UiT The Arctic University of Norway

Faculty of Science and Technology

A Meta-Perspective on Societal Security & Safety:

Ontological, Epistemological, & Axiological Assumptions in Societal Security & Safety Research

Jens Kristian Skjølsvold

Master's thesis in Societal Security & Safety SVF-3920 January 2022

Number of words: 16448, excluding list of works cited and appendices.

Abstract

This thesis explores the ontological, epistemological, and axiological assumptions held by societal security & safety researchers by utilizing the scoping study methodology to select and rapidly assess relevant literature for inquiry about these assumptions. The relevant literature is analyzed according to a framework consisting of several questions related to the metaphysical notions of the author(s), which in turn allows for typological classification of the research articles with regards to ontological, epistemological, and axiological assumptions. The typologies are drawn from a literature review explicating on the origins of the *amalgamated* discipline of social security (& safety) from two separate iterations (*identity-based* & *functional* societal security), which adhere to different metaphysical assumptions. This thesis reveals that the *identity-based* iteration is hardly referenced in the selected literature, while traces of the *functionalist* iteration are far more frequent. This thesis further reveal that researchers are both conform and congruent with regards to ontological and epistemological assumptions but diverge with regards to axiological assumptions.

Table of Contents

1 Introduction

The theme of this thesis was conceived due to my interest in the limits and possibilities of scientific endeavors. Moreover, due to the broad scope of Societal Security & Safety research, I have oftentimes found it unclear what societal security & safety is, and what it is not. Consequently, I wish to investigate the "worldviews" and "truths" held by societal security & safety researchers, and how these views affect research practices in Societal Security & Safety Research.

To understand just what is being researched, and what we can know about it, I will assess the ontological and epistemological assumptions held by researchers in societal safety & security research. Furthermore, I will assess what axiological assumptions are held by researchers, and what the purported value of their work is (according to researchers themselves). Assessing ontological, epistemological, and axiological assumptions further contextualizes how methodological approaches are appropriate. To do this in a purposeful manner, I will typologically classify ontological, epistemological, and axiological assumptions, as they present themselves in *Societal Security & Safety* research. It is not the purpose of the master thesis to delve into a philosophical discourse about *what is true* and *what we may know* (in general terms), but to utilize a philosophical approach as a theoretical framework to contextualize what knowledge we can draw from societal safety & security research.

Beyond the personal aspirations of the author, this thesis has a two-fold purpose. For societal security & safety practitioners, it might encourage a moment of reflection upon their craft, whereas those just getting immersed into the (vast) discipline of societal security & safety might gain a purposeful conception of the possibilities and limitations imposed on research, by researchers themselves, while also making sense of the scope of the discipline, and what it encompasses. Many a student (of any discipline) may have endured methodology classes (and whole courses), explicating upon ontologies, epistemologies, and other such conceptualizations without necessarily having had the mental faculty (at that point in time) to conceive just what lecturers spoke of (, I included), and were perhaps more perplexed than ever, as to what reality, knowledge, knowing (and even science) really *is*. Therefore, this thesis will present a (brief) introduction as to how modern science came to be what it is, and how Societal Security & Safety emerged as, or amalgamated into, a scientific discipline.

As stated above, this thesis will utilize philosophy as theoretical backdrop, and as such the theory chapter of this thesis is devoted to explicating on the necessary metaphysical conceptualizations which are necessary to carry out the intended research. Due to the nature of this thesis, I provide an exhaustive description of the methodological approach utilized in the thesis, before presenting empirical evidence, followed by a discussion of the research findings, and concluding remarks.

1.1 Science, the Scientific Revolution, and the Philosophy of Science

The Scientific Revolution refers to a drastic change in scientific thought throughout the 16th and 17th century, by which the old Greek worldview was replaced, and science became an autonomous discipline. Essentially, science replaced Christianity as the focal point of European civilization, as both the Renaissance and Reformation brought a new view on science - particularly the development of the scientific method intent on giving definite answers on selected questions raised from theories. The volume of information ushered in by this change led to the need for extensive and rapid spread of scientific results, in need of independent and critical scrutiny, which in turn led to the creation of scientific societies, such as the Royal Society of London for Improving Natural Knowledge and Académie des Sciences (of Paris) and the publishing of scientific papers and the shaping of universal terminology (in place of obscure jargon or other means to hide discoveries) (Spencer, Brush, & Osler 2019).

The term Scientific Revolution is not applied anachronously, as Bernard I. Cohen explicates upon in *The Eighteenth-century origins of the concept of scientific revolution* (1976). Researchers did refer to the change science went through as revolutions, with the meaning of a breach with continuity, underscored by a sense of repetition, to contemporaries. At least during the 18th century, contemporaries saw scientific change as a series of revolutions, which altered both society and the political affairs of the state.

However, Philosophy of Science is an old discipline, even addressed by pre-Socratic writers (along with Plato and Aristotle), in both (High) Latin and Arabic, but the 17th century particularly ushered the discourse on the subject matter of the nature of science, scientific knowledge and method(ology), before *The Enlightenment* pushed this project even further. Throughout the industrial revolution, the term “science” stood synonymous to progress. However, around the 19th century and the following decades, physics was at the center of attention of philosophers. Several breakthroughs in physics (such as Relativity and quantum

theory) made scientists and philosophers reflect upon the nature of the physical world and the nature human knowledge of the physical world. Contemporaries regarded physics as the paradigmatic science, and thus science as the paradigmatic path to knowledge However, later, Positivists sought to ground science in observations and experiments and empirical grounding stood out as major difference between science and other theoretical and/or philosophical claims of knowledge. (Machamer & Silberstein, 2002).

The current debate in the philosophy of social science deals with issue clarification, conceptual argumentation and empirically oriented discussions based on the practice of social research. Particularly with regards to *naturalism* and the question whether social sciences can use the methods of the natural sciences. However, this question is essentially the same as the question of whether the social sciences can produce scientific knowledge at all. The future issues of philosophy in social science are the actual practice of social research. The task is to identify collective practices of social research, to further use this information to both explain and evaluate the social sciences. This also entails explaining whether social scientists successfully move from data to hypothesis. (Machamer & Silberstein, 2002).

In *Quality in Qualitative Research* (1999), Seale argues in favor of new conceptualization of the relationship between qualitative social research, theory, and philosophy. According to Seale, techniques, and their associated paradigms, be it whether they originated in positivism, naturalism, constructivism, or postmodernism, can be used across paradigms; researchers should not be obliged to follow a given *philosophical scheme,* but instead be aware of the philosophical (and political) value of the craft (social research). Seale further argues that by engaging in philosophical and methodological debates, the quality of qualitative research is enhanced.

1.2 Societal Security: What is it?

In *Societal Security as Higher Education: The state of the Art in the Baltic Sea Region* (2021) Christer Pursiainen & Dina Abdel-Fattah address what the discipline of Societal Security constitutes. According to Pursiainen & Abdel-Fattah, Societal Security is not an established academic discipline, but a multidisciplinary or interdisciplinary field, drawing upon two academic traditions: First an *identity-based* Societal Security concept from the 1990s, which concerns itself with "the defense of a community against a perceived threat to its identity." (Pursiainen & Abdel-Fattah, 2021, p. 3) and further a more-or-less related social constructivist concept known as *Ontological Security* from the early 2000s. The second

tradition relates to a practice-oriented and functional *or* societal approach, which can be described as the European edition of *Homeland Security* (as developed in the United States post 9/11), intent on safeguarding a national identity and corresponding worldviews. Both these two traditions; the *identity-oriented* and *functional-orientated* traditions persist in societal security literature under the same overarching umbrella term, despite their differences.

According to Pursiainen & Abdel-Abdel-Fattah (2021, p. 7); "(…) Societal Security (or whatever nomenclature is used) is a discipline in the making but is not quite there yet", as they argue in favor of a more rigid disciplinary understanding, which would make for a more traditional discipline, with a defined in scope and context (both within and outside of academia). However, some scholars have emphasized the scientific nature of their endeavors in subdisciplines such as *safety science* and *risk analysis science*, with something akin to a shared identity in an epistemic community, which might enhance the understanding of just what they are doing to both themselves and outsiders. In any case, Pursiainen & Abdel-Fattah (2021, p. 12) states that Societal Security is "characterized by a low level of paradigmatic developments, and b) a high degree of 'softness' in term of its practical applicability", and that the discipline is fundamentally normative. The discipline of societal security is largely multidisciplinary or interdisciplinary, compromised by political science, international relations, legal studies, sociology, psychology, public health studies and medical sciences, organization studies, business studies, engineering, natural sciences, and the humanities further. This *amalgamation*, as described by the authors, fused together in a rather uncoordinated manner. However, this fusion is viewed as positive feature both within the discipline and the broader scientific community, as a holistic approach to the construction of knowledge.

1.3 Two independent iterations

According to Larsson & Rhinard (2020), numerous inceptions of security emerged towards the end of the Cold War, which challenged the traditional territorial versions fixed on national security, which gave rise to questions such as *what security is*, *who does it*, and *who benefits (or loses) from it*. Knowing what security is and how it is practiced is central tenant to security studies.

The term societal security encompasses to two different notions of security. One variant (the first) developed in the 1990s by the *Copenhagen School* of security studies, which concerned

itself with “the ability of a society to persist in its essential character under changing conditions and possible or actual threats” (Larsson & Rhinard, 2020, p. 22), and another variant (the second), which developed in Swedish and Norwegian academia (and practice). Despite overlaps, the two variants developed in parallel, but not intertwined with one another. These two variants are based on different ontological and epistemological assumptions with regards to security. One version focuses on the security of cultural identities, utilizing constructivist methods, while the other invested itself with the security of life-giving functions (critical infrastructure), through objectivist methods.

Traditional theoretical approaches towards security focused on the state, as a legal and political unit enjoying sovereignty over territory and population, whereas the threat was perceived as military force from other(s) (states). In these terms, security was intent on securing territory and population through alliances, band-wagoning, deterrence, and balance of power (Larsson & Rhinard, 2020, p. 23). With this focus, interior issues (or society) were left out of the security agenda. Consequently, authors brought attention to society as an independent ontological unit, separate and no longer subordinate to state, wherein the identity (based on nationality, ethnicity, clan or tribe membership, and other forms of communal bonds) and as security actors. As such, society later became conflated with identity, equating the two terms and making societal security synonymous with identity security. This made for two (ontologically) different ways of viewing societal security. The focus of empirics in this identity-centric inception of social security became that of societal insecurity, devised by secessionist, or sub-national movements within and across borders. However, the narrow identity-centric based security concept excluded domestic and societal values.

The inception of identity-based or identity-centric societal security paved way for another version of security, which focused on objects within state territory (which arguably, was more resemblant on the original notion of security, than the identity-based development). This version split its focus between life-giving functions (critical infrastructure) and societal values (and the preservation of these values), however, the former eventually took priority. Essentially, societal security thus referred to the ability of a society to function, which led to the three following corollaries (which also describe the use, and abuse, of the term): 1) the nature of threats was ignored, while employing an all-hazards approach (with regards to the proverbial *black swan*). 2) The essence of these functions became deconstructed to underpin their transnational character. States no longer held sway over these functions, but collective governance systems and private actors. 3) focusing on the preservation of life-giving

functions made the methods, way, and manners in which these functions were protected to being the focus of analysis. This *functional* inception of societal security (or safety) is related to several similar concepts, such as *resilience*, *crisis*, and *risk*, and was thus quickly adopted by policymakers, particularly in the Nordics where it fostered cooperation and guided research. However, societal security also rose to prominence on an international level, particularly as an alternative to "homeland security" (Larsson & Rhinard, 2020).

Whereas the first identity-based iteration of societal security has largely been replaced by the *functional* iteration, the former was a necessary step to develop the latter. The success of the functional iteration can be attributed to five factors: First its conceptual appeal based on Norwegian and Swedish notions of societal solidarity, and particularly the Swedish *total defense* concept (whereby the entirety of society is obliged to contribute to territorial defense). Second, *Post-Westphalian* affinities, as a reference as to how safeguarding life-giving systems transcends the national scopes and calls for international cooperation. Third, self-interest, as governmental agencies and non-governmental actors could adopt responsibilities previously subject to defense ministries and (defense/military) industrial complex during the Cold War and thus receive greater funding. Fourth, proscriptive guidance, as societal security apparently provided policy-relevant guidance related to globalization and regional integration, with normative implications, which was appealing for Scandinavians in lieu of the *total defense* concept. Fifth and finally, entrepreneurialism, largely thanks scholars, who described functional iteration of societal security and through strong links to policymakers, and later through positions in government were able to deploy and implement the concept. The former tradition of *identity-focus* took an inductive, subjectivist turn in the study of identities as the key-reference object, while the latter took to a positivist, objective oriented analysis of the preservation of society through life-giving systems as the key-reference object. While both made impact, it is the latter form which appealed to policymakers (part due to entrepreneurship) (Larsson & Rhinard, 2020).

