a certain kind interpretation, not to provide an all-encompassing explanation. Furthermore, before we even get to contemplate these concepts, we have to answer another problematic question: are they terms, definitions, or concepts?[24] Their common usage aside, even in research concept is used in a neglectful way or at least understood to have a diverging meanings, for instance, between various philosophers. In addition, each concept comes from a diversified field of related questions that are sometimes if not contradictory then not usually discussed in a same study[25]. Hence, it creates an importance on the way the researcher can 'control', explain, and limit the examination in each of these concepts.[26] As Max Weber (1994) would proclaim, research is always merely interested in a partial significant picture of an immensely complicated phenomenon. Most of the other concepts related to this thesis, other than administrative science, i.e. complexity, certainty, or efficiency are often times as well applied without a more precise definition; in addition to the previous list we can adjoin change, interpretation, improvement, public policy, truth, or governance. This kind of

[23] Compare to Rorty's citation at the start of this thesis.

[24] When the object of the study is ambiguous, first we have to define what we mean by an interpretation. Interpretation is a question of what x means and what is the meaning of x. In this case research has an object that has a meaning, which we aim to elicit; this elicitation is the interpretation (Niiniluoto, 1984: 155–158, 163–170). These interpretations manifest themselves as concepts, terms, definitions, and as a change in them (Meklin, 2009: 32). "Concepts are the constituents of thoughts" (Margolis & Laurence, 2014); in philosophy and logic concept is considered to be "the product of the faculty of conception; an idea of a class of objects, a general notion or idea (OED: Concept). Referring to something in the surrounding reality called the object. In other words, it is composed from the term and its definition. (Tieteen termipankki: käsite.) One form of concepts is abstracts, which in social science represents any idea, but as Kuhn (1970: 111–136) notes, there are no pure observations; they are all filtered through an unconscious or conscious theoretical lenses. What one has to realize in relation to complexity, is that "the task of philosophy, when it creates concepts and entities, is always to extract an event from things and beings" (Deleuze and Guattari 1994: 33). Hence, the more complicated the problem in society is that we are talking about, the harder it becomes extracting it; or rather we should understand it can never truly be 'extracted' as a whole, to portray a truth, henceforth, *it is always rather an interpretation*. When I use complexity, efficiency, or uncertainty I will refer to them as concepts, but if the author I am discussing uses, for instance, the word term, then, I will use it in that particular way for the reasons indicated before.

[25] For instance, think about the three concepts and their opposites; one can find commonalities, for instance, uncertainty in chaos theory can create efficiency, but especially one finds bipolarity.

[26] The further we can clarify different meanings inside a concept, or the contextualizing towards organization, the better we can evaluate our actions strengths and weaknesses in a multifaceted ways and use it to develop our action (Kakkuri-Knuuttila & Heinlahti, 2006: 168).

'skittish' usage is typical for organization and management related vague, or magical, concepts (see Pollitt & Hupe, 2011); especially this comes more apparent when we come closer to those used by consulting, where holding the truth behind the concept is means of doing business (see Ernst & Kieser, 2000: 6); in addition, this can be caused by their closeness to spoken language and their loose and shallow usage by researchers' (Hirsijärvi et al., 2009: 304–307), or a mix with colloquial speech (Niiniluoto, 1984: 167–170).

Why do we need to study the etymology or the historical meaning of a concept; it is one of the inevitable questions concerning the foundation of this thesis. As Shenhav and Weitz (2000: 394) note, the roots of many key concepts in organization theory are inadequately known. For instance, Shenhav and Weitz (2000: 376) conducted an analysis of the Administrative Science Quarterly during the period of 1985-95 and concluded that 16 percent of the articles dealt explicitly with uncertainty. Furthermore, the toilsome task of examining any of these key concepts in itself means that their interplays are sometimes meagerly studied. For example, in relation to this thesis, Allen, Maguire and McKelvey (2011: 21) remark, a common problem in the management literature is that the relationships between uncertainty and complexity are sparsely studied. This can be further elaborated by seemingly discernable conversation concerning some of the explanatory concepts that are related to the concept of uncertainty, in other words, where assessing critically meta-concepts that have spun in relations to it[27]. Due to administrative science's relatively young age and multidisciplinary nature (see 1.1.), it occasionally lacks research concentrating on elaborating the historical groundings of these concepts; especially when one considers the habit how problems are resolved, by replacing an old concept with a new one that in some cases holds or transforms some of old the meaning to the new one;[28] not to mention organizational habits of clinging on to the old understandings in the framework of the new one. Furthermore, our public policies are often times related to the ways concepts, such as efficiency, are used to solve perceived problems. In other words, understanding that some concepts intrinsically include what we need to solve some problem, like a missing bolt, which we now just screw in, then, will finally get the car running again that we can carry on into the right direction.[29]

[27] Concepts that aim to, for instance, resolve problematic aspects dealing with issues arising from uncertainty such as resistance; e.g. they are critically researched in a much more elaborate way in the fields of political science (In relation to resistance see e.g. Chandler, 2014a, 2014b).

[28] E.g. how action is enabled or restricted by the terms we use (Barrett et al., 2011: 195–196) or how we perceive knowledge gaps to be replaced, i.e. if we see them as a result by the lack of information or by the very nature how we understand (Tsoukas & Chia, 2011: 5–6).

[29] In addition, these lines could be complemented by, for instance, how different lines of building argumentation, evident in present academic writing, have changed. As Mika Ojakangas (see Pörsti, 2015 in UP 3/ 2015) points out,

Already in 1947 Robert Dahl noted that public administration has lacked comparative research element, when, on the other hand, it has been an object of a substantial amount of interest in the political science (Baker, 1994). As Eglene and Dawes (2006) argue, one of the problems of this line of inquire is the nonequivalence of key concepts, in addition many of these key concepts used by the management originate from America. It is noteworthy to mention that certain key concepts already have diverging meanings inside 'American' literature; as shown by Eglene and Dawes (2006: 608–609), in certain cases it already becomes distinguishable between United States and Quebec.[30] After all, the use of the concept of efficiency inside the European Union publications compared to the national states ones already begs to ask the question of its conceptualization. Understanding differences will produce not just novel interpretations, potential pitfalls, or clearer instructions but transparency from governance side towards countries, municipalities and ultimately citizens.

Whenever we are examining anything in relation to human reality understanding its context is essential, as human reality is essential saturated by different meanings; furthermore, also objects or facts do have a meaning in themselves[31]. Hence, we have to relate them to other facts that require interpretation, be sensitive to context, and towards other meanings. (Moilanen & Räihä, 2015: 52–53.) There are multiple reasons why understanding meanings becomes difficult. There are meanings we know and meanings we are unconscious of, they also relate to individual, communal, and universal meanings. The point of interpreting meanings is to get some sense of the thing we are interpreting, but as a researcher the interpretive question always defines the kind of meanings we are looking for, in other words, by making certain presuppositions, knowingly and unknowingly, the researcher is already delimiting possible meanings; for this reason, making, or trying to make, these delimitations apparent is essential. And even though getting rid of these presuppositions is impossible, according to hermeneutics,[32] it never the less initiates the interpretation process that can be altered further down the line. (Moilanen & Räihä, 2015: 53–58.) The problem of studying or

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Anglo-American way of addressing argumentation (the point of the text can be easily summarized) has increasingly occupied/ smothered space from other ways, like the philosophical way of argumentation that was/ is present in France (the thought is gradually developed along with text towards somewhere, the point is not necessarily to reach some well-defined conclusions).

[30] Even though this thesis is not concentrated on comparative research, I am using it to accentuate the need for historical elaboration and interpretation.

[31] One main criticism of positivism is that it ignores the meaning of these different meanings (like concepts or anything else that science 'produces'), hence, if we do not understand them we cannot interpret them (Turunen, 1995: 135). Concepts are not discursive, humans are (Deleuze & Guattari, 1994).

[32] In hermeneutic understanding (Gadamer) the interpretation is always incomplete.

researching meanings is that they are perishing, as Nietzsche (1990) and Deleuze and Guattari (1994) also state,[33] and if we are to examine someone's conceptions we precisely need to understand the nature of these conceptions and how we can even get a hold of them! (Moilanen & Räihä, 2015: 59–60.) In other words, the context in itself does not create meaning but the interaction as a two-way process, a dialect in Gadamer's (2006) terms.

In qualitative inquiry understanding the contextualism of interpretation, where contextualism refers to the nature of interpretation, is key. In hermeneutics, context bound interpretation is one of the only things that is common for the whole inquiry (see e.g. Ramberg & Gjesdal, 2014); meaning that the interpretation is always taking place in some background set of beliefs or practices (Schwandt, 2007: 44), which Gadamer (2006) calls tradition. This will lead us to the next section in which I will explain what we mean by an interpretation as well as by the alternative interpretative framework I have promised to portray.

1.3. The way of interpreting as well as thesis contribution to the philosophy of science

The second aim of this thesis was to describe an alternative interpretative framework for complexity and what it would mean for interpreting the three concepts in the light of it and the first concept.[34] In research, framework is a frequently used term, shortly it means "an essential or underlying structure; a provisional design, an outline; a conceptual scheme or system" (OED: Framework, n.). In other words, those underlying assumptions, ideas, and truths defining specific theories that shape the way we produce knowledge, and how producing knowledge is even possible in the first place. The way researcher builds the framework allows the problematization and the way he problematizes, as discussed earlier; thus, it makes an alternative interpretation possible by seeing, for instance, different presuppositions. Henceforth, through this interpretative framework we can moreover form an alternative way of producing knowledge as well as compare it to the current one,

[33] Nietzsche presents it in a much more despair way.

[34] The contribution of this thesis is to problematize the background philosophical suppositions that science and more particularly administrative sciences have concerning the subject of the study. One object, in any kind of critical studies, is to examine researchers own philosophical background views; by bringing to the front presuppositions concerning, for example, values, knowledge, and reality, then, we contribute to the objectivity of research; and, furthermore, we make the applications of research 'easier' in the long run; by examining these presuppositions theoretically we can eliminate and elucidate conflicts and contradictions. (Kakkuri-Knuuttila and Heinlahti, 2006: 9–11.) Criticality is also pointed towards the way of what is seen as scientific.

making novelty, conceiving pitfalls, debate, as well as differing understandings possible. (see 1.1.[35]; Kakkuri-Knuuttila, 2006: 131.)

Inside a framework, in order to get the most 'effective' results, research should be approached asking questions: what it is that we do not know, how can we find more about it, and how should we present those findings (Williams, 2012: 137). Even though these different stances, in the philosophy of science, are often seen as contradictory and perhaps I am as well bit avid in my ways of pointing them out, they none the less do not always differ as substantially in every way. For instance, we can find cohesion in their aims of general betterment. They both as well have certain complimentary virtues that can benefit each other, for instance, in the context of public policy where these different needs naturally intersect. Hence, interpretation is seeing different aims, gains, possibilities, and complementary ways instead of trying to claim one or a foremost advantage of one.

Keeping the previous in mind, this study is located amongst the interpretative studies of administrative science. And for the sake of some kind of clarity I will regard it (interpretative approach) contradictory to positivist approach. This division into opposites is also used in the complexity related theories in organization and management research[3637] (Maquire et al., 2006: Maquire et al., 2011); furthermore, it is also an allocation used in social science. For instance, Kakkuri-Knuuttila (2006: 54) positions interpretative research contradictory to positivist research.[38]

[35] By this reference I am referring to the effects of these stances in the philosophy of science.

[36] Maquire et al. (2006) divide approaches to complexity between objectivist (those trying to give an external view) and interpretivist (interpreting meanings) approaches (see also next footnote).

[37] Naturally objectivism is not a same thing as positivism; in the context of this thesis they are seen to pose certain correlations that can be seen in a same way contradictory to the interpretivist approach. Positivism holds on to an external point of view, all reality can be objectively described by concepts that are congruently understood (Kakkuri-Knuuttila & Heinlahti, 2006: 135); furthermore, holding on to a nomothetic understanding, where science's ideal is producing order for explanation and prediction (Kakkuri-Knuuttila, 2006: 57). As objectivism holds on to an objective reality (ontologically) and where through knowledge we can increase this objectivity (Ratner, 2008: 567). As Ratner (2008: 571) exemplifies, a common mistake in qualitative research is to assume that the kind of objectivism positivism predicates is the only one; yet in the sense that objectivism is used by the researchers employed in this thesis one can regard them having the understanding explicated. A further note, this kind objectivism, the other one, in qualitative research goes on the lines of Dilthey, which Gadamer opposed (will be shortly exemplified in the first part of hermeneutics section; also compare Ratner, 2008).

[38] Further dichotomies related to the positivist versus interpretative research can be illustrated (divided with ;-sign). For instance, one is provided by Kakkuri-Knuuttila and Heinlahti (2006: 13, 40–42, 47–48, 104–106, 133–138; see also Turunen, 1995: 135–138): if not positivism then on 'a scale of relativism' its location, for example, moderate relativism means that arguing and finding conclusions between different values and understandings is possible, which someone might be inclined to call truths, although their aptness is tethered to the situation; the aim of research is not, foremost, to systemize observations and find causality between them; furthermore, reality can be seen to build up dichotomically either as atomic or holistic, whether it should be even regarded either or (Morin, 2008), or as a system

In positivists' term as contradictory to positivism, it means that interpretative approach does not acknowledge 'definite truths'; this position can best be illustrated trough an example: for instance, shared leadership is impossible to describe trough sense perceptions, hence, scientifically solving it in positivist means, in the way they can produce knowledge, is regarded impossible;[39] it as well ignores value related debate (Kakkuri-Knuuttila and Heinlahti, 2006: 13, 133–138).[40] Next I will open up philosophical hermeneutics (the interpretation approach I have chosen) and the background of this understanding, which is the base that this thesis builds towards (in the philosophy of science).

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> The hermeneutic task consists in not covering up this tension by attempting a naive assimilation of the two [horizons], but in consciously bringing it out (Gadamer, 2006: 256).[41]

Etymologically, the term hermeneutics originates from Greek mythology and from a boundary crosser called Hermes. Hermes' job was to be a messenger between the gods and the mortals; a job where interpreting and convoying messages required a certain level of trickery. Hence, his name was borrowed once mortals became interested on what other people said or did, mostly in texts, and called it hermeneutics. Originally hermeneutics entailed two separate ideas for the Greeks in Plato's dialogue: the significance of "the texts for present purposes (Protagoras' view)" and "reading through texts to find out their true meaning (Socrates' view)". The former included the way people solve problems and convince others in public policy, such as through narrative, while the latter was "concerned with knowledge of unchanging realities". In his dialogue Plato banned Protagoras view as he partially viewed this line of thinking treacherous as it failed to convey the truth when the purpose of hermeneutics was to find out what the author "really meant". (Barrett et al., 2011: 182–183; see also Hope & LeCoure, 2010: 436–437.)

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is a separate question we will come back later on (on complexity thinking system approach critique see e.g. Stacey, 2010).

[39] 'Gains' achievable from these perspectives, compared to other questions how we could be producing knowledge, is a different kind of contemplation that I will not discuss in this thesis.

[40] Compare this to the first chapter of this thesis where I refer to the ethical concerns (Alhadeff-Jones, 2008: 71–73; Morin, 2008; compare Popper: truth and certainty)

[41] This citation does not refer to the different stances in the philosophy of science; it refers to the interplay and understanding, advocated by the hermeneutics (between the past and the current).

Until the last 400 years' hermeneutics was associated almost solely with what Plato called Socrates' view, which we now associate most closely to biblical hermeneutics, concentrating on the interpretation of the Bible. In the 18th century theologians started to revisit scriptures realizing that the "meaning is not always fixed", but also requires a "historical interpretation". During the same century Fredrich Schleiermacher struggled with the Enlightenment tradition of knowledge and widened the array by calling "attention to the role of the reader" and introducing the hermeneutic circle. Schleiermacher claimed interpretation to be a legitimate way of knowing that differs from the positivistic way of knowledge; it is an interpretation that covers all texts – and not just text – but all modes of understanding (Barrett et al., 2011: 183–185; see also Hope & LeCoure, 2010: 437–438.) This understanding is further developed by Gadamer and Ricoeur into a situation where this "text" includes all modes us understanding such as institutions, organizational practices, social structures, practices, et cetera. They are texts because they can be regarded, understood and interpret in a similar manner of written text. (Prasad, 2002: 23–24.)

Heidegger further elaborated hermeneutics by widening understanding to include not just meaning but background practices, a preunderstanding, that makes knowing possible where one is "being-in-the-world". For Heidegger language was the foundation of this being, in other words, "ideas and concepts are language". Furthermore, he extends the notion of hermeneutic circle by widening it from the relation of subject and text to the "relationship between self-understanding and understanding of the world". (Barrett et al., 2011: 187–188.) Heidegger's student *Gadamer* advanced *what it means to understand*, which Gadamer regards ultimately as an *application*[42], a practical one where we are in a *dialogue* with the original, trying to achieve common ground that gives it a familiar meaning applicable to this situation. Hence, it is not so much about finding the exact correct meaning of which we are interpreting but *translating* it through a conversation with the former to some common ground. (Barrett et al., 2011: 190; see also Hope & LeCoure, 2010: 436–438.) The term Gadamer used for it was *extending one's own horizon to the horizon of what we are interpreting where the fusion of horizon* is this understanding that we achieve; horizon is not a rigid boundary but something that is always partial and malleable[43] (Malpes, 2015).

Currently hermeneutic approach is merely a minority approach in social sciences (Barrett et al., 2011: 193) – even less so in organization and management theory (Prasad, 2002). The method I am

[42] An understanding based on Heidegger and Aristotle; once you reach section concentrating on efficiency, compare this understanding what it would mean if one regards it as an application.
[43] Notice a strict difference to the way system thinking perceives boundaries.

referring to as hermeneutics[44] includes a various number of "streams".[45] The commonality is that hermeneutics stresses interpretation and understanding of the phenomena, forming an opposite method to those stressing independence and objectivity in the formation of knowledge (University of Jyväskylä, 2014a; 2014b). As qualitative research is about understanding, understanding depends on how we give meaning to (interpret) language and change (Murray, 2008: 107). It is an understanding where it creates different meanings in which knowledge is formed as a process of continuous renewal of this interpretation and hence renewal of the knowledge. In other words, rather than trying to see it as an interpretation of something true in the background we are doing interpretation on their meanings. (Malpes, 2015.) It means a constant openness for a 'challenge',[46] as the horizon is not a boundary nor is it anything else rigid in form; a form is already a misleading term. Henceforth, historical idea is not merely a classic that stretches into our time by the dead hand of tradition[47], but part of what also radiates into our current struggle for meaning (How, 2011: 50). By not realizing this and by not bringing ideas or concepts into our current setting but interpreting them in their time, then, makes them just transferring their already dead meaning into our reality (Nietzsche, 1980)[48]; or in Ricoeur's terms, it is one way of making an intentional fallacy problem.[4950]

Furthermore, hermeneutics allows one to indicate how meaning is understood in its context. It is an understanding that is formed through time, not as the truth already born in certain form, but as an accumulation of knowledge that has created a certain kind of understanding. In the context of this thesis it means why we perceive efficiency or complexity to be what they are today. Hence, I am aiming to show that this understanding is not the only possibility or that it possesses some kind of

[44] For a general introduction in hermeneutics see Ramberg and Gjesdal, 2014; hermeneutics in management and organization research see Prasad, 2002; a comparable different way of categorizing different hermeneutic approaches see Demeterio III, 2001; as a note, comparably Ricoeur also uses diverging categorization.

[45] A term Prasad (2002: 14) uses to describe the division into three different approaches in hermeneutics: classical hermeneutics, *philosophical hermeneutics* (used in this thesis) and critical hermeneutics; the latter two only have very minor differences that are mostly associated with a question of what a truth is (see debate Gadamer versus Habermas). In this research I will use Prasad's division, it is not to say it is the best or the only one as illustrated in the previous footnote.

[46] One should not interpret this in a way of autopoiesis theory (see Luhmann1990; Maturana & Varela, 1980), as in any kind of boundary or boundary exchange per se.

[47] Term used to describe, practically always in a negative sense, the influence historical texts have on us.

[48] Compare to Bloch's historian's pitfalls.

[49] Is an indication of a bias someone 'committed', according to Ricoeur, that he used as an illustration when someone asked him, what was your inspiration when writing that book, what were you reading when you came up with the idea, et cetera (see e.g. Uggla, 2010: 1–29; Hope & LeCoure, 2010: 436; also Stiver, 2012).

[50] Furthermore, compare this to Socratic problem as well as how Gadamer regards time.

objective truth we should 'value' in itself.[51] Appreciating hermeneutics is essentially about perceiving the moving horizon that is an "on-going re-articulation of the dynamically historical nature of all human thought" (Ramberg and Gjesdal, 2014)[52]. Henceforth, I am painting a canvas where the two merging horizons are not a unified body but a nebula[53] of differences of different kinds of views in themselves, which we should not interpret as being one; as Maguire (2011: 87–88) points out, complexity is a challenge of interpretation. But a challenge that should not be seen merely as a context but as a "historicality of understanding" – the compulsory conditions in order for us to understand – that Gadamer (1976: xii–xv; see also Prasad, 2002: 18–19) refers to as "*prejudices*"[54].

This thesis will use philosophical hermeneutics which develops further, for instance, philosophical issues that surround the constitutive act of interpretation (Prasad, 2002: 15). I perceive hermeneutics suitable for this thesis due to its conception, for instance, how language has an ontological significance (Prasad, 2002: 20), how our meaning is built through language and that there are no fixed meanings (Prasad, 2002: 20–21) and how borders are seen as elastic (Malpes, 2015). The rather more troubled task was choosing between different hermeneutic traditions. As Prasad (2002: 16–17) point out, both of these lines of thinking are "antipositivistic in [their] nature". Hermeneutics of suspicion would have greatly suited the purpose of examining the alleged complexity of the financial crises (Ricoeur: hermeneutics of suspicion); whereas I perceive Gadamer's approach be more suitable for the purposes I am claiming in this thesis: as my aim is not to deny, but rather to show that there are always different horizons in play, which means that there

[51] I like to 'pitch' around truth as a meaning in this thesis; by truth I do not mean that it is uncontested or that there would be no differences inside it. I am referring to it when something has a prevalent status because it imposes itself upon us. In other words, I do not see that there is no truth as some of those categorized under hermeneutics of suspicion. Gadamer thought these different "truths" we enclose into an event, and in here I mean in complexity or efficiency, emerge retrospectively in the light of succeeding horizons, and do not eliminate other understandings (see How, 2011: 54). We should not fall into the trap of seeing the current emerging view as the only one, or something better or progressive in itself (such as the one misunderstanding attached to the concept of evolution).

