

Bachelor Thesis Philosophy

Mind the gap: a social constructivist inquiry into why we fail to act in accordance with our environmental knowledge

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Part I: Introduction

Although the need for climate change mitigation has been underlined in many international agreements, amongst others is the Paris Agreement signed by 195 countries in 2015, thus far real action seems to be lacking. Rather, the outcome of international meetings have been wishful promises and opaque pledges for a future far ahead. Although over the past years we have seen the rise of organized climate-skepticism, among scientists there is a general consensus that humans are, at least somewhat, responsible for our changing climate. The idea of human induced climate change seems to be increasingly accepted by citizens as well. In the Netherlands, 71% of people believe in human induced climate change, whereas 23% believe climate change is not caused by anthropogenic actions (EenVandaag, 2018). In the United States 58% of the population believes that global warming is mostly human caused, whereas 30% believes climate change to be mostly due to natural changes in the environment (Leiserowitz et al., 2017). Although the consensus of human induced climate change seems to be spreading, when we assess the actions of individuals and societies it seems we fail to take action both on individual and collective level. This thesis analyzes the apparent paralysis of human kind: on the one hand it seems most people are concerned and want to act on climate change, yet on the other hand we fail to act according to this knowledge.

There are several paradoxes that can explain this gap in what people claim to believe and their actual behavior. In this thesis, three of these paradoxes will be explained; the Dunning-Kruger effect, performative contradiction and cognitive dissonance and the Jevon's Paradox. The Dunning-Kruger effect sheds light on the question why low-performing individuals believe they do better, whereas high-performing individuals believe they are performing worse than they do. Thereby it highlights the importance of the ability of self-reflexivity and the beliefs we have about our beliefs and actions and these of the ones around us (Kruger & Dunner, 1999). Cognitive dissonance theory approaches the knowledge-behavior gap from an individual level where individuals actively seek to maintain consistency in their thoughts and behavior by, consciously or subconsciously, adjusting their beliefs (Harmon-Jones & Harmon-Jones, 2007; Norgaard, 2009). Lastly, the Jevons' Paradox discusses why a technological efficiency increase does not necessarily lead to a decrease in environmental impact (Alcott, 2005). Although the first two theories discuss the perception of ourselves and our actions and how we maintain a coherent self-image, the latter focusses more on how our economic system and thinking influences our actions.

There are many ways to explore paradoxes in human (pro)-environmental behavior, both on an individual and societal level. Although this gap has often been approached from a psychological, individual, perspective (Beck, 2010; Noorgaard, 2009), from a philosophical point of view this contradiction is also extremely interesting. This thesis will take a societal meta-approach; exploring the gap in human pro-environmental behavior and knowledge from a systemic level. Over the years there have been several philosophers who theorized *why* it is that whole societies fail to act in accordance with their knowledge. One of the theories used to understand this discrepancy is social constructivism, a view that emphasizes the social process of how problems are constructed and contested (Evanoff, 2005; Smith, 1999). Thus far there are no studies that applied a social constructivists view to the three paradoxes described above thereby approaching the individual lack of acting from a societal and systemic perspective.

To assess the gap between environmental knowledge and pro-environmental behavior the three theories will be analyzed using a social constructivist approach in order to provide a more coherent image of why people behave the way they do and the role of society and the constructs around us in this behavior. Therefore, the *thesis* defended will be: *the cultural, institutional and symbolic systems in society and the (power) structures, traditions and social practices they are embedded in influence and shape our (self-claimed) environmental knowledge and the way we see and justify our (lack of) pro-environmental behavior. Thereby social constructivism has the potential to explain apparent*

contradictions in human pro-environmental behavior as the Dunning-Kruger effect, cognitive dissonance and the Jevons' Paradox. To assess this thesis first social constructivism and its roots and applications will be presented. Second, the three theories will be presented and analyzed using social constructivism. Last, the three theories and the social constructivist implications will be critically discussed and synthesized.