1.3.1 *Functional* Societal Security

Ekengren (2008) further addresses the development of the functional security concept in the European context, where a new security landscape rose because of broader transnational threats, in tandem with the establishment of the European Security and Defense Policy (ESDP), which includes *military and civil crisis management, internal safety and emergency preparedness measures, rapid alert systems, a solidarity clause for the protection against*

terrorism, and a security strategy (Ekengren,, 2008, p. 695). According to Ekengren, two developments have been of great importance for the conceptual and policy change in the EU: 1) the end of the division of Europe in 1989/1990, and 2) a host of new threats and challenges ranging from disease (Mad Cow Disease), ethnic conflicts (Former Yugoslavia) and terrorism (Madrid and London). This, together with 9/11, set the stage for a reconceptualization of security, where the first step was defining what European security isn't. Defining European security in general terms has as such been difficult, with the absence of the threat of inter-state war. This situation has been characterized as a "security complex" (Ekengren, 2008, p. 695). From the outside, this has been perceived as shift from a *European Security Community* to a *Secure European Community*. This community is seen as an ideal, by which EU developments can be contextualized, but not a factual description of the situation. The concept has been described "as a group of people that is integrated to the point where there is real assurance that the members of that community will assist each other in the protection of the democratic institutions and the civilian population – the core functions of their societies and governments" (Ekengren, 2008, p. 696). The European (or EU) states have built a peaceful order, however, as the lines between states blur, non-state forms of securitization have manifested. The new order does not take the form of a direct security system, collectively solving security issues.

1.3.2 *Identity-Based* Societal Security

The details of *identity-based* Societal Security (and *Securitization*-theory) are further outlined by Wæver (2008) in *The Changing Agenda of Societal Security*.

According to Wæver, societal security, while being related to, differs from national, political, and military security, as it addresses the *defense of identity against a perceived threat*, or *the defense of a community against a perceived threat to its identity (Wæver, 2008, p. 581).* National security based on states, is fixed to formal membership and territorial claims, whereas social security transcends spatial dimensions. Society is about identity, the self-conception of communities and that of individuals who consider themselves part of these communities. While intertwined with government(s), these identities are very much distinct from political organizations concerned with governing. This focus on identity in societal security and within security studies can be attributed to the *Copenhagen School* and other theories in originating in post-Cold War Europe, who observed ethnic tensions both in and outside Europe, and its consequences. Whereas the original inception was inspired by national

or ethnic tensions, it was (or *is*) also applied to religious or racial tensions. In Wæver's (and the Copenhagen School's view), societal security is closely related to identity security (which will be addressed further in section 1.3.1.1 on Ontological Security).

According to Wæver, defending an identity is a paradoxical task, due to the everchanging and subjective nature of identities. In the scope of security (or *securitization* theory), however, they become firmly entrenched concepts. Questioning "who am I?" may permit many different answers depending on the given situation and context. National identity, however, has proved itself to be a prominent identity historically, especially with concern to security.

The most common issues related to societal security in the *identity-based* iteration have been: 1) migration, whereby the identity is changed due to changed demographics, 2) horizontal competition, as the influx of a new identity supersedes the former identity, and 3) vertical competition, where people no longer associate themselves to an identity, as they are drawn to another identity (be it wider or narrower), and (possibly) 4) depopulation (however, not specifically related to societal security). However, *identity-based* societal security should not be conflated into these issues, as identities can dissolve from other reasons (loss of language, and/or emigration), without any securitization process, if the reason is unrelated to a particular group or actor(s). Identity, with regards to securitization, is dependent on *other* identifiable identities. According to Wæver, the inclusion of culture, identity, and ethnicity into security studies throughout the 1990s was a complex act which tried to assist in interpretation of "identity making", while also contributing to the process.

1.3.2.1 Ontological Security

As presented by Pursiainen & Abdel-Fattah, the early 2000s saw the inception of Ontological security, which is somewhat reminiscent of the *identity-based* iteration of Societal Security. The central tenants of this Security-aspect are presented by Mtizen (2006), in *Ontological Security in World Politics: State Identity and the Security Dilemma*. This branch of security studies testifies that metaphysical notions have (for some) been central to security studies.

In contrast to something tangible as physical security, ontological security as described by Mitzen refers to the individual's need of certainty in oneself, one's persona and continuity in time and sense of agency, which is sustained through relationships. Whereas, ontological security can be extrapolated to the state, just like individual physical security, the mechanisms of ontological security might be downright harmful or at least interfere with physical security,

evident in the sustentation of self-defeating relations. To further exacerbate the differences of physical and ontological security, the former (on an individual level) refers to security of the body, while the latter refers to the security of the self and subjective sense of the I. The theoretical notions of ontological security describe how a state, certain of its role and agency in conflict, might uphold conflicts to hold on its ontological security. Compromising its physical security to uphold continuity may be far more favorable than the uncertainty of other agencies and relations. By comparison, ontological insecurity relates to the incapacitating state of not knowing what dangers should confronted and what should be ignored. While ontologically secure, the individual, or the state, knows how to act and to be oneself in relation to others.

Ontological security-seeking concerns itself with the minimization of uncertainty, by cognitively ordering the environment, however, not on a conscious level, but rather through internally programmed routines which dictate responses to information and stimuli. Routinization pacifies the cognitive environment. The individual, or state, knows the world through routines which dictate how they know the world and act. However, this is not limited to *safe* routines, but also to dangerous or harmful behavior, and as such ontological security is compatible with physical insecurity. Routinized social relations stabilize one perception of the I, and as such individuals become attached to them. Due to attachment to routines, regardless of whether they can be considered safe or harmful, individuals rarely experience ontological insecurity (Mitzen, 2006).

1.4 Metaphysics in Social Research

According to Blaikie & Priest (*Designing Social Research: The Logic of Anticipation*, 2019), ontological and epistemological assumptions refer to the nature of social reality (ontology) and how knowledge about it can be acquired (epistemology). The former make (explicit) claims as to what social phenomena exist, and the conditions of its existence and its relations, while the latter concerns itself with how we can know about it, and how this knowledge is adequate and legitimate. Textbooks on social research will claim that social research defines and measure concepts along with theories explaining the relationships between the concepts. Hypotheses are viewed as potential relationships between concepts, which can be tested by coding concepts into variables (along with appropriate measures) and analyzing them.

In essence, a concept is an idea expressed as words, and technical concepts (in any discipline) are ideas formulated in a common language to deal with phenomena. Concepts range from general to (highly) specific and the abstract, and from the simple to the complex.

> *Concepts are commonly regarded as the building block of social theories. Such theories specify the relationships between concepts and why these relationships exist. In this approach, concepts are the way connections with 'the empirical world' are achieved.* (Blaikie & Priest, 2019, p. 141)

Every discipline within sciences develops its own vocabulary to conceptualize phenomena and to connect with that which is considered real, according to ontological assumptions. (Blaikie & Priest, 2019)

1.4.1 Metaphysical concepts as empirical units

In *Performing Ontology* (2015), Aspers addresses the implications of applying ontology (or metaphysical concepts) as an empiric to be studied to science and technological studies. Asper's purpose of writing is refuting the notion that ontologies can be discovered or researched. Ontologies are not units which can be researched empirically. Instead, ontologies make for the very premises upon which (social) empirical research is conducted. According to Aspers, there is no difference in the application of ontology (as a buzzword) to these sciences from that of its original constructivist nature. Social things such as identities, ties, objects, artifacts and more, both material and immaterial are all constructions. Very few social scientists contest that, that what we describe as true is really constructions. In its traditional philosophical use - ontology concerns itself with what *is* and the study of *what is*. A research project, or even a research question, start out with a set of assumptions that predicate it, which is vested in the ontology of the scientist. If ontologies are evident through practices, discourses or any other social convention, research upon ontologies cannot be separated from constructivism.

1.4.2 Metaphysics in qualitative vs. quantitative research

In *Concepts and measurement: Ontology and epistemology* (2012), Goertz, G. & Mahoney, J. address ontological and epistemological differences in qualitative and quantitative approaches to concepts and measurements in research.

Describing concepts is inherently a matter of ontology, according to Goertz & Mahoney, as defining a (empirical) phenomenon as a concept is the same as making a claim about what is

true and what exists. Qualitative researchers make great effort to identify the intrinsic and necessary defining attributes of a given phenomenon, whilst quantitative researchers identify a latent variable through indicators, which by a causal relationship, describes the phenomenon. The qualitative way of defining concepts is largely concerned with semantics (or the meaning of a concept) and listing the various attributes or characteristics that make up the concept – what makes it what it is (and not something else). The quantitative way is not concerned with semantics, but rather how a concept is measured – how they operationalize, and measure a given concept. As such, the number of good (quantitative) indicators that correlate will be less exhaustive than the list of (qualitative) attributes or characteristics that makes a phenomenon what it is in the qualitative tradition. Essentially, the two approaches put different emphasis on concept and measurement. The key issue which presents itself for qualitative researchers is defining the concept and its features, from which it cannot be separated, while quantitative researchers strive to identify the casually linked indicators by which a concept can be explained or defined. (Goertz & Mahoney, 2012)

The challenge for quantitative researchers to generate knowledge is *error*, where one of the key features of statistics is providing an estimate for the error in its findings. In qualitative research, the challenge for generating knowledge is fuzziness; the degree to which a given case shows membership to a concept. Fuzziness is as such an ontological claim about the real world, which holds epistemological implications. Error, by contrast to fuzziness, is fully epistemological, as it concerns the quality of our knowledge. Traditional qualitative and quantitative methods exhibit epistemological differences in their belief regarding the quality of the knowledge they acquire. Whereas a quantitative researcher might assume a greater measurement error for a given research subject, the qualitative researcher will consider the measurement error as lesser for the same research subject, due to the differences in their methodological practice. Goertz & Mahoney suggests that fuzzy logic is the natural way of modelling concepts and measurements in qualitative research, as a natural extension of Aristotelian and continuous logics. According to Goertz & Mahoney, fuzzy logic is a theory of applied semantics, along with a theory of measurement. In statistics, the error estimate is of epistemological concern, as it assesses the quality or nature of knowledge. Fuzzy-set value or membership, however, is ontological as they are statements about the real world, of what exists. Any given fuzzy value is a claim about the nature of a concept, without addressing errors in, or quality, of the knowledge. Fuzzy-set membership is much more akin to a value of a quantitative variable. Fuzzy-set values do not come with an associated error or uncertainty

measurement, however, most often, neither do quantitative datasets. Qualitative coding often measures the grade or magnitude of belonging to an ideal type of a given concept. The error is considered lower the closer the observation is to this ideal type (and thus also easier to code), so that there is a curvilinear relationship between fuzziness and level of error. In qualitative research, it is often inverse, as the largest estimated errors are largely linked to the extremes (comparable to a fuzzy score of either 0 or 1), while lower in the middle (where the comparable fuzzy score of 0,5 would be associated to a greater magnitude of error, than that of 0 or 1).

To summarize Goertz & Mahoney: qualitative and quantitative research differs ontologically in the way which they describe concepts, and epistemologically as to how they view and where they identify error (in our knowledge about a phenomenon).

2 Theory

As evident from the introduction, metaphysical assumptions are a key factor when distilling knowledge from science, and thus it necessary to explicate upon just what metaphysics is. What follows is a brief, or even superficial account of philosophical and metaphysical concepts which are relevant to this thesis, which is by no means exhaustive, or in-depth, but certainly the minimum of theory needed to properly answer the research questions posed in this thesis.

2.1 Metaphysics

In Metaphysics: A very short introduction (2012), Mumford introduces the reader to metaphysics, and why it is important - not just in general, but also for the sciences.

> *Perhaps metaphysics is thought of as a useless waste of time or, even worse, a dangerous distraction. We shouldn't forget the story (probably only half true) that Socrates was put to death for being such an annoyance.* (Mumford, 2012, p. 98)

By asking the simplest questions we might find ourselves engaged in deep complex discussions over the smallest, almost childish matters to answer what really *is*, and *what* really is. However, is it useful to engage in such mental acrobatics and gymnastics? We might achieve sense of deeper understanding, but to what use? Metaphysics seeks to understand the fundamental nature of reality just like (hard) science, but in a different way. The hard sciences unravel tangible truths, while metaphysics unravels the abstract and intangible. Metaphysics

tell us that things exist, such as laws of nature, causes, change, properties and further, however, the (hard) sciences tell us exactly what these are, such as gravitational attraction, particles, and the interaction between particles. The essential difference between metaphysics and sciences such as physics lies in the matter that physics start from the onset of what is observed, while metaphysics is concerned with what can be observed.

However, the differences between physics and metaphysics are not black-and-white, where one offers practical truths and the other theoretical truths. The differences lie along a spectrum, whereas one is more abstract than the other, and the other more tangible, all the meanwhile both physics and metaphysics are largely theoretical. Whereas observation alters our perception of physics, reason alters our understanding of metaphysics. Observational evidence makes the scientist reject a theory, but the meta physicist rejects a theory by reason, absurdity, or contradiction – as metaphysical data is unobservable.

2.2 Ontology

According to Hofweber (2021), the contents of metaphysics and ontology overlap to a great extent, however, the latter should be considered a subordinate narrow field in comparison to the former, which entails a much broader scope. In any case, the borders between what can be described as ontology and metaphysics are unclear, though a question of ontology will always be a matter of metaphysics, while a question of metaphysics is not necessarily about ontology.