[52] In hermeneutic interpretation one can exceed current perceiving angles, the *prejudices* (compare to focal points referred to earlier); these interpretative horizons enable for a researcher that he/ she can achieve critical consciousness; it is achieved by understanding one's on historical position, which furthermore enables new ones to emerge; and ultimately it will lead to the assimilation of horizons (Gadamer, 2013, 436–440; Kusch, 1986, 107–110).

[53] By nebula I am only illustrating the boundary problem, not any other analogy that one can draw from it.

[54] I will go through, at least in some form, historical understandings in three different contexts – complexity, efficiency and uncertainty, in which the difference between text and our current understanding is differing. By doing this I am aiming at what Prasad (2002: 18–19) calls making visible Gadamer's legitimate and productive prejudices versus unproductive prejudices. By examining these different understandings, I am enabling confrontation between a historically distant 'text' and our prejudices – it creates a temporal distance, which makes it possible for us to distinguish productive prejudices; furthermore, when we "encounter a text whose meaning challenges the truth of our prejudices" we can become aware of our own prejudices. (Prasad, 2002: 19).

are different suitableness for different purposes that we need to acknowledge.[55] It means that each interpretation is a productive one – building a new understanding, changing it, or reaffirm it – rather than reproductive one (Prasad, 2002: 21). Hence, one can say that I have a harder time accepting the general framework under which they are currently rammed, in short of a better term. In other words, even though I might seem rather adversarial in my articulation my aim is to be questioning and perhaps somewhat conversational, to which some have described Gadamer's approach of hermeneutics belong to, while holding (How, 2014: 50). Whereas the hermeneutics of suspicion denies truth in its essence (Malpas, 2015), I regard it through Gadamer (2006) as something that we should perceive to be temporal. Furthermore, in Prasad's (2002: 23) terms what Gadamer's hermeneutics offers as a method is a broad epistemology and philosophical (understanding) interpretation and considerable flexibility; the goal is not to provide a narrow method of interpretation but to "explicate the conditions for the possibility of understanding as such" (Prasad, 2002: 23–24, 26).

1.4. Earlier research and the structure of the study

> I do not give you enough information to think (Verhoeven, 1990).[56]

When I started reading the background information needed for this thesis, then, I soon found myself overwhelmed with material that these three notions deluge one with. Notably this was the case when I started to think what it means if something is complex. I found myself thinking about certain problems where interrelations seem to be ceaseless. This ceaselessness that I had also encountered before, for example, when the bubble burst in 2008; it had also manifested itself again during my first employment when I was trying to figure out why people feel more insecure even though crime rate has gone down; and now it was raising its head again while trying to think these different threads one finds in complexity thinking. I did not 'feel' as I do 'normally'; where one can pick a certain angle and a theory and start contemplating the implications to produce an argument. I felt

[55] Some researchers would position critical hermeneutics, which does not refer to Ricoeur per se but e.g. Habermas, contradictory to Gadamer's philosophical hermeneutics; one should rather examine it as a family squabble (see e.g. How, 2011; Prasad, 2002: 17); and should not confuse what Ricoeur calls hermeneutics of suspicion to be same as Habermas critical hermeneutics. Henceforth, I do not see any build in problem using authors such as Nietzsche or Foucault to display certain features how historical meanings have led to certain constructions; it is rather that the interpretation that I make concerning the 'ontological assumption' of knowledge differs. As an example, one way of seeing interpretation is to regard it as a never ending conversation, which shapes and reshapes our understanding. Difference is whether one sees it as a relativistic quest (Rorty) or a quest of producing knowledge (Gadamer).

[56] In a movie called Total Recall this is an answer that the evil person of the plot gave to his right hand man, when the right hand man has tried to solve a problem (and failed to do so) without consulting him first.

like I could never reach the accumulation point where one could solve something, to be able to add that little nugget of information behind the problem; because as soon as I could find it, something else was connected to it and added unforeseen uncertainty into my finding. In some cases, like the banking crises, which started in 2008, this unforeseen uncertainty that was called and credited to complexity was merely a created illusion (see e.g. Christophers, 2009); it could not bear closer look. But in the latter two it had become ever more prevalent in my mind. I felt like I never had enough information to think the way I was thought to; no matter what I read, disjoined, demarcated, or abstracted (Morin, 2008: 3–5; see also Niiniluoto, 1984b: 19–32), I could not find a way to say something definite behind those two problems in a level of certainty that I was content with. Frustration became my ruler, until I started to think about the background reasoning. Why is it so hard to start thinking about those two problems and why do I even have to the way I do? Especially in this particular way of producing something that can for certain to see endure time; why do I have a perception of knowledge as something that has to endure time and to be in some kind of way definite? I am not saying that the following choices taken for this thesis are somehow intrinsically the truthful ones; I am not claiming that they are the right kind of choices, e.g. concerning the stance I have taken in the philosophy of science, nor that they are the only possible ones; moreover, I am not claiming that this would inevitably produce in itself some kind of more precise truth.[57]

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Next two sections will elucidate what kind of stances, in the philosophy of science, these three concepts include[58]; furthermore, analyzing related writing materials and their contemplations are embedded into these sections. Last two sections of the thesis will contemplate alternative interpretative framework and potential implications.

The next two sections, the unfolding of the first part of the research question, will concentrate on the three concepts central to this thesis (complexity, uncertainty, and efficiency). My intention is not to 'reinvent the wheel' but to bring into the forth this problem posed in 1.1. I will use and

[57] As said earlier, I am offering an interpretation that will hopefully produce different kind of angles and inflect readers to contemplate on their different perspectives that they might have taken for granted beforehand.

[58] By examining philosophical presuppositions, the point of this thesis is not to be building juxtapositioning or clearer boundaries. As Kakkuri-Knuuttila and Heinlahti (2006: 109–110) state, through philosophical analyzing we allow dialogue to emerge between presuppositions, in other words, by comparing different meanings that concepts have; and, furthermore, by using richer language we enable conceptual understanding. Even though this thesis does not aim to reach or even to propose any synthesis to emerge, it will elucidate the build up to the current situation. By understanding these concepts – and conceptual understandings as a change of our own productions that are, moreover, in constant change – we hopefully enable understanding to emerge, rather than trying to impose something onto it.

combine the work of other researchers as a standing ground in of each of these questions (on these three concepts concerning the philosophy of science); while analyzing the writings, it will also be the base of the contemplation in each of them. Section concentrating on complexity will be based on the work of Edgar Morin (2007, 2008) and in his divide into general versus restricted complexity that I will bridge to complexity thinking writings.[59] Furthermore, I will use Alhadeff-Jones (2008, 2010), as his research on Edgar Morin provided a healthy comparison and further illustrations. Uncertainty related writing is mainly based on the work of Shenhav and Weitz (2000), which I will use to illustrate positivist related conceptions concerning uncertainty in organization and management research. Lastly, the section concerning on efficiency, will be based mainly on the work of Rutgers and van der Meer (2010) and Schachter (2007); rather than just trying to point out the same, as in the section concentrating on uncertainty, this section will furthermore offer us steps towards 'the alternative', in other words, the second part of the research question.

Last part of this thesis, unfolding of the second part of the research question, will be based on Prasad's (2002) understanding on Gadamer's *philosophical hermeneutics*; it is as well supplemented by Gadamer's (1976, 2006) work and How's (2011) notes. Henceforth, perhaps one can grasp my reasoning, in other words, why, in the section one, I have constantly repeated the nature of the thesis' interpretation; as shown by the first part of the thesis title, this will only be an interpretation not the interpretation.

2. What is complexity?

> *Complex, adj.* <modern French complexe, or < its source, Latin complexus , past participle of complectĕre or complecti to encompass, embrace, comprehend, comprise; hence perhaps originally 'embracing or comprehending several elements', but in course of English use tending to its analytical sense of 'plaited together, interwoven'; < com- together + plexus plaited (OED: complex, adj.).

The citation above describes the etymology of the word complex, according to the Oxford English Dictionary (OED), comparatively complexity refers to "the quality or condition of being complex" (OED Online: complexity, n.); by looking at the history of a word, or a concept, we can see its

[59] Morin is one of the first researchers who started to talk about complexity related questions in his 6 volumes of La Méthode (started in the 1970s). His work is not that well known in the English speaking world. Although, more than a few cite him (as an inspirational reading) in the Sage Handbook of Complexity and Management (Allen et al., 2011); rather than using his work in any form of a structured theory.

original meaning and how this meaning has developed through time. Through studying historical meanings and concepts, it offers us "a possibility of a distinct and unique way of interpreting it and enables us to develop novel hypothesis" (Shenhav and Weitz, 2000: 393). First use of the word complex can be traced to J. Smith in 1652 describing man and man's relation between the body and the soul as being complex and multifarious (OED Online: complex, adj.)[60], on the other hand, Darwin attributed that there seems to be a tendency in evolution that it advances complexity (OED Online: complexity, n.). The word in general is relatively new and the usage of the word only started to pick up the pace and accumulation in the 1900-century;[61] now the usage has expanded to biology, chemistry, economy, linguistics, mathematics, psychology, et cetera (OED: complex, adj., complexity, n.); to a point that the advancements in complexity theory are regarded, by some, as "signaling the arrival of a new scientific paradigm" (MacLean & MacIntosh, 2008: 50).

We can search for the commonness, of the word complexity, by examining its appearance in articles.[62] For this purpose I have done a search for the word complexity[63] in Sage journals (http://online.sagepub.com/) and the word appears in 182 401 different articles[64] in a wide array of different journals between 1847 and 2015.[65] In comparison I have searched for the word complexity in the New York Times (http://www.nytimes.com/) and the word appears in 33 021 different articles[66], appearing through all sections from 1851 through 2015.[67] With this display my purpose is not to categorize further in what kind of journals, topics, disciplines, meanings, or scientific communities the word is most commonly used or for what purpose; I am trying to rather establish

[60] J. Locke (1690) called complex compositions ideas made up from several simpler ones that are put together to form ideas of gratitude, beauty, et cetera; Jeremy Bentham (1780) used it to describe the condition of a parent, where he considers the different 'roles' parents assume during their parenthood: a master, a guardian, et cetera (OED Online: complex, adj.). The first known mathematical use of the word is 1832 depicting complex numbers (OED Online: complex, adj.).

[61] Complex (adj.) is listed in the second most used category according to the OED (Band 7 – same category usage as words: man, women, day, et cetera), occurring between 100 and 1000 times per million words in typical English usage (OED Online: complex, adj.). Comparatively the noun complex, or the verb complex, or the noun complexity, are less used (Band 6) according to this categorization (OED Online).

[62] Even though the common notion concerning complexity differs from the theory of complexity in academic circles, the common conception and utilization have known significance how well certain notions are accepted and used by the public, politicians, et cetera (see e.g. Jacobsson and Jacobsson, 2014).

[63] Sage Journal and New York Times were selected for this illustration purposes due to the variety of journals Sage covers and topics New York Times covers. Both of their records reach out about the same length, to the 1850s. Both are also wide known and respected publications, and were hence valid for this short illustrative purpose. Secondly, this is merely an illustration of the usage of the word complexity and does not offer any illustration towards possibilities that some of the search results which come up might have different meanings per se.

[64] On the other hand, the word complex appears in 347 310 articles.

[65] Search result is narrowed for Sage journals available for an access granted to a student studying at the University of Tampere.

[66] On the other hand, the word complex appears in 212 942 articles.

[67] Search result is narrowed only to articles and only to those accessible for a visitor through the search function.

the ground for a claim that the word complexity, and complex as well, are widely used for numerous purposes. Hence, the objective of this lengthy description which started in the last paragraph, was not just to portray the historical meaning and usage of the word, but to give justification for the claim that these words have some kind of understandable meaning when used in a context, by this claim I mean that it can be used as 'a common sense notion'.[68] If you tell someone that we need to understand the complexity of this situation, their next question is (at least most often) what you are exactly meaning by this; it creates an interpretation problem (examining interpretation problems being the purpose of hermeneutics).[69]

This issue, highlighted in the last paragraph, can best be illustrated trough a simplified everyday example, for instance, let's say that a person says to another person that someone else is beautiful; we can all straight away see what someone means by this notion, but what is it exactly he is adhering to still remains somewhat mystified, other than the general condition of being, in this case of being beautiful.[7071] The point of this example was not to merely show that we can now go on

[68] Even more essentially I want to note what we mean by 'a common sense notion': it is not just a mix created between scientific community and colloquial speech, but is also given due to the nature of the word – not being parsimonious in meaning. For instance, compare to the usage of the term information; Adriaans (2013: see introduction and section 1) points out that "the lack of preciseness and the universal usefulness of the term" go hand in hand.

[69] There are a lot of different interrelated problems: conceptual confusion between scientific communities concerning the exact usage of the word (for conceptual confusion see e.g. Jacobsson and Jacobsson, 2014); certain paradigms, how it should it be used in certain lines of disciplinary inquiry (see e.g. Bird, 2013); differences between everyday usage; and, moreover, how its 'explanatory value' is accepted by the public, politicians, et cetera (for further elaborations see e.g. Gallie (1956): essentially contested concepts; in political philosophy Rawls, 1999; in law Dworking, 1988; and in management leadership David Wilkinson's writings concerning ambiguity).

[70] For a problematic concept in 'more' scientific terms, see philosophical conversation concerning truth (e.g. Glanzberg, 2014) and the earlier footnote reference to information.

[71] Why is it so arduous for one to consider the problem complexity poses? Why is it so hard to consider the nature of any (social) problem? Other than that the researcher is certainly digging his own grave by introducing metaphysical conversation (see e.g. van Inwagen and Sullivan, 2015). How difficult is it to answer what the concentration camp system (the Gulag) means, considering what the nature of the late USSR was? Morin (2008: 3) traces the reason for the fact that "we do not have means to conceive of the complexity of the problem". Problem described is also the reason why for an extended period of time we were unable to recognize the formulation of creativity in an organization; it was like a black box from which we could see the inputs and outputs but never look inside (Morin, 2008: 19–21). It was not long ago that creativity in an organizational setting was still seen as a personal attribute. Therefore, it is not surprising that complexity thinking related fields have been a source for numerous theories concentrating on creativity and innovation, for instance, how in management theory it can create these advances through creative disorder at the edge of chaos (e.g. Stacey, 1991), modes network theory (e.g. Chua, 2015), and modes of learning organization (e.g. Son and Kim, 2015). In other words, what differentiates humans from computers is our ability to think and use insufficiencies and ambiguous situations to our advantage without knowing every variable (Morin, 2008: 21). After all, creative process – let it be writing, research, or art – is about sailing to unknown and the ability to live with the unknown. It can also be illustrated through a different way, the more there is improvisation, then, potentially the more swept away one is in improvised theater performance, hence, it becomes potentially more fertile the more moving parts the performer is able to use and withstand. Furthermore, as Cilliers (2001: 136) has argued, that for us to "have a science of complexity" it would imply "a revision of our notion of what constitutes as science". Leaving one to ask what is the problem with our current way of thinking and where is it traced

further and describe how we can, for example, categorize certain features people or theorists would perceive and associate to this condition, hence, creating e.g. sub-categorizes, as we could have done in our example of the usage of the word complex or complexity (in order to 'further' our knowledge concerning what we mean by adhering a meaning of complexity or something being complex).[72] For the purpose of this thesis the point is to note the interpretational problem that this multifaceted understanding creates, but not merely to regard it as something being complicated.[73] And secondly, how these choices we make effect what we find or even can find in the first place. As Morin (2008: 2) points out, "the deep cause of error is not error of fact (false perception), or error of logic (incoherence), but rather the way we organize our knowledge into a system of ideas (theories, ideologies)". In other words, it "is not just what we know, but how we know, and how we organize our knowledge" (Montuori, 2008: xxvi).[74]

2.1. Indulging into complexity – general complexity theory

> Avoidance of complexity is the essence of tyranny (original author unknown cf. Mitroff, 2008).

As illustrated earlier, complexity made a relatively late appearance into science;[75] Edgar Morin (2008: 4) traces reason behind this to the Western though that was enchanted for a long time by the

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to? Including statements made at the end of previous chapters, what is this "the nature and the consequences of paradigms that mutilate knowledge and disfigure reality" (Morin, 2008: 3)? As this revision of what constitutes as science was also required in hermeneutics and was instituted by Gadamer. For instance, for Dilthey and Schleiermacher the task of hermeneutics was methodological, in other words, making it "properly scientific". Whereas human science could not adopt in a straight way manner models and procedures from natural sciences its task was to find a proper methodology that would produce results in a reliable way from human sciences. (Malpas, 2015: 2.2.).

[72] It is one way that science uses to create further understanding by illustrating meanings, separating, unifying, centralizing, creating hierarchies, et cetera (Morin, 2008: 2).

[73] Words complexity and complex are often used as an opposite for simplicity or when stated that some phenomenon is not simple to comprehend, which raises the impression that they are synonyms for something being complicated. As this is in a certain sense a sensible conclusion, if we look at the definitions offered by those who define what complexity thinking means, for it is described with terms such as nonlinearity, boundary problems, interaction (Cilliers, 2011), phenomena to which they give rise to (Allen et al., 2011), or behavior not reducible to the interactions of individual parts (Thietart and Forgues, 2011); it is important that we do not reduce these notions to it and are able to see diverse meanings it holds. If we address it merely as something being complicated, without heuristic interpretation, we face the risk of reducing it to simplicity; as Richardson (2011: 367) illustrates, for something to be complex and something being complicated need to be kept separate, because if complexity is merely complicated, then, it just means that we are waiting, just biting our time, for "the management best seller of all time" to emerge called the "Theory of Management" that would reveal what to do in various contexts. It is reductionist lines of thinking that are concerned with complications and hyper-complications (Alhadeff-Jones, 2008: 72; Morin, 2008).

[74] Further elaborations of this problem see, for instance, philosophical conversation concerning epistemological problems (see e.g. BonJour, 2016; Matthias, 2014).

[75] According to Thietart and Forgues (2011: 53) complexity science is regarded as a "scientific study of systems with many interacting parts that exhibit a global behavior not reducible to the interactions between the individual

"paradigm of simplification" that originated from the work of Descartes, known from the separation between the thinking subject and thing being thought of; creating "the principles of disjunction, reduction and abstraction" – advocating causal explanation, objectivity and certainty. Cartesian epistemology reduced complex social phenomena to its parts that were seen as simple and objective. For a long time for us to say it is complex meant an arduous task to give a definition or explanation due to the fact that the concept or the law that would bring us the truth was not yet here (Morin, 2007: 6); for something to be uncertain was merely so for the time being for it had not yet become certain. Henceforth, in this line of inquiry complexity only relates to our current state of cursory knowledge (Morin, 2007: 6), to which, in that line inquiry, we can also perceive uncertainty and efficiency to be deducted.

First cracks, to the understanding originating form Descartes, were formed through the discovery of disordered phenomena such as the thermodynamics (irreversibility of time), evolution (order and disorder are related), and Einstein's discovery (space and time relation) (Morin, 2008: 7–9). The genesis, or the etymological roots, regarding the first wave of complexity science – to what we perceive complexity to be today – rose in the study of chaotic processes in engineering and mathematics in the early twentieth century. Nonetheless, it still remained outside of social and human sciences. Almost at the same time, in the nineteen forties and fifties, it was connected with Information theory and cybernetics, which introduced the link between information and feedback. (Morin, 2007: 9–10; 2008.) They were set out to deal with "problems of disorganized complexity" by developing probability theory and statistical mechanics (Weaver, 1948: 2); issues that came, for instance, with increasing automation and a degree of variation in a given system (Morin, 2007: 9). The issue of wartime (WWII) raised the question of handling uncertainties presented in the decision making of handling military affairs. It brought forward "operation analysis" that concentrated on handling the numerous variables presented by the situation through linear calculations solved by computers in a more effective way. It was also significant for a second reason, through the use of diverse groups consisting of different professional expertise British tried to answer problems of

constituent parts". To compare, Allen et al. (2011: 2) defines complexity science as "the systematic study of complex systems as well as the phenomena of emergence and complexity to which they give rise". And Cilliers (2011) "complexity refers to a more general understanding of complex systems which focuses on (nonlinear) relationships, systematic interaction, boundary problems, emergence and adaption". Thus, we can see some key points that are being emphasized. All of these definitions start by saying that complexity is something in relation to a system (see also Maguire, 2011: 83). System, according to the Oxford English Dictionary (2014: March Edition), is "an organized or connected group of objects". Seeming to be quite understandable, although once we start contemplating on the matter problems arise; system changes according to each actor, action and it is sometimes hard to establish which actors' effect, for example, decisions or knowledge through power or perhaps some indirect ways. Not to mention, since we are contemplating human/ social systems, the foremost question becomes who defines a system and how? (see e.g. Göktug, 2012: 45–61). Not to mention e.g. what is change in the end (e.g. Brunsson, 2009).

tactic and strategy, which lead to a revelation that when formed correctly, then, these groups could form a unit that was greater than the sum of its parts. (Weaver, 1948: 6–8; see also Simon, 1947; Churchman et al., 1957; Stacey, 2010.)

Second wave came when the notion of emergency rose in scientific conversation contemplating organization as a living system. It was set in motion, for instance, by the discovery of DNA. The discovery of emergency led to an understanding where it was seen as indeductible from the qualities of the parts, which makes it irreducible but at the same it means that it produces qualities and self-organization (Morin, 2007, 9–10, 22–23; 2008). By this time the notion of complexity was also introduced to the epistemological contemplation of organization and management theory by Simon (1962)[76]. Second wave of complexity science gave rise to the scientific inquire into different ways of solving the problem complexity proposed; these include algorithmic complexity, descriptive complexity, computational complexity, artificial intelligence reasoning (e.g. Simon & Newell, 1958), autopoiesis theory (Maturana and Varela, 1980) grounded in evolutionary biology, general systems theory (Von Bertalanffy, 1951), based on cybernetics the notion of self-organization (e.g. Von Bertalanffy, 1951; Ashby, 1956), non-linearity based on e.g. Prigogine's dissipative structure (e.g. Prigogine & Stengers, 1985) and Gleick's (e.g. 1988) chaos theory.[77]

The third break appeared in the 1980s. It started a time period of complexity that is also equivalent for how our most recent discoveries, at the present time, apply complexity theory in their usage; it furthermore constituted the epistemological divide between what Morin (2007, 9–10; 2008) calls generalized and restricted complexity. The latter term is associated with the line of inquiry started by the Santa Fe Institute (1984); concentrating on the dynamical systems (Morin 2007, 9–10; 2008), now known as complex adaptive systems (CAS) theory[78]; most known for theorists such as Holland and Miller (e.g. 1992), Kauffman (e.g. 1993), Gell-Mann (e.g. 1994b). It accentuated the logic of formalization that can be achieved, for example, through modeling (Morin 2007, 10) and simulating behavior. The banner and mission statement, in the Santa Fe Institute's home site (http://www.santafe.edu/), already states the purpose for this line of understanding: "searching for order in the complexity of evolving world". What the entrance of Sante Fe Institute reinforced was an understanding of complexity that requires "researchers to create and organise the rules of its conception" (Alhadeff-Jones, 2008: 71). The former line of inquiry, the generalized complexity that

[76] For the base of understanding that Simon's advocates (rationalism, positivism) see e.g. Virtanen (2011).
[77] For further elaborations of this wave see Alhadeff-Jones (2008: 66–70).
[78] CAS is a term Holland (1995) and Gell-Mann (1995) started commonly using the latest in 1995, as shown in their publications. Holland used it at least in his publication already in 1988.