This thesis will apply a social constructivist approach where both personal and impersonal agents will be assessed in why people and societies fail to act in accordance to their self-proclaimed environmental knowledge. The main aim of this thesis is not to explore and explain climate change denying as the extreme and structural denying of climate change constitutes a different study than how our societies structure individuals' beliefs and thereby their actions. This thesis will thus rather discuss what structures, power and knowledge productions make us act the way we do in our interaction with nature when facing climate change. It should be noted that although I will try to refrain from taking a normative and/or moral stance on the topic and try to objectively describe the underlying power structures and social, institutional and symbolic systems, this thesis is written by a person and thus will inevitably be subject to, and shaped by personal experiences, preferences and affiliations.

Part II: Social constructivism

2.1 The constructivist approach

The constructivist approach arose in the 1970's as a critique on the behaviorist approach for being too narrow and specifically focused on the individual without taking the broader setting into account (Liu & Matthews, 2005). Nowadays, the term social constructivism refers to an umbrella concept that comprises a multitude of theories within the constructivist domain (Liu & Matthews, 2005). Constructivism supports the claim that knowledge is not mechanically acquired but that it is actively constructed by actors and thereby heavily influenced by the actor's (social) environment and (power) structures in the specific situation (Liu & Matthews, 2005). The most commonly discussed forms of constructivism are cognitive/personal constructivism and social/realist constructivism. The first branch has its origins in psychology and is primarily focused on individual knowledge production and construction. Followers from this branch argue that knowledge is idiosyncratically constructed as it is not merely transmitted from one person to the other, but centered around the people surrounding this individual. The (social) environment here functions as a stimulus for individual cognitive learning. The second branch, social or realist constructivism, does not focus on individual knowledge production, but rather on how social relations construct the world we live in (Liu & Matthews, 2005). This thesis will primarily rely on the second branch.

2.2 How does construction work

In constructivism there is the constructing and the constructed. That what 'constructs', often referred to as the agent, may refer to two main categories: *impersonal* agents, including cultures and institutions and *personal* agents, including persons and/or groups (Mallon, 2019). The first category refers to a certain lens through which humans observe the world and concern the broader perspectives in society that shape how we experience. The constructing by the impersonal agent is always non-intentional. The latter category refers to a more deliberate form of construction where personal choices actively construct the world around us including (scientific) theories and the value we assign to certain phenomena (Mallon, 2019). Whereas agents, both personal and impersonal, "construct", that what is constructed mostly refers to representations and facts. These representations constitute the means by which we store and organize information and thus see the world. Most of these constructed representations refer to the theories behind the thing itself (Mallon, 2019). Therefore, Pettenger (2007) speaks of the "*agent/structure duality*": the underlying meanings of identities, interests and structures as norms and discourses that shape the structure of the world (Pettenger, 2007, p. 6).

2.3 Social constructivism

The core idea of social constructivism is that an object or objects are caused/controlled by social and cultural factors rather than by natural factors (Mallon, 2019). The father of the social constructivist school, Vygotsky, believed that psychological phenomena emerge from social interaction and thus are established by social relationships (Liu & Chen, 2010). Social constructivism encompasses a wide variety of theories and theses. Although approaches vary, the overarching theme is the central role of the social environment in the learning process. Learners appropriate knowledge based on their own understanding through interaction with the learning environment. Learning thereby becomes increasingly situation- and context-specific (Liu & Matthews, 2005). As a result, theoretical frameworks that allow for social constructivism emphasize the determining influence of social relations on our lived realities: the production of knowledge, values, beliefs and/or behaviors and emphasizes the importance of different histories, traditions, social practices and power relations (Smith, 1999). However, it should be noted that social constructivism is *not* classic idealism per se, which is the notion that concepts do not exist independent of our minds (Proctor, 2001). Social constructivism reminds us that any descriptive statement men make is not innocent of its human origins.

2.4 Social construction in environmental philosophy

Constructivism in the field of environmental philosophy and ethics acknowledges that our attitudes and understanding towards nature are socially constructed. However, also in the field of environmental philosophy significant differences exist in the social constructivist approach (Evanoff, 2005). On the one hand there are the variations of social constructivism that endorse more idealist claims that reduce reality, and as a result nature, as nothing more than social constructs. In this view, “nature” has no other reality than its social construction. Thereby all natural phenomena and processes, including global warming and pollution, are not perceived as “real” phenomena that can be observed and explained, yet they are seen as a product of our collective construction that people in different groups hold different opinions and beliefs about (Evanoff, 2005).