In its simplest form, ontology can be abbreviated to questions of what *is*. However, delving into questions of what *is*, we are obliged to answer what the general features and relations of that which *is* are. Summarily, ontology seeks to answer what *is* (i.e., what exists), what *it* is made of, and what *its* general features and relations are. (Hofweber, 2021)

Despite the clarity of such an open question of "what is *it*?", it is not always clear what *is*. For what *are* numbers, properties or even God, and what are their general features, and how do they relate to other things that exist? When we are faced with simple mundane objects, that we can perceive or sense it is easier to determine what exists or not. But, when faced with complex or abstract objects, notions, or entities, it is dependent on our (subjective) beliefs if we determine whether *it* exists or not. Our rational commitment to our beliefs allows for both the answer and for a rational commitment to existence of the given objects, notions, or entities. From a grander scope, the discipline of ontology concerns itself with finding out what thoughts we are committed to, with a particular set of beliefs, i.e., the subjective (or

collective) belief of what is true an exists as a thing, and how it relates to other things that are true and exist. (Hofweber, 2021)

It is however unclear what it means to commit yourself to an answer for an ontological question. It is furthermore unclear what an ontological question really is, and what it accomplishes. Asking these former questions, we depart into the sphere of meta-ontology (the study of what ontology *is*), which also leads to the question of just what, or which, question(s) ontology seeks to answer. Ontology can thus summarily be described as the study of ontological commitment (to a set of beliefs), the study of what *is* (exists), the study of the general features and relations of that which *is*, and the study of what ontological questions seek to answer, if anything, and with what methodology. (Hofweber, 2021)

2.2.1 Ontological (and epistemological) realism & idealism

In general, ontological realism, or generic realism can be summarized in as such, that if a given entity a, b, or c (or any lettered object) exists, and it is characterized by a-ness, b-ness, or c-ness (or any letter-ness), then it exists independently of anyone's beliefs, linguistic variation, or conceptual differences. A statement such as "The moon is spherical" is only true if it is indeed spherical. This does not mean that realism is a matter of semantics and truth. However, no one assumes a definite stance of a realist, or a non-realist when dealing with any subject matter, and the individual's assumption lies on a spectrum between realist and non-realist. (Miller, 2021)

Essentially, for realists, the world *is*, and it is independent of how humans perceive it. The objects of the world, and their relation to each other, exist independently of humans (or humanity). If not for this, (in a realist perspective,) none of our (true) beliefs about the world can be objectively true, as it is beliefs that tell us what *is*, and these beliefs are objective either when true or false, independent of anyone's notions. For many, (ontological) realism boils down to common sense, while others may consider it a form for mass suggestion. (Khlentoz, 2021)

In short, ontological realism concerns itself with a reality which is independent of the human mind. The opposite view of ontological idealism is idealism, held by idealists, who will claim (in a simplified manner) that there is no external reality independent of the human mind. With regards to epistemology, epistemological realism is committed to the notion that theoretical claims about the world describe a mind-independent reality, which constitutes knowledge. In general, epistemological realists share the view that scientific theories give true or close-to-

true descriptions of both observable and unobservable things in a mind-independent world. (Chakravartty, 2017).

Ontological idealism, which traces its roots back to Plato, contrary to realism, claims that some mental capacity (such as mind, spirit, reason or will) is the foundation of reality and what *is*. In ontological and epistemological idealism, the ultimate foundation of reality is related to how physical objects are experienced, and that (physical) objects cannot exist without experience. However, this does not mean that idealism reduces the (physical) world to an illusion. (Guyer & Horstmann, 2021)

Realism & idealism adhere to two distinct and separate notions of what constitutes truth, namely the Correspondence Theory of Truth, which states that a belief is true if there exists an appropriate entity (or a fact), which it corresponds to (thus, realism), and the Coherence Theory of Truth, which states that a belief is true if it belongs to a coherent system of beliefs (thus, idealism). (Glanzberg, 2021)

Whereas epistemological realism & idealism might seem dichotomous, it is constructivism that has come to be viewed as the epistemological counterpart to realism. (Lewis-Beck, Bryman, & Futing Liao, 2004)

2.2.2 Constructivism

Blaikie & Priest (2019, p. 120-124) describe the tenants of Constructionism (Constructivism in this thesis) as the following:

> *As access to any social world has to be through the language of the participants, social reality has to be discovered from the 'inside' rather than being filtered through, or distorted by, experts' concepts and theory. Social scientific knowledge is the outcome of social scientists' meditation between everyday social language and technical social scientific language. There are no permanent, unvarying criteria for establishing whether knowledge can be regarded as true.*

While it is debated in both philosophy and science in general, constructivism was first conceived in the field of psychology, where its theories describe how a person (actively) constructs his or her own subjective world(-view). Constructivism opposes other theories, which might assess that any given thing has an essential nature or universal meaning (i.e., belonging to an inherently objective typology – such as in epistemological realism), realized

by our perceptive abilities. Epistemological constructivism describe how we construct subjective worlds, by ordering and organizing our experiences. Radical constructivism expands upon the notions of constructivism and proposes the nothing can be described objectively, and that everything we perceive and remember is constructed. (Lewis-Beck, Bryman, & Futing Liao, 2004)

Social scientists use the concept of constructs to explain empirical data or to conceptually explain unobservable or unmeasurable elements of data, upon which they formulate a theory. More precisely, it refers to 1) an idea or concept which cannot be observed or measured directly, 2) a concept drawn from empirical data which explains a phenomenon or 3) an abstract definition of a concept which manifests itself in other observable or empirical concepts. For concepts to be utilized while studying social phenomena, it must be 1) clearly defined and 2) its relation to similar or non-similar concepts or constructs must be defined. However, even though a construct may be abstract, unobservable, or unmeasurable, it must manifest itself in observable or measurable data to be scrutinized. (Lewis-Beck, Bryman, & Futing Liao, 2004)

2.3 Epistemology

2.3.1 Theories of Knowledge

In general terms, epistemology refers to a theory of knowledge, or a theory of how human beings can have knowledge of the world that surrounds them. Epistemology is the philosophical sanction, by which we can decide what kind of knowledge is possible and whether it is adequate and legitimate. Two theories of knowledge, Empiricism and Rationalism has dominated since the scientific revolution, locked in debate over what is a secure foundation of scientific knowledge and to distinguish it from belief and prejudice. (Lewis-Beck, Bryman, & Futing Liao, 2004)

2.3.2 What is knowledge?

Among other things, epistemology concerns itself with what knowledge *is*. We may know many facts about a certain issue or object, without ever interacting with. We might even know more about the given issue or object, than those who have in fact interacted and been acquainted with it. However, knowing about and being acquainted to the object or issue, is two quite separate states. Even while being familiar with something or someone, we might not know a great deal about it. Furthermore, there is a difference between knowing the facts

about doing something, and doing it, all the while you might know just how to do something, without knowing any facts about how you do it. *Knowing how* and *knowing that* are fundamentally different. (Steup & Neta, 2020)

2.3.3 Beliefs & perception(s)

Beliefs stem a variety of sources, among them desires, emotional needs, prejudice, and various biases. However, beliefs do not qualify as knowledge if the originate from such sources. A belief is only true when it originates in a source which can be considered reliable, such as perception, introspection, memory, reason, and testimony. (Steup & Neta, 2020)

Perception involves the five human senses: sight, touch, hearing, smelling, and tasting. However, there's a difference between perceiving what is factual, and that which seems to be factual. The fact of the matter is that perceptual experiences are fallible – things are not always as they seem through perceptual experiences. But nonetheless we consider our perception as reliable, but how can we *know* that perception is reliable? As knowledge about our perceptive qualities stem from memory of previous situations where our perception was right, there is no non-circular ways of presenting an argument in favor of the reliability of our perception. We assume that our perception is reliable based on past events. (Steup & Neta, 2020)

Introspection is the ability to inspect the content of one's mind, and discern what mental state one is in, such as a state of thirst, tiredness, excitation, or depression. Compared to perception there is, arguably, less contention surrounding the truthfulness of such knowledge, as it might even regarded as an incorrigible feed-back cycle. However, introspection is not infallible, and it is harder to judge error in introspection, than in perception. (Steup & Neta, 2020)

Memory is our capacity to retain knowledge from the past, but a recollection is not necessarily the past only, as recollecting knowledge from the past might make for facts in the present. However, memory is (also) quite fallible, as we do not necessarily remember correctly. Thus, we must differentiate between remembering and seeming to remember. (Steup & Neta, 2020)

Some beliefs are justified independently of perceptual experience(s), as *a priori* knowledge (in contrast to *a posteriori* knowledge, or knowledge derived from empirical evidence), which can be arrived at without empirical evidence and solely by reasoning alone. This further entails, that this kind of knowledge is arrived at without the use of perceptual, introspective,

and memorial experiences. Truths derived from conceptual truths, mathematics, geometry, and logic can for instance be regarded as knowledge derived from reason. (Steup & Neta, 2020)

Testimony is different from the other sources above, as it does not possess its own cognitive faculty. Testimony can be regarded as a source for knowledge based on reliability of its origin, and we further tend to rely on testimonial sources unless we have contrary reasons to do so. (Steup & Neta, 2020)

2.3.4 Epistemic Justification & Justification of knowledge

Justification, in general, is the rightfulness of an action, person, or attitude with regards to a set standard, i.e., an act might be justified according to law. However, epistemic justification refers to the rightfulness of a belief with regards to knowledge. Epistemic justification is essential for knowledge. (Watson, 2022)

In general, a belief is justified given that the individual has good reasons for holding it, for example, by having acquired the belief through perceptive qualities. However, if a belief is held based on wrongful or faulty reasoning, then justified beliefs are yet still fallible. However, it is justifiable to hold false propositions. (Watson, 2022)

For knowledge to justified, its propositions must be true, which is in dependent on three conditions: 1) the proposition must be true by an actual situation, by which the proposition is known, 2) the individual must believe in the proposition, and 3) the belief in the proposition is justified. If these conditions are met, knowledge is a justified true belief. (Watson, 2022)

2.3.5 Empiricism & Rationalism

One of the central issues in epistemology is the discord between rationalism and empiricism. Rationalists and empiricists disagree as to from what sources our concepts and knowledge can be derived from, and the discord further involves a discourse over the limitations of human thought and knowledge. The discord between rationalism and empiricism is whether (our) knowledge comes from reason or experience, and which of them is prioritized over the other. (Marke & Folescu, 2021; Lewis-Beck, Bryman, & Futing Liao, 2004)

According to Blaikie & Priest (2019, p. 120-124), the central tenants of Empiricism and Rationalism, respectively, can be summarized as follows:

> [In Empiricism] *Knowledge is produced and verified by the use of human senses, and only that which can be observed is relevant to science. A neutral, trained observer, who undistorted contact with reality, can arrive at reliable knowledge. Knowledge is certain when it accurately represents the external world.*
>
> [In Rationalism] *Knowledge comes from the direct examination of the structures of human thought. Evidence for an unobservable collective consciousness can be found in the consequences it has on people's lives, or in thought processes and structures of the mind itself. Logic and mathematics provide the standard for judging knowledge claims.*

Empiricism - often treated as a synonym to positivism as both terms refer to the (now discredited) idea that genuine knowledge can only be derived from science, as the conclusions of science are logically derived from empirical data. However, in epistemology, the term empiricism refers to the inclination that knowledge is derived from the senses, in opposition to the rationalist view that there exists innate knowledge (derived from reasoning). Critics of empiricism argue that there is no validity to data without interpretation or judgement, and that theories are required, to which data should be tested, which's results in turn only is indicative of truth or falsity. Within the social sciences, the term empiricism may allude to works that emphasize empirical data to a fault, while discouraging the construction of theories. (Lewis-Beck, Bryman, & Futing Liao, 2004)

Rationalists claims knowledge is derived by reason through indisputable axioms and formal logic, in contrast to the Empiricists argument that we depend on human senses to produce reliable knowledge, and that knowledge about the world can only be obtained through direct sense-experience. In empiricism, human senses observe reality, which is composed of material things, where concepts and generalizations make for summaries of observations, whereas in rationalism, the world is viewed as real and general, as it exists independently of people (and their consciousness and their circumstances). (Lewis-Beck, Bryman, & Futing Liao, 2004)

Empiricism and Rationalism further differ as to what logic they utilize to arrive at conclusions. Empiricism is recognized by its inductivism, whereas Rationalism is recognized by deductivism. Essentially, inductive logic is a logic of evidential support – observations make for generalizations that can be extrapolated, whereby the premises must be true for at

least some. Deductive logic is based on premises that logically entails the conclusion, which must be true, as the premises are true. Deductivism thus provides total support for the conclusion (Hawthorne, 2021).

2.4 Axiology

Traditional axiology investigates what is good, but also how good it is, and how the good in good things relate to each other, essentially this is further a question of just what value is. Central to this thesis, is the differentiation between *intrinsic* and *instrumental* value. That which is a good because it leads to good outcomes has an instrumental value, whereas something which *is* good itself holds an intrinsic value. (Schroeder, 2021)

According to L. Given (The SAGE encyclopedia of qualitative research methods, 2008), axiology (or value theory) unifies separate discussions about value under one greater term, debating the essence of truth, utility, goodness, beauty right conduct and obligation. Axiology, as a discipline, further focuses on the value of human life, knowledge, wisdom, freedom, love, justice, self-fulfillment, and well-being. In qualitative studies, axiology is of great importance, as it is related to the ethics, assumptions, and research paradigms of research.