Morin (e.g. 1980; 2007; 2008) is advocating, is a way of rethinking that tries to offer us means to conceive complexity in a new way through certain principles. These principles offer us reflexive tools to conceive complexity in a multifaceted way; it helps us to be reflexive and critical towards the way we produce knowledge. The main contention between the two is for as long as one tries to attach some "laws to complexity" one is dealing with restricted complexity (Morin, 2007: 10). Henceforth, most often those using the ideas of e.g. chaos, disorder, fractals, and uncertainty are still dealing with restricted complexity because they attach "complexity as a kind of wagon behind the truth locomotive" (Morin, 2007: 6); in the Santa Fe Institute's banner, the truth is waiting for its King Arthur to pull it out of the stone.[79] Due to the fact that generalized complexity has rejected this claim of truth seeking, it is often declined for not being scientific enough or being demoted a philosophical chatter at best (Morin, 2008: 27–28).

Morin's (2008) insights were how he treated the accumulation of knowledge, in other words, how knowledge (in this case meaning in relation to science) is intertwined to the way we organize it, how our culture has developed sectors or rationality like science; the link how science is produced and its production is assessed (Morin, 2008: 38–52; see also Kuhn, 1970). To further our understanding Morin (2008: 49–51) proclaims a need for macro-concepts, concepts to be defined by their cores and not by their boundaries because boundaries are always overlapping and blurring; macro-concepts provide ways of understanding these "hearts" of the things we are having problems interpreting (Morin, 2008: 48). Concepts overlap by their nature as they are merely snapshots of the social that is already starting to flee the moment it is introduced to us (Deleuze and Guattari, 1994: 16–34). Morin (2008: 49–51) proposes three linked guiding principles for complexity thinking: dialogic, organizational recursion and the holographic principle.

Morin (2007: 27–30; 2008) is claiming that there is no single concept or a set of concepts that would reveal our eyes to the magnificence of complexity. Whether we agree to this or not, or if complexity can or should be regarded as restricted or general complexity, it still pays dividend to realize how these views are formed. Furthermore, and as said earlier (1.4.), it pays to understand for what kind of 'needs' these different understandings are more suitable for and what are their limitations. Moreover, it urges us to examine how we relate to science and knowledge, in other words, when we explore what is possible that we do not restrict ourselves to what was formally

[79] It attaches a never ending truth seeking into it; making it a word solution when it should a word problem that needs our contemplation. It is rather realizing that the moment the truth is said, just as concept is invented (see 1.2.), it escapes and starts fleeing from the experience known as the truth by its inventor.

probably (Morin 2007: 27–30; 2008). The general complexity should rather be conceived as interpretation of a key understandings build by the researcher; as it will help us to realize the heavy anchorage complexity thinking has in biology, engineering, management and physics; and how this is reinforced by hyper specialization (Alhadeff-Jones, 2008: 72–74; 2010: 479.) It helps us to challenge the way we transform knowledge into science while interpreting the world (Alhadeff-Jones, 2008: 74).

At a paradigmatic level, the paradigm of simplification and the paradigm of complexity (Morin, 2008: 4), can be enumerated to certain principles. Alhadeff-Jones (2010: 479–480) lists eleven principles for both of them. The paradigm of simplification includes principles of universality (downgrading the local); eliminating temporal irreversibility (such as history and events); reducing the whole to the parts; reducing the knowledge of organization to their inherent order; linear causality; absoluteness of order and universal determinism as explaining principles of phenomena; separation and isolation of the object and its environment; disjunction between the object and the perceiving subject of the study; erasing problems of connected to "self, being, or existence" (formalization and quantification) from scientific knowledge ("incapacity to conceive scientifically notions such as 'autonomy'); logics absolute reliability in establishing intrinsic truths of theories; clear and distinct ideas as the foundation of thought without dialogue in discourse (Alhadeff-Jones, 2010: 479; see also Morin, 2008: 39–44). On the other hand, the paradigm of complexity that suggest challenges rather than solutions, is built on conjunction and includes principles of interpretation starting from the singular and the local; integration and recognition of the irreversibility of time (including history in all understanding); linking the knowledge of unit of to the whole as well understanding the impossibility of perfect isolation of an unit; understanding the problematic relationship between the organization and self-organization; complex causality "(including mutual causalities, feedback loops, etc.)"; circular logic as a way of interpreting organization "(linking order, disorder, interactions and organization)"; disjunction replaced with conjunction in relation to the object and the subject, and their environment; relationship between the subject and the observer of the study; developing possibilities to understand scientifically the self and recognizing being and existence categorizes in different scientific faculties; limited ways in recognizing formal complex systems through logical demonstration, rather constructing a discursive way of understanding "complementary, concurrent and antagonistic notions"; dialogical thinking and understanding through macro-concepts, moreover, establishing as well as critically securitizing

relationships and links between different concepts and notions that reach beyond disciplines (Alhadeff-Jones, 2010: 480; see also Morin, 2008: 44–52).[80]

2.2. Complexity theory in organization and management

> One recurring theme in the more sophisticated recent discussion of complexity, whether in the sciences, management and organization theory, or the social sciences in general, is that reductive/ analytic approaches to issues are unable to account for, and give an adequate understanding of, complex, interconnected phenomena (Montuori, 2008: xviii).

Albeit complexity theory's popularity amongst researchers' fascination for a relatively long time in organization and management theory (see e.g. Maquire et al., 2006; Allen et al., 2011), there is still little agreement what it is exactly that we perceive to be complexity theory.[81] During the thirty years of quickening accumulation of research knowledge, concerning complexity, the field still remains heterogeneous[82]; even though it has been stated to have become somewhat of a new paradigm (e.g. Allen et al., 2011; Cilliers, 2011; Richardson & Cilliers, 2001). For complexity theory to finally reach a state of 'maturity' there are calls, in management and organization literature, for it to become more than a metaphor (Hazy, 2011), to find rigorousness (Lichtenstein, 2011: 487), and at last to reach its potential (Baumann & Siggelkow, 2011).[83] Hence, it is begging the question what is it currently still missing and why it has not yet reached this state of maturity.

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[80] This illustration does not claim that everything belongs to either or (paradigm); furthermore, to have one principle does not mean having them all.

[81] The scientific field of study concerning complexity is eminently diversified, meaning that it is hard to find a branch that has not somehow integrated, commented, or 'resisted' complexity thinking. Resulting complexity to be though and urged to be as something of a new inter-disciplinary solution to various problems in various fields of study, for instance, see in management (Allen et al., 2011; Prigogine and Stengers, 1984; Kauffman, 1993; Anderson et al., 1988; Morrison, 2010), neuroscience (e.g. Orsucci, 2006), security (e.g. Rosenow, 2012), economics (e.g. Ormerod, 2011), communication (e.g. Qvortrup, 2006), social science (e.g. Walby, 2007), education (e.g. Smith, 2013), international relations (e.g. Cudworth and Hobden, 2013), gender (e.g. Enns, 2008), evaluation (e.g. Marra, 2015) and psychology (e.g. Schermer, 2012). Even though the field is diversified and the accumulation of studies is starting to be significant, there is, for example in the field of organization and management, little agreement what complexity science actually is (e.g. Richardson and Cilliers, 2001; Cilliers, 2011; Stacey, 2010). Hence, it is often times easier to start with what it is claiming to provide.

[82] Why should we examine these interpretative problems of complexity thinking? Competing complexity views that are inequivalent in their descriptions are seen as the constitutive force both in social and natural sciences (Maguire, 2011: 82). Henceforth, for us to understand the challenge of complexity we first need to understand how it is interpreted in order for us to interpret the 'reality' by using complexity.

[83] In management and organization theory the swift rise has filled journals and books with numerous diverse applications (for a very exhaustive illustration see Maquire, 2006; for newer applications see Allen et al., 2011). For example, some address key concepts related to complexity (Goldstein, 2011; Maguire, 2011), others epistemological

Reasons behind researchers' interests are numerous; complexity theory has been perceived to provide better and more novel solutions for problems such as understanding the limits of knowledge (Cilliers, 1998), explaining the development of innovations (Stacey, 1991), examining multiple interactions (Tracy, 2011), as well as organization's and environment's relationship (Boisot & McKelvey, 2011), and furthering our understanding of change (McMillan, 2004); to say a few. One of the key reasons behind this appetite is an understanding of society that is becoming increasingly more complex (Ministry of the Interior, 2010); a society in which the rate of change is constantly increasing (Prime Minister's Office Finland, 2014). Complexity theory has been perceived to provide answers for several of these perplexing problems raised by the need to find novel ways to answer this call (see e.g. Allen et al., 2–3). Furthermore, for many it seems to offer a promise of mitigation; a new way to mitigate the uncertainty that this 'complexity' brings and has brought (see CAS related theories e.g. Gell-Mann, 1994); as well as a way of eradicating inefficiency brought to us by complexity (e.g. Holland & Miller, 1991).

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What is the more practical meaning? Science establishes grounds on many of the "claims, teaching or products" that are used to make more educated long term decisions concerning, for instance, environment, healthcare, and safety (Hansson, 2015). Meaning how we see that a certain scientific inquiry is supposed to be done in order for it to provide moreover beliefs that are warranted. This has led us to e.g. produce science in certain ways. As Chia (2011) points out what makes complexity thinking hard for us to acknowledge fully, both in scientific and strategic way, is that it tries to recognize what is peripheral and unseen; whereas society, science and strategy appreciate rational, direct, and frontal ways of doing. This is also connected to the way, i.e. where see the useful nature of knowledge stemming from. As one of science's tasks, by creating "concepts and entities, is always to extract an event from things and beings" (Deleuze and Guattari 1994: 33), i.e. in order for us to study and create the concept of complexity we need to demarcate it, it is necessary so that we can answer any ontological reduction when trying to explain something (e.g. Chalmers,

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and methodological perspectives (Chia, 2011; Cilliers, 2011; Chia, 2011), as a source of depicting organization (Baldwin, 2011; Mitleton-Kelly and Ramalingam, 2011), implications and possibilities for management (Boisot, 2011; Andriani, 2011), and interfaces to other disciplines (Hidalgo, 2011; Bankes, 2011). One could list different versions: ontological analysis (Cilliers, 1998), transdisciplinary (Nicolescu, 2002, 2014), interconnectedness (Lewis, 1993), agent-based modeling (Kauffman, 1995), living at the edge of chaos (Youngblood, 1997), metaphorical understanding (Cornelissen, 2005; 2006), et cetera. Rather what one shortly comes in terms with, is the overwhelming number of alternative options, mixture of different elements, and, on the other hand, *entanglement and overlap in between*. Hence, one asks what the novelty of complexity thinking is and wonders how to approach this 'swamp' that seems to take you deeper with every step you take.

1996), which in itself is contrasting towards the idea of complexity, if we are trying to see something peripheral and unseen. Significance also being, which the orthodox science already notes, that in order for us to do this we would need to establish some causal relations; yet it creates a problem, for example, regarding concepts of conscious mental states, such as pain and sense of security, whether they can be reducible to some causal relations (see e.g. Papineau, 2002). Those that are considered to be the most complex problems in society are frequently those that try to tackle the definitional problem, for instance, of sufficient or effective healthcare or trying to create the right standards and institutions for safety and security, so that they are not only effective but also make people feel safe and secure.[84] In other words, even though complexity is not a mere concept of conscious mental state, if we exclude the fact of humans' limited mental capacity, the problems that it is used to tackle many times seem to be or at least are connected somehow into it. For example, the way we approach these problems, argue the way they should and can be solved, what are their implications, how these relate to each other, and how they relate to elsewhere – it has foundational implications. Furthermore, if something is removed of its present 'mystification' by stating that it is unnatural, irrelevant, or illogical then it removes it beyond our close scrutinization[85] – on the other hand, stating it to be beyond us, then, it easily becomes a conceptual scapegoat (e.g. when the bubble burst the bankers blamed complexity).

During the last two decades the emergence of complexity thinking has also slowly started to sweep through the decision making sides of governments, companies, municipalities – organizations in general. One can find that strategies are being formed by trying to somehow acknowledge our inability to control everything through our own actions. For instance, in the Finnish Cyber Security Strategy (Finnish Government, 2012), in order to account for complexity, complexity can be seen as something that we are trying to achieve through time with our actions and adaptation. These actions are seen as our ability, in a novel way, to resist and adapt to threats rather than trying to control them. Control is still asserted but now in the officials' internal actions in order to increase their own resistance and adaptation and through this chain towards the exterior.[86] This particular way of dealing with problems that are posed by complexity is associated with an approach called complex adaptive systems (CAS) that the thesis will examine in the next section.

[84] Of course we can only get this far if in the start we bypass the conversation of what is it that we perceive to be effective and in what grounds this definition is grounded on.
[85] Consultancy example of this will be provided in the last section.
[86] In this example it means transferring control to a more suitable place but still maintaining the same understanding of control; aiming to guide the systems towards desired outcomes (in this case it means safety, response, et cetera); using control as mechanism but just steering it in novel places; it creates potential problems concerned with knowledge and understanding, furthermore, it would as well need ethical considerations.

The purpose of this section was to go through some of the things and choices we are already forced to make before we can even enter to consider what complexity thinking means, for instance, for public policy, uncertainty, or efficiency. In other words, these demarcations make restrictions, which is precisely against the very nature of thought that those advocating general rather than restricted complexity thinking are telling us to change. That is to change the way we are thinking (e.g. Allen et al. 2011; Richardson and Cilliers, 2001; Richardson, 2008; Chia, 2011; Levy, 2000; Cilliers, 2011; Morin, 1978; 1981; 2007; 2008). Hence, we can ponder the meaning that was presented by the citation at the start of this chapter by connecting it to Morin's (2008: 6) thought; Morin (2008: 6) examines how the current way of thinking, concerning complexity, has lead us into a situation where "mutilating thought necessarily leads to mutilating actions". In other words, Morin is critically pointing out that our way of producing knowledge, and the way we ultimately make meaning, is currently done through demarcation – e.g. differences (borders) make meanings. This is due to the fact that "the modern pathology of mind is in the hyper-simplification that makes us blind to the complexity of reality […] the idea obscures with the reality it is supposed to translate, and takes itself alone as real" (Morin, 2008: 6; also see and compare Deleuze & Guattari, 1994: 33, two paragraphs earlier).

2.2.1. Complexity theory's diverging interpretations

> The dream of capturing a bit of chaos is more insistent, even if the most diverse forces stir restlessly within it. Science would relinquish all the rational unity to which it aspires for a little piece of chaos it could explore (Deleuze & Guattari, 1994: 206).

This contemplation[87][88][89] will include two different writings associated with complex adaptive systems (CAS) theory[90][91] and a third[92] who is not associated with CAS but as to those as well who

[87] CAS was selected due to its pivotal point in the development of what Morin (2008) calls restricted complexity. Furthermore, it is an approach that seems to be commonly taken in administrative science research (especially in security related fields). In the end it only represents a certain way of approaching from the perspective of the philosophy of science. Henceforth, one can claim that it is important to understand what those 'starting' understandings are for the theory, so that those using it can situate its potential problems for their studies. On the other hand, Luhmann's writing is one the first ones to represent the more modern version of system thinking that tries to advance the scientism side of organization research.

[88] Another way this need can be exemplified is by examining The Sage Handbook of Complexity and Management (Allen et al., 2011). In section B: Complexity and Managing (which can be 'classified' as more practicality (reference to scientism) closed articles, eight of the nine articles were done using some form of CAS related understanding and one using a derivative of CAS (see Marion & Uhl-Bien, 2011; Colbert & Kurucz, 2011; Azadegan & Dooley, 2011; Boisot, 2011; Andriani, 2011; Lichtenstein, 2011; Baumann & Siggelkow, 2011; Eisenhardt & Piezunka, 2011; Hazy, 2011).

aim to advance the 'scientism' side.[9394] In an allocation, in the way researchers use complexity science, Maguire et al. (2006) make a division into "interpretivist" and "objectivist" approaches; CAS related approaches belonging to the latter. Objectivist approaches are concerned with the processes of understanding according to which "complex, irregular interactions can achieve order"; as well as to those enabling simple deterministic rules to "create complex phenomena that seem to be driven by change" (Thietart & Forgues, 2011: 53). Undoubtedly also inside the CAS theory there are different ways how to approach complexity. Thietart and Forgues (2011: 57) make a division of these objectivist approaches into four different categories, in which CAS represents a line of thinking where "organizations are an emergent outcome, being the result of random encounters between agents that interact following a set of deterministic rules". As interaction's nature is deterministic, henceforth, their "rules are fixed by choice or by nature" (Thietart & Forgues, 2011: 56).

If we start to unravel in a reverse order,[95] this fixation into rules by choice or by nature can be illustrated in the aim of CAS: to find order amidst evolving complex world (Sante Fe institute's

[89] Thirdly, the misconceptions, meld, and confusion is evident in complexity science. It is evident in Morçöl's (2012: 39–43) writing, who as well advances the scientism side, when he struggles with the term adaptive in complex adaptive systems definitions. He denies its need as it is extremely difficult to distinguish from complex systems approach- I am not advocating some categorization. He points extremely well potential problems that are associated in it, when we perceive system adaptive by its nature. But the problem I am elucidating is Morçöl's inability to realize the constitutive conceptual definition in it none the less, i.e. he sees CAS as some sort of right starting point that we now develop and take a new step by removing this intrinsic problem.

[90] I do not claim them to be exactly the same; as Gell-Mann points out, even inside the same theory most often "a scientist would rather use someone else's toothbrush than another scientist's terminology" (Gell-Mann, 1994: 17). Furthermore, I do not claim to have read all their writings nor is it the point of this illustration. I am going to illustrate some of the principles in the philosophy of science inside of CAS; it is not a comprehensive traversal.

[91] Murray Gell-Mann (1994) and John Holland & John Miller (1991); are central writers that have contributed to the development of CAS from the beginning. These chosen texts are one of the first ones published concentrating on CAS. I do not claim that everyone using CAS has these elements illustrated. Holland's and Miller's 1991 published text was chosen as I do not have access to the one published in 1988. In addition, exemplifying Kauffman's CAS would have been illustrative (e.g. the relationship between nature and positivism), but it was left out this time.

[92] Niklas Luhmann (1990) is a central writer to the development of 'a modern version' of system theory.

[93] Belonging to the same 'category' as Simon, who's approach we discussed earlier, for this particular categorization see e.g. Raadschelders (2008).

[94] The point of this contemplation is not the be comprehensive but to be a short illustration to include certain focal points, which we can examine in relation to what we have gone through in the earlier parts and that we will go through in the following parts.

[95] An analysis for these writings is done using theoretical based content analyses. In the theory-based content analysis material can be sorted out based on e.g. previous context, theory, or concept; the aim can be e.g. testing theory's functionality, testing its validity, or testing in a way of applying it in a new context (Tuomi & Sarajärvi, 2002: 112–118). According to Tuomi and Sarajärvi (2002), when doing a theory-guided or theory-based content analysis, then, the first step is to make an analysis structure, which can be loose or not, depending on the research. Afterwards, the first step is picking out the things in the empirical data that are left inside or outside of this analysis structure, in order to make the empirical data simpler. The things that are left can be divided into different groups; it makes the examination tighter and enables arraying of the empirical data. In the next step these findings are connected to the concepts

mission statement). It is to explain how agents make choices when confronted by endlessly novel, evolving world (Holland & Miller, 1991: 365)[96]; understanding universal principles that underlie all systems and the pivotal differences between them (Gell-Mann, 1994: 18). It is to see how we can find emerging simplicity[97] among these complex interactions (Gell-Mann, 1994); how we can reveal the global attractor or optimum towards which these local niches contribute to (Holland & Miller, 1991: 365). In the positivist elimination the subject was a mirror, a reflective of the objective universe (Morin, 2008: 23). In the current understanding it still holds on to the positivist understanding but in a different sense; if we cannot understand the whole through its elements, we can understand some of the ways these elements are guided towards constitution through reasons found in the universal attractor or optimum. Analogically speaking this quest becomes a task of finding, in the first stage, the 'large' tentative frames – shaped in a form of a compactor – after which we start gradually pushing the four sides towards the center into a more compact form that will ultimately, in form, shape out to be an attractor or the optimum.[98] The local can be regarded as a smaller compactor inside the larger compactor.[99] In positivist sense, it is important to notice that if something slips between the cracks, we can just open the compactor a little bit and then continue again (compare Gell-Mann, 1994: 24);[100] moreover, if we find something that does not fit inside any of the known compactors, then, we just need to produce a new bigger compactor that subsumes

driven from the theory. The aim of this process is to have a more conceptual view of the issue we are examinating, and furthermore, to be able to connect it to the theoretical framework; leading into apprehending and portraying what the empirical data meant for the research. (Tuomi & Sarajärvi, 2002: 108–118.) The amount of empirical data needed for the purpose of each research is dependent on research, its aims, and the amount needed for to create an illustration; trough theoretical based content analysis, we can perceive, then, what is the importance of these particular understandings (Hirsijärvi et al., 2009: 181–182).

[96] Holland and Miller (1991) contemplate economic systems as agents in this particular writing.

[97] Once again, I am not disputing the intrinsic "value" that can or could be found in simplicity, for instance, in services of both private and public sector (see e.g. Mikolon et al., 2015). But once we start seeing this claim of having simplicity everywhere as some kind of attached 'superiority', then, it easily starts to imply itself as a truth (compare efficiency). Hence, transforming itself, for instance, towards what we are seeking in complexity; and has effects what we try to find from it, and how we position ourselves towards knowledge; in other words, such as deducting complexity to a meaning of being complicated.

[98] Compare to the list in the paradigm of simplification, for example, the last three principles. What does it matter what each actor does in this illustration?

[99] I do not mean a straight box inside another box like the Russian doll (maatuska in Finnish), but in a sense of these dense points related to different frames. One of the most interesting question for a different kind of research would be what this compactor exactly represents in each situation and if/ what kind of variety there is inside it. In other words, whether it is an image, some kind of a mental construction, or even a social construction in each or in all cases – I am inclined to foremost call it a mental construction in case of CAS, which shows in my explanation.