One of the philosophers taking this view is Vogel (1996), who advocates a Hegelian approach to the philosophy of nature in which he denies nature’s external reality apart from how it has been socially constructed. According to Vogel nature’s ontology is completely dependent on its social construction. Vogel believes there are four senses in which nature is socially constructed:

- 1) The world we inhabit constitutes physical objects that are humanly produced.
- 2) Social processes produce the objects that constitute the world around us.
- 3) “Natural” and “wilderness” areas are shaped by humans as they exist because humans decide to leave them untouched.
- 4) Nature is epistemologically socially constructed as scientists have no access to nature as a thing in itself. Therefore they have an active role themselves in generating and reinforcing this view through theories, language and practices (Vogel, 1996).

Vogel here denies the external reality and ontology of nature. His view is shared by others including Edwards, Ashmore and Potter who advocate a “strong” social constructionist view that everything is dependent on the agents constructing nature (Evanoff, 2005).

However, other versions of social constructivism are compatible with more external realist claims, which is the view that a world exists outside and independently of our mind and representations of it (Smith, 1999). This view accepts a realist ontology meaning that there is a world and nature independent of our minds whilst acknowledging that our knowledge, values and ethics do not exist independently in this world (Evanoff, 2005).

2.5 Social constructivism and climate change

Why is social constructivism an interesting lens to discover our apparent inability to act on climate change? Rosa & Dietz (1998) stated that the climate is a pure collective good which makes it extremely interesting as the political dynamics are very different from environmental problems that have a more

local impact (Rosa & Dietz, 1998). This implies that climate change must be understood from the context of social settings, yet these settings are often ignored (Pettenger, 2007). The social construction of actors' identities, interests and structures as discourses and norms forms the heart of constructivism. With regards to climate change, some actors are privileged and others are negated. These structural forces shape the process of climate change's interpretation. Our beliefs and values are not derived from nature itself but they are rather socially constructed to interact more successfully with the world around us (Evanoff, 2005; Pettenger, 2007). This is extremely interesting in assessing pro-environmental behavior in face of climate change, as this social constructivist view holds that actors' actions depend on the structures, discourses and norms around us. Therefore, this thesis will assess the context around us to explain the gaps in what actors claim to know, and the behavior they actually display.

2.6 Social constructivism and environmental ethics in this paper

This thesis will follow the social constructivist view promoted by, amongst others, Evanoff, Proctor and Smith, which accepts the paradoxical truth that nature is *both* autonomous and socially constructed (Proctor, 2001; Smith, 1999; Evanoff, 2005). This thesis will employ this social constructivist approach, where human activity is constrained by the laws of nature yet with ample room to interact with nature within its natural boundaries or as Rappaport (1979) states:

"Nature is seen by humans through a screen of beliefs, knowledge, and purposes, and it is in terms of their images of nature, rather than of the actual structure of nature, that they act. (...) their images of nature are always simpler than nature and in some degree or sense inexact, for ecological systems are complex and subtle beyond full comprehension" (Rappaport 1979, p. 97)

This interpretation of social constructivism implies that given that the world is not organized in pre-set categories, there are high degrees of pluralism over place and time. This view holds that although there might be virtually unlimited ways of interpreting the world and these interpretations vary from culture to culture and time to time, all our constructions are constrained by how the world really is. As Proctor (2001) stated, the paradox of the realist view and the constructivist view need one another as both sides are correct yet not completely correct without the other. This paradox implies that none of us can embody the "whole truth" but it rather opens the debate for compromise and other inclusive methods of resolving contradictions. *"We must all find our environmental ethics in a dual spirit of confidence and humility, with one leg standing surely on solid rock and the other perched tentatively on shifting sands."* (Proctor, 2001, p. 226).