Axiology is subordinate to value theory, which revolves around the nature of value itself, be it aesthetical, ethical, the dichotomy between good and bad, & right and wrong, the epistemic value of truth, rationality, and justification. Philosophers have debated whether value is innate, defined by human interest or universally valid. In any case, value cannot be sensed or measured scientifically, but it arises out of our relationship with things. While attempting to identify final values, or organizing value hierarchically, a recurring problem for the study of value is that lack of justification or any validity to the claims. The study of value is closely related to the study of ethics, and ethics based on value is precisely axiological ethics – where the focus lies with what is worth doing, rather than what should be done. (Given, 2008)

Any research paradigm comes with assumptions, and as such as scientific knowledge rests on assumptions. The assumptions themselves are not a problem, but failing to identify them, or their consequences, lead to problems, as assumptions encode values. Arguably, axiology is of greater importance than even ontology and epistemology in understanding the reasonings of researchers (and stakeholders). (Given, 2008)

3 Methodology

3.1 Scoping studies

In *Critical Infrastructures: How resilient are they? Manuscript to be submitted for possible publication in an international journal. (Revised version of the manuscript submitted to Reliability Engineering & System Safety on July 8, 2020)*, Rød, B., and Johansson, J. utilize the scoping study methodology to review scientific literature, which was found appropriate to this thesis in order to select and review relevant literature. Rød and Johansson cite, Arksey, H. & O'Malley, L (*Scoping studies: towards a methodological framework. International journal of social research methodology*, 2005), Levac, D., Colquhoun, H., & O'Brien, K. K. (*Scoping studies: advancing the methodology*, 2010), and Daudt, H. M., van Mossel, C., & Scott, S. J. (*Enhancing the scoping study methodology: a large, inter-professional team's experience with Arksey and O'Malley's framework*, 2013) for a theoretical backdrop as to how their scoping study was conducted.

3.1.1 Arksey & O'Malley's framework for scoping studies

A scoping study as described by Arksey & O'Malley (2005) is, essentially, another iteration of the literature review, among (full) systematic reviews, meta-analyses, rapid reviews, (traditional) literature reviews, narrative reviews, research synthesizes and structured reviews, albeit with certain constraints which separates it from the others:

> *[…] a scoping study tends to address broader topics where many different study designs might be applicable. […] a scoping study is less likely to seek to address very specific research questions nor, consequently, to assess the quality of included studies.* (Arksey & O'Malley, 2005, p. 20).

Scoping studies makes for another methodology amongst others, which can be applied to the appropriate research purposes and research questions. However, a scoping study might be performed as a stand-alone project, but also with the intent of (rapidly) mapping concepts, notions, sources, and evidence in separate fields of research, and particularly in complex, or "uncharted" fields of research. Arksey & O'Malley further describe four reasons as to why a scoping study might be undertaken:

> *1. To examine the extent, range, and nature of research activity: […]. 2. To determine the value of undertaking a full systematic review: […].3. To summarize and*

disseminate research findings: […] 4. To identify research gaps in the existing literature: […] (Arksey & O'Malley, 2005, p. 21-22)

These four reasons differ between two general ways of thinking about scoping studies: that of the scoping study as an on-going review process (intent on producing a full systematic review) or that of the scoping study of a method on its own. Essentially, this makes for an iterative process where search queries might be refined or even repeated to ensure that study is conducted with adequate or desired breadth; as the scoping study is supposed to identify *all* relevant literature, regardless of study design. Scoping studies *map out* an area of interest, but they are not fit for answering very specific research questions. Due to the sheer volume of data produced through this methodology, researchers tread a fine line between reaching adequate breadth and depth, however, the former outweighs the latter when conducting scoping studies. According to Arksey & O'Malley, scoping studies produce a narrative or descriptive account of the research reviewed, but not a synthesis of its findings. Furthermore, scoping studies should not assess the quality of evidence in the aggregated data. Arksey & O'Malley emphasize the need for transparency in while utilizing the methodology, both with the intent of replicability, but also with regards to reliability.

Arksey & O'Malley presents a framework for scoping studies (based on the fourth of the above cited reasons for conducting a scoping study), which consists of five stages: 1) identifying the research question, 2) identifying relevant studies, 3) study selection, 4) charting the data, and 5) collating, summarizing, and reporting the results. Arksey & O'Malley further suggest a consultation exercise as an optional stage 6 – which, due to scope and available resources is deemed not relevant to this thesis. Consequently, it will not be addressed further in this thesis. The contents of the five relevant stages (1-5) can be further explicated as follows:

Identifying the research question (1) also entails highlighting important aspects or facets of the research question in greater detail, such as the study population, interventions, and outcomes. The research question must be specific to the area of interest, while simultaneously achieving adequate breadth of coverage.

Identifying the relevant studies (2) also includes deciding where to search for relevant literature, determining a span of time in which literature will be reviewed for inclusion or exclusion, but also about literary language(s). During this step researchers should also reason

as to what limitations they impose, and why they impose these, on the aggregated data for either inclusion or exclusion into the study.

Study selection (3) should also address overlap and differences in terminology in the relevant research. This step also involves establishing exclusion and inclusion criteria based on type(s) of studies, interventions, (care) recipient groups, and career groups, which are thereby applied to the literature, which will be scrutinized according to a deadline.

Charting the data (4) involves producing a data frame based on an analytical framework which provides an overview of general and specific information. General information can encompass author(s), publication year, and geographical location, while specific information can encompass what study population, type of intervention, outcome measure and study design the individual papers utilize. The intent should be to approach every study with a uniform approach; however, this might be unfeasible and dependent on what information the paper(s) under scrutiny provides for.

Collating, summarizing, and reporting the results (5) should not, as mentioned above, result in a synthesis of the literature and its evidence, nor should it asses the weight or quality of evidence. This step simply involves providing an overview of what has been reviewed, along with both a numerical and a thematic analysis.

3.1.1.1 Levac et al's critique of Arksey & O'Malley's framework

In *Scoping studies: advancing the methodology* (2010), Levac et al proposes the following recommendations or augmentations to the stages of a scoping studies, as presented in by Arksey & O'Malley (, however, particularly for health research):

Identifying the research question (1) should combine a broad research question with a clearly articulated scope of inquiry, which includes defining concepts, target populations, and (health) outcomes of interest to both clarify the focus of the scoping study and to establish an effect search strategy. The purpose (in reference to the above cited reasons) of undertaking a scoping study should also be considered during this stage while articulating the research question. Levac et al further argue that scoping studies conducted according to the fourth reason may yield false conclusions if the quality of evidence is not assessed.

During the *Identifying the relevant studies* stage (2.), researchers should also make sure that whatever considerations given to feasibility of conducting the scoping study do not

compromise the ability to answer the research question, or that the study won't achieve its purpose. Furthermore, Levac et al argue that the scoping study team should hold adequate methodological and contextual expertise to make sound decisions regarding comprehensiveness and breadth. It is also important that researchers justify limitations at this stage in the study.

During the study selection stage (3.) researchers should refine their search strategy based on abstracts, while also reviewing full articles to decide whether they should be included or not. This should alleviate any ambiguity on broader research questions.

While charting the data (4), researchers (or the research team) should make sure that the charted data answers the research question(s), and collectively develop the data plotting chart to determine what variables should be extracted.

Levac et al argue that the stage for Collating, summarizing, and reporting the results (5) should be broken down into three sub-stages with regards to the descriptive numerical summary (which addresses characteristics of the included studies, such as number of studies, types of study design, year(s) of publication, type(s) of interventions, study population(s), country of origin etc.): 1) Analyzing the data, 2) reporting the results, and 3) applying meaning to the results. The final product should be tied to the purpose of the scoping study, while the implications of the findings should be taken into consideration regarding a broader context.

3.1.1.2 Daudt et al's critique of Arksey & O'Malley's framework

Daudt et al's critique is largely in line with Levac et al, however, Daudt et al propose the following recommendations or augmentations to Arksey & O'Malley's framework:

While identifying the research question (1. stage), Daudt et al advice researchers to follow the recommendations of both Arksey & O'Malley and Levac et al to define concepts in their research question to clarify the scope, but also to redefine search terms. Daudt et al however stresses that researchers should avoid reducing the research question as the scoping study progresses to fit the methodology.

Daudt et al argue that identifying the relevant studies (2. stage) requires comprehensiveness to be thorough, and that researchers should go out broad, and then fine tune their search for literature (in accordance with Arksey & O'Malley's framework).

As for the study selection stage (3. stage), Daudt et al agree on Levac et al's inclusion and exclusion criteria, however, they argue that assessing quality is necessary component of scoping studies, and that this should be added to the framework.

When charting the data (4. stage), Daudt et al point out that every single paper included in the study should be given a unique identifying number.

As for the Collating, summarizing, and reporting the results (5. stage), Daudt et al explicitly endorse Levac et al's suggestions for the stage, by adding separate sub-stages in resemblance of a qualitative data analysis or thematic analysis.

However, in closing, Daudt et al. disagree on the notions that scoping studies should be rapid, and that they should take time.

3.1.2 Applied Scoping Study Framework

With regards to Levac et al's and Daudt et al's critique to Arksey & O'Malley's I will apply the following methodological framework to the scoping study performed in this thesis, however, I have combined phases 2 & 3, and 4 & 5, respectively, as it was found more purposeful. As is evident, my approach will differ somewhat to what is prescribed by Arksey & O'Malley, Levac et al, & Daudt et al, due the scope of this thesis:

1) I will state a broad research question specified to the discipline, as per Arksey & O'Malley. I will however not define concept(s), target populations or outcomes of interest, as specified by Levac et al, due to the nature of the research question(s). I will also state the purpose of conducting the study, as specified by Levac et al. Search terms will be redefined if needed according to Daudt et al's recommendations, without reducing the research question. Essentially, this means that the scope of inquiry might be subject to change.
2) During the second stage, I will decide where I will search for the relevant literature, and literary language. I will particularly follow Daudt et al's recommendations regarding breadth of coverage during the second stage, which will also be relevant to Daudt et al's recommendations to stage 1. The second stage also includes stating inclusion and exclusion criteria for the literature, and whatever limitations I impose will also be stated at this point.
3) Any considerations regarding what type(s) of will be decided upon during this stage. Due to the nature of the research question, it is not necessarily beneficial to address

overlap or differences in terminology, as advised by Arksey & O'Malley. If needed, the search strategy will be refined if particularly abstracts show that the aggregated results are unfit, but this is also relevant upon reviewing full articles. I will however not assess the quality of the selected literature as per Daudt et al's recommendation, due to the nature of the research questions.

4) During the fourth stage I will both general and specific data in a data frame (in excel), which will also be made available for review to ensure transparency. This data frame should be, as far as possible, be applied uniformly to analyze the literature and provide relevant data. As advised by Levac et al, I will be diligent about plotting data that answers the research question(s), and not generic irrelevant data. I will assign a unique number to each selected paper according to Daudt et al's recommendation.
5) During stage five I will not provide a synthesis of the reviewed literature. In its simplest form, this stage will provide an overview of the reviewed literature and the data extracted from the literature, along with analysis of that which has been reviewed. It will be beneficial do this in the manner endorsed by Levac et al, further advised by Daudt et al, whereby the stage is broken down in three substages, akin to a qualitative content analysis, consisting of 1) analyzing the data, 2) reporting the results, and 3) applying meaning to the results.

3.1.2.1 Stage 1: Research Question(s)

I raise the following research question: What ontological, epistemological, and axiological assumptions are prevalent in societal security and safety research from 2016 to 2021? This research question will further be divided into six subordinate research questions, which will be explicated upon under section 3.1.2.3.2, which details the analysis. The overarching research question corresponds to the 1st reason for conducting a scoping study, as described by Arskey & O'Malley:

> *To examine the extent, range and nature of research activity: this type of rapid review might not describe research findings in any detail but is a useful way of mapping fields of study where it is difficult to visualize the range of material that might be available (*Arksey & O'Malley, 2005, p. 21*).*

3.1.2.2 Stage 2 & 3: Relevant studies & Selection Criteria

Early (pilot) searchers revealed that searching for the terms "societal security" OR "societal safety" (utilizing Boolean operators) provide very few results (<10) in the relevant journals.

Keeping with the iterative nature of scoping studies, the search terms were thus refined. While it has gone unmentioned until this point, this thesis consequently speaks of "societal security & safety", whereas the referred literature in this thesis consequently speaks of "societal security". I have however, opted to carry out searches which cover both "security" and "safety", while disregarding their discrete semantic differences. As mentioned in the literature review, the functionalist iteration of societal security developed in the Nordics, where (Swedish) "säkerhet" and (Norwegian) "sikkerhet" both may well be translated as either "security" or "safety" to highlight discrete subtle differences. I do acknowledge that this most certainly affects search outcomes, while I justify this by the inclusion of the term "societal" in searches, while also referring to the intended breadth of coverage in scoping studies, as stipulated above. Searching for "security" OR "safety" AND "societal" proved far more productive.

The concept(s) of interest are thus both "security" and "safety", when found in association with society (as in "societal"), which should encompass the entire breadth of sub-disciplines and domains which can be ordered under the (umbrella-) term societal security & safety. To purposefully limit the scope, and contextualize the relevant articles, the search was conducted across established journals: *Safety Science*, *International Journal of Disaster Risk Reduction*, *Risk, Hazards, & Crisis in Public Policy* and *Journal of Contingencies and Crisis Management*. Furthermore, the scope was limited in time, to encompass articles published in the past five years (2016-2021). To purposefully examine articles through a coherent framework, this thesis will only research qualitative research articles, and primarily original empirical research (as secondary & tertiary data alone will oftentimes be reiterating concepts).