[100] One of the reasons why maladaptive (reducing uncertainty in a process by a debilitating way) schemata appear is that the system is not defined broadly enough that encompass all that the schemata is concerned with (Gell-Man, 1994: 22).

the previous one(s).[101] I use the term compactor because, according to Gell-Mann (1994: 19), in order to give predictions, a theory needs to be combined with boundary conditions.[102]

What makes these complex adaptive systems adaptive is their evolvement towards certain criteria (Gell-Mann, 1994: 21–22); adaptation is a result of those niches it exploits (aims to increase) through particular adaptation (Holland & Miller, 1991: 365). For Holland and Miller (1991: 365) an agent to be called as adaptive, it means that the agent's actions, in its environment, can be assigned a value (performance, fitness, et cetera), a value it works towards to increase. It is the reasoning for its actions.[103] Of course there are sources of error in the way it builds schemas;[104] there are two different kinds of error, the way it finds regularities where there are none or the way it overlooks regularities (Gell-Mann, 1994: 18–19, 22–23); concentration is on the way we can identify these perceived regularities (Gell-Mann, 1994: 25). In the positivist understanding, information was perceived in ways of transforming it from one place to another (Morin, 2008: 13–14); when now it is a problem of interpretation connected to way of processing the information. As it is impossible to have all the information in a complex phenomenon, we can use these fundamental principles as well as regularities seen in frozen accidents to find ways to avoid, or at least lower, the probability of environments selection; further down the line they can used, for instance, in policy situations (Gell-

[101] This is illustrated in Gell-Mann's (1994: 24) understanding of frozen accidents; sometimes what we perceived to be regularities might sometimes turn out to be only frozen accidents that do not apply; presumption is that frozen accidents are regularities that apply elsewhere.

[102] One of the fundamental problems we face while contemplating a system, especially human/ social systems, is who defines a system (Morçöl, 2012: 45–61). This question draws our attention towards a contemplation what is included and excluded inside a particular system; conversation touching a system is always a question of boundary problems (e.g. Cilliers, 2001, 2005). Drawing our attention towards our ability to define different borders as precisely as possible, which in turn enables us to orient our attention towards, for instance, the interfaces and where the exchange happens (see e.g. autopoiesis theory). This line of inquiry has received tremendous fascination, for instance, in management literature, consultancy and marketing; conversation concerning customer interface is seen, for example, as a source of innovation, or as a reason differentiating professional institutions in the way they can direct their innovation towards customer interface (e.g. Tuominen, 2013). Meaning that finding these interfaces becomes essential towards the efficiency how an organization works. By improving this ability, it, the meaning that is derived from it, becomes more innovative, leading towards better service, advantage in the market, more 'bang for a buck', value production, et cetera. I am not denying the possible gains achievable through this line of examination, I would merely like to elicit other sides of this depictions. The potential problems emerge when we start to derive concepts from the realizations achieved through them (for instance, examining everything as a system), because concepts should only be defined by their cores and never by their boundaries (Morin, 2008: 46–48; Deleuze & Guattari, 1994: 15–34). One of the fundamental Descartian ideas is a clear distinction as well as clarity, which are essential towards the truth (Morin, 2008: 48), but concepts are merely intersections and should not be confused as propositions, because this is the underlying reason producing a belief that there are certain (or more) scientific concepts (Deleuze & Guattari, 1994: 15–34). Henceforth, by trying to depict borders for what should be included in a concept of complex system, it creates a biased reality and as a by-product potential skewedness (Morin, 2008: 54–57, mutilating thought).

[103] For example, compare to the intrinsic truth for action in the paradigm of simplicity (referred to in the previous footnote).

[104] Schemas are perceived regularities, which it uses to manage (provide descriptions, prescriptions, et cetera) its actions (Gell-Mann, 1994: 18–19).

Mann, 1994: 24–25; see also Luhmann, 1990: 84). Analogically speaking, it becomes a problem of finding and realizing these regularities inside each compactor, as well as establishing various bridges between them. As Morin (2008: 14) notes, in positivism interpreting information presents itself foremost as a source of "great caps and great uncertainties".[105] Instead of transferring it as a boundary exchange (see thermodynamic systems), now, in it, information is regarded as a piece wax between two hands that is never endingly molded into a new form, the struggle is rather grinding it just the right way into just the right form; as well as a question of how control the amount of it – having too much or too little wax in each situation.

Central to the problem concentrated on the previous paragraph was information. As stated information is a central concept in the problem of understanding ambiguity (Morin, 2008: 13). Since one can never have all the information it becomes a question of having enough but not too much information, it becomes a task of gathering information as coarse grains that are constantly grinded, doing identification of perceived regularities, and creating different schemata; CAS is a "pattern-recognition device" where most of the problems rise due to the flawed ways of interpreting information it gathers; furthermore, it is a task of separating important information (Gell-Mann, 1994: 18, 19, 22, 26). It is not just how it sees and selects operation to be taken but the way it can see and form observations (Luhmann, 1990: 81–82). It chooses certain niches that it tries to exploit as it can rarely exploit them all; and connects itself, in a networked environment, towards other CASs (Holland & Miller, 1991: 365); CAS is relation towards other CASs that form a string of subsystems, for instance, markets are an example of CASs in a string of subsystems (Gell-Mann, 1994: 24). Positivism carries in itself an aspiration for completeness (Morin, 2008: 46), even if knowing everything is claimed to be unachievable for a CAS almost in all situations; exploiting all the niches is like "finding a universal competitor in a tropical forest" (Gell-Mann, 1994: 22; compare Holland & Miller, 1991: 365). None the less, now it holds on to an understanding where completeness is not an objective but as an endeavor that, although most of the time we cannot or might not achieve in a complete way (for various reasons that fluctuate according to each situation), we still walk towards in a same direction. Henceforth, what happens is that instead of seeing them like pieces of a manual, they (regularities and principles) are like the stops in The Star of Africa (Afrikan tähti); stops between which we travel. It is still adhered in the same way of revealing as many stops as possible; difference being that we cannot see them all at the beginning of the game, nor do we have to, or in the end necessarily need to. Hence, we move on the board between those

[105] Concerning reducing uncertainty see 1.1.

that we see, and the more we uncover the easier it becomes moving between these stops, as one does not have to travel as long of a distance between other stops (regularities and principles), which reduces potential risks associated with information. It is not just about revealing these stops but being able to use them at a right time (see Gell-Mann, 1991: 24). Premises of an attractor are shaped like a gradually completed 3D pointillism work.

The nature of CASs is depicted as a never ending struggle, where change in the environment as well as CASs adaptation endlessly creates new niches (Holland & Miller, 1991: 365). Rather than just 'adapting', which can be maladaptive (reducing uncertainty in a process by a debilitating way), it aims to be 'pro' adaptive (raising its fitness, or the niche, among others); as these actions are emergent, the definition for what 'proactiviness' results in, concerning each situation, it is impossible to give an exact definition but only premises (Gell-Mann, 1991: 21–22).[106] As aggregate behavior can be explained without the knowledge of each agent or every detail, but still is the result of dynamic behavior resulting from individual activities (Holland & Miller, 1991: 365). Hence, now the point is not to know every detail in order to achieve understanding, but realizing how to build bridges over these perceived gaps and uncertainties. As this way of positivism regards actions emergent outcomes unknowable, it still holds on, as a premise, that we can eventually reach a state of knowledge that will 'iteration by iteration' lead us closer to having desired way of improving our fitness or niche. In other words, it learns to live with uncertainty and knowledge gaps, which it cannot most often even potentially know, by learning ways to ignore or bypass them by making them 'shorter' distance wise; as in the Star of Africa, you do not need to roll as big of a number to get to the next stop (regularity or principle), making adaption easier and less left to the enforced change of environment.[107] What one describes is not survival per se but dominance (see Gell-Mann, 1994: 20–21; see also Luhmann, 1990: 84). Action becomes a way of dealing with complexity (see Luhmann, 1990: 84); it gives an ostensible reasoning for truth, certainty, et cetera, where action is no longer a wager, as Morin (2008: 54–57) regards it, but a nugget of knowledge that in a long run transforms into different truths.[108] Hence, our understanding of dealing with complexity, let's say in

[106] One of the reasons why maladaptive schemata appear is that the system is not defined broadly enough that encompass all that the schemata is concerned with (Gell-Man, 1994: 22; compare to the understanding of a compactor when something new appears).

[107] Enforced selectivity is a term Luhmann (see e.g. 1990: 80–85) uses to describe the unavoidable condition of reality, which is enforced selectivity.

[108] They fail to see the meaning of meaning and take their meaning as a truth in a positivist sense, where the problem is not constant interpretation, since in a way it is for them as well, but finding these regularities (truths) and shuffling them in each case into a right form inside each of these compactors. Hence, truth has evolved from 'global' truths (as Gell-Mann (1994) points out, fundamental truths are rare) to attractor wise (read each CAS wise) truths that we furthermore use to see larger truths (frozen accidents) and connect to all CASs, and systems these CASs are part of.

this occasion in terms of a strategy, is based on an illusion; it is derived from gradual betterment. For instance, think about strategy in war and how it has developed to our present situation; it is an accumulation where the current time is regarded to know, not necessarily everything that was known before or doing it in a more pure way, but 'more' as a premise.[109]

What is failure? When it reaches a local optimum and stays in it assuming its lastingness (Holland & Miller, 1991: 365); in our inability to realize the ever changing particularity of complexity's representational meaning (Luhmann, 1990: 84); when we find regularities where there are none, or overlook regularities, or when the system is not defined broadly enough (Gell-Mann, 1994). It is the role of experience that is given central place (see e.g. Gell-Mann, 1994: 18, 22), the horizon where organization is looking from (Luhmann, 1990 84); it aims to make amends to the old problem of positivism where history and time are excluded (see e.g. Turunen, 1995: 136–138; Alhadeff-Jones, 2010). It strives to establishes an ability to continually reflect on our knowledge (see e.g. Gell-Mann, 1994: 18–19), in other words, it tries to bring recursion that was for long missed into the mix[110] but these reflections are restricted to the niches it aims to exploit and niches that arise (Holland & Miller, 1991: 365), and to what is available when this adaption occurs (Gell-Mann, 1994). As Gell-Mann (1994) proclaims, big steps are extremely rare; as they are in reality as well, especially in public policy since those actors are confined to an environment with a complicated strings of 'rules'. But this way of construing pins a rather grim realism of the nature of interaction; a Hobbesian kind where "a man is a wolf to another man".[111][112]

As positivism was accused of ignoring the dialogical nature of reality (Turunen, 1995: 137–138)[113], now it is some sense incorporated into CAS. But its understanding is denoted as a constant struggle (see the earlier two paragraphs), not so much as for not dying but for who gets to decide how to adapt and towards what we are struggling for – it is a struggle for domination. Henceforth, as

[109] Even though it is a related problem, do not read this as the well-known problem of affiliating development for same as progress.
[110] Recursion principle: It's both the product and the producer, for instance, individual's and society's relationship; it is a cycle where every product comes back to the producer; the cycle is self-constitutive, self-organizing, and self-producing (see Morin, 2008: 49–50).
[111] Or of Neorealism at its 'best', where instead pinning it on the nature of a single unit, we see it as well at the level of the whole as well where it is a constant build up towards something (compare niches, fitness, et cetera).
[112] In many ways these elaborations seem suitable for security related institutions but the question it leaves unasked is related to its own foundation, not that the 'institution' that it represents cannot die, but it takes as certain its need to exist. Not so much it's self-being but the reason for its action. If one wants to be a bit more imaginative in their words, they interpret it as filling the void, where it takes the void as a self-evident truth on the account of it becoming filled.
[113] In complexity dialogue is a part of dialogic principle (whole-part, life-death, effect-cause, product-producer, and separability-inseparability) that is seen as both complimentary and antagonistic by its nature; one that is realized in the relationship between order and disorder (Morin, 2007: 21; 2008: 49).

positivism was accused of narrowing reality, because it attached concepts and thinking into empiricism and technical observations (see e.g. Turunen, 1995: 133–135), now CAS narrows argumentation as a war or a competition metaphor (see Lakoff & Jonhson, 2003: 3–7).[114] To ignore the other implications for now, it becomes a struggle for action, where action still is a wager but more specifically a wager for the organization that has or has not various often unknowable effects outside.[115] Instead we could examine any taken action as a mutilation, as most of the problems in our society (or municipality, or world, or organization) are furthermore also caused by actions (see Morin, 2008: 56–57); hence, it is, moreover, a wager for everyone outside the organization.[116]

As we consider action, change, uncertainty, or their interrelations, it becomes a question what is it that we base our decisions on, especially since it should not be adaptive but proadaptive (see earlier explanation). For Luhmann (1990: 80, 84) meaning is an answer to this never ending problem, furthermore, it as well constructs a bridge that closes the gap between the soft and the hard sciences.[117] Meaning becomes the representation of complexity; meaning is what we look for when we are trying to resolve the enforced selection possibilities; what this problem we talk about as complexity has posed towards us; what it means for us in this particular situation. It actuates in the way we approach that particular problem; it is the link between the actual and the potential (in this order). (Luhmann, 1990: 80–85.) In other words, for Luhmann meaning represents the focal point what we interpret and how we interpret it. As Thietart and Forgues (2011: 56) point out, in their discussing of the objectivists, what we first thought of as randomness further down the line uncovers hidden processes. In this case the hidden process is the theorem of enforced selection that the soft and the hard sciences can adhere to as a dot – or let's call it in Gell-Mann's (1994) terms as a frozen accident – between two bridges build on both sides to bridge the gap (see Luhmann, 1990: 85).[118] As Luhmann (1990), Gell-Mann (1994), Holland and Miller (1991) try to 'bridge' the old problem[119], it is not the whole nor is it the parts that we merely need to understand but interaction

[114] On the other hand, compare to the criticism of resilience in political science (see Chandler, 2014a; 2014b). In addition, see Walker and Cooper (2011) on the genealogy of resilience and what resilience approach would mean as a management approach.

[115] I am not denying the need or possibilities of this interpretation, only its delimitation towards reality.

[116] For Morin (2008: 54–57) the better we conceive this problem as well as the problem complexity poses towards us, then, the better we can form actions (thought) in way that they are less mutilating towards people.

[117] An understanding that there are, in the first place, things called hard or soft sciences, is based on a false positivist ideal that has remained into our time (see Kakkuri-Knuuttila & Heinlahti, 2006: 134).

[118] As they were niches in the case of an economy (Holland & Miller, 1991: 365), or as they were regularities in the case of CAS for Gell-Mann (1994).

[119] As Gell-Mann (1994: 25) points out, he does not believe that these fundamental principles can be used as such (at that time in 1995) into behavioral sciences, as they need news ways to incorporate situation specific information into them (see where the problem is located in); however, they perceive building these abstractions as points between

and distribution, in other words, not localization nor system behavior per se; the one depicted as the holographic principle by Morin (2008: 50–51).[120] The problem for Luhmann, Gell-Mann, Holland and Miller remains that their explanation can be in many ways seen through meta-characters of a system (regularities, fundamentals), meta-characters of the CAS (niches), and at least in a certain way also Luhmann perceives meaning as a meta-characters of phenomena (complexity); it is important distinction whether we regard them as Morin does, where meta-character is not a character but only a meta-point of view towards e.g. society, not the meta-point of society in itself; as illustrated by Gödel's theorem or Tarski's logic, there is no single point you can use to characterize the whole system (see Morin, 2008: 50–51); as the recent research of black hole suggests, nothing is completely something (they are not completely 'black').[121] Hence, what does it mean to be characterizing and seeing something completely in terms of e.g. niches it aims to exploit (compare footnote 102; starting citation of this chapter)?[122]

2.3. Living with uncertainty – how uncertainty constructs our reality

> As we know there are 'known knowns'. There are things we know we know. We also know there are 'known unknowns'. That is to say, we know there are some things we do not know. But there are also 'unknown unknowns', the ones we don't know we don't know. (Donald Rumsfeld, Department of Defense, cf. BBC News 2007).[123]

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different bridges; these points from onwards we can start building knowledge on the Cartesian plane, where we can incorporate other sciences knowledge (will be explained in 4.).

[120] System characteristics are distributed rather than localized, passing reductionism (parts) and holism (whole). Furthermore, the three principles explained along the way – dialect, recursion, and the holograph – are linked together (Morin, 2008: 49–51).

[121] I will end this section here; further elaborations could also be explained concerning at least context, effectivity, interaction, order, and truth.

[122] Some of these problems elucidated in this chapter are an illustration of post-positivism, for example, more 'nuanced' way of understanding reality; how information and perceiving error can effect interpretation (an acknowledgement of bias), seeing and exploiting all niches is often impossible (reality does not exist in a vacuum; allowing examination of multiple variables) (see Sharma, 2010). Elaborating these differences further would have also been a possibility but I have left this kind of specifying outside of this thesis on same account as explained earlier on logical positivism or objectivism.

[123] The context of this particular speech is about conflict and how to deal with it in a nation context, but it might as well be a quote from a manager contemplating expansion into a new market area, or a student writing his/ her thesis, or a professor contemplating a claim presented to him in a thesis. In other words, the constraints we are posed with limit our decisions making abilities. For instance, nation is limited to its reconnaissance, information sources, voter's opinions, et cetera; manager is limited to his/ her knowledge, to the way they know their market segment works, knowledge that they have and can acquire to close the gap between there market segment and the area of expansion, et cetera. Henceforth, what we know, positions the way we see the unknown.

It would be difficult to talk about complexity without having a conversation concerning uncertainty.[124] The concept of uncertainty plays a crucial role in complexity theories, but for some theories, and understandings, its position is more pivotal. For instance, theories concerned with complex adaptive systems uphold organization's relationship towards uncertainty through other interrelated theories, concepts, analogies, or metaphors – such as resilience and robustness. As Allen (Millikan, 1987: 133 cf. Allen, 2011: 20) points out uncertainty is a "central concept in the organization literature, particularly in theories which seek to explain the relationship between organizations and their environment" (also see Chandler, 1962; Scott, 1987; Thompson, 1967). And as they would all accentuate, the concept has played a primary role in the development of complex organizations; as Thompson (1967: 159) would even further elaborate, coping with uncertainty is "the essence of the public administrative process". Henceforth, it is hard to deny its salience, but why does it play such a pivotal role and how have we arrived to this present conception?

Once we start to go on the road paved in the last paragraph, then, we start to think about why and from what uncertainty, and hence complexity, arises from? Morin (2008: 20) explains that "complexity, in a sense, is always about change", because it does not origin just from the amount of interactions or interfaces, the quantity of, but from indetermination, randomness, and uncertainty. But more importantly "complexity cannot be reduced to uncertainty" (Morin, 2008: 20). Because as Morin (2008: 19–21) points out, complexity only coincides with a part of organization's everyday realities of inscribed complexity, being a certain mixture of order and disorder. As complexity cannot be reduced to uncertainty, then, it is also one of the crucial difference and the critique I would imply towards those theories concerned with adaptive systems and concepts related to it. In itself the term adaptive, in complex adaptive systems, is a potential source of misconception; when we try to describe social systems through a character, then, we run a risk of applying that particular character to its nature, for instance, as a struggle to adapt (Morçöl, 2012: 40–43), therefore, imprinting something towards the nature of the complex system in which it is always biased to as a meta-character (see 2.2.1.).

Going back to uncertainty, and as elaborated in the previous paragraphs, it would be cumbersome to get into an argument concerning the fact that the future is uncertain, change brings uncertainty, or that there are intrinsic uncertainties presented in the everyday organizational life. Rather the problem manifests itself when we start to contemplate where uncertainty stems from; and especially

[124] For instance, for Luhmann (1990: 84) the structure of meaning is based on the difference between actuality and potentiality, where actuality is certain but unstable, and potentiality is uncertain but stable.

why and how we can control, mitigate, or eradicate uncertainty that is brought to us by decisions, change, et cetera. In the management literature "the concepts of risk and uncertainty predominate", as the research has for long ignored many of those qualitative aspects contained intrinsically into it that complexity now forces us to accept (Allen, 2010: 21).[125] Stacey (2010: 27–37) traces the origin for this line of thinking in the fact that the base of the current management theory is in the scientific revolution in which uncertainty is merely something in an organization life that has not been uncovered for it to become more certain. Furthermore, the roots for the concept of uncertainty, in organization theory, can be traced into the technical sphere of industrial America such as engineering. It is from here that the *success attained by the reduction of technical uncertainties was translated into the reduction of uncertainties in the organizational life* – leading into seeing, for instance, efficiency to be defined in terms of the reduction of uncertainties. (Shenhav and Weitz, 2000; see also Shenhav, 1999.) In other words, as Shenhav and Weitz (2000: 375) explain through the work of Williamson (1975; 1985), the canonical view of reducing and eliminating uncertainty and controlling future contingencies is seen as the object of administrative efficiency, and as explained was seen as the reason behind the success of industrial efficiency. Leading Shenhav and Weitz (2000: 394) to ultimately note that the roots of many of the key concepts in organization theory are inadequately known; further as Allen (2010: 21) remarks, a common problem in the management literature is that the relationships between uncertainty and complexity are meagerly studied. Especially this seems to be the case with theories, related to the concept of uncertainty, that assess critically concepts that have spun in relations to it, which have as their aim to manage, mitigate or control uncertainty (compare previous paragraph and 2.2.1.).[126] In other words, our aim should not be eliminating complexity by reducing or finding new ways to resist it, rather according to Morin (2008: 21) our aim should be "from complexity to ever increasing complexity"; for Morin (2008) it is a gradual journey from the hyper-simplification to hyper-complexity; finding new ways to live with uncertainties not ways of reducing uncertainties, or ways of controlling uncertainty trough knowledge production.[127][128][129]

[125] Moreover, as Montuori (2008b: xi) points out, disciplinary knowledge has problems in ignoring its own paradigmatic assumptions.

[126] These concepts, or in some cases mere metaphors, are critically researched in a much more elaborate way, for example, in the field of political science. For instance, in relation to resilience, Chandler (2014a; see also 2014b) perceives it as a concept that gradually dooms us into a state of despair; if it is used as the current way is, in other words, this way of seeing it depraves us of hope that is essential for humans' ambitions – the hope of doing things in a new better way being one of our fundamental forward driving forces; as it is in organizational life as well.