2.7 Approaches social constructivism

2.7.1 Power and discourse analysis

Discourse is a central element of social constructivism. Discourse was most notably introduced by Foucault. Although often referred to as what is said and thought, the term "discourse" encompasses a broader spectrum including symbolic systems, institutional structures and social rules and practices as who can speak and when one can speak (Liversey, 2002). However, in Foucault's work the meaning of what is said arises *not* merely from the language used, but rather from the context of institutional practices and power relations. This implies that words and concepts change meaning depending on their use in different discourses and contexts of power relations (Ball, 1990, p. 2). This subsequently implies that a discourse can constrain trains of thought and thereby inhibits things and concepts used outside the discourse. This thus emphasizes the social processes behind discourses, as it is dependent on the context what is meaningful and regarded as the truth (Ball, 1990, p. 3). Hereby, discourses and resulting knowledge systems produce 'truths' that are sustained by their existence as they continuously reinforce oneself by sustaining the belief and knowledge approved by these systems and disregarding knowledge and beliefs that are dissonant with the structure of these systems (Liversey, 2002).

2.7.2 Paradigms

Another useful tool for a social constructivist approach are paradigms, as first introduced by Thomas Kuhn (1970). A paradigm is *'an entire constellation of beliefs, values, techniques, and so on shared by members of a given community'* (Kuhn, 1970, p. 175). Here, Kuhn referred to research paradigms including the concepts, assumptions, laws and methods in a given discipline or specialty in research. In his book Kuhn describes the cycle of science. First, in a period of normal science knowledge claims are accumulated in a given paradigm. However, at a certain point the scientific works encounter anomalies: things that cannot be explained within the given paradigm. When these anomalies build up a crisis stage occurs, eventually leading to a revolution where the existing paradigm is overthrown and a new paradigm is installed (Kuhn, 1970; Ritzer, 1975). In Kuhn's more narrow perspective scientists as Galileo, Newton and Einstein are the expositors of major scientific revolutions. These all include profound theoretical shifts constitute a paradigm shift in Kuhnian terms. However, some philosophers including Bryant (1975) and Ritzer (1975) propose a more sociological approach of Kuhnian paradigms. These sociological approaches are often heavily criticized, as Kuhn's view of paradigms is situated and geared to the natural sciences and thus one must be cautious by applying it to wider social contexts (Harvey, 1982). To reconcile paradigms with the social sciences Polsby (1998) proposes a broader view of paradigms where paradigms can be incommensurable in the psychological dimension where beliefs about acceptable and agreed-on knowledge as well as texts, curricula and instrumentation discourage pursuing another view. Then, following Kuhn's account, it requires to belief that the body of scientific knowledge is a social construction as all information held by a community and/or social group is socially constructed (Polsby, 1998). The distinction between Kuhnian (natural) scientific paradigms and the word *paradigm* in this thesis should be mentioned as when referring to *paradigms* this thesis does not imply a narrow Kuhnian paradigm, but rather the broader context and implication of two (incommensurable) worldviews that are socially constructed as this notion is extremely helpful to analyze the wicked problem of climate change and pro-environmental behavior.

Part III: The Gap

To assess why people fail to act in accordance with their environmental knowledge three gaps between (self-claimed) knowledge and behavior will be assessed: the Dunning-Kruger effect, the performative contradiction as a result of cognitive dissonance and the Jevons' Paradox. These three theories and paradoxes are chosen as all explain a different part of the knowledge-behavior gap.

3.1 Dunning-Kruger effect

3.1.1 Introduction to the Dunning-Kruger effect

The first paradox in the gap between (self-acclaimed) knowledge and displayed behavior is the Dunning-Kruger effect. This effect maintains that poor performers often seem largely unaware of the deficiency of their expertise as ones' own ignorance is often invisible to oneself. This implies that people are generally not only misguided, but that this mechanism also prevents them from recognizing their own mistakes and prohibits someone from following the example of someone else making a wiser decision (Dunning, 2011). In the context of (pro-)environmental behavior this means that people overestimate their own (cognitive) capacity to make decisions, thereby refusing to accept information and/or behavior proposed by others.

3.1.2 Theory behind the Dunning-Kruger effect

The Dunning-Kruger effect holds that less competent individuals often overestimate their abilities. This is caused by the lack of metacognitive skills to recognize and acknowledge the errors and flaws in ones' own decisions (Kruger & Dunning, 1999). Metacognitive skills are the capacities to recognize ones' own

cognition. An example is having knowledge of one's own knowledge in a particular field (Lubaranja, 2017). If someone is an expert in a certain field this also implies that that individual knows what he/she does *not* know. However, generally when someone is not an expert individuals seem to overestimate their own capacities and knowledge (Kruger & Dunning, 1999; Dunning, 2011).