Consequentially, these inclusion and exclusion criteria were applied:

Table 1 – Inclusion & Exlcusion Criteria

Inclusion Criteria	**Exclusion Criteria**
"Security" OR "Safety" AND "Societal"	
English	Non-English
Empirical (original) research	Research (exclusively) utilizing secondary & tertiary data

Qualitative methods	Mixed & quantitative methods
Published 2016-2021	Published pre-2016 and post-2021.
Published in: *Safety Science*, *International Journal of Disaster Risk Reduction*, *Risk, Hazards, & Crisis in Public Policy* or *Journal of Contingencies and Crisis Management*.	
	Author affiliation – whereby the relationship between the author of this thesis and the author of the research article is deemed to close.

All articles, ordered by relevancy to the search query, were considered (until up to 10 was selected per journal) no matter their title(s) or keyword(s), unless a title explicitly revealed that the article would be irrelevant or non-applicable (c.f., systematic literature reviews). Relevant research articles were selected based upon abstracts and given a read-through if the abstract did not provide a clear-cut answer whether the article was relevant to the study or not. The primary concern was to identify empirical (original) research, which is essential to the research question(s), as secondary and tertiary data (alone), essentially, reiterates ontological (and to a lesser extent epistemological) assumptions. The literature was collected through the ScienceDirect (Elsevier) advanced search function, and Wiley Online Library advanced search function.

3.1.2.3 Stage 4 & 5: Charting & Collating, summarizing, and reporting the results

To answer the research questions, relevant data was extracted from the reviewed literature. This was conducted in a systematic manner, whereby general information about the articles of which the data was extracted, and specific information (text excerpts related to the research questions), was charted and classified according to the relevant typologies. The charting of data was thus systematic, according to the recommendations of Daudt et al & Levac et al. The charted data will further be made available for scrutiny and replication.

3.1.2.3.1 Becker & Niehave's framework of typological assumptions

Analysis of the relevant data will be based on the reference framework for analyzing and systematizing epistemological assumptions in Information Systems research presented by J. Becker & B. Niehave's, in *Epistemological perspectives on IS research: a framework for analyzing and systematizing epistemological assumptions* (2007, p. 202). This will further be reported in Empirics & Discussion chapter to apply meaning to the results.

The framework revolves around the following five questions: 1) What is the object of cognition (ontological aspect)? 2) What is the relationship between cognition and the object of cognition? 3) What is true cognition? 4) Where does cognition originate? and 5) By what means can cognition be achieved? (Methodological aspect), whereby Becker & Niehave present the respective typological categories for each question, relevant to Information Systems research.

The application of this framework is justified by the fact that Information systems research, like societal security & safety research, is a broad discipline (which also overlaps into the domain of security), as described by Becker & Niehave. However, the relevant typologies of ontological and epistemological assumptions must be drawn from societal security & safety research, evident by the literature review in the introduction.

3.1.2.3.2 Applied reference framework of assumptions

Adapted and fitted to societal security & safety research, the respective questions in the framework can be answered by the following typologies, inspired by Bekcer & Niehave (2007, p. 202):

1) *What is the object of cognition? (Ontological aspect)*

The first question analyses what *is*, and how it is. Essentially, what is the object of research? The answer to this question is dependent on whether the researcher holds the position of a) ontological realism or b) ontological idealism (see section 2.2.1 in this thesis).

2) *What is the relationship between cognition and the object of cognition?*

The second question revolves around what is possible to know about the object of research and pertains to the positions of a) epistemological realism (which is dependent on the ontological assumption of realism) and b) constructivism (which is related to ontological

idealism) (see section 2.2.1 & 2.2.2 in this thesis). Essentially, whether reality is objective or subjective, respectively.

3) *What is true cognition? (Concept of truth)*

The third question scrutinizes how researchers believe true knowledge can be acquired. Essentially, what is correct, and how do you know that it is correct, which is answered by either a) Correspondence theory of truth or b) Consensus theory of truth (see section 2.2.1 regarding Correspondence Theory of Truth, however, note that Consensus Theory of Truth is drawn from Becker & Niehave's framework as the truth theory related to Constructivism, which is not described in the theory chapter of this thesis).

4) *Where does cognition originate?*

The fourth question answers whether knowledge is acquired sensory *a posteriori* or by reason *a priori*, by a) the empiricist approach or b) the rationalist approach (see section 2.3.5 in this thesis), respectively.

5) *By what means can cognition be achieved? (Methodological aspect)*

Question five asks by which method knowledge can be acquired, through a) inductivism – extrapolating the individual to the universal (*a posteriori*), or b) deductivism – derivation of the universal to the individual, (*a priori*) (see section 2.3.5 in this thesis).

However, this thesis is also intent on analyzing and reporting on the axiological assumptions in societal security & safety research which raises a 6th question: What is the nature of the value of knowledge? Becker & Niehav, however, J. Heron & P. Reason addresses this issue in *A participatory inquiry paradigm* (1997), from which the following augmentation to the reference framework is inspired:

6) What is the nature of the value of knowledge (, and why is it worthwhile to acquire it)?

The value of knowledge (, in scope of the identified typologies) can be regarded as either of a) knowing is *intrinsically* valuable or of b) knowing can be used to gain that which is considered valuable and is thus of *instrumental* value (see section 2.4 in this thesis).

Consequently, we are left with the following reference framework to typologically categorize ontological, epistemological, and axiological assumptions in societal security & safety research:

Table 2 – Typological framework of metaphysical assumptions

Typological ontological & epistemological assumptions		
1. What is the object of cognition (ontological aspect)?	Realism: *A world exists independently of human cognition, for instance, independent of thought and speech processes.*	Idealism: *The 'world' is a construct depending on human consciousness.*
2. What is the relationship between cognition and the object of cognition?	Epistemological realism: *Objective cognition of an independent reality is possible*	Constructivism: *The relationship of cognition and the object of cognition is determined by the subject.*
3. What is true cognition?	Correspondence theory of truth: *True statements are those which correspond with 'real world facts'.*	Consensus theory of truth: *A statement is true (for a group), if it is acceptable to the group.*
4. Where does cognition originate?	Empiricism: *Cognition originates from the sense. Such experience-based knowledge is called a posteriori or empirical knowledge.*	Rationalism: *Cognition originates from the intellect. Such non-experience-based knowledge is referred to as a priori knowledge.*
5. By what means can cognition be achieved? (Methodological aspect)	Inductivism: *Induction is understood as the extension from individual cases to universal phases, the generalization.*	Deductivism: *Deduction is the derivation of the individual from the universal.*

Typological axiological assumptions		
6. What is the nature of the value of knowledge (, and why is it worthwhile to acquire it)?	Intrinsic: knowing is intrinsically valuable	Instrumental: knowledge can be used to gain that which is considered valuable

(Becker & Niehave, 2007; Heron & Reason, 1997)

The applied framework is comparably narrower in scope, with less typologies, than the framework presented by Becker & Niehave (with regards to ontology and epistemology), however the premise of their framework is derived from a far more exhaustive literature review in Information Systems research. As has been already described in the literature review, contemporary societal security & safety research is an amalgamation of two disciplines with distinct underlying metaphysical assumptions, described as identity-based and functional societal security, respectively. These two 'directions' adhere to different ontological and epistemological assumptions. As evident in the literature review the functionalist approach is more-so related to ontological & epistemological realism, while the identity-based approach is related to ontological idealism and constructivism. In any case, the typologies presented in the framework constitute ideal types. Whenever an article is assigned membership to a given typology, it must be viewed as fuzzy-membership – it largely belongs to the typology. The typologies are far from exhaustive, but adequate to the scope of this thesis.

3.1.3 Validity & Reliability

According to Blaikie & Priest (2019), the terms reliability and validity stem from the quantitative research traditions. Validity concerns itself with whether you investigate just what you intend to measure, and reliability with whether you produce consistent results. Methodologically, validity and reliability are established through corroboration and replication. However, Blaikie & Priest states that both corroboration and replication is hard, if not impossible, with qualitative data.

In *Qualitative Research from Start to Finish*, R. Yin (2016) describes a valid study as one that has interpreted the data properly, so that the research(er) has made conclusions that accurately reflects and represents the real world. While it is tempting, I will not address the irony in this,

given the theme of this thesis, as I do not wish to digress to a meta-level discussion regarding validity (or reliability). However, Yin underscores that it is important (in qualitative research) that researchers don't conflate validity with realism, as the original conception of validity was tied to realist assumptions of what *is*.

Yin (2016, p. 89) reiterates J. Maxwell's (eight) strategies to combat threats to validity, whereby this thesis largely (but not fully) adheres to five of these, by "Intensive long-term involvement - to produce a complete and in-depth understand of field situations, […]", "*Rich* data – to cover fully he field observations […] with detailed and varied data", "Search for discrepant evidence and negative cases – to test rival or competing explanations", "Triangulation – to collect converging evidence from different sources", and "Comparison – to compare explicitly the results across different settings, groups, or events". However, neither of these strategies are fully applicable given the research design and overarching theme.

Lewis-Beck, Bryman & Liao (2004) describe how both validity and reliability can further be dichotomized into internal and external. Internal validity refers to whether defined concepts and their relations interact with outcomes in a meaningful manner, or if they are dependent on each other at all. External validity refers to whether research findings can be generalized to a larger population (than the selection accounted for in a study). Usually, there is a trade-off between internal and external validity, however, weak internal validity entails that concept and their relations have not been properly defined, and as such do not interact with outcomes. Therefore, sacrificing external validity in favor of internal validity is a justified approach.

According to Lewis-Beck, Bryman & Liao, there is contention regarding reliability amongst qualitative researchers, centered on whether reliability is important in qualitative research, as some (, like already stated above,) deem that qualitative research cannot be replicated or reproduced. However, adherents to the epistemic role of reliability in qualitative research, insists that observations made in a study must be both stable over time, and throughout different methods. Internal reliability refers to whether consistent results are produced across observations within a study, and external reliability whether consistent results are produced when extrapolated to other observations. Lewis-Beck, Bryman & Liao (*SAGE encyclopedia of social science research methods*, 2004) further reiterate Guba & Lincoln, who point out that reliability should give way for dependability due to the philosophical underpinnings of

qualitative inquiry (and their epistemic consequences), and that replication is not possible. Thus, transparency should be expected from researchers.

Given the research questions, it is somewhat difficult to assess both reliability and validity in scope of this thesis. With respects to internal validity, the typologies could arguably be far more exhaustive to properly analyze the data, however, it is adequate given the novelty of the task and what has been revealed both through the literature review, and by the constraints of the scoping study methodology. External validity is arguably weaker, due to the method of which data is selected – the study only examines relatively recent research, from selected journals, among other stringent criteria, and might produce biased results, as the differences in the amalgamated discipline of societal security & safety research stem from the earlier inceptions. In terms of (internal and external) reliability, the reference framework for analyzing data should produce consistent results both across the relevant data, and when extrapolated to other sources of data (and further across time), due to its fuzzy-logic nature. Furthermore, the reliability (or dependability) of this paper is strengthened by methodological rigor and transparency.

4 Empirics & Discussion

In the following section I will both present and discuss general features observed during the classification of the research articles, and further explicate on particularly interesting observations observed during the classification process.

For the respective search queries from which the relevant research articles were aggregated, see Appendix A. In total, 33 research articles, listed in Appendix B, were analyzed and classified according ontological, epistemological, and axiological assumptions, presented typologically in Appendix C. Furthermore, 4 of the research articles selected for review were discarded, as it became evident that they utilized either quantitative or mixed methods, whereas 1 research article was discarded due the affiliation between the author of the research paper and the author of this thesis. The total number of research articles reviewed (33) is lower than intended (The original intent was to review as many as 50 research articles), however, the allotted time frame did not allow for further inquiry into more research articles time. Consequentially, this affects the weight of the evidence presented in this thesis.

4.1 *Functionalist* vs. *Identity-based* Societal Security

Whereas they main intent of this thesis is to answer what ontological, epistemological, and axiological assumptions societal security & safety researchers hold, it was found purposeful during inquiry into the research articles to disseminate (, when possible,) what iteration, namely *functionalist* or *identity-based* societal security, the research resembled. Consequently, I will address this matter first, as the same topic was addressed early in the introduction, prior to introduction of the theoretical perspective.