[127] What I was arguing in the last paragraph were the possibilities we can attain by examining critically the roots and usage of the concept that is also the aim of this study. It gives us new ways to see existing and potential problems but further to elaborate what are the original relations and reasoning behind the concept. If we understand it in a more refined way, then, it also opens up new possibilities how it can be used or can/ might/ will interfere with other

These different orientations have forceful implications for science and research but also towards public policy, strategy, and programs – where they lean to. If we fast forward a little bit, as the citation at the beginning of the chapter shows, essentially it is about action, making a decision, going towards the unknown, the uncertain; it ultimately says that we have to make a decision and take action if we are to purposely try to change something – or adapt in case of CAS – in many cases it is about not wanting to leave it in the 'hands of faith'.[130] As pointed out, for Morin (2008: 54–57) action is ultimately a wager, but the question is in what way? How we position ourselves towards uncertainties in general will have an effect how we treat them and ultimately approach them as part of our decision making or action; and for this reason it is necessary to contemplate how we, for example, 'cope' with uncertainties. The way we perceive action to be taken shapes in a fundamental way the paths we take or the method we imply for reasoning. In addition, this is crucial for how we deal with uncertain outcomes of these actions. This is secondly important for how we understand outcomes relationship towards different actions, since it will affect the way we compose concepts, measurements, programs, strategies and ultimately decisions and actions. This all comes back to the question, not just the way action escapes our intentions the moment we have taken it, but to the fact that if we are perceived to be making interpretations or prescriptions for the problem(s) at hand. It comes back to many of those question related to positivism[131]; whether our expectations are those of linear ways, such as do this, do that, do not do that, in these cases do that or this, but on that case that.[132] After all, is this claim made by complexity thinking even that

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concepts in a potential way. After all, it is a way of accumulating knowledge about possible relations (compare also to the example concerning the nature of at the start of 2.).

[128] Furthermore, of course this contemplation has a huge variety of different possibilities for different ways in various organizations, as for some their only task in reality is reducing uncertainties. Of course in public policy context, there are laws, equality, et cetera that we need to take into consideration, but what is one of the background problems they are all as well connected to?

[129] For some this might seem depressing or even demoralizing, to call for a permanent 'self-reflection' but it at least offers us a step towards less mutilating way of producing knowledge and hopefully will result in less biases on the way we use knowledge, in order to perceive and produce desired ways to improve our way of life (in comparison see Stacey's (2010) ending contemplations; and Foucault's (1980, 2003, 2007, 2008) apparatus, truth, power, and governmentality; also compare on Morin's (2008) understanding of mutilating thought).

[130] Original meaning of the sentence refers also to the fact that we cannot know every variable in each situation, but it should furthermore mean about those that we do not want to know or deny of knowing.

[131] Parting with positivism means giving up absolute certainty (or rather an illusion of absolute), but do not put the emphasis on absolute, as it will become a task of replacing it with variances, et cetera. It is question of not delimiting ourselves already at the start to the same problem.

[132] Humankind has always been fascinated with the unknown, because it is the unknown that holds the keys; and, on the other hand, beholds into the future and into the kingdom of better understanding. For a long period of time we perceived this to be achievable by meticulously breaking everything down into the smallest detail, listing every interaction, relation and categorizing; which would first lead into our ability to say something definite about the subject of the study and ultimately lead towards further steps revealing more and more about the nature of its parts, the whole, their interactions and ultimately their relations and categorization compared to others. Through this

peculiar, few managers would take any universal advice as itself without requiring any contemplation into their local setting; as it has been already argued regarding the limits of universal value for most of the practices.[133] Hence, it accentuates the dialogical nature of complexity (Morin, 2008: 48–51) and the aptitude of the hermeneutical approach for studies relating to complexity.

2.4. How complexity relates to efficiency?

Our orientation towards certain understandings already delimits their connections. If we perceive uncertainty or complexity as having a negative connotation, then, it naturally leads on ways of wanting to reduce, control, or bypass them e.g. relations. On the other hand, finding something intrinsically good, such as efficiency, leads us trying to advance it, and in case of problems, especially in case of established concepts and understandings, often finding more suitable ways of advancing it in those situations; in terms of a hiccup, so to speak, not to throw the baby out with the bath water. For a long time, some might argue, both uncertainty and complexity had solely a negative connotation,[134] but now they have been seen to provide insight into certain important processes for organizational life.[135]

Even though we have established that perceiving complexity as a synonym to being complicated is a contortion, one could still be willing to say that something that is hard to comprehend, then, can be perceived inefficient, perhaps even by its intrinsic nature. It radiates notably from a mathematical understanding, where most theories are concerned with the complexity of complexity (to use Luhmann's (1990) term, how difficult it is to solve; where branches, such as computational complexity, perceive it as a relation, for instance, the more it will take time to solve it (compare complex modeling, algorithmic information theory).

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process we will arrive, eventually, at the final destination, the last stop of this particular line of thinking; presenting us, as the first light of the day presents us with, a revelation that would reveal, or unmask, what has evaded us until this very moment of time. But in reality, and as we all know, this moment was inevitable, it was just a matter of when and through what it would reveal itself to us. As the journey towards it is sometimes long and treacherous, but fear no evil, as the final destination lies ahead as long as you are prepared to travel the journey.

[133] For instance, compare to the black hole example; recent discoveries concerning the universal application of some consultancy 'truths' i.e. fabricated results to seem so.

[134] For something to be described as complex in organization or management theory, as in general conversation, it is attributed with a negative connotation: hard to describe parsimoniously, hard to give a definite answer, hard to get a grip of the problem; among others, we found it hard to establish a definitive starting point of the problem, from which we could go forward in a step by step motion knowing what contributes to the problem and in what proportion (e.g. wicked problems).

[135] See e.g. writings related to chaos theory, nonlinearity, innovation, and creativity.

What I am contemplating here, as a transition, are the differences how we do and see science, for instance, in organization and management discipline versus engineering related fields of study. I doubt that there is anyone who would object the claim that organization theory produces science for different purposes than engineering theory, but if we start by transferring the same claim into different setting, by saying that the way science is done in organization and engineering theory differs foundationally, then, we would raise more than few eyebrows. To illustrate it further, let us go back to the notion of complexity and think what is it exactly that we mean when we claim that something is complex? Is it by its nature, interaction, relation, or outcome? But once again, and as we start to ask these follow-up questions, we roam a different path and ignore the orientation already offered to us in the start. In other words, what kind of knowledge science is supposed to produce, the customs one is supposed to comply, and disciplinary practices one is supposed affirm; because if one steps out of these ways, customs, and practices one faces dangers of misunderstanding, stigmatizing, or refusal (e.g. Kakkuri-Knuuttila & Heinlahti, 2006). This is also a part in an important quest for disciplinary acknowledgement and legitimacy (see e.g. Ahonen, 2011). We do not assume that science is done the same way, for instance, it has been a widely acknowledged fact for a long time that qualitative data cannot be used the same way to make straight conclusions as quantitative data can (see e.g. Kakkuri-Knuuttila & Heinlahti, 2006), machines and biological organisms have substantial differences, cultures differ in each organization, the interrelation of conception and information, et cetera.

As different stories have diverging strings, so do they have fundamentally different starting points that will most often lead to different journeys. One kind of illustration shows an alternative. Calling it an alternative means that we are ‘stretching’ it; this meaning is not competing, rather I will continue to contemplate where it is more suited for certain purposes and how we could establish this understanding.

3. What is efficiency?

> If economic efficiency turns out to be the one true religion, maybe it is because its prophets could so easily conquer (Wildavsky, 1966: 308).[136][137]

Efficiency is a tricky concept, but perhaps in a substantially different way than complexity or uncertainty. In Finland, as illustrated by Vakkuri (2009: 11–30), efficiency, as a concept, is used to describe various diverging approaches trying to solve the problem posed to us by what we have come to know as efficiency; furthermore, one could even go as far as calling it an obsession of finding the right theory to describe it in different (institutional, disciplinary, et cetera) settings. Henceforth, it is not surprising when Manzoor (2014: 1) notes that "one of the imperatives of public administration is the achievement of efficiency at all levels". Any form of critique against aspects associated with efficiency usually starts by stating: I am not against efficiency in itself. Hence the question, how can you really be against efficiency itself?[138] It appears to be that when a term, or a concept, receives a foundationally positive connotation, such as efficiency has, then the only aspect of it one can contest is how it is conceptualized, or more easily said accomplished; not the concept in itself (see e.g. Yliaska, 2014).[139] I am even inclined to call it an ideology by which I mean it is a vision justifying the action. By this claim I do not mean perceiving it to be something contradictory to science or truth but merely in a sense that Marx used ideology; we regard it as a landmark. And in this case it means a landmark from where we can start to build our knowledge – our perceived truth onwards. As Deleuze and Guattari (19, 26–27) illustrated, the only concept that the Cartesian plane needs, in the way it produces knowledge, is the starting point that presupposes nothing objective; from this spot on it can gradually build knowledge onwards.[140] On the other hand, every

[136] Why efficiency in relation to complexity? Complexity thinking is often 'bound up' with efficiency. For instance, Jalonen (2007), who was one of the first, in Finland, to construct a dissertation that used complexity thinking as a theoretical framework, applied complexity thinking in order to achieve e.g. a better way to harness innovation in order to gain more efficiency.

[137] As stated, I do not aim in somehow denying efficiency, but showing a richer meaning into it. If one looks at the latest Government Program (hallitusohjelma) it does not matter whether we are discussing defense, environment, financial, labor, legal, or science matters – and in other meanings than in relation to cost-efficiency – efficiency is seen as a synonym for betterment (Finnish Government, 2015).

[138] As an additional note, one of the recognized gains from these kinds of considerations is a significance of worth to any kind of evaluation; for example, the old build in understandings in institutional settings create ambiguity for any evaluation used in interrelation with decision making (Ahonen, 2014).

[139] As shown by Yliaska (2014) concerning the efficiency seeking in his dissertation; how seeing certain ideas stemming from privatization as efficient by themselves had impacts on the public sector reforms in Finland from the 1970s to the late 1990s. Furthermore, Yliaska (2014) examined Finnish government's quest for efficiency during this time period and concluded that the quest for efficiency actually did not produce the kind of efficiency that was looked for.

[140] This can also be further illustrated in relation to Gadamer's stance on language, as human being is a being in language: "Being a part of our own tradition, historical works do not primarily present themselves to us as neutral and

scientific inquiry, paradigm, or faculty has their own blind spots and sweet spots (see e.g. Montuori, 2008b). These blind and sweet spots revolve, for instance, around the concepts, notions, or terms we use to depict, indicate, or demarcate our research; towards which management and organization theory is no stranger to.[141] This section articulates one way of perceiving how the canvas was painted in the case of efficiency.

One a rather unorthodox way to somehow show the level of difficulty, posed by this question of what is efficiency, can be illustrated by my own mind's depiction. When I first started to contemplate it on paper, then, this kind of 'enumeration' in relation to public policy came to my mind. When talking about efficiency, in organization and management theory, it has created new concepts, notion, and values that elicit different kinds of conceptualization. For instance, terms, or concepts, such as effect, efficiency, effectiveness, performance, which are, or often times seem to be, mixed with notions of value, public value, or 'good administration'; relating to questions such as can government be efficient, should it be, and in this case how, what way, and in what situations. But is this conversation alone bypassing the conversation concerning the role of efficiency in itself? Whether it is a means to an end (instrument) or an end in itself already (value) and in relation to what? But even if these new notions of conceptualization, or the micro- macro-concepts to further adjust them, cover a better form of efficiency, then, it still does not exclude the need to examine the problem introduced; nor would a fact that even if those using it do recognize the build in problem with it (efficiency). After all, it seems that efficiency is the ground word in many conceptualizations of these new words that merely try to build efficiency in a way that covers a wider, or new, array of e.g. (public) values. But this all together excludes the possible problem of it just becoming a task of integrating more e.g. values; values that are all counted and compared in their input-output ratio (known as the technical efficiency) and just trying to find the right mix between them. Hence, the understanding associated with efficiency affects other inferences ushered from it. Secondly, how is efficiency still discernable inside these other depictions such as effectiveness? (How) does the colloquial usage differ and perpetuate these problems? Henceforth, can we just innovate a new and a better 'working concept' that would depict in a better way reality or that what we perceive to be

value-free objects of scientific investigation. They are part of the horizon in which we live and through which our world-view gets shaped. We are, in other words, formed by these great works before we get the chance to approach them with an objectivizing gaze". (Ramberg & Gjesdal, 2014: 5.)

[141] When talking about social scientists, which could be applied to others as well, Foucault' (2004: 23–27) stated that social scientists are the ones' who create delimitations through their books, concepts, and theories. In other words, their power is in the way they translate reality into a concept or a theory. Because ultimately whenever someone uses that theory, a theory that is always only an intersection, he takes action and pushes something aside, which later on takes its revenge through the complexity we could not yet see (Morin, 2008: 54–57).

desirable according to our values (coming back to as what we know to be efficiency); as it somehow seems to integrate an earlier notions parts into it – it seems to retain the interpretation problem still in it. Rather if clarity is a virtue, as some claim, then knowing the different built in meanings can achieve 'more' than any new equation or model could hope for; unless it really is the right theory of efficiency (for the public policy).[142]

Going again to the background reasoning why efficiency has been a subject of such fierce debates in recent times.[143] In Finland the current prolonged recession has furthered the quest for efficiency and made the calls for the need of efficiency evermore pressing.[144] Nevertheless, at the same time one can find diverging dialogues where some claim that public administration is efficient while others claim it to be inefficient. As Rutgers and van der Meer (2010: 756) allege, current conversation concerning efficiency has two different build in meanings, but the definition recognized and used to justify claims concerning efficiency refers almost solely to the more singular meaning of technical efficiency; leading us in a situation that by using this partial understanding we are unable to understand the complexity of the concept. Henceforth, at the moment some contemplations are arguing besides it, whereas, understanding these different interpretational meanings would allow us clarity inside the concept; instead of the way we now create clarity, knowingly or unknowingly, by simply reducing the notion to one of its meaning (Rutgers & van der Meer, 2010: 756). Part of this conversation are the long term scars of New Public Management (NPM), where we were forced to live with the prophecy of who has the best way to show input-output ratio. In other words, who will finally find the tactic that will at last "allow managers to hit the efficiency bull's-eye" (Schachter, 2007: 801). As Yliaska (2014: 529–530) illustrates, the quest that went on during the NPM 'period', and as several understandings associated with NPM still are going on strong, did not exactly lead into a better evaluating methods; it paradoxically replaced values associated with e.g. equality or those related to emotions and regarded them merely as noise; on the other hand, its own values that it used to replace them, such efficiency or productivity, were and in many ways still are notable even more vague. Hence the claim, where one can argue for the need to realize the conceptualization of the notion of efficiency; at the moment it still seems that in often times we are doomed in our search to find gold that keeps on turning out to be fool's gold; as

[142] Accompanied with the earlier mentioned all-time best seller called the Theory of Public Management and Organization.

[143] In fact, it has been, just in different 'forms', part of a fierce debate at least since Wildavsky's prediction in the 1960s (the quote at the start of the chapter).

[144] For example, in Finland the conversation concerning the universities and the need to raise their efficiency (see e.g. Rehn, 2016).

oftentimes we do not even know yet what gold is but take technical efficiency as a metaphorical path that starts the journey leading towards the pot of it.

As exemplified by the previous last two paragraphs, if one compares my own depiction to that shown in the previous one, then, it shows the problem that many of the contemplations are stuck with – such as mine was, in other words, unable to realize the conceptual problem at the heart of the concept. What Rutgers and van der Maar (2010) were showing, was that there are two different definitional meanings at the heart of the concept we know as efficiency; the predominant contemplation known as the technical efficiency in its various (also new) forms (e.g. allocative efficiency). On the other hand, one of the few instances where we can still see the manifestation of the second definitional meaning, known as the substantive meaning, can be illustrated through an example. Think about someone being called an "efficient person"; as Rutgers and van der Meer (2010: 772) point out, it cannot be illustrated merely through an input-output relation, or at least it becomes one in a rather perverted way, or it has to be solely in some clearly delined situations. Rather in here the interpretation of "a person capable of getting things done" is the meaning that makes in several conjunctions 'better sense'. (Rutgers & van der Meer, 2010:772.)[145][146][147]

[145] Often time's conversation concerning efficiency falls into a conversation where conception is located in an instrumental rationality perspective (see Vakkuri, 2009: 11–17), which is common take on positivism. According to instrumental rationality, something can be regarded as a value free or to have intrinsic value by themselves, hence, offering ways for practical usage through generalizations (Kakkuri-Knuuttila & Heinlahti, 2006: 136, 161–162). Furthermore, in here values are left as opinions, hence, they cannot be argued logically (Kakkuri-Knuuttila & Heinlahti, 2006: 169–170). Instrumental rationality turns the question merely as a task of finding ways to achieve what we are endeavoring for (Kakkuri-Knuuttila & Heinlahti, 2006: 162–165), since it has already been shown that something has an intrinsic value; deducting conversation merely as ways of finding new measurements, meta-concepts that further the main conceptualization, which intrinsically hold this attribute given to us by this original truth.

[146] Hence, why we need to examine different concepts and where they originate from, what their defects are and why we need to consider these effects; one of the ways we can do this consideration is to be more aware of the historical meanings and how they have shaped different concepts.

[147] In interpretative research social reality is constructed from meanings defining the social norms. Hermeneutics explain reasons behind; why things happen(ed) the way they did (Kakkuri-Knuuttila & Heinlahti, 2006: 158). Hence, making it possible for us to interpret (as seen) the 'truth'; what is the truth in that particular understanding and assessing its effects.

3.1. Constitutive meaning of efficiency

> As long as there is systems approach, there will be need for making that system efficient (Manzoor, 2014: 4).

> Even though the generally understood source of madness is incoherence, we often overlook the other one that is much more prevalent is the modern society that of coherence (Morin, 2008: 48).

Efficiency, just like complexity, is a relatively new notion to be introduced in a systematic way to our argumentation. The late 19th century was only the time when the use of efficiency started to pick up the pace, hence, many classical economic writings, such Adam Smith's Wealth of Nations, lack any usage of the word (Rutgers and van der Meer, 2010: 761). There are at least three different ways we can conceptualize efficiency: input output ratio known as technical efficiency; efficiency as a quest for optimization e.g. known as the Pareto efficiency; efficiency as a substantive meaning, in other words, as a desired outcome, an end, or a purpose why action is undertaken. In the substantive meaning efficiency is – an operative agent – (1) the active force, (2) power, or ability, to get things done, or (3) a capacity to produce an effect; at least the first and the third definitions are present in our current understand of what we perceive efficiency to mean at the moment. (Rutgers and van der Meer, 2010.)[148] My aim in this section is not to go through the concept of efficiency in a way that illustrates e.g. how it can be calculated, how cost-effectiveness can or should be achieved, how efficiency interrelates to effectiveness; nor is it to criticize the concept per se (for a more precise elaboration of the historical roots of the concept efficiency, efficiency's definition, or its relation to e.g. effectiveness see in public administration e.g. Schachter, 1989; Rutgers and van der Meer, 2010; and Manzoor, 2014; in engineering e.g. Alexander, 2009). I am going to illustrate, as I did in the complexity section, how through historically built in conception it has a certain multifacetedness of meanings built into it, which we rarely acknowledge.

[148] Even though the way Aristotle conducted science is not 'hundred percent' (Heidegger's and Gadamer's diverging understanding of the hermeneutics) congruent with the notion of science elaborated by Edgar Morin it does not make it incompatible, because the way I use Aristotle's work includes merely showing the start of the genesis of the notion of efficiency and by referring to the source of the concept I am allowing and showing other meanings of definitions as well as novel elaborations to emerge. I am demonstrating how the meaning Aristotle attached to efficiency is built in to the notion of what we perceive efficiency to be today. I am not per se trying to introduce a new concept or an understanding we should rather now delve ourselves into. As a second note, Heidegger whose student Gadamer was based his understanding of hermeneutics on Aristotle (see e.g. Scott-Villiers, 2014).

According to the OED (efficiency, n.) the original meaning of the term can be traced to Latin efficientia, which means "being an operative agent or efficient cause", known as the philosophical usage of the word. In other words, it refers to efficacy, to the cause "that which gives efficacy to the means and makes it effectual" (OED: efficiency, n.). This particular usage of the term originates from the Aristotelian understanding of causes and was dominant well into the 20th century (Rutgers and van der Meer, 2010: 761). Aristotle's concept of efficiency can be traced to his philosophy of science known as Artistotle's natural philosophy (Istvan, 2012; see also Cohen, 2015 on Aristotle's metaphysics). Aristotle himself did not use the term efficiency per se, rather it is derived from his followers who referred to efficient cause (Rutgers and van der Meer, 2010: 762). In the line of Aristotelian understanding, all scientific explanation has to respond to the "four causes". The first two, the matter and the form cause, respond to from "what an entity is made up from"; the latter two, the efficient and the final cause, respond to initiating and bringing effects and accounting for the reason what is being intended to gain and what they (processes and entities) are for. (Istvan, 2012.) The last two originate the reason for change or for standing still, the reason for motion, where the efficient cause is always linked to, not subordinate to, the final cause; it refers to the production, causation, and creation where efficiency is always linked to, and what it is for, i.e. the end; but obtaining the final cause through the efficient cause may or may not be the result (Rutgers and van der Meer, 2010: 762; see also Istvan, 2012). In other words, in this line of conceptualization efficiency cannot be regarded as a value itself, it can not stand alone, but is always related to the final cause.[149]

Until the 19th century efficiency was completely immersed in an Aristotelian causal explanation; it was not until the work of Jeremy Bentham (Bentham, 1817/2005: 8, 11, 15, 25, cf. Rutgers and van der Meer, 2010: 763–764), the founder of utilitarianism, who used it in a different sense to describe the efficiency of the oath, where efficiency refers to the security we achieve by one's obligation to the oath; in other words, oath was a mechanisms to ensure us against deception and incorrectness, which Bentham saw as being inefficient way of securing it. But the reason behind the use of the oath Bentham still retained on the ruling few, hence, he was using a mix of the two notions of efficiency, but still referring to it as a "contribution to purposes", in other words, to its substantive meaning and "not as an economic relation between resources and results". (Rutgers and van der Meer, 2010: 763–764, 775.) One of the first indications of the modern usage of the term can be

[149] Another way to see the effect, on what has changed, is in the way we position ourselves towards knowledge. Our current understanding of causality, which originates from the influences by the discoveries of natural sciences. makes us ask the question how when producing knowledge, where for Aristotle it was a question of what. (Niiniluoto, 1984: 43–44.)

found in the political science and the work of John Stuart Mill's (2010: 114–116) *On Liberty*; Mill's was concerned with an eventually process where bureaucracy might become so efficient that it potentially deprives us from our freedom (see also Rutgers and van der Meer, 2010: 764).