But why do incompetent individuals structurally overestimate themselves? Poor performers have a double burden. First, the deficits in their knowledge and expertise lead them to make more mistakes and second, these same deficits make them unable to recognize when they were making these mistakes. This results in that people that perform poorly believe they are doing reasonably well whereas in reality, they fail to live up to any expectations (Dunning, 2011, p. 261). Another reason is that people rarely receive negative feedback from others in daily life. Even if people receive feedback, one still needs an accurate understanding of *why* specifically one has failed. Even if people receive feedback and acknowledge they did not do something correctly, they might attribute it to another factor as there are many factors that might be wrong. A last factor is that incompetent individuals could be unable to take advantage of social comparison, as they are less able to spot the adequate competences (Kruger & Dunning, 1999). This double burden thus arises as people fail to judge the accuracy of their own action, they also fail to judge whether others actions were better and more accurate (Dunning, 2011, p. 261).

The Dunning-Kruger effect also shows a systematic bias in the self-appraisal of top performers. Whereas low-performing individuals overestimate themselves, extremely high-performing individuals seem to consistently underestimate their own performance (Kruger & Dunning, 1999). They have all resources and capabilities to know what they are probably doing right and/or wrong however, their misjudgment concerns other people and their respective capacities. As they rather easily give right answers, they believe other people must experience the same easiness when choosing answers. This is called the *false-consensus effect*, implying that because they scored so high, they assume others must score similarly (Kruger & Dunning, 1999).

There are many studies that provide support for the Dunning-Kruger effect in various fields, including medical professionals (Eva & Regehr, 2005) and academics (Huang, 2013). These studies show that meta-ignorance is omnipresent and combats the notion that professionals, rather than being an exception, also are prone to meta-ignorance and the corresponding Dunning-Kruger effect (Lubaranja, 2017).

3.1.3 Dunning-Kruger effect and climate change

Bergquist (2019) researched people's belief about their environmental attitudes and -behavior in four countries. All four studies conducted in India, the UK, the US and Sweden consistently demonstrated that participants believed they held better actions and capacities than others (Bergquist, 2019). Although this study shows the better-than-average effect it also shows people overestimate their own capacities and knowledge whereas in reality they do not understand the concept as good as they believe themselves. In face of climate change the Dunning-Kruger effect also becomes evident in politicians who are overconfident about their own knowledge and course of actions (Lubaranja, 2017) as well as scientists, who are experts in their field, that are conservative in displaying their results.

3.2 Dunning-Kruger effect and social constructivism

3.2.1 What is good and bad behavior?

The findings of Dunning and Kruger suggest that once low-performing individuals are made aware of their incompetence they should consequently engage in more pro-environmental behavior. However, the implication of social constructivism is that what is regarded as knowledge is malleable and context

dependent. Therefore, the suggestion that “environmental” knowledge will automatically lead to “good” behavior becomes contested. One could say this contributes to the wickedness of the problem as it is not only low-performing individuals who overestimate their abilities, but the very fact that a “low-performer” is becomes contested and opaque. This holds both for knowledge and actions. Most problems, including climate change, are immensely complex. As people are unable to fully grasp the complex systems behind it and possible solutions, these wicked problems are often simplified to linear, easy to grasp problems and answers (Kollmuss & Agyeman, 2010; Rappaport, 1979, p. 97). This implies that people who fail to grasp the systems still claim they comprehend what is going on, as the “knowledge” presented to them is easily accessible and therefore understandable. The actions that flow out of these simplified models and theories have different normative claims and what is “good” becomes increasingly diffuse and difficult to establish as it becomes context- and person dependent.