As presented in the introduction, contemporary Societal Security & Safety research is an *amalgamated* discipline, according to Pursiainen & Abdel-Fattah (2021), moreover, it evolved from two traditions, an *identity-based* and a *functional* tradition, with separate foci and metaphysical assumptions. By large, the research articles reviewed in this thesis relate to the *functional* iteration (14 items) or neither (18 items). Only two items, *Exploring and modeling the societal safety and societal security concepts – A systematic review, empirical study and key implications* (Høyland, 2018) & *What is it like for a middle manager to take safety into account? Practices and challenges* (Callari, Bieder, & Kirwan, 2019), make explicit reference to the *identity-based* iteration or *ontological security*. However, Høyland (2018) also explicates on the *functional* iteration, as he presents a literature review on Societal Security in the manner of this thesis. Curiously though, at least in the scope of the research articles reviewed in this thesis, the characteristic constructivist notions of *identity-based* societal security are just as widespread in contemporary *functionalist* societal security research. The *functionalist*-oriented research articles seemingly adhere to the constructivist tradition previously attributed to the *identity-based* iteration of Societal Security. The former dichotomy of two traditions putting emphasis and identity and objects respectively, is not observed. The objectivist focus, in a literal sense, is largely missing and researchers more-so address abstractions or discourses related to objectivist security. Contemporary *functionalist* societal security research is largely constructivist and apparently put no particular emphasis on object security, but rather discourses over the processes related to object security, regulation, and governance (Hjelum & Lægreid, 2019; Nilsen, Albrectsen & Nyheim, 2018; Størkersen, Thorvaldsen, Kongsvik, & Dekker, 2020; Larsson & Sjöqvist, 2021; Lehtonen, Kojo, Kari, & Litmanen, 2021; Pollock, K. & Steen, R., 2020 & Fiorentini, 2018.). However, I will however refrain from asserting anything definite or generalize over this matter, as it may be skewed due to the limitations that were imposed on the selection of relevant research articles, or the limited number of articles reviewed. It is not unlikely that *functionalist*-

oriented societal security research stemming from technical disciplines put much more emphasis on objects *per se*, than those drawn from the social sciences.

4.2 Focal point(s) of Journals

The respective journals emphasize different aspects of security and safety researcher, oftentimes evident by journal name alone. However, references the *identity-based* iteration of societal security is only found in *Safety Science*. References or semblance with the *functionalist* iteration is more-or-less distributed among all journals, with some skew towards *Safety Science* & *Risk, Hazards & Crisis In Public Policy*.

4.3 Analysis of ontological, epistemological, & axiological assumptions

As presented in Appendix C the selected research articles largely testify to conformity with regards to ontological and epistemological typological assumption, and as stated above, the reviewed research articles largely operate within an idealist-constructivist ontological and epistemological approach with regards to objects and cognition about these objects, and further empiricism and inductive logic of inquiry with regards to the origin of cognition. However, there are a few research articles diverging into realist ontology and epistemology, and further some discrepancies, which will be addressed in the following sections.

4.3.1 Objects & Cognition About the Objects

Out of 33, 31 of the reviewed articles take on idealist-constructivist ontological and epistemological assumptions, but only two takes on realist ontological and epistemological assumptions: Grabbe, Kellnberger, Aydin's (2020) research in utilizing the FRAM framework for assessing risk in traffic safety, emphasizing the objects, the measurable and metrics moreover as concepts of relation to risk, and Linbom's (2020) inquiry into risk and risk assessments, promoting quantifiable operationalizations (while evaluating error in epistemological terms). Moreover, Linbom's inquiry into the concept of risk and risk assessments can be juxtaposed to Peters (2021) inquiry conflict as a driver for disaster risk, through an idealist ontology and constructivist epistemology, where disasters are viewed as a socially constructed phenomenon – essentially, risk being related to a construct.

Arguably, many of the idealist(-constructivist) concepts are highly abstract, complex, and multifaceted. For instance, in disaster research related to cyclones in Bangladesh, researcher scrutinize concepts such as *Gendered disaster immobility* (Ayeb-Karlsson, 2020) and

Vulnerability and adaptation strategies of older people (Malak, Sajib, Quader, & Anjum, 2020), where *vulnerability* in the latter is defined as such: "Vulnerability is the sum total of characteristics of people (and the event) that can account for the different impact on persons of a disaster of the same magnitude". A subordinate term which describes the concept itself, is very much intangible, testifying to complexity of the concept being researched, whereas the authors state that "We argue that vulnerability is differentially experienced by various age groups of people and, among the age groups" (Malak, Sajib, Quader, & Anjum, 2020) testifying to constructivist epistemology. Other abstract concepts are *framing* (Scott & Ennander, 2017), *media framing* (Nilsson & Ennander, 2020) and *watchdog journalism* (Lehtonen, Kojo, Kari, & Litmanen, 2021), where the concept (or parts of it) is a metaphorical extension of physical (tangible) origin. Further (socially complex) abstractions include concepts such as *associated decision-making* (Wamsler, & Johannessen, 2020) and *collective decisions* (Kalkman, Kerstholt, & Roelofs, 2018).

4.3.2 True Cognition

Most of reviewed articles adhere to the Consensus Theory of Truth, as a continuation of the inductive-constructivist assumptive stance. However, Almklov, Antonsen, Bye & Øren (2018), working within the inductive-constructivist assumptive stance, and conducting the research within the constraints of empiricism (and inductive logic of inquiry) state that:

> *[…] They reflect the construction and maintenance of cultural differences in the interaction between two groups and must be read in pairs, not as cultural inventories of the individual groups. To select one column from the table and say that this represents one group is, in other words, problematic and misleading, since relational stereotypes emerge as groups of practitioners interact.* (Almklov, Antonsen, Bye & Øren, 2018, section 6.1)

In essence, Almklov, Antonsen, Bye & Øren argue that the stereotypical notions of group A about group B are untrue, thereby implying an adherence to the Correspondence Theory of Truth, which is not at terms with the idealist-constructivist assumptions and the Consensus Theory of Truth, which states that "A statement is true (for a group), if it is acceptable to the group" (Becker & Niehave, 2007, p. 202). As such, it testifies to an incongruence or dissonance in the assumptions held by the author with regards to truth. If reality, and what is knowable about reality is subjective and mind-dependent, what is true most certainly must

also be subjective and mind-dependent (and related to group consensus), and not an objective fact entrenched in the *real world* which can be measured (by calibrated instruments), as it is.

Moreover, the Grabbe, Kellnberger, Aydin (2020) & Bengler & Linbom (2020) adhere to the Correspondence Theory of Truth: "True statements are those which correspond with 'real world facts'" (Becker & Niehave, 2007, p. 202), naturally, due to the assumption of realist ontology and epistemology.

4.3.3 Origins of Cognition

As is evident by the typological matrix (Appendix C), all the reviewed research articles are conducted within the empiricist tradition. This is of no surprise, considering the selection criteria imposed on the relevant material, but also due to the nature of the discipline of societal security & safety, as outlined in the literature review. With the concepts described above, such as *(media) framing*, *collective decision*s and *associated decision-making* in mind, a Rationalist epistemology to cognition does not seem applicable. However, one article, *Between Autonomy and Paternalism: Crisis Managers' Constructions of Citizens' Responsibilities in the Context of Crises and Contingencies* by Hobbins (2017), researching "Swedish crisis managers' understandings of citizens' (moral) responsibilities and practices" display something akin to a rationalist inclination, at least more-so than others, by referring to theorization about moral philosophy, and analyzing findings in the scope of morals. Moral philosophy is arguably derived from rationalist assumptions about cognition and innate knowledge.

With regards to the sensory nature of Empiricism, it is purposeful to revisit the theory section of this paper with regards to (justified) beliefs and perception, drawn from Steup & Neta (2020) and Watson (2022). Most of the reviewed articles rely on testimonial evidence, through interviews and documents analyses. Calibrated instruments are hardly mentioned, save for Grabbe, Kellnberger, Aydin (2020) referencing its utility in future research. Testimony does not possess its own mental faculty and is also subject to the fallacies of perception and memory, through the medium. Testimonies are only as reliable as their origins.

Whereas this is wholly in line with the idealist-constructivist approach to the nature of the reality and knowledge, and further truth, it is paramount to acknowledge the inherent deficiencies of a testimony as source for knowledge, with the testimony's origins in both a

medium's perceptive abilities and memory, which may be fallible. However, many researchers (c.f. Larsson & Sjöqvist, 2021) do make limited generalizations from their observations, due to similar reasoning.

Without digressing into a meta-discussion on research methodology, I do however wish to entertain a deductive line of reasoning to warn of the perils facing Social Sciences, and thus Societal Security & Safety, while conducting research through ontological idealist and epistemological constructivist assumptions with regards to reality, and with an empiricist assumption with regards to cognition and further inductivist reasoning. Particularly inspired by the reasoning presented by Almklov, Antonsen, Bye & Øren (2018), with regards to truth. If reality, and cognition about reality is subjective and mind-dependent, and thus truth related to the consensus (aggregated by the sum of individual assumptions of truth), then triangulation efforts (to strengthen validity) to distill or mediate an 'objective' truth found in between the consensus of groups, discredit, or nullify, the original assumptions held by researchers. Essentially, the researchers may display cognitive dissonance. However, as described by Miller (2021), presented in section 2.2.1, ontological and epistemological assumptions are not binary, but distributed along a spectrum, which in part allows us to forgive such (apparently) dichotomous assumptions.

4.3.4 Logic of Inquiry

Due to their empiricist assumptions of cognition (see section 2.3.5), most researchers utilize inductive logic, however, certain articles also utilize deductive reasoning (Scott & Ennander, 2017; Peters, 2021; Umeokafor, Windapo, & Evangelinos, 2019), often due to working the Grounded Theory paradigmatic approach to knowledge, whereby deductive reasoning is introduced in the analysis of data (Nilsen, Albrectsen & Nyheim, 2018; Almklov, Antonsen, Bye & Øren, 2018; Deverell 2021; Jong & Dückers, 2018). These are however still classified according to the inductivist typology, as inductive inquiry constitutes the premise for the deductive reasoning.

One research article however utilizes abductive logic:

> *Abduction refers to a mode of inference where theory and empirical data are gradually reinterpreted as they are contrasted and confronted by each other (Alvesson & Sköldberg, 1994). An abductive research process is characterized by a continuous movement between empirical data and theory (Dubois & Gadde, 2002). First, by*

> *observing the empirical data inductively without theoretical goggles and then deductively with the assistance of theoretical assumptions and prior research, developing a theoretical framework, which is applied on the empirical data in order to develop a deeper understanding of the text (Alvesson & Sköldberg, 1994; Dubois & Gadde, 2002).* (Deverell, Alvinius & Hede, 2019)

However, as with the case of deductive reasoning above, the premise for utilizing abductive logic is based on inductivism, thereby justifying the typological classification of the research article into inductivism. However, it is evident that typological framework must be expanded upon, to adequately address logics of inquiry in Societal Security & Safety Research.

Only one single research article states that it (foremost) utilizes deductive logic (Larsson & Sjöqvist, 2021), by coding their interviews in accordance with pre-determined theoretical notions.

4.3.5 Value of Knowledge

It is perhaps on (the nature of) the value of knowledge the data testifies to most variation, despite an overall conformity regarding ontological and epistemological assumptions. Several authors outright state the *instrumental* value of their research, while others assert that the knowledge is of *intrinsic* value (however, none of the authors use this terminology or explicit wording), whereas other state nothing at all – in these cases the value has been interpreted to be of *intrinsic* value, according to researchers. A prime example of implicit instrumental value is evident in the following statement: "In this way, my research design represents a methodological contribution to safety and security research specifically, as well as to qualitative research more generally." (Høyland, 2018)

In total 11 researchers are interpreted to claim instrumental value, against 22 either stating nothing on the matter, or claiming intrinsic value. Particularly, none of the researchers published in *Journal of Contingencies And Crisis Management* claim that their research hold instrumental value, whereas close to every second researcher claims instrumental value among the other journals: 3 out of 7 in *Risk, Hazards & Crisis In Public Policy*, 3 out of 7 in *International Journal of Disaster Risk Reduction*, and 5 out of 9 in *Safety Science*. Whereas selected researchers do address ontologies and epistemologies explicitly, only Scott & Ennander (2017) address value (thus axiology) in explicit terms. However, the instrumental

value is most often reported with regards to future epistemological endeavors, and rarely with regards to practitioners.

4.3.6 Future Contingencies

However, with regards to the purported reason for establishing journals, that of presenting research with a consistent terminology and to move away from jargon and obscuration, as described by Spencer, Brush, & Osler (2019), I warn that too deep immersion into the idealist ontology, and constructivist epistemology. It is not the intent, by any means, to call-out the research or researchers in question, but to highlight possible future contingencies in Social Sciences. With increasingly complex concepts and operationalization, I reiterate, Machammer & Silberstein's (2002) philosophical perspective on social science, and ask whether the social sciences produce can scientific knowledge, and do the social sciences successfully move from data to hypothesis? If Societal Security & Safety research really does harbor instrumental value, surely, it must be applicable beyond academic circles (at some point, at least), to practitioners of Societal Security & Safety. In onset, the concepts researched by Scott & Ennander (2017) and Nilsson & Ennander (2020), namely (media) framing, are quite tangible and relatable, perhaps due to extended familiarity with the concept, however, it is essentially a metaphor, which testifies to its innate complexity. Though, neither of these authors do claim an instrumental value However, as has been demonstrated above, concepts grow increasingly complex within the idealist-constructivist ontology and epistemology. Complex concepts and operationalizations make inquiry into phenomena difficult, but also raises the threshold for applicability in practical terms (for practitioners), while arguably making knowledge inaccessible (as consumers of research literature must be familiar to ever greater scopes of literature).

I argue that the purported strength of Societal Security & Safety research through a fusion of many disciplines for a holistic approach to the construction of knowledge, reported by Pursiainen & Abdel-Fattah (2021), rests on paradigmatic diversity with regards to ontology and epistemology, and further practical applicability of research findings for practitioners.