The forerunners of the substantive meaning of the term efficiency in the modern conversation concerning administration are Henry Taylor and the Northcote and Trevelyan report (Rutgers and van der Meer, 2010: 764). In his book, *The Statesman*, Taylor (1836) refers to efficiency as the absence of a body of able persons who could take care of the task of government in an adequate way, due to the limited number of efficient statesman. In other words, Taylor's efficiency refers "to the capabilities of those employed" (Rutgers and van der Meer, 2010: 765.) For instance, we can see our contemporary understanding emerge when we examine Taylor's (1836: 178) conception what is the proper "remuneration" for public servants: it is oftentimes to be stated that in order to get efficient service, then, good pay has to be offered. As Rutgers and van der Meer (2010: 765) note, one is tempted to read it as an input-output relation, but Taylor's definition of efficiency does not contain any ratio, it refers to doing the job in time and doing it well. In other words, both Bentham and Taylor still referred to efficiency in an Aristotelian substantive meaning (Rutgers and van der Meer, 2010: 765). Rutgers and van der Meer (2010: 765–766) trace the first changes, from an administrative perspective, to The Report on the Organisation of the Permanent Civil Service of 1854, known as the Northcote–Trevelyan Report, which widened the substantive meaning by addressing efficiency to be applied to persons or a body of persons compared to the more common processes or organizations, "being efficient concerns character, ability, and experience".

According to the OED (efficiency, n.) first reference to efficiency as a ratio comes from engineering; the efficiency of engines by W.J.M. Rankine who stated: "the efficiency of an engine is the proportion which the energy permanently transformed to a useful form". In here its reference to a measurement is evident. Whereas it was not until the start 20th century that the first economic use appeared (OED: Efficiency, n.); Rutgers and van der Meer (2010: 767–768) illustrate that it was not until the post second world war before the technical or economic meaning of efficiency became core vocabulary. The use of the term efficiency accumulated drastically in the early 20th century administrative discourse through Taylorism (scientific management), which in turn entered modern public administration trough the Research Bureau Movement, which promoted "the core values of efficiency and economy (Marx, 1959: 24, cf. Rutgers and van der Meer, 2010: 768). And even though Taylorism is seen as the source of what became New Public Management (NPM) Rutgers and van der Meer (2010: 768–769) note that Taylor's work on efficiency had a dual notion; and

even though it included the term efficiency in a narrow sense of technical-economic efficiency of higher output per person, much of it remained in the substantive meaning. Taylor did not regard efficiency in itself as a good or a bad thing (Schachter, 1989: 64). In the testimony Taylor gave to the Congress (1912) he said: "Scientific management is not any efficiency device, not a device of any kind for securing efficiency; nor is it any bunch or group of efficiency devices" (cf. Schachter, 1989: 64). In other words, the purpose of his work was to unite the interests of employees and employers (Rutgers and van der Meer, 2010: 768). Even Taylor's pupil, Morris Cooke, regarded efficiency as a way of achieving an amplified response to the public needs (Schachter, 1989: 75–76); the substantive meaning of the word still remained prevalent (see also Rutgers and van der Meer, 2010: 768).

Where then did the deviations start to appear transforming efficiency to what we perceive efficiency to be today? Rutgers and van der Meer (2010: 770) trace this subordination of efficiency, in the administration related conversation, to a twofold conversation occurring after the Second World War. Firstly, in Dwight Waldo's *The Administrative State* (1948), Waldo contemplates how we should position ourselves towards efficiency as an administration value. Rutgers and van der Meer (2010: 770–771) point out that even though Waldo regarded that efficiency was merely a prescription for a relationship among other values, a notion that cannot be a value in itself, nor can it be used if the purpose is not clear; in other words, efficient cause always appears with the final cause (Aristotle), but furthermore Waldo used efficiency as a subordinate to final cause, which was not the case for Aristotle. Secondly, Rutgers and van der Maar (2010: 770–771) trace the change to the work of Herbert Simon's (1945) and his critic towards the pre Second World War period. In Simon's work on *Administrative Behavior* (2013), Simon debates the concept of efficiency as a value (255–256), a term (256–258), and as an economic analogue (258–259); by stating that even if the "criterion of efficiency" is not always prevalent in "administrators' decisions" it would be "if they were rational" (Simon, 2013: 258). Henceforth, comparisons with Vakkuri's (my own translation 2009: 5) remarks are noteworthy "modern society leans on the ideal of efficiency, in which these choices are justified by rationality". And even though Simon (2013: 256–258) notes the problematic relationship between efficiency and effectiveness, yet, he still reduces them both, and the meaning of efficiency, all under the same rubric of efficiency; this is done by noting that there is no better concept available for him to use. He regards it neutral by its nature towards the desired end, based on his rationality stating that there is no perfect concept of efficiency – "measure of absolute efficiencies" – it is merely "relative efficiencies" towards problems where the "measure of efficiency" is "merely a comparison" between "the efficiencies of two alternative positions".

(Simon, 2013: 256–258.) Furthermore, Simon (2013: 256–257) associates the reason why efficiency includes a more technical meaning merely to the scientific management. In other words, even though he recognizes the historical problem, nonetheless, he does not consider its relevance (compare to positivism). This particular conceptualization "fits his aim to rationally calculate the desired technical efficiency" (Rutgers and van der Meer, 2010: 771). In comparison, Ville Yliaska (2014) shows how, in Finland, different notions such as efficiency were used to legitimize the need for change. Because their status became prevalently seen as good, then, the conversation was not if we should use efficiency (in its technical meaning); it merely came attached to the means of how.[150] As Morin (2008: 34) notes, efficiency's objectivity is in its statutorily presumed intrinsic goodness where we just need to find the right formulation.

Looking at the OED entry of efficiency, by this time we have a circle where all entries post the Second World War relate to the economic or engineering understanding of efficiency. And as Rutgers and van der Meer (2010: 771) note, the "technical efficiency has become the prevalent interpretation"; efficiency is seen as a subordinate to other values (Waldo) and can be regarded only as a "meta-principle". Henceforth, this begs the question that some might pose: is this precisely the problem being now remediated by referring to e.g. effectiveness? But the problem – and the answer – is reflected back to the reasoning that I have already tried to establish when talking about complexity – it is also apparent here. When we derive, or usher, or make – whatever term one wants to use – new conceptualizations that still hold the previous meaning that was attached to efficiency, without knowing (or knowing) what it exactly was ('conceptual roots'), then one is in varied ways often limited to interpret the new meaning also in the same kind of limited way. In other words, effectiveness is also part of this technical approach in its guest for better input-output relations but just through different means, rather than the force and ability founded in the substantive meaning (Rutgers and van der Meer, 2010: 773). For instance, in administrative science we talk about an effectiveness problem when a company produces products efficiently but there is no demand on the market for the product, on the other hand, public services might be produced efficiently but they do not match the needs or expectations of the public (Vakkuri, 2009: 12). Hence, in the company example the question is being efficient in the right place; in public service the question is being able to find the most pressing needs and expectations where to be efficient once again. What they question is not efficiency in its economic and technical sense; it is the way this is achieved in a best

[150] As a future note, in Finland the technical rationalization used to restructure administration and organization in the 1950s was connected with societal engineering planning in the 1960s that set out to shape understandings (Yliaska, 2014: 48–50).

possible manner. Secondly, a new term does not mean that the original meaning would vanish somewhere. This problem becomes distinguishable when it is used as a way of interpreting historical understanding, which holds intrinsically an ample risk of misinterpretations (Schachter, 2007). As Rutgers and van der Meer (2010: 772) illustrate, in many interpretations today the richer, substantive meaning of efficiency presents itself in the way we use the word in public administration and common use. And further as illustrated elsewhere, "a technical preoccupation in administrative thought" is a result of misinterpretations, for instance, by translating "Fayol's "good" and "bad" (bon et mal) as efficient and inefficient" or "Weber´s performance ("Leistung") as efficiency" (Schreurs, 2000: 71–72, cf. Rutgers and van der Meer: 772). The purpose is not to ask the question whether the substantive meaning of efficiency is better than the technical meaning of efficiency. The question is rather a further conception of the problems concerned with the notion that we assign with the term efficiency.

Even though one can regard this just as e.g. a critical exclamation of the NPM, or value assessment, or the difficulties of measurements, defining values, or the never ending measurement culture. Henceforth, for the sake of this thesis, the most relevant question is not to ask whether and to what extent we are not already trying to correct this problem with, for example, the New Public Governance (NPG), Public-Private Partnership (PPP), Private Funding Initiatives (PFI), Public-Private-People Partnership, Urban Design Management (UDM), (for these different 'governance innovation' models look e.g. Anttiroiko, 2010; Anttiroiko et al., 2011), or performance management (e.g. van Dooren, 2015). It is rather the supplementary question that accompanies us with these questions and what is the problem that the scientific conversation would turn to if it were to consider the substantive meaning of efficiency as a second core. It is the problem of increasing vagueness accompanied with it (from their perspective), as it would mean further difficulties in explaining and defining inputs, outputs and outcomes, in a culture and science where clarity through distinguishability is a virtue. But perhaps the problem is rather what we perceive to be clarity, i.e. what was pointed out by Yliaska (2014) earlier, in other words, the question is not to deny the need for clarity but to ask what we are sacrificing for its sake, which becomes ever more present in those situations where finding it becomes more difficult to attain. Henceforth, we come back to the question Wiberg (2014: 28)[151] presented to everyone in his pamphlet (or rather in EVA's pamphlet):

[151] Rather aggravated example of this debate is illustrated by a pamphlet (Wiberg, 2014) – Julkea sektori – näin byrokratia vaalii omia etujaan – which addresses characterizations of the build in inefficiencies in the Finnish public sector. As Wiberg (2014: 25–27) notes, as one of the measurements of the value of critical conversation is its ability to bring forward new concepts and conceptualizations while also bringing clarity to conceptual confusion and showing the reasoning behind questionable conceptualizations. Yet when he depicts the conceptualization of efficiency he

why should we be produce welfare services in an inefficient way when we can produce them in an efficient way?[152] Because concepts are not neutral, they are not discursive, they do not link propositions together; if we see them this way it produces an illusion that some concepts are more scientific than others, they do not present us with a single truth or the truth (Deleuze and Guattari, 1994: 23). In an Aristotelian sense, the efficient cause is always intrinsically linked to the final cause, hence, public administration efficiency always needs to linked to the public. This understanding is pivotal for as long as we are dealing with systems – it gets accentuated once we regard systems in relation to their borders – then we are concentrating on defining the borders and the exchange between these different borders. This is especially manifested if one reads the criteria according to what different efficiency theories try to define the intersections where one can receive their perceived 'truth'.

The point of this chapter was not to show that we should now go back to the Aristotelian meaning or how this is more apt somehow, or holds something 'more' pure, et cetera; it was to show how the meaning what we perceive to be efficiency has developed through time. After all, one has to keep in mind what Deleuze and Guattari (1994), and in his own unique way Nietzsche (1990), stated how we should address concepts. Concepts lose their relevance in a strict sense the moment they are published; every minute that goes forward from then on means that something has changed. Furthermore, this is already assuming that it was accurate in the first place for it what it was trying to depict. Hermeneutics allows one to inspect and see this transformation. As stated by Edgar Morin, complexity is not a word solution but a word problem in itself (see Alhadeff-Jones, 2008). Henceforth, when we depict these concepts we have to realize their position. Concepts are not discursive in themselves (Deleuze & Guattari, 1994) and by perceiving them as something touching upon some essence, a truth behind all, then, we are merely looping the problematic understanding of replacing one truth with another and getting disappointed by the reality over and over again, because just as we thought of catching it, it escaped our intentions (Deleuze & Guattari, 1994: 15–34). If we understand the way of doing science, getting to know the truth, the same way as ever before, we can never get outside of this circle. And it is necessary to understand that what we are here offering is not another truth but a note that there are some limits to our current way of producing knowledge. In other words, certain things keep remaining outside of this circle of the current way of understanding.

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reduces its value to technical efficiency (Wiberg, 2014: 28–29). But yet when addresses what would efficiency bring to public administration, then, he muddles the engineering efficiency as an outcome of Aristotelian efficiency.

[152] Or as Bill Clinton put it even more 'aptly' concerning even the bigger picture in his campaign (Clinton's Presidency campaign 1992): (It's) the economy, stupid! (Kelly, 1992).

3.2. Efficiency inside of complexity

> Explanations exist; they have existed for all time; there is always a well-known solution to every human problem neat, plausible, and wrong (Mencken, 1921: 158).

Even though literatures as well as researchers' interests concerning complexity have exponentially risen during the last two decades, complexity in itself is not a new phenomenon per se. It has always been present, hiding in the shadows, biting for its time to come. 'Natural' reason for its emergency can partially be placed in gradual complexifying (see e.g. Chia, 2011; Allen et. al., 2011) that most of the time, paradoxically in certain sense, seems to be increasing with new bits of information, decisions, interactions, et cetera. But the reason why it has eluded us until now and still does so in many ways is due to the reasons that are still presented in our current way of thought. Ways that have been a subject, for instance, in Finland of numerous dissertations (e.g. Yliaska, 2014; Kallio, 2015). In other words, creating efficiency based habits of thought, in science and decision making, we have deprived ourselves of complexity (even when efficiency achieved is merely a sensation that does not transform in a same way to an outcome e.g. Yliaska, 2014). Positivist and objectivist ethos reduces complexity everywhere merely as something to be solved – it attaches it on a situation where it is a never ending wait for once we find the right theory, concept, or truth. It cannot have a dialogue with what we perceive to be generalized complexity. I would even be inclined to argue that in many situations complexity could be regarded merely as inefficiency, and I do not mean just in mathematical based complexity thinking. This current line of though is a place where accepting 'different kind/ line' of complexity would mean subverting our "efficiency-based habits of thought" (Chia, 2011: 183). Hence, the way to perceive complexity is something that arises "non-deliberately as a 'negative capability'" (Keats, 1817 cf. Chia, 2011: 183). But seeing it unnatural (as it seems to be seen in consultancy[153][154]) or something which needs to be imposed some boundaries (restricted

[153] For instance, Ron Ashkenas (2014), who is a known complexity consultant, provides us with a list how to reduce complexity in organization in his Forbes blog (http://goo.gl/mPsBqC). If we take his seven step list, look at list and then see what is it about complexity that we need to simplify, we then get a list of its (alleged) problems: it makes us pay attention to low value activities, brings ubiquitousness into situations, induces constant tinkering, makes decision making process longer (the signal timespan from place A to place B is longer), reduces manager's control; it is seen as unnatural and is caused not by human practices but illogical human practices. Hence, there are certain things that truly shine here. Another different kind of example is the new Global Simplicity Index (http://simplicityindex.com/), which gives an estimation how much top 200 Fortune companies lose each year, which was little over one billion (Am.) in 2010, because of complexity in their markets and organization (Chynoweth, 2011).

[154] One should not see that I have prejudices against consulting. Consulting is perhaps better stated to be a certain kind of niche of management. Of course the impact of consultancy into management can be discussed and seen to have had some certain long term effects (see e.g. Stacey, 2010).

complexity) just reaffirms our scars with any bit of what they call relativism (as it is the only option outside) and moreover what reality poses towards us. Here "the reality of our lived experience is denied conceptual legitimacy" (Chia, 2011: 184), in which social phenomena need to be rendered "more comprehensive and hence amenable to productive action" (Chia, 2011: 185). The current way of action leads to "mutilating simplifications" of what we perceive in scientific terms (Morin, 2007, 2008; Chia, 2011: 188–189; see and compare also Foucault's truth and the apparatus of power).

In reality, let it be decision making or researchers, many times the more complex (for Mikulecky it means in a complicated sense in this situation) the situation is, then, the more likely they are to revert back to this "Cartesian reductionism" (Mikulecky, 2011), but in this current set of operation culture can you blame them? After all, the more there are uncertainties and controversies present when an official makes a decision or someone leaves a funding application, then, is he not more likely to revert back to the allure where something certain rests? Something he knows to be perceived as a valid reason; that which he can use to justify it. On the other hand, when we are demanding for efficiency and effectiveness (e.g. Rehn, 2016) are researchers not likely to adhere to (see phrasing) something that is measurable and perceived to be efficient and hence with certainty useful.[155] The need to argue through efficiency is discernible e.g. in Finnish literature; its earliest forms are illustrated already by Merikoski (1944) who saw, in the start, administrative science as a pivotal task of balancing and keeping the relationship between legal protection challenges (oikeusturvavaatimuksen) and the efficiency of governance (hallinnon tehokkuusvaatimus) (Merikoski, 1944: 180 cf. Vartola, 2011: 34). Henceforth, is this task of creating something that is perceived as inefficient in the current context even useful? After all, positivist related comprehension cannot accept (in the same 'category' of what is truth) even the tiniest bit of what they regard as relativism that would give its 'truths' the same heighted/shared place on the podium. How we produce knowledge and how this production of scientific knowledge is linked to the way e.g. we evaluate the process of this production has a lot of unforeseeable implication (Morin, 2007; 2008)

If we elaborate this problem in relation to a problem of context for a variety (I am referring to mental association); why is realizing different contexts for complexity important? For instance, this line of thinking easily leads into one of those treacherous roads; whenever potentially the horizon

[155] A phenomenon that is recognized in various places in organization and management literature, for example, efficiency implementations into universities (e.g. Kallio, 2015) and change in companies (e.g. Brunsson, 2009).

attached to complexity meets any problem we are discussing, then, it is in emergent ways attached or perceived in relation to e.g. inefficiency; where it is seen as something that needs to be optimized towards efficiency, instead of being e.g. a natural or an intrinsic outcome of certain situations, or perhaps even a desired one. By not realizing this context we are doomed to reduce these situations, connected to complexity, as something unnatural and illogical (e.g. Ahskenas) or waiting for the right truth or the right concept to emerge (complicacy – positivism[156]).

4. Interpretative framework of general complexity

In the sections, included in the fourth part of the thesis, I will outline the interpretative framework of general complexity based on the theoretical points illustrated in the previous sections. I will start this outline (in 4.) by explaining key concepts for philosophical hermeneutics and comparing them to the key principles in Morin's general complexity. Philosophical hermeneutics will explain and relate on understandings ontological side, on the other hand, Morin's contemplation was mainly concerning epistemology. Due their high interrelatedness, which was shown earlier in the context of complexity, in their discussion separation has not been artificially imposed.

Hermeneutic circle can be understood in two different ways. As an ontological or methodological task; the latter (methodological)[157] is based on the work of Schleiermacher and the former on Gadamer (Schwandt, 2007: 133). The main difference can be drawn to few differing conclusions. In Gadamer's version of the hermeneutic circle the interpreter can never get outside of the circle, in other words, in order to achieve "the true meaning of the text".[158] For Gadamer the circle of interpretation is not a methodological principle but a fundamental quality of "all knowledge and understanding" (Schwandt, 2007: 134). In philosophical hermeneutics, as well as in critical hermeneutics, there is no distinction maintained between interpretation and understanding (Prasad, 2002: 16). In practice this means that there is no truth achievable outside of the 'text'[159] – there is no perfect harmony somewhere – our language constructs what we call truth, but this does not mean

[156] Here our inability to understand complexity leads into an account where we commonly seem to deal with it in the context of (reduce it to) complicacy. Rather than just seeing this merely as some kind of inaptitude to see different kinds of complexities, which it also is, we furthermore need to understand what drives us towards this bare understanding. What I am inclined to state is that much of our problems with complexity are now not merely concerned with our ability to grasp it or solve it due to the multifacetedness build into it but different pre build in conceptualizations.

[157] Compare further to Dilthey and objectivism (see 1.1 and 1.4.).

[158] The task of hermeneutics is not a problem of method at all but a question how to understand; how this understanding happens (Scott-Villiers, 2014: 404).

[159] Text signified in this hermeneutic context means all modes of understanding (see 1.3.).

that the 'logical' conclusion following it is therefore merely relativism or, on the other hand, leading into a conclusion were saying or doing anything becomes an impossibility; understanding should be understood to be the nature of it as a process in an event.[160] As Schwandt (2007: 227) formulates it, understanding is rather a process or an event in which we participate in, where language is our means of doing it, not in an instrumental sense but as a meaning. Is this not the logical[161] conclusion one would reach when he is thinking about this? For instance, consider different ministries or universities; no one would claim them to be exactly the same, no matter even if the two universities were established the same day, had exactly the same amount of resources, students, subjects of the studies, teaching schedules were identical, et cetera – best they could hope for was maintaining an appearance of sameness for some time.[162] Yet it is the way they are treated in many situations, where their history is not seen as that relevant – rather it is inclined to be seen as a necessary amount of fluctuation or variations that nonetheless, at least to an extent, needs to be contained.[163][164][165]

What hermeneutic circle looks like as a method can be seen in the figure one. Like complexity it accentuates a realization where understanding (interpretation) is an interplay between the whole and the parts – in order to understand meaning of the parts we need to understand the whole and vice versa. For those promoting the methodological side of hermeneutics it only means a process that is temporal, where its completion means achieving the harmony; escaping the circle and achieving the 'true' meaning of the 'text' (Schwandt, 2007: 133–134).

[160] Compare, for instance, to Habermas' conception of truth (see e.g. Bohman & Rehg, 2014: 3.3.).

[161] Note that hermeneutics specifically is not merely a logical process (see e.g. Prasad, 2002: 18), but I use the word to mean some sort of sensible conclusion as others have as well (see e.g. Prasad, 2002).

[162] 'Historical' problems included in this understanding are discussed/ adjusted, for instance, through the inclusion of organization culture and organization culture related theories (see e.g. Hofsted, 1991; Schein, 2010); furthermore, for many complexity related theories understanding local conditions is vital, as well as accentuating the need to include local understanding in a new way while implementing e.g. change (see e.g. Stacey, 2010).

[163] In the most drastic contemplations, it can be seen as their own fault for developing in a 'wrong way' (what is the right way?) even though they have had exactly the same directives, which has led them into to a situation where they need to be guided into a right direction (see e.g. Stacey, 2010, critical perspectives on managers' ability to guide the system towards the wanted place, as well as downplaying the impacts of local circumstances).

[164] For instance, as a comparison – not saying or claiming this to be positive or negative – in Finland, the tendency is currently in streamlining government structures (not referring to monetary streamlining); this can be seen in The Ministry of Finance's objectives in their administrative structures explanations for the future (not available in English). Administrative structures are decreased (from three stair model to two stair model), joint strategies and objective agreements are formed, and their aims are clarified to concentrate solely on steering and instead leaving the execution to their 'sector and local agencies' (compare further e.g. The Ministry of Finance: administrative structures; VIRSU and KEHU -reports).

[165] Furthermore, it correlates to the seemingly never-ending question of how to regard locality (compare e.g. Stacey's 2010 conclusions).