However, as the form of social constructivism followed by this paper accepts the external reality of nature, I will hold that in this case “pro-environmental behavior” includes behavior and practices that act in such way that does not (negatively) affect the external environment. Although this might seem self-explanatory, the integration of practices and behavior in a broader context makes it more complex. When one, for example, buys an organic avocado it can be argued that 1) this is pro-environmental as the avocado is organic and thus no pesticides have been used yet 2) this is not pro-environmental as the avocado has been shipped from Brazil with the associated negative impact on the environment. The arguments provided above thus do not deny the negative effects on the (real) external world we live in, but rather hold that as our behavior and systems we use and live in are so complex it is increasingly entangled in contradictory notions so one cannot label an action as good or bad.

3.2.2 Low performing individuals

The low performer in this case fails to grasp the complexity of the system and displays it in a too simple form as argued by Kollmuss and Agyeman (2010). This can be perceived both in individuals as well as in societal leaders including CEOs and politicians. A notorious example is Trump’s campaign discourse where climate change is presented as a “hoax”. But this can also be found in more subtle forms employed by other politicians and societal leaders where one line of action is advocated and there is a very narrow focus without (trying to) understand the complex interrelated feedback systems. The Dunning-Kruger effect and double burden for these low-performing individuals that shape the rules guiding our society, thereby creating our daily reality, implies that they do not recognize the deficit in their knowledge and fail to recognize when they make mistakes in assumptions. This may make them less subjective to listening to advice from experts that do have adequate knowledge and make them overly confident in making their decisions. These observations and considerations are validated by the findings of Lumbaranja (2017) who found that the majority of government officials who participated in a training on climate budgeting stated they were aware of climate change and related mitigation budgeting yet when the training started the vast majority of participants seemed to lack a basic understanding of climate change related issues and the opportunities of green budgeting to evade potential problems. Similar situations are seen in all different societies in Europe. Many politicians, private companies and individuals state they are aware of problems and are on the frontline of portraying themselves as being “environmentally friendly” and supporting “sustainable growth”, without having the actual understanding to promote actions endorsed by experts. The double burden of the Dunning-Kruger effect then holds that first of all they fail to accurately judge the validity of their own actions, but second that they also fail to judge the action of actual experts. Low performers in the context of this thesis thus does not refer to individuals and/or actors that have no environmental knowledge at all. Rather, low performing actors have just enough knowledge about climate issues to be dangerous as they systematically overestimate their own ability and advocate actions that might not be helpful/good and creating more information which eventually might keep attention away from actual information endorsed by experts.

3.2.3 High performing individuals

High performing individuals are prone to the *false-consensus effect* (Kruger & Dunning, 1999). What distinct high performers from low performers is that high performers do (somewhat) understand the complexity and interdependency from the world around us. As argued above, it is increasingly difficult to know what is good, bad, better and worse. However, acknowledging it *is* difficult and there is no one solution is the first step. The high performers in this instance are the people that acknowledge the wickedness of the problems and thus know there is no one straightforward answer and/or actions that are good/bad *an sich*. Thereby, one could say that the high performers acknowledge in a way the social construction of the discourses and surroundings of pro-environmental behavior and climate action. The classic example of a high performer are scientists or other experts in their field that have detailed knowledge on human-environmental interactions. The implication of the Dunning-Kruger effect for this group is that they may falsely assume people have the same knowledge and hold the same ideas as them, without realizing they live in a world where this knowledge construct is accepted, whereas in other parts of society their knowledge construct is not as accepted. This may lead to experts not promoting their knowledge/actions as much, which leads to their recommendations and observations being lost in the myriad of (false)knowledge claims produced by pseudo-experts.

3.3 Performative contradiction and cognitive dissonance

3.3.1 Introduction to performative contradiction

The discrepancy between what people claim to know with regards to the environment and their (lack of) pro-environmental behavior is known as a *performative contradiction*: one says one thing yet acts the opposite (Norgaard, 2009). A lot of research has been performed in the area of performative contradictions and many models have attempted to explain the lack of pro-active behavior on environmental knowledge. Explanations include rationalist models, altruism, empathy and prosocial behavioral models and several sociological models (Kollmuss & Agyeman, 2010). Although it has frequently been argued that people lack adequate information, the argument that people “just don’t know” has been proven wrong by many researchers. In fact, only a small fraction of pro-environmental behavior is caused by actual information (Kollmuss & Agyeman, 2010; Norgaard, 2009).