4.4 Reflection

An immediate concern as author of thesis, reflecting on the discourse and arguments presented above, is that it will be interpreted as an argument against the commonly held assumptions identified, however, I assure that this is not the case. The relatively harsh critic of the reviewed literature above is a consequence of the fact that mostly ontological idealism

and constructivist epistemology was identified. Beyond this, the critique is meant to be a reminder of potential pitfalls researchers face if they get to immersed in their paradigmatic approach, and particularly if a single paradigmatic approach grows dominant, in favor of other potential paths to knowledge. Furthermore, the author of research has previously been involved with research utilizing cognitive linguistics theory (which most certainly has shaped epistemological assumptions), which paradigmatically resembles both idealism and constructivism. Furthermore, the research presented in this thesis has been conducted in an Empiricist manner, utilizing both inductive and deductive reasoning, thus, it would be quite the conundrum to present an argument against the validity of the methodology. However, I, as others, hold ontological, epistemological, & axiological assumptions about what is true, what can be known, how true knowledge is acquired, and what is valuable, and how it is valuable. As such, I argue that any reader of this thesis is obliged, at least in an informal manner, to analyze the assumptions held by the author. I will however refrain from introspection on my own assumptions in this thesis, as to not face my own conflicting assumptions.

5 Conclusion

In this thesis I have assessed the ontological, epistemological, & axiological assumptions held by societal security & safety researchers, as evident through their research, by reviewing Societal Security & Safety research, identified by utilizing the Scoping Study methodology, (Arksey & O\Malley, 2005; Levac et al, 2010; Daudt et al., 2013) and analyzed the metaphysical assumptions according to a framework inspired by Becker & Niehave (2007) and Heron & Reason (1997). Furthermore, the literature review preceding this described how Societal Security & Safety research stem from two separate iterations, namely the *functionalist* and *identity-based* tradition. This thesis finds that research akin to the *functionalist* tradition is far more frequent, than that of the *identity-based* tradition.

Looking back to Pursiainen & Abdel-Fattah's statement from *Societal Security as Higher Education: The State of the Art in the Baltic Sea Region* (2021, p. 12), that that Societal Security is "characterized by a low level of paradigmatic developments, and b) a high degree of 'softness' in term of its practical applicability", I argue that this thesis has substantiated this claim. By far, most researchers hold the same ontological, epistemological, & (to a lesser extent) axiological assumptions, whereas research paradigms display conformity. Moreover, researcher do report that their findings hold instrumental value (that is utility to achieve what is considered valuable), but for future research endeavors, and not for practitioners. Most

research is conducted with idealist ontology with regards to objects, and constructivist epistemology with regards to cognition about the objects. Furthermore, all reviewed research articles testify to the Empiricist tradition with regards to the origin cognition, however, a single research article do display a Rationalist inclination through innate knowledge that cannot be derived empirically. With regards to axiology, few researchers reflect upon the matter of axiology (or value), however, several researchers do profess that their research holds instrumental value, however, rarely for practitioners of Societal Security & Safety.

As stated in this introduction, and through the research questions, this thesis is intent on unravelling the ontological, epistemological, & axiological assumptions of Societal Security & Safety research not only due to the personal aspirations of the author, but also to promote reflection among Societal Security & Safety researchers. A further coinciding feature is that the thesis can serve as an introduction to both metaphysics in social science, and the discipline of Societal Security & Safety research for those about to get immersed into the vast and ever more relevant discipline that is Societal Security & Safety research.

Figures and Tables

Works cited

Almklov, P. G., Antonsen, S., Bye, R., & Øren, A. (2018). Organizational culture and societal safety: Collaborating across boundaries, in *Safety Science*; Volume 110(Part C), p. 89-99

Arksey, & O'Malley, L. (2005). Scoping studies: towards a methodological framework. *International Journal of Social Research Methodology*, 8(1), 19–32. https://doi.org/10.1080/1364557032000119616

Aspers, P. (2015). Performing ontology. Social Studies of Science, 45(3), 449–453. https://doi.org/10.1177/0306312714548610

Ayeb-Karlsson, S. (2020). 'I do not like her going to the shelter': Stories on gendered disaster (im)mobility and wellbeing loss in coastal Bangladesh, in *International Journal of Disaster Risk Reduction*; Volume 50, November 2020

Becker, J., & Niehaves, B. (2007). Epistemological perspectives on IS research: A framework for analyzing and systematizing epistemological assumptions. *Information Systems Journal (Oxford, England), 17*(2), p. 197-214.

Blaikie, N., & Priest, J. (2019). Designing Social Research. Newark: Polity Press.

Callari, T. C., Bieder, C., & Kirwan, B. (2019). What is it like for a middle manager to take safety into account? Practices and challenges, in *Safety Science*; 113, p. 19-29.

Chakravartty, A. (2017). Scientific Realism. In Zalta, E. N. (ed.), *The Stanford Encyclopedia of Philosophy.* From https://plato.stanford.edu/archives/sum2017/entries/scientific-realism/

Cohen, B. I. (1976). The Eighteenth-century origins of the concept of scientific revolution. *Journal of the History of Ideas, 37(2), p. 257-288.* https://doi.org/10.2307/2708824

Daudt, van Mossel, C., & Scott, S. J. (2013). Enhancing the scoping study methodology: a large, inter-professional team's experience with Arksey and O'Malley's framework. *BMC Medical Research Methodology*, 13(1), 48–48. https://doi.org/10.1186/1471-2288-13-48

Deverell, E (2021). Professionalization of crisis management: A case study of local-level crisis communicators in Sweden, in *Journal of Contingencies And Crisis Management*; 29(2), p. 131-142.

Deverell, E., Alvinius, A., & Hede, S. (2019). Horizontal Collaboration in Crisis Management: An Experimental Study of the Duty Officer Function in Three Public Agencies, in *Risk, Hazards & Crisis In Public Policy*; 23 September 2019.

Ekengren, M. (2008). From a European Security Community to a Secure European Community Tracing the New Security Identity of the EU. In Brach. H (ed.), *Globalization and environmental challenges: Reconceptualizing security in the 21st century* (Vol. Vol. 3, Hexagon series on human and environmental security and peace, p. 695-704) Berlin: Springer

Fiorentini, E. (2018). Governing Proliferation Risks: An Evolutionary Approach to an Uncertain World, in *Risk, Hazards & Crisis in Public Policy*; 10 August 2018

Given, L. M. (2008). The SAGE encyclopedia of qualitative research methods (Vols. 1-0). Thousand Oaks, CA: SAGE Publications, Inc. https://doi.org/10.4135/9781412963909

Glanzberg, M. (2021). Truth. In Zalta, E. N. (ed.), *The Stanford Encyclopedia of Philosophy*. From https://plato.stanford.edu/entries/truth/

Goertz, G. & Mahoney, J. (2012). Concepts and measurement: Ontology and epistemology. Social Science Information, 51(2), 205–216. https://doi.org/10.1177/0539018412437108

Grabbe, N., Kellnberger, A., Aydin, B., & Bengler, K. (2020). Safety of automated driving: The need for a systems approach and application of the Functional Resonance Analysis Method, in *Safety Science*; Volume 126.

Guyer, P. & Horstmann, R. (2021). Idealism. In Zalta, E. N. (ed.), *The Stanford Encyclopedia of Philosophy.* From https://plato.stanford.edu/entries/idealism/

Hawthorne, J. (2021). Inductive Logic. In Zalta, E. N. (ed.), *The Stanford Encyclopedia of Philosophy*. From https://plato.stanford.edu/entries/logic-inductive

Heron, J., & Reason, P. (1997). A Participatory Inquiry Paradigm. *Qualitative Inquiry*, 3(3), 274-294.

Hjelum, M. S., & Lægreid, P. (2019). The challenge of transboundary coordination: The case of the Norwegian police and military, in *Safety Science*; 115, June 2019, p. 131-140.

Hofweber, T. (2021). Logic and Ontology. In *Zalta*, E. N. (ed.), *The Stanford Encyclopedia of Philosophy*. From https://plato.stanford.edu/entries/logic-ontology/

Høyland, S. A. (2018). Exploring and modeling the societal safety and societal security concepts – A systematic review, empirical study and key implications, in *Safety Science*; 110(Part C), p. 7-22.

Jong, W. & Dückers, M. L. A. (2018). The Perspective of the Affected: What People Confronted With Disasters Expect From Government Officials and Public Leaders, in *Risk, Hazards & Crisis In Public Policy*; 30 June 2018

Khlentzos, D. (2021). Challenges to Metaphysical Realism. In Zalta, E. N. (ed.), *The Stanford Encyclopedia of Philosophy.* From https://plato.stanford.edu/archives/spr2021/entries/realism-sem-challenge/

Larsson, O. L. & Sjöqvist, S. (2021). Managing National Food Security in the Global North: Is collaborative governance a possible route forward? in *Risk, Hazards & Crisis In Public Policy*; 09 June 2021

Larsson, O. L. & Sjöqvist, S. (2021). Managing National Food Security in the Global North: Is collaborative governance a possible route forward? in *Risk, Hazards & Crisis In Public Policy*; 09 June 2021.

Larsson, S., & Rhinard, M. (2020). Nordic Societal Security: Convergence and Divergence (1st ed.). Routledge. https://doi.org/10.4324/9781003045533

Lehtonen, M., Kojo, M., Kari, M., & Litmanen, T. (2021). Healthy mistrust or complacent confidence? Civic vigilance in the reporting by leading newspapers on nuclear waste disposal in Finland and France, in *Risk, Hazards & Crisis in Public Policy*; 10 March 2021.

Levac, Colquhoun, H., & O'Brien, K. K. (2010). Scoping studies: advancing the methodology. *Implementation Science*: *IS*, 5(1), 69–69. https://doi.org/10.1186/1748-5908-5-69

Lewis-Beck, M. S., Bryman, A., & Futing Liao, T. (2004). The SAGE encyclopedia of social science research methods (Vols. 1-0). Thousand Oaks, CA: Sage Publications, Inc. https://doi.org/10.4135/9781412950589

Linbom, H. (2020). The missing link – The importance of the capability concept for relating risk assessments and plans, in *International Journal of Disaster Risk Reduction*; Volume 51, December 2020.

Machamer, & Silberstein, M. (2002). *The Blackwell Guide to the Philosophy of Science*. Hoboken: John Wiley & Sons, Incorporated. https://doi.org/10.1002/9780470756614

Malak, A., Sajib, A. M., Quader, M. A., & Anjum, H. (2020). "We are feeling older than our age": Vulnerability and adaptive strategies of aging people to cyclones in coastal Bangladesh, in International *Journal of Disaster Risk Reduction*; Volume 48, September 2020.

Markie, P. & Folescu, M. (2021). Rationalism vs. Empiricism. In Zalta, E. N. (ed.), *The Stanford Encyclopedia of Philosophy*. From https://plato.stanford.edu/entries/rationalism-empiricism/

Miller, A. (2021). Realism. In Zalta, E. N. (ed.), *The Stanford Encyclopedia of Philosophy*. From https://plato.stanford.edu/entries/realism/

Mitzen. (2006). Ontological Security in World Politics: State Identity and the Security Dilemma. *European Journal of International Relations*, 12(3), 341–370. https://doi.org/10.1177/1354066106067346

Mumford, S. (2012). Metaphysics: A very short introduction. Oxford: Oxford University Press.

Nilsen, M., Albrechtsen, E., & Nyheim, O. M. (2018). Changes in Norway's societal safety and security measures following the 2011 Oslo terror attacks, in *Safety Science*; 110(Part C), p. 59-68.

Peters, L. E. R. (2021). Beyond disaster vulnerabilities: An empirical investigation of the causal pathways linking conflict to disaster risks, in *International Journal of Disaster Risk Reduction*; Volume 55, March 2021

Pollock, K. & Steen, R. (2020). Total Defence Resilience: Viable or Not During COVID-19? A Comparative Study of Norway and the UK, in *Risk, Hazards & Crisis* in Public Policy; 03 December 2020.

Pursiainen, C. & Abdel-Abdel-Abdel-Fattah, D. (26. February 2021), *Societal Security as Higher Education: The State of the Art in the Baltic Sea Region.* (NEEDS Intellectual Output 2 (IO2) Report IO2 Task 2.1 & Task 2.2).

Rød, B. & Johansson, J. (Revised version of the manuscript submitted to Reliability Engineering & System Safety on July 8, 2020). *Critical Infrastructures: How resilient are they? Manuscript to be submitted for possible publication in an international journal*. UiT The Arctic University of Tromsø: Tromsø.

Schroeder, M. (2021). Value Theory. In Zalta, E. N. (ed.), *The Stanford Encyclopedia of Philosophy.* From https://plato.stanford.edu/archives/fall2021/entries/value-theory/

Scott, D & Ennander, A. (2017). Postpandemic Nightmare: A Framing Analysis of Authorities and Narcolepsy Victims in Swedish Press, in *Journal of Contingencies And Crisis Management*; 25(2), p. 91-102.

Seale, C. (1999). Quality in Qualitative Research. *Qualitative Inquiry*, 5(4), 465–478. https://doi.org/10.1177/107780049900500402

Spencer, J. B., Brush, S. G., & Osler, M. J. (Nov 26th, 2019). Scientific Revolution. From https://www.britannica.com/science/Scientific-Revolution

Steup, M. & Neta, R. (2020). Epistemology. In Zalta, E. N. (ed.), *The Stanford Encyclopedia of Philosophy.* From https://plato.stanford.edu/archives/fall2020/entries/epistemology/

Størkernse, K, Thorvaldsen, T., Kongsvik, T., & Dekker, S. (2020). How deregulation can become overregulation: An empirical study into the growth of internal bureaucracy when governments take a step back, in *Safety Science*; Volume 128.