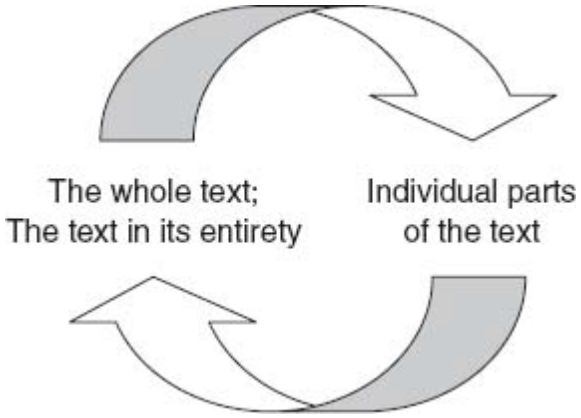

Figure 1. The hermeneutic circle as a method of interpretation (Schwandt, 2007: 133)

As you can remember, Morin (2008) divided his understanding on complexity into three different principles: dialogic, organizational recursion, and the holographic principle (see in 2.2.1. explanations). Comparing this understanding to the methodological hermeneutics, then, we can notice that the methodological understanding elicits certain sides of these principles, for instance, the dialogic principle – where duality of two often antagonistic principles is kept as a constant interplay and a dialogue. In addition, it brings understanding evident in the organizational recursion where the product and the producer are in a way contributing to the self-constitutive, self-organizing, and self-producing cycle. It also contains some elements of the holographic principle, where the part is in the whole and the whole is in the part. But for Morin (2008: 38–57) these principles do not guide us to the harmony, it would not let us to escape the temporal, even if it produces knowledge about the temporal circumstances; it leads into a gradual betterment of understanding knowledge[166] that is furthermore based on the reasoning how we perceive knowledge production possible due to our traditional setting.

The ontological understanding of the hermeneutic circle illustrates this understanding depicted in the previous paragraph. As the task of interpretation does not originate from something objective, hence, it is always someway based on a previous interpretation; being a fundamental feature of all knowledge and understanding. It means that we cannot achieve the previously mentioned Cartesian plane, as there are no independent e.g. 'super' meanings[167] waiting to be discovered – we cannot

[166] Although it can be the outcome as well, it is not meant in quantifiable way. As Morin (2008:51–52) explains, he cannot give this new paradigm of complexity out of his pocket, as it does not have this kind of one universal rule that should be followed – it comes as a product of an entire cultural history and civilizational development – the way we perceive knowledge to be produced; new visions, concepts, discoveries and reflections that will make it possible.
[167] Referring to e.g. in social settings.

escape the circle when interpreting nor can we transcend the background (beliefs, practices, historical traditions, et cetera) (Schwandt, 2007: 134; see also Prasad, 2002: 17–18.) In other words, language is seen as the meta-institution in which all social institutions are reliant on (Prasad, 2002: 22; see also earlier remarks on Gadamer and language in 3. end of first paragraph). As figure two illustrates, according to this understanding we are historical beings (ontological character). The preceding operation of tradition "(a) as a fore-structure of understanding both conditions and suggests the foreconceptions ('prior knowledge,' if you will) (b) that the inquirer brings to interpret the object (a text or another human being). The feedback from the reading of the text (or from another human being's response in a conversation) motivates a new projection of meaning (interpretation). The relations (b) and (c) represent the hermeneutic circle. The relationship signified by (d) indicates that in the process of interpreting, the inquirer's relation to a particular tradition can change; foreconceptions (prior understandings) can be challenged and modified, and so on." (Schwandt, 2007: 134.) I will further explain and elaborate on these different elements and understandings next.

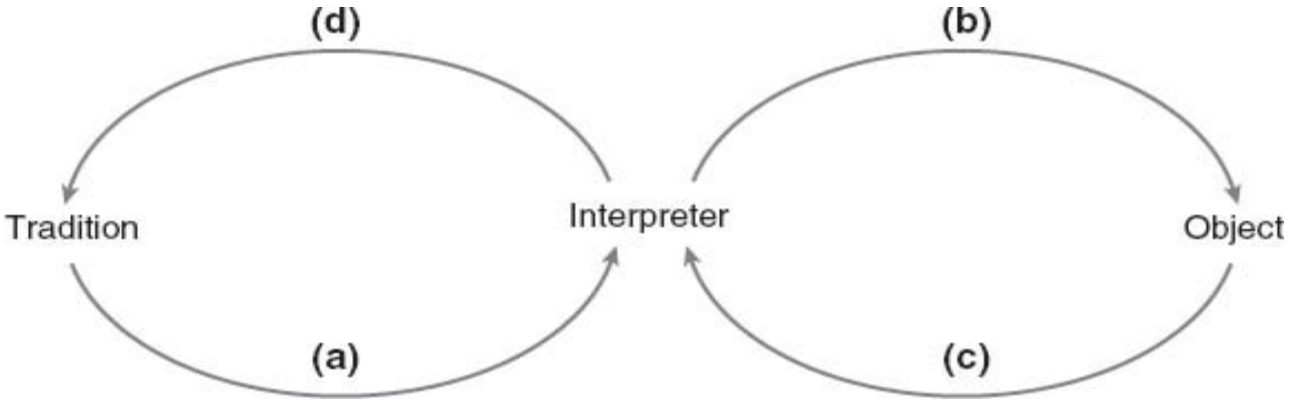

Figure 2. What is included in the hermeneutic circle in philosophical hermeneutics (original outline of the circle from Gallagher, 1992: 106 adapted version cf. Schwandt, 2007: 134).

In this understanding *historical tradition* plays a crucial role as it starts an answer for Gadamer's three questions of understanding: "How is 'understanding' possible? What kinds of knowledge can understanding produce? What is the status of this knowledge?" (Blaikie, 2004c: 456.)[168] In a vague sense, the role of history can be seen functioning as a context for the text; yet this would ignore differences in the historical contexts or cultural milieus – the prior understanding that the interpreter

[168] Hermeneutic inquiry requires that the organizational researcher develops a thorough familiarity with the historical aspects of the phenomenon of interest (Prasad, 2002: 24).

will bear in his/ her expectations and a priori understanding of the historico-cultural tradition in the approach (the whole) towards the text (the part) being interpreted (Prasad, 2002: 19). Gadamer calls this preunderstanding of the whole as a "prejudice" (Gadamer, 2006: 271; see also Prasad, 2002: 18). *Prejudices* are divided into legitimate/ productive prejudices and to those that "hinder and lead to misunderstandings" (Gadamer, 2006: 278, 295, 298; see also Prasad, 2002: 18–19).[169] As Prasad (2002: 19) notes, the natural follow up question becomes, how can we distinguish between these different prejudices – the question translates into a significance of *temporal distance*, where the interpreter is separated from the text. It comes back to the *meta-point of views* of different problems, society, et cetera, as discussed earlier (Morin, 2008: 50–52), that we can use to 'distance' ourselves. This temporal distance cannot be exceeded like "a gulf to be bridged", as proposed by the methodological side (Gadamer: 2006: 297–298; compare CAS in 2.2.1.).[170] The way we can achieve this distancing is with a 'text' that challenges our historical meanings; it is what brings a "*provocation*" to the mix and enables us to see our prejudices – the prejudices we know as our 'truths' (Gadamer: 2006: 298). It does not mean that we can always challenge every prejudice that the interpreter has,[171] rather it offers a possibility in the way it can be done; in other words, the point is not getting beyond them, as pointed out in the distancing example.

As was exemplified, since the interpreter cannot escape the circle, then, it is a constant interplay; the understanding advocated by Gadamer (2006: 286–291) is dialogical in nature, but not a one between the subject and the object (i.e. gradual enrichment of one's mind); it is a dialogical interplay between the text's tradition. This conversation is what produces, in other words, where text's meaning emerges from; it is an interplay between the text and the interpreter where both ask questions from each other, aiming to ask the questions in which those texts constitute an answer to (Prasad, 2002: 19; see figure 2.). Hence through this provocation and interplay we can see beyond those unproductive prejudices that otherwise can lead us questioning the text already in the start. What we can achieve by this 'process' is a "*fusion of horizon"* – it requires a "historically effected consciousness" (effect of others) that recognizes the traces it has (Gadamer, 2006: 336–341). One needs recognition of one's own horizon, understanding interpretation as a dialogue, and openness

[169] Prejudices should not be understood in a same straight correlative way as, for example, racism; furthermore, compare e.g. Foucault's genealogy of racism to Gadamer's prejudices.

[170] Distance should not be read as to remove, or to get 'outside', et cetera. For instance, as was in the 'objective' understanding of historicism; as in putting ourselves in their shoes. Compare to CAS in 2.2.1.

[171] Hence, we can never fully put ourselves in someone else's time and account for every meaningful fact for that particular interpretation. For Gadamer when we are looking at a text, we are not seeking for a truth but participating in its tradition (Prasad, 2002: 19).

for tradition (Prasad, 2002: 20).[172] As for Morin (2008: 51–52) complexity was about distinction, conjunction and implication; for Gadamer it is firstly realizing these effects of others, their distinctions that come, as a horizon, into a conjunction with our own horizon, which starts the conversation. These horizons form a state where the past or the present are never fixed, but form a constant space of conversation that is never ready nor is it closed by some boundaries. (see e.g. How, 2011: 49–51.) This follows the inevitable part played by the application[173] (implication for Morin), which is the difference (i.e. not representing either of them) between the two sides of radical contextualism or trying to get over it, which the latter is what Gadamer calls as a positivist illusion (How, 2011: 55–57).[174] The last part – Morin's implication and Gadamer's application – play a crucial role when examining our understanding originating from positivism. In other words, our way of applying hinders other than positivist way of understanding application; as its appearance needs to portray what we perceive to be 'truth' (science, paradigm, practice, usefulness, et cetera).

What was pointed out does not translate into something where we can perceive the history (part of tradition) as a cannon into our understanding.[175] Where they have some kind of intrinsic betterness attached to them per se, leading us into merely seeing how well we can apply them, or how well that particular historical understanding suits our current time.[176] Other than offering these meta-points of views, historical understandings, or a 'text', it moreover offers the subject matter as "*properly portrayed*" (Gadamer, 2006: 285). Even though it would be tempting to see this as the starting point we have so profoundly hoped for, it merely offers us the starting piece of that particular holograph, which does not translate into truthness in itself. There is in itself no thing

[172] In a limited way, as a mental image, these horizons can be seen as nebulas, in an old astronomical sense of a diffuse object, where there are no fixed boundaries, where they overlap, and eventually transformations happen. Limited because of great mass, bifurcation points, et cetera. Rather it is a good metaphorical illustration in one sense – as we are often stuck dealing with thinking in systems in complexity thinking, this illustration exemplifies the boundary problem inherent to it. As Morin (2008: 48) proclaims, nothing important should be defined by their boundaries but by their cores.

[173] Application does not merely mean an instrument but it is its original meaning of understanding – presumptions, so that it can be applied in the first place; How (2011: 56–57) exemplifies this by saying that before we can understand jokes, most of the time we need to know the cultural setting. In addition, what is seen as applicable is one of the conceptions that positivism has influenced. It can be contemplated, for instance, by asking a question that cannot be answered due to its contextual variation: to a what extend does information offered to a decision maker have to be certain to be somehow useful i.e. applicable?

[174] Concerning the positivist illusion, we cannot understand beforehand the meaning that some text might have for us, nor can we know the potential future implication of our texts, henceforth, meaning that it is an illusion that we can somehow know the fixed meanings it might pose (compare e.g. Habermas's understanding of truth).

[175] See the debate about classics as a cannon problem, e.g. How, 2011 (how classics influence us and how we position ourselves towards them; what kind of implications these have/ it has).

[176] Compare, for example, 1.3., how Deleuze regards concepts, and Ricoeur's intentional fallacy problem.

called uncertain, complexity, or efficiency (the super-meaning) in the world. Properly only means properly portrayed in relations to the concept we are contemplating per se.

But what was before articulated does not mean as seeing it nothing else than gradual reinterpretations that we cannot escape; where the historian's dead hand or the texts cannon cannot be avoided (see e.g. How, 2011; see also 1.3.). As *interpreter's task is creative* we cannot regard it merely as an adaptation, we cannot know all the 'elements' in one's tradition, what he/ she knows and the way he/ she connects the dots in between (prejudices). Hence, it creates an unforeseeable mixture that is connected to other, and others, unforeseeable mixtures; making accounting for uncertainty of the forthcoming difficult – to say the least. Moreover, the interpretation as well leaves the interpreter as soon as it is said (as theory potentially escapes the purposes of its inventor from the moment it is invented). This constant escape of meaning makes it impossible to, or for, a method per se (at least in a strict sense), as it correlates to the fact that there are no fixed meanings.[177] We cannot trace meaning to some ultimate starts, betternesses, et cetera; it is a constant emergent conversation, hence, its potential meanings are unforeseeable (see e.g. Prasad, 2002: 21). This denial of fixed meanings makes it practically impossible for any kind of objectivists centered approaches to accept.

What would this interpretative framework signify for a decision maker? What the interpreter is doing while interpreting is entering into a conversation referred to as a dialogue between the 'text' and the interpreter. For Gadamer (2006: 363) "the meaning of a sentence is relative to the question to which it replies". Henceforth, the goal of an interpretation is to find those questions the 'text' constitute an answer to (Prasad, 2002: 19). In other words, the goal is to see interpreter's prejudices in order for us to surpass them temporally (remember what was earlier said about distance); and achieve a new, better understanding. This does not mean that the current understanding has to be a wrong, twisted, or somehow an 'evil one'; as disappointing as that was and what I will say is, it is a need for constant pondering that is always partial and malleable. As Gadamer (2006: 363–364) notes, all this comes back to the logic of question and answer; where these questions can be and are derived from; if one does not recognize something as part of it, then, its contemplations or critique are mere shadow boxing.[178] It quickly succumbs to the old question whether we are doing science, craft, or art; and in what settings is which of these really e.g. the useful one. Yet this setting I

[177] Compare e.g. how certain ways of thinking reaffirms western ways of understanding (see e.g. Saad's critique towards Foucault's).
[178] What is useful or brings betterness in their particular setting.

portrayed already bypasses the incorrect presumption, why does it have to be one of these; even more pressingly in the current understanding, why is it foremost one of them that others are often times supplement? In other words, now that we have every nook and cranny covered, then, those that cannot be first and foremost understood with what we perceive as most useful, let it be science 'or whatever', can then be hopefully further understood, if there is a need, with 'others' (compare e.g. CAS).

Toward what this understanding correlates to is a way for our 'future creation'. You have to compare Morin's (2007; 2008) conception of system and understanding of borders that limit the way we can create understanding, in other words, not through borders but by the core. What kind of way Gadamer's hermeneutic understanding guides us, if we think about in some form of simpler analogical terms, is a position of an ever eager student who is intrigued. Rather than forcing his/ her own understanding/ horizon everywhere, he/ she constantly keeps pondering why (extending own horizon as a dialog) towards this understanding of other (conversation with the tradition). As standing points (prejudice) for everyone differ, it is a task that is never completed; e.g. what Ministry of the Interior's tasks are concerning the feeling of security change, as does one's own perception of what is causing it at that time of the glance. We can try to exemplify this in relation to CAS. It is important to note that there are ways we can pose this contemplation that quickly 'mistakes' the task; for instance, by reading this question in a form of why not. In this case it could refer to the use of power and control that make further possibilities ever more unforeseeable. This relates to the way we use control while extending our horizon, because it is exactly only asking the question of why not and perceiving ways we can force our horizon towards others (CAS: who gets to decide how we adapt). It, furthermore, transforms the task to focus on the ways we can perceive future (compare future in CAS).

At the end, can seeing this position of the interpreter make us further understand the reason how, or why, it can be regarded in a way of mutilating the subject, truth, reality, et cetera [I do not refer to the limited understanding tried to be understood by the 'effect analysis' (vaikuttavuusanalyysi) done e.g. in the ministries]? To what extend is this problem of mutilation already covered, in case of the subject, by referring to the local (or rather in a way reduced to[179]). As interpretation is always

[179] Why did I say that local is already a reduction? For example, often time's larger framework decisions already have local components inside them, but these components favor certain kinds of locality (when it is pondered how locality can be taken into account), which depends on the decisions (i.e. locality, local 'application', by someone else's terms). Hence, the usage of the word local should rather be contextual, which in fairness is what it is often tried to be

affected by the interpreters' own history (tradition) as well as the history of the object(s) that he/ she/ they can acquire, embrace, or include. In other words, it would be fair to say, then, that those making decisions are always struggling in their conversation towards the tradition posed by the local. No matter if it is concepts, measurements, or decisions – more 'strings' seems to be making it even more apparent. This can be taken exactly as a struggle towards the outside; hopefully by this point these different exemplifications have made it clear and one can realize that it should be read as a constant struggle towards understanding. Henceforth, it offers us possibilities where we can look beyond what is said and what is being taken for granted while saying it.[180]

4.1. Interpreting public policy

In line with a more practical contemplation, this part will consider the two different approaches (general complexity and CAS) in a short public policy context example. It will consider suitability, possible impacts, and ways it would portray it. It as well aims to explicate why it is important to consider these philosophical background assumptions. I will go through how complexity thinking is evident in these examples. For this section I have chosen three future review reports and a future operational environment report;[181] these reports concentrate on the pivotal questions concerning development, possible problems, and different solutions in the Ministry of the Interior's domain (Ministry of the Interior, 2006, 2010a, 2010b, 2014).[182][183][184] Firstly, I will exemplify problems portrayed in these future reports that seem to be suitable for the problems pointed out when contemplating complexity.[185] I will compare this towards what are the junctures and how these different understanding of CAS might seem suitable and appealing towards these problems and solutions. Secondly, I will contemplate on the differing understandings it creates compared to the interpretative framework explained earlier (4.), and what kind of different approaches they portray.

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illustrated, but the local global dichotomy rather more often produces presumptions that can only be discussed with the notion of bias or favoring.

[180] Compere e.g. with the aims of problematization that where gone through in 1.3.

[181] This fourth report is done by interviewing ministry's high level officials and is compiled by a researcher. Hence, it seems to rather well indicate on the way the operational environment is seen and approached 'inside the house'. Of course it is impossible to know how much of this canvas is painted by the writer (the researcher).

[182] Future review reports are available for every ministry (starting 2006); they are published in a four year intervals. In addition, and as was pointed out, Ministry of the Interior has one extra report. Ministry of the Interior was selected based on my analysis on 2.2.1 as CAS is/ seems suitable (and in reality seems to appeal) to security centered organizations and scientific researchers. Furthermore, I used the sense of security as an example in the start, hence, it will provide a good correlation for it as well.

[183] An analysis for these future reviews is done using theory-based content analyses. For an explanation of the theory-based content analysis, refer to the earlier explanation that you can locate in 2.2.1.

[184] All the citation translations in this section (4.1.) from the Ministry reports are my own translations.

[185] These examples are only few chosen ones; my aim is not to analyze them altogether or to be somehow comprehensive, rather it is to shortly exemplify and contemplate these few chosen and connected problems.

In addition, I will contemplate some related differences concerning the other two central concepts – uncertainty and efficiency.

If we merely start by reading chapters number one (all named operational environment) for the three future reports (2006, 2010b, 2014), then, as its central problems the ministry defines different issues that can be roughly divided into contingencies (unpredictabilities) and uncertainties. First ones can be looked to effect specific and usually in a rather well understood ways; they have a certain fairly straight like correlation to an effect (i.e. they understand well the source problem and its effects). These are almost always accompanied with a mellowing factor that would counterbalance its effects – i.e. increased 'attention', meaning e.g. resources slash money. For instance, urbanization, individualism, unemployment, alcohol, ICT development, increasing public expectations in quality, budget deficiencies, and aging population will mean decreasing security and decreasing sense of security as well (e.g. compare 2006 and 2014); these create uncertainties for the future operational environment.[186] On the other hand, there is a wide array of larger scale factors (local, national, EU, or global level); in these the higher the level is – i.e. where the problem is situated or stemming from – then the more their effects are arduous to know (especially since we can affect them in a very limited way). For instance, cyber security, EU- and Russia-cooperation, international criminality, immigration and security environment. terrorism, and globalization in general (e.g. 2010b, 2014); – these create contingencies for the operational environment (nonlinear, emergent behavior).[187] Their meaning is that they most often force us to be reactive, when on those uncertainty problems we can compensate and effect, what is seen in an efficient way, beforehand (see 2006; 2010b, 2014). What makes working with these uncertainties and contingencies problematic is, as it is pointed out in the reports, the unpredictable mix between them that creates further uncertainties and contingencies – "the totality is complex" (2010a: 3) and the more complex it gets, then, the further we find ourselves in a situation where we are more contained to predicting or trying to sniff out the potential future problems. These are the situations we try to avoid getting into (i.e. we try to find ways to affect). Adaption seems to offer us means we can use to get away from this vicious cycle. In addition, in small portions of the report there are explanations for few

[186] Of course these can, and do, potentially create unpredictable outcomes, but usually they are referred to in a way that there is already considerable amount of research that tells us beforehand their correlation in a rather linear way (if/ when – then); for instance, when the general population gets older, then, the general sense of security decreases; when urbanization increases, then, the general sense of security decreases; when ICT dependency increases, then, the general potential variety of problems increases; and so on. (see 2006; 2010b; 2014.)

[187] Mostly they are referred to in a way, which means that they are in many courses out of our hands, and whether/ how much they are increasing or decreasing is many times almost impossible to know (other than trying to 'sniff out' the upcoming trend).

potential different ways that the ministry can interact and henceforth effect outside. For instance, ICT, trust, new interaction channels, national, EU and global level cooperation (2006, 2010b, 2014) – these create possibilities.[188]

In this paragraph I will stop for a while and contemplate adaption; a central concept for any CAS related understanding. In other words, how does adaption offer us means to get away from this vicious cycle that was mentioned in the last paragraph. Instead of being the poor farmer who has to cultivate the land once again after the flood has destroyed the plantation, adaptation is the 'comprehension' that the farmer achieves when he/ she reaches an understand where they build dams to control the flow of the water. In other words, adaptation is the answer to the problem – any problem – that gets us beyond of being forced to live with the problem or sniff out the problem (i.e. merely trying to save what crop we can after the flood already starts). Yet understanding adaptation in this simple linear way is only the first part of the 'solution' that adaptation offers for us – suitable for problems of the first kind mentioned in the last paragraph. The 'true' offering of the adaption comes from the second part. When we are solving problems of the second kind or the complex ones, then, adaption becomes a tool of domination (see e.g. 2010a; 2.2.; 2.2.1.; 2.3.; Finnish Government, 2012). It offers us an understanding where adaptation is a game of who gets to decide on what grounds adaptation occurs – who has to play the part that has to be 'sniffing out' something. Adaptation[189] becomes the central focus of energy in internal action (see Finnish Government, 2012), external action (e.g. 2010a), in its purpose (Gell-Mann, 1994; Holland & Miller, 1991), and in its meaning (Luhmann, 1990). By ignoring the potential positive sides of these understandings that I am about to list, it becomes a compulsion of context; perhaps even a transformation of context towards some form of a rationalist cause and an object. The reason for saying this is that adaptation becomes an all-encompassing solution, while remaining unclear (it is like a chameleon towards anything) practically in everything else, other than those central understandings. It is nothing else than ceaseless endeavor for a new set of definition(s), which becomes the central part of its fascination; finding the attractor, the interface, the meaning, et cetera – it provides the answer, the end-goal, the need for it, that we have inherited from scientism. For this reason in its most plain and distinct comprehensibility remains, and it creates more of its own incomprehensibility. In the next paragraph I will get back to the future operational environment reports.