3.3.2 Cognitive dissonance theory

On the individual level cognitive dissonance plays a significant role. Cognitive dissonance occurs when individuals are confronted with information that opposes their world view. They will then, consciously or subconsciously, block or distance specific information to maintain a coherent world image. This may lead to a performative contradiction in what one ought to know and explains the failure to behave according to this knowledge (Norgaard, 2009). The original version of the theory was formulated in the 1950’s by Leon Festinger. The process described by Festinger relates to when one individual holds two or more elements of knowledge that are relevant to one another, yet at the same time contradict one another. Festinger describes the resulting state of discomfort experienced by individuals as both elements of knowledge clash. This unpleasant state is called a *dissonance*. Two cognitions that are relevant to one another can either be *consonant*, when one follows from the other, or *dissonant*, when the opposite of one of the cognitions follows from the other (Harmon-Jones & Harmon-Jones, 2007). The psychological uncomfortableness motivates an individual to reduce the dissonance by avoiding information that reinforces the dissonance. Festinger (1957) describes how individuals decrease inconsistencies by supporting the cognition that is most fundamental and therefore most difficult to change. This psychological work typically includes adding consonant cognitions, subtracting dissonant cognitions, increasing the importance of consonant cognitions and/or decreasing the importance of dissonant cognitions (Festinger, 1957).

The most famous example presented by Festinger (1957) illustrates the process of cognitive dissonance reduction by an habitual smoker. When a habitual smoker learns smoking is bad for ones’

health, dissonance arises as the habit of smoking is dissonant with the knowledge that smoking is bad. This results in discomfort. To reduce the dissonance the smoker can either reduce this dissonance by changing his/her behavior, and stop smoking, or by changing his/her cognition about the effects of smoking by seeking positive effects and/or by downscaling the perceived negative effects (Harmon-Jones & Mills, 2019). A multitude of experiments in, amongst others the domains of free choice and self-affirmation and consistency have supported Festinger's claims of dissonance theory (Harmon-Jones & Harmon-Jones, 2007).

3.3.3 Cognitive dissonance and climate change

Norgaard (2009) states that the climate debate and subsequent solutions are entangled in a deep sense of ambivalence. She describes this sense of ambivalence as "knowing and not knowing"; although people do know about climate change and what they should/should not do, in everyday life people often fail to act according to this knowledge. This performative contradiction in face of climate change points into the direction of cognitive dissonance theory and the efforts people make to bridge the gap between knowing one has to change/adapt behavior and the inability to do so. Some have argued that dissonance reduction is a typical feature of western individualized societies, yet others have shown the omnipresence of dissonance reduction although culture may moderate response to dissonance. Rather than occurring in one culture and not in the other, Festinger (1957) holds that "culture defines what is consonant and what is not" (Festinger, 1957, p. 14).

3.4 Cognitive dissonance and social constructivism

3.4.1 Paradigms

In our contemporary societies there are many different ideas, beliefs and worldviews all justified by "facts". According to Latour (2018) this is not an act performed by individuals alone, but rather a course of action proposed by, amongst others, powerful political figures. Rather than being an individual choice to contest/accept knowledge, as the tourist that compensates, downscales and/or negates the adverse effect of flying on the climate, Latour points to the role of society and politics in the process of downscaling and/or negating adverse climate effects and describes the societal process of structurally ignoring and/or accepting knowledge. According to Latour, it is ridiculous to be mad about Trump-supporters that 'do not believe the facts'. Contrarily to what many people think, they are not idiots; to believe in the world as proposed by Trump our whole geopolitical situation must be denied. Therefore, ignoring facts as climate change becomes of utmost importance (Latour, 2018, p. 49). Thus, the acceptance as well as the refusal of human induced climate change, or any climate change at all, is societally structured and organized. According to Latour it is no surprise that a systemic climate change denier as Trump rises to power in the United States as the US has *the most to lose* when acknowledging climate change as an urgent matter as its infrastructure, culture and economy are based on the very premises that must be changed when taking climate change measures and the institutional changes to address this seriously (Latour, 2018, p. 50).