Umeokafor, N., Windapo, A., & Evangelinos, K. (2019). Causal inferences of external–contextual domains on complex construction, safety, health and environment regulation, in *Safety Science*; 118, p. 379-388.

Wæver, O. (2008). The Changing Agenda of Societal Security. In Brach. H (ed.), *Globalization and environmental challenges: Reconceptualizing security in the 21st century* (Vol. Vol. 3, Hexagon series on human and environmental security and peace, p. 581-594) Berlin: Springer

Watson, J. C. (January 4th, 2022). Epistemic Justification. *The Internet Encyclopedia of Philosophy, ISSN 2161-0002, https://iep.utm.edu/epi-just/*

Yin, R. (2016). *Qualitative research from start to finish* (2. ed). New York: Guilford Press.

Appendix A: Search Queries and Results

Search #	Search String	Hits	Selected for further inquiry	Included
ScienceDirect (Elsevier) – Advanced Search				
1	Find articles with these terms: (security OR safety), empirical, qualitative, societal In this journal or book title: Safety Science Year(s): 2016-2021 [Sorted by relevance] Article type: Research articles	50	10	9
2	Find articles with these terms: (security OR safety), empirical, qualitative, societal In this journal or book title: International Journal of Disaster Risk Reduction Year(s): 2016-2021 [Sorted by relevance] Article type: Research articles	83	10	9
Wiley Online Library – Advanced Search				
3	Context: Anywhere, Term: security+OR+safety Context: Anywhere, Term: empirical Context: Anywhere, Term: qualitative	12	8	7

	Context: Anywhere, Term: societal Published in: Risk, Hazards, & Crisis in Public Policy Publication Data - Custom Range: Jan. 2016 – Dec. 2021 [Sorted by: Relevance]			
4	Context: Anywhere, Term: security+OR+safety Context: Anywhere, Term: empirical Context: Anywhere, Term: qualitative Context: Anywhere, Term: societal Published in: Journal of Contingencies and Crisis Management Publication Data - Custom Range: Jan. 2016 – Dec. 2021 [Sorted by: Relevance]	13	9	8
Total:				33

Appendix B: List of Reviewed Articles

Journal	Research articles (#)
Safety Science	Høyland (2018) Nilsen, Albrechtsen & Nyheim (2018) Almklov, Antonsen, Bye & Øren (2018) Størkersen, Thorvaldsen, Kongsvik & Dekker (2020) Callari, Bieder & Kirwan (2019) Grabbe, Kellnberger, Aydin & Bengler (2020) Erkan, Ertan, Yeo & Comfort (2016) Ulmeokafor, Windapo & Evangelinos (2019) Hjelum & Lægreid (2019)
International Journal of Disaster Risk Reduction	Moreno & Shaw (2019) Peters (2021) Anshuka, van Ogrtrop, Sanderson, Thimas & Nee (2021) Linbom (2020) Hagelsteen, Becker & Abrahamsson (2021) Hamza, Eriksson & Staupe-Delgado (2021) Wamsler & Johannessen (2020)

	Ayeb-Karlsson (2020) Malak, Sajib, Quader & Anjum (2020)
Risk, Hazards, & Crisis in Public Policy	Lehtonen, Kojo, Kari, & Litmanen (2021) Pollock & Steen (2020) Fiorentini (2018) Steen & Morsut (2019) Jong & Dückers (2018)
Journal of Contingencies and Crisis Management	Staupe-Delgado & Kruke (2018) Hobbins (2017) Enander (2020) Deverell (2021) Kalkman, Kerstholt & Roelofs (2018) Treurniet & Wolbers (2021) Scott & Enander (2017) Owne, Brooks, Bearman & Curnin (2016)

Appendix C: Typological Matrix

#	Title	Author(s)	Journal
1	Exploring and modeling the societal safety and societal security concepts – A systematic review, empirical study and key implications	Høyland, S. A.	Safety Science
2	Changes in Norway's societal safety and security measures following the 2011 Oslo terror attacks	Nilsen, M., Albrechtsen, E., & Nyheim, O. M.	Safety Science
3	Organizational culture and societal safety: Collaborating across boundaries	Almklov, P. G., Antonsen, S., Bye, R., & Øren, A.	Safety Science
4	How deregulation can become overregulation: An empirical study into the growth of internal bureaucracy when governments take a step back	Størkernse, K, Thorvaldsen, T., Kongsvik, T., & Dekker, S.	Safety Science
5	What is it like for a middle manager to take safety into account? Practices and challenges	Callari, T. C., Bieder, C., & Kirwan, B.	Safety Science
6	Safety of automated driving: The need for a systems approach and application of the Functional Resonance Analysis Method	Grabbe, N., Kellnberger, A., Aydin, B., & Bengler, K.	Safety Science
7	Risk, profit, or safety: Sociotechnical systems under stress	Erkan, B., Ertan, G., Yeo, J., & Comfort, L. K.	Safety Science
8	Causal inferences of external–contextual domains on complex construction, safety, health and environment regulation	Umeokafor, N., Windapo, A., & Evangelinos, K.	Safety Science
9	The challenge of transboundary coordination: The case of the Norwegian police and military	Hjelum, M. S., & Lægreid, P.	Safety Science
10	Community resilience to power outages after disaster: A case study of the 2010 Chile earthquake and tsunami	Moreno, J. & Shaw, D.	International Journal of Disaster Risk Reduction
11	Beyond disaster vulnerabilities: An empirical investigation of the causal pathways linking conflict to disaster risks	Peters, L. E. R.	International Journal of Disaster Risk Reduction
12	Vulnerabilities shape risk perception and influence adaptive strategies to hydro-meteorological hazards: A case study of Indo-Fijian farming communities	Anshuka, A., van Ogtrop, F. F., Sanderson, D., Thomas, E., & Nee, A.	International Journal of Disaster Risk Reduction
13	The missing link – The importance of the capability concept for relating risk assessments and plans	Linbom, H	International Journal of Disaster Risk Reduction
14	Troubling partnerships: Perspectives from the receiving end of capacity development	Hagelsteen, M., Becker, P., & Abrahamsson, M.	International Journal of Disaster Risk Reduction
15	Locating potential sources of capacity and vulnerability in geographically remote areas: Reflections based on three case studies	Hamza, M., Eriksson, K., & Staupe-Delgado, R.	International Journal of Disaster Risk Reduction
16	Meeting at the crossroads? Developing national strategies for disaster risk reduction and resilience: Relevance, scope for, and challenges to, integration	Wamsler, C. & Johannessen, Å.	International Journal of Disaster Risk Reduction
17	'I do not like her going to the shelter': Stories on gendered disaster (im)mobility and wellbeing loss in coastal Bangladesh	Ayeb-Karlsson, S.	International Journal of Disaster Risk Reduction
18	"We are feeling older than our age": Vulnerability and adaptive strategies of aging people to cyclones in coastal Bangladesh	Malak, A., Sajib, A. M., Quader, M. A., & Anjum, H.	International Journal of Disaster Risk Reduction
19	Managing National Food Security in the Global North: Is collaborative governance a possible route forward?	Larsson, O. L. & Sjöqvist, S.	Risk, Hazards & Crisis In Public Policy
20	Horizontal Collaboration in Crisis Management: An Experimental Study of the Duty Officer Function in Three Public Agencies	Deverell, E., Alvinius, A., & Hede, S.	Risk, Hazards & Crisis In Public Policy
21	Healthy mistrust or complacent confidence? Civic vigilance in the reporting by leading newspapers on nuclear waste disposal in Finland and France	Lehtonen, M., Kojo, M., Kari, M., & Litmanen, T.	Risk, Hazards & Crisis In Public Policy
22	Total Defence Resilience: Viable or Not During COVID-19? A Comparative Study of Norway and the UK	Pollock, K. & Steen, R.	Risk, Hazards & Crisis In Public Policy
23	Governing Proliferation Risks: An Evolutionary Approach to an Uncertain World	Fiorentini, E.	Risk, Hazards & Crisis In Public Policy
24	Resilience in Crisis Management at the Municipal Level: The Synne Storm in Norway	Steen, R. & Morsut, C.	Risk, Hazards & Crisis In Public Policy
25	The Perspective of the Affected: What People Confronted With Disasters Expect From Government Officials and Public Leaders	Jong, W. & Dückers, M. L. A.	Risk, Hazards & Crisis In Public Policy
26	Preparedness: Unpacking and clarifying the concept	Staupe-Delgado, R. & Kruke, B. I.	Journal of Contingencies And Crisis Management
27	Between Autonomy and Paternalism: Crisis Managers' Constructions of Citizens' Responsibilities in the Context of Crises and Contingencies	Hobbins, J.	Journal of Contingencies And Crisis Management
28	"Damned if you do, damned if you don't": Media frames of responsibility and accountability in handling a wildfire	Nilsson, S. & Enander, A.	Journal of Contingencies And Crisis Management
29	Professionalization of crisis management: A case study of local-level crisis communicators in Sweden	Deverell, E.	Journal of Contingencies And Crisis Management
30	Crisis response team decision-making as a bureau-political process	Kalkman, J. P., Kerstholt, J. H., & Roelofs, M.	Journal of Contingencies And Crisis Management
31	Codifying a crisis: Progressing from information sharing to distributed decision-making	Treurniet, W. & Wolbers, J.	Journal of Contingencies And Crisis Management
32	Postpandemic Nightmare: A Framing Analysis of Authorities and Narcolepsy Victims in Swedish Press	Scott, D. & Enander, A.	Journal of Contingencies And Crisis Management
33	Values and Complexities in Assessing Strategic-Level Emergency Management Effectiveness	Owne, C., Brooks, B., Bearman, C., & Curnin, S.	Journal of Contingencies And Crisis Management

Resarch Question							
#	1	2	3	4	5	6	Iteration
1	Idealist	Constr.	Consensus	Empiricist	Inductive	Instrumental	Synthesis
2	Idealist	Constr.	Consensus	Empiricist	Inductive*	Intrinsic	Functionalist
3	Idealist	Constr.	Correspondence	Empiricist	Inductive*	Instrumental	Functionalist
4	Idealist	Constr.	Consensus	Empiricist	Inductive	Intrinsic	Functionalist
5	Idealist	Constr.	Consensus	Empiricist	Inductive	Intrinsic	Identity
6	Realist	Realist	Correspondence	Empiricist	Inductive	Instrumental	Functionalist
7	Idealist	Constr.	Consensus	Empiricist	Inductive	Instrumental	Unclear
8	Idealist	Constr.	Consensus	Empiricist	Inductive*	Instrumental	Unclear
9	Idealist	Constr.	Consensus	Empiricist	Inductive	Intrinsic	Functionalist
10	Idealist	Constr.	Consensus	Empiricist	Inductive	Instrumental	Unclear
11	Idealist	Constr.	Consensus	Empiricist	Inductive*	Intrinsic	Unclear
12	Idealist	Constr.	Consensus	Empiricist	Inductive	Intrinsic	Unclear
13	Realist	Realist	Correspondence	Empiricist	Inductive	Intrinsic	Functionalist
14	Idealist	Constr.	Consensus	Empiricist	Inductive	Intrinsic	Unclear
15	Idealist	Constr.	Consensus	Empiricist	Inductive	Instrumental	Unclear
16	Idealist	Constr.	Consensus	Empiricist	Inductive	Intrinsic	Functionalist
17	Idealist	Constr.	Consensus	Empiricist	Inductive	Instrumental	Unclear
18	Idealist	Constr.	Consensus	Empiricist	Inductive	Intrinsic	Unclear
19	Idealist	Constr.	Consensus	Empiricist	Inductive*	Intrinsic	Functionalist
20	Idealist	Constr.	Consensus	Empiricist	Inductive*	Intrinsic	Unclear
21	Idealist	Constr.	Consensus	Empiricist	Inductive	Intrinsic	Functionalist
22	Idealist	Constr.	Consensus	Empiricist	Inductive	Instrumental	Functionalist
23	Idealist	Constr.	Consensus	Empiricist	Inductive	Intrinsic	Functionalist
24	Idealist	Constr.	Consensus	Empiricist	Inductive	Instrumental	Functionalist
25	Idealist	Constr.	Consensus	Empiricist	Inductive*	Instrumental	Unclear
26	Idealist	Constr.	Consensus	Empiricist	Inductive	Intrinsic	Unclear
27	Idealist	Constr.	Consensus	Empiricist	Inductive	Intrinsic	Unclear
28	Idealist	Constr.	Consensus	Empiricist	Inductive	Intrinsic	Unclear
29	Idealist	Constr.	Consensus	Empiricist	Inductive	Intrinsic	Functionalist
30	Idealist	Constr.	Consensus	Empiricist	Inductive	Intrinsic	Unclear
31	Idealist	Constr.	Consensus	Empiricist	Inductive	Intrinsic	Unclear
32	Idealist	Constr.	Consensus	Empiricist	Inductive*	Intrinsic	Unclear
33	Idealist	Constr.	Consensus	Empiricist	Inductive	Intrinsic	Functionalist