[188] These are given only a small attention compared to the other two.
[189] Do not confuse adaptation to adaptability.

The future operational environment report (2010a: 3–4) differs in style from the other three; it tries to be treating more of the ways through which the ministry can respond to these problems in practice and in the end through e.g. strategy;[190] i.e. why, how, and where it can and should be proactive in an uncertainly and unpredictably changing environment. What is the best way to adapt in a way that will enable us to see those mechanisms that instigate it, so that we can influence those 'forces';[191] There are diverging ways how to respond to it and on what the response is based on. In governance most amplified way of getting practical knowledge "is exactly through targeted and simplified working environment analyses" (2010a: 8). As the environment is risk based, then, the reactions to the working environment are often reactive due to different constraints; yet the aim is to be proactive and to find places where we can be; as problems that are examined are those that are perceived as "certain or anticipated" ones (2010a: 9–10) – as we can predict almost all of its fuel and coarse ways it progresses (2010a: 7).

If one compares this listing, then, by first comparison, compared to what CAS claims to be offering (see 2.2.1.) to those problems that the Ministry of the Interior is facing, it comes across as a gold mine – correlations are evident e.g. in phrasing. Secondly, especially the understanding accentuated in the operational environment report (2010a) has a lot of the characteristics related to CASs embedded into it.[192] Hence, we can, at least in some way, affirm that CAS is evident or has influenced public policy (in Finland), even though this is not per se related to the aim of this thesis. One cannot deny that these contemplations do seem to suit 'ably' security related fields of study or that there are these kinds of problems that security related fields actually do face – nor is it the point. What we need to examine is the possible blind spots that are carried in this understanding. After all, there is only some minor critique on CAS per se. Hence, what is the effect of this kind of uncertainty or complexity reduction? What is the problematic outcome of addressing the nature of the problem this way? How do we position towards other organizations, information, et cetera; and how does it make us position ourselves towards them? How would/ does CAS manage in some other fields of study such as health care (e.g. wicked problems)?

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[190] Compare e.g. Kakkuri-Knuuttila and Heinlahti (2006: 172–174) what positivism means in a strategy setting.

[191] Ability to be reactive is needed, but the aim has to always be proactive (2010a: 7).

[192] It, furthermore, has a little twist of Kauffman's natural science understanding that was not gone through in this thesis. Also see the starting footnote of this chapter where this report is explained considering the impact of the understanding that the research writer might have.

So what are the possibilities we can perceive, 'achieved' as an understanding, through this interpretative framework? It forces us to look at it in another way, other than as a competition, domination, or war (in metaphorical sense); it forces us to recognize, and hence might prevent, some of the different mutilations and mutations that security institutions produce (compare e.g. Foucault's apparatus of power). Moreover, it makes us confront different prejudices instead of trying to just overcome them. As insightful as the scientific revolution was by bringing new ways of understanding towards e.g. problems, none would claim those approaches to be the only valid ones. In addition, as the time has passed more problems have sprung up; and moreover, we have noticed more issues that were precisely caused because of the mutilations created by these approaches. Notably this is the case in 'social science related fields of problems'.[193] Currently many ways of complexity science are done using a limited (scientific approach stemming from the one side in relation to the philosophy of science) and even one sided (approach) knowledge. After all, in case of complexity thinking it is only one possibility of the ways we can approach it, in relation to what we perceive as complexity to be and mean. Henceforth the question is: what are the possible problems we cannot yet see, which will in the future manifest because of this? The more pertinent this becomes the more one can put it in a context, in other words, comparing it to the problems /mutilations that rose, for instance, in relation to efficiency and complexity that we have examined in this this thesis. In addition, we need to ask how these possible problems / mutilations, in understandings, are related to these concepts we can then examine. It can help us contemplate it in relation to uncertainty, i.e. what unknowability poses for us (reduction, overcoming, struggle, et cetera); in relation to efficiency, i.e. the ways of perceiving it when we are solving what it poses. In the end, one might quickly try to diminish this talk by referring back to the old problem: is it a science, a craft, or an art. But then one would once again ignore what was just said before and furthermore ignore some of the elements proven and understood to be pivotal. In a case related to security, we can examine sense of security as intractable problem towards CAS. In other words, such as in the previous understandings (e.g. CAS, see 2.2.1.), I am not claiming that we cannot somehow still embrace its essentiality (sense of security), but in reality can we regard it as anything else than as an accumulation stemming from elsewhere – not by itself as a concept? Even though these are precisely the kinds of problems that complexity has promised to be bringing some form of 'relief', then, what is this relief exactly in the end in case of CAS?

[193] Hence, what are the limitations still? After all, we are talking about problems that are related to a social 'setting' being solved through an understanding based on objectivist and positivist ethos – ignoring some sides of these problems and only referring to the same clashes of explanations and understandings in the philosophy of science.

4.2. Meaning we attach to general complexity by addressing it as a character of efficiency

It's economy stupid! (Bill Clinton's Presidency campaign in 1992)

When we are talking about an interpretation, then, it necessarily starts with some form of contemplation; a contemplation that leads into a journey that is one of many. Henceforth, it is time to start asking: what is the journey we have traveled as the end is starting to loom ahead.

As we have established, both general complexity that Edgar Morin (e.g. 2007, 2008) proposes as well as Gadamer's (2006) philosophical hermeneutics (Prasad, 2002) do not translate into anything that can regarded as a method per se – and they cannot be made as one in a common sense of the meaning (see Prasad, 2002[194]). For this reason, if we examine it in relation to a method, they are not meant to be understood as a list that has e.g. different subjugations, which one can check and use to progress step by step to achieve an outcome. The optional way it shows, rather, is the ways of understanding different limits (or rather outcomes of these limits) of the way one applies it – the impacts it has outwards. In other words, if we consider it's ontological and epistemological relation, it offers ways for one to examine limitations inherent in the way he/ she thinks and, on the other hand, the way he/ she constructs reality (interprets) – as one can remember, in this line of thinking there is no difference between understanding and interpreting.[195]

By referring to this line of thinking, we are approaching the question, the question that is posed by the researcher in a different way. Instead of trying to impose regularities on what we are researching (or perhaps they would use an argument to find those that naturally occur in them), we can perceive e.g. the way our actions constructions effects on others understandings, and not how it affects others only. Instead what this alternative interpretative framework offers us, first of all, are ways to examine the consequences of the different stances we take in the philosophy of science. For example, how we perceive efficiency intrinsically or how we position ourselves towards uncertainty or what are our premises when we approach complexity. In the case of efficiency this influences e.g. what we perceive to be an answer and how it can be solved (see 3., 3.1., 3.2.); in the case of uncertainty this stance has affected e.g. the way we (can) approach it and in our measures that we take towards it (see 2.2., 2.3.); in the case of complexity this has created e.g. ignorance and

[194] "The major concern of [philosophical] hermeneutics is not with creating prescriptive theories for regulating interpretive practice" (Prasad, 2002: 15).

[195] It offers a clear difference towards those posing objectivity, but once again reading this through its mere dichotomy, i.e. relativism, forgets the point illustrated earlier and is debating in either-or fashion.

reduction (see 2., 2.1., 2.2., 2.4.). Instead of just referring to the source of their truth as the only truth, it shows its limitations. It does not deny it nor does it deny its accomplishments per se.

As we saw when examining complexity, uncertainty, and efficiency their stances (problems I listed above and in the chapters) in the philosophy of science were stemming from the positivist and objectivist perspectives. This 'bond' has affected on the way the conceptualization of these concepts was and is developed. For instance, the reduction of uncertainty stemming from engineering; efficiency foremost as a ratio stemming from engineering and economics; and in relation to complexity where the way of understanding is seen to be achieved by overcoming it, which stems from e.g. mathematics and natural sciences. One of the secondary understandings provided by these illustrations are the new terms, concepts, or ideas – as sublime as they might seem – often times inherit these intrinsic conceptualizations. Awareness of these background attachment is important, not just for realizing potential 'downfalls' or limitations, but possibility wise in our quest for more novel research. For example, new angles, focal point, or meta-point of views create potentialities that can emerge as e.g. seeing new contexts, junctures, or possibilities. In the way of seeing it as a full circle it can then, furthermore, show us potential problems we might have not otherwise known or realized. The basic aim of this understanding is not to overthrow something but enable an interpretative understanding to emerge. From an end product perspective, it makes us perceive how understanding is possible in these contexts, what kind of knowledge we can produce of them, and what kind of conclusions we could draw from it.

If we now start contemplating what this interpretative framework means towards those understandings we depicted in the last chapter (4.). Considering from an administrative perspective, *historical tradition* forces us into a realization where there are no things that we can consider to be value free, to have a built in betterness in them (if we just find a way to apply it into our contexts and the right context), or that there are only certain 'logical' conclusions one can draw from different concepts, theories, et cetera; being the case also towards the understanding one can draw connected to the three concepts discussed in this thesis. After all, different traditions, that everyone brings with them to the interpretation, means, then, that we cannot know their meaning for the interpreter beforehand (see 4. e.g. fixed meanings). We cannot assume some universal value or meaning. It forces us to consider the different ways we relate towards the problem contemplated in the last paragraph (in relation to the three concepts). It forces us to ask why we think something has certain kind of value, instead of pondering e.g. ways how to get to the direction already set out to us (compare e.g. Rehn, 2016).

Once again considering from an administrative perspective, *prejudices* enables us to consider these perspectives. Furthermore, if we accept the idea of prejudices that is connected to our historical tradition, then, it forces us to actively find and look at them in each situation, so that we can realize possible mutilations, and on the other hand, make more novel research, decision, et cetera. As shown, a way of doing this is through *temporal distance* that enables us to produce *meta-point of views* – as we saw in this case it was done by showing the concept as *properly portrayed*[196]or *provocation* that enabled e.g. contemplation what is taken for granted. In this thesis this was shown by examining the three concepts that enabled us to perceive different meanings attached to these meta-points of views in case of each concept. Hence, it made it possible for us to see different possibilities, potentials – to question our prejudice, and furthermore to show different places where these prejudices can be 'hindering' or 'productive' depending on the case.

As was pointed out, since the interpretation is a never ending task and the *interpreter's task is a creative one*, hence, this understanding enables future potentialities. As I was trying to point out, any form of relativism should not be perceived as some naïve proclamation or a task where we just abandon it all and replace it with new. But as the task is creative, it means that by combining these different elements in the last two paragraphs,[197] then, means that we are being able to get past this loop we are situated in; a loop where the prophecy won't just appear. Hence, it produces hope for us. We can gradually start finding different complementary ways to perceive these different e.g. concepts, problems related to them, their solutions, or different stances taken in the philosophy of science – instead of seeing it as a bridging contest. These are the kinds of understandings that we can achieve when interpreting by using the *hermeneutic circle* as hermeneutic circle in itself does not determine someone's context beforehand or take it as something readily decided by its becoming.

Even though the aim, in what the aims are for a dialogue, it is not to create or reach some solutions, at least not as a premise, but to foremost 'bring into the table' different point of views,[198] I will try

[196] As said, properly portrayed does not mean something that is better, or that holds truthness, et cetera (see earlier explanation in 4.).

[197] As a short summary it appears as this: by combining these different elements in the last two paragraphs, then, we can notice our historical traditions, overcome (remember the meaning of this) our prejudices by the temporal distance provided through meta-point of views that can be seen e.g. in properly portrayed concepts that shows alternative meanings.

[198] As it is not for certain kinds of narratives either; from the 'process' everyone can reach different conclusions instead of guiding someone else's thought; nonetheless, many of the conclusion are there to be found in the analyses

to some way reach conclusions in the last two paragraphs of this section due to the nature of expectations presented towards theses. I have insisted that the way we perceive understanding to be created effects the way we can even see problems; affecting the way we can resolve them. By examining this in relation to the CAS, it correlates towards what adaptation each time brings into the table, then, affects what the solution is.[199] Theoretical perspectives help us to understand where this understanding originates from and what it is based upon; on the other hand, different points of views help us realize the affects that they have had or would have. In other words, these correlate e.g. how we can realize the way understanding is transforming into our present situation. Furthermore, they make it possible for us to transform and realize the weaknesses of each theory. For instance, in the case of CAS, it helps us to realize that even though the theory builds the realization as a meta-character (see 2.2.1), when we talk about something that is 'social in some parts of its nature', not to apply it as a character of the problem by its nature. This in the hermeneutic circle transforms into a better realization how CAS solves problems.

All and all, what then does it mean to interpret general complexity when we address it as a character of efficiency? It means that I can only enunciate my own contemplation. For me it means possibilities; it means in case of efficiency, where now efficiency is seen as the overall cornerstone of betterment (see earlier; Finnish Government, 2015), that there can be different kinds of things we can start to perceive to be efficient; something that shows efficiency in a completely different and a new way. For instance, not just with a new indicator or something that is tied to an indicator. It correlates towards complexity where dealing with complexity is not a task of overcoming it but perhaps even a direction (or if wants to try be nifty and say in this case an indicator) that shows we are going in a right way. In case of uncertainty, it might lead into seeing it in additional new and positive ways.[200] Of course the aim cannot be an end result where everything becomes an impossibility, but it is only so if the truth of what is possible has to be in a same way possible as it is for those who assert it in the context of their own understanding of truth. Then naturally it is a goal we can never achieve – it is the same in reality. This kind of conversation makes us blind to reality – and also in reality from my personal experience. It is also, furthermore, connected to

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parts. Of course, it is not to say that one even has to reach something. Hence, it would be preferable to read the whole thesis, think about one's own reached understanding and then reflect on them. As mine are not necessarily 'better', but they nonetheless easily might guide the ones the reader reaches. In addition, the level of concreteness that I offer with my conclusions might not be the most preferred one for some, depending on one's own understanding what is beneficial.

[199] The way that it is done, is more related to the other two parts of the acronym CAS that I did not go through in this thesis.

[200] As there are already some, for instance, see creativity and innovation related fields of study.

diverging everyday situations where we need to get past these sometimes rather naïve assumptions of if-then, either-or dichotomies that researchers are especially keen on pointing out e.g. towards the public and policy related conversation; yet still sometimes they forgot to check their own standing points or contemplate on their meanings; and base the rationalization on these old dichotomically validated stances – especially when solving problems, then, reverting back to these dichotomically established truths, which furthermore keeps reaffirming them.

5. Time to start jogging – not towards the unknown but towards an understanding

As we have reached the end of this thesis, it is time to ask what is the outcome of this interpretative understanding we have tried to build towards and, moreover, to achieve? Did we reach the same kinds of conclusions as those who we tried to problematize? In other words, where the changing world poses us new problems that seem to be saturated with complexity; complexity which our current ways of understanding cannot efficiently handle in order to overcome the uncertainty posed by it? Did we at least find ways to use e.g. nonlinearity, emergence, or recursion to build up steps out of uncertainty or towards efficiency – amidst complexity? To put it frankly, we were unable to – we were unable to reach any optimum or even the outlines of an attractor; we were unable to build bridges towards scientism. We were then feeble in the face of despair to find new ways to account e.g. for effectiveness. This is an undeniable truth, yet it is only so from one perspective. It is a perspective of those who perceive what real sciences and answers are. But as was stated, who wants to ponder these peripheral trivialities when it is time for action, after all, if they cannot tell or produce you the truth the way it was told for them to say it, then, it is not the truth but a trivial ponder.[201]

This thesis has sought out to explicate and enhance our understanding in relation to the philosophy of science. The concerns of this thesis have been how different approaches have affected the ways we see complexity to be build and, moreover, solved; in relation to it, how uncertainty and efficiency are to be build and, moreover, solved; and how this affects how the problem posed by complexity can be answered in the first place. The approach taken has been based on less known, or at least used, theories in the administrative science that have tried to bring out differing views. As the first part of the headline of this study already indicates, one of the main aims has been to produce a diverging interpretation, which opens up self-evidences elsewhere. This thesis showed

[201] All these points are references to some of those questions and public policy contexts pointed out in 1., 1.1., 1.2. and 1.3.

some of the taken for granted viewpoints in diverging contexts in the administrative science perspective. Furthermore, it tried to bring the reader to question some of the things he/ she might have taken for granted beforehand. Henceforth, in order to answer the question asked in the first paragraph of the thesis: is this complex operational environment merely a new thing, a state of reality we have slowly reached, or just a new way of conceptualizing the problem? The answer is that is none in 'reality'; yet it has elements of each. It is a new thing as it took us so long to acknowledge it. It is a state we have slowly reached, partly due to our actions, mutilating thought, and evolvement of the world. And lastly, it is a new conceptualization, but what kind of one it will be at the end still remains to be seen. In its essence it is none of these – there is no complexity per se. As it, what we use complexity to describe it, has always been there.

As we are often forced to live with the concepts forged to us by those before us, the main argument has been to build towards an understanding where we can interpret[202] complexity, uncertainty, and efficiency to be also something else – separately but also together under the same question – than how they are supposed to be answered at the moment. In order to accomplish this, thesis started by asking a research question: what is the meaning we attach to general complexity by addressing it as a character of efficiency; took a bearing towards it by explicating the approaches of differing understandings in complexity, and in relation to the other two concepts of uncertainty and efficiency. The other two concepts were chosen for the recognized part they play in administrative science; it is not to the say they were necessarily the only ones or the more crucial ones per se. In the first part, the thesis was gradually discerning an understanding towards the second part. Besides the contemplations achieved in the first part – for instance, why we perceive complexity, uncertainty, or efficiency to be what they are – the main contribution has been depicting an alternative interpretative framework for general complexity by using philosophical hermeneutics. It, furthermore, provided a short public policy contemplation and an interpretation to the research question. The purpose of this second part was to provide more than just problematization; it provided some preliminary ways to address problems posed by complexity, other than something adhered to positivist or objectivist ethos. Naturally this alternative framework has wider potentialities than just complexity thinking. As an example, it provides possible contemplations towards power, value, and reflection[203] in their related fields on inquiry. In addition, and as mentioned in the complexity related sections, ethical consideration in relation to knowledge,

[202] In this case, answer the problem posed by it.
[203] On reflection, what constant reflection would really correlate in see e.g. Pillow (2003).

knowledge production, and method are as well possible angles of consideration (see also Alhadeff-Jones, 2008, 2010).

According to the contemplation adhered by the understanding, in which I have contributed towards, the clarifications, provocations, and 'proper' portrayals of the concepts have contributed to an interpretation that can e.g. incorporate more of the meanings that are now left at the periphery, seen as 'anomalies', those we are not being able to discuss, or those we even regard as futile. It can as well be seen to produce a less mutilating way of producing solutions towards problems. In terms of more practical juncture, I demonstrated complex adaptive systems (CAS) approach's effects on the way we perceive reasoning, truth, reality, et cetera. By bringing these understandings towards the front I wanted to elucidate CAS related effects in an example that is used in a policy context, which I further compared to a Ministry setting. What I further wanted to exemplify was the 'gains' achievable when we alter our understanding of construction (such as concept), time (e.g. in relation to validity), and their purpose (e.g. in relation to truth), but furthermore, how this is dependent on certain ways of acceptances'; acceptances also in paradigmatic settings.

If we would accept the principles elucidated in this thesis, then, what interpreting general complexity, by addressing it as a character of efficiency, would mean – if we try to illustrate some of the characteristics in analogical terms – it can be apprehended as touch typing. First of all, most people do not think that it is as relevant, at least in terms of the gains you get, towards the time it takes for you to learn it – you need to put into it a considerable effort in order to master it. At first it seems arduous and is actually less efficient (in both senses of meaning in the concept of efficiency). Only once you have mastered it, then, you can see how much more efficiently you can really type. Furthermore, it is efficiency in the other meaning of the concept as well, as you can also fully concentrate on thinking what you are writing and not also having to think and watch how you are typing, hence, you can also get things forward as a 'premise'. Secondly, the most important part of this analogue is that once you have learned it, then, you also start forgetting it as soon as you stop using it – it needs constant practice. In the case of touch typing many people seem to start forgetting it eventually, for instance, because of laziness, inconveniences, appetite for comfort, et cetera – paradoxically even though one already knows and has recognized it is more efficient (in both meanings of the concept). It is the same, for instance, in problems tried to be solved through policies; where something 'understood' before is taken as the truth, where context is misunderstood or overlooked, where something is taken for granted, analyses is ignored as it was done already, et cetera. If there are social 'elements' included in the action, then as depressing it sounds, there are no

other than unique missions, unique circumstances, unique outcomes, et cetera. Something we have learned we cannot take for granted. This does not correlate to a meaning that anything learned before cannot or even might not be ever valid; it only comes back to the different premises how we approach the question in the first place and each time again and again. There is no static understanding, which means there should be ways to understand constant interpretation; constant interpretation that is not constraint to an already set outcome.

How come I am claiming that this is not something that will lead into nothing but relativism? In correlation to practice, when I was listening to the ESDC HLC upper level officials, one of the main critiques stemming from their point of view was e.g. using any kind of readymade solutions, not updating the analysis, not being able to be realistic, or ignoring any of the previous in any level of the activities – accentuated by the top level decision making. Problems were almost solely to do with reality and our inability to account for it. Partly this is due to the constraints (power, laziness, inconveniences) we have set but mostly it has everything to do with the fact that we take reality for granted in different ways. I wish I could tell that what I depict is like one's own reality: only certain, simple, and effective; or a one that will only be like that, if one gives it a little bit of consideration or perhaps now and then little bit more consideration. In the end, hopefully this thesis will enable us to ask not just right kind of question but also just new ones. The purpose is not to dismiss certain kinds of knowledge, but to endorse that knowledge produced different ways suits different purposes, but not as a 'premise'. Having one kind of knowledge does not encase it impermeable from other kinds of knowledge. Moreover, even if this is not anymore the most pertinent case in practice, then, it reverts to a realization that this opening does not happen on something else's terms.[204] Hopefully we can get outside of the mere quasi-monopoly competition or on whose terms this competition is weighted on – it is no competition between the two extremes as most often no public argument is either. Hence, often times a good start towards solving a problem is that we need to get past these dichotomies, categorization, bridgings, et cetera and start interpreting reality, not the reality.

[204] Compare e.g. multidisciplinary (Nicolescu, 2002) and multidisciplinary in a university setting (e.g. Lehtinen, 2015).

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