Latour describes different paradigms that propose certain values, beliefs and knowledge claims. I will call these the *accepting* and *refusing* paradigm, as one accepts the existence of (human induced) climate change and the other negates this existence. These paradigms are incommensurable as at their very core proposes a worldview that is impossible to reconcile. Both are backed by systems of (scientific) research, facts, values, techniques and recommendations on how to handle the world. An individual can choose from these pre-existing views and justify actions to overcome a potential cognitive dissonance between (self-proclaimed) belief and (lack of) action. Which one is right thus depends on ones' acceptance and validation of knowledge claims. This first distinction of paradigms of (human induced) climate change accepters and deniers determines whether an individual accepts or rejects climate change. When one rejects the existence of human induced climate change overcoming cognitive dissonance is rather easy, as one does not have to justify any action in light of climate change

because when believing human actions do not cause climate change, there is no urgency to act and people that do express this urgency are perceived as a threat to the current system. More interesting in light of (overcoming) cognitive dissonance and this paper are people adhering to the *accepting* paradigm. When claiming to acknowledge climate change as an urgent matter that has to be acted upon, to maintain cognitive consonance one has to act in accordance with this knowledge. Therefore the rest of this section will focus on people acknowledging (human induced) climate change, and how individuals overcome cognitive dissonance between knowledge and behavior by using societal discourses and frameworks.

3.4.2 Discourses and the fusion of knowledge

Whereas before there was a more clear definition of what is “good” and “bad”, nowadays what is good and/or bad is fused and knowledge claims are contested by different actors (Beck, 2010). Therefore, what counts as “proof” in today’s world is highly contestable, as knowledge and non-knowledge are inevitably fused and individuals can increasingly cherry-pick the “facts” that supports their argument (Beck, 2010). The result is that information can be resisted, accepted and interpreted differently according to the individual receiving information. Methmann (2010) notes that often in the discourses that are put forward heterogenous and sometimes even contradictory practices are unified in one discourse of climate protection (Methmann, 2010). This ultimately leads to a situation where individuals can cherry pick “facts” from different discourses of climate protection within the *accepting* paradigm that all in their own, and often contradicting, way state they are “good”. Thereby individuals can justify any belief that fits their actions best to align actions and beliefs to maintain a state of consonance. Festinger himself stated the importance of culture as culture constructs and thus determines what we perceive as being consonant and dissonant (Festinger, 1957). In the case of climate change culture is a part of the agent that constructs the different discourses that exist within the *accepting* paradigm as a culture can determine what is perceived as consonant, and thus good, in a society and what is not.

3.4.3 Climate mainstreaming and overcoming cognitive dissonance

One particular discourse that is put forward is coined *climate mainstreaming* by Methmann (2010). This course of action holds that actors, including businesses, governments and consumers, more or less stick to business as usual while submitting to climate protection. This leads to persistent foundational structures as the world economy, growth and free trade while contradicting long-term environmental protection (Methmann, 2010). An example is the environmentally aware shopper who goes on a flying holiday three times a year. Furthermore, any organization can become part of a climate protection discourse without significantly altering behavior (Methmann, 2010). Examples include fossil fuel companies whose industry is inherently pollutive yet increasingly frame themselves as “environmentally aware”. This discourse of climate mainstreaming gives rise to many apparent contradictions in consumer behavior, especially in the field of consumption. An interesting example in consumption are the use of green labels and products that are promoted and endorsed by an increasing number of actors including companies and governments. Nowadays there are many local companies, multinationals and even governments that act within and endorse the above mentioned narrative of climate mainstreaming, also often called “sustainable growth” (Warde, 2005). *Sustainable growth* fails to have a clear definition and is therefore often loosely used by a multitude of institutions (Warde, 2005). When something is promoted as “sustainable” and endorsed by many notable agents the discourse frames consumption as something that is *not* bad, but as something that can even enhance positive environmental effects. However, sometimes the most sustainable option is no purchase at all (Horne, 2009). One could say that discourses of sustainable growth and frameworks as ecolabels allow consumers to overcome their cognitive dissonance by, when adhering to these constructs, giving individuals the feeling of doing something that is not *so* bad or something that is considered to be good.

Consumption and ecolabels are just one example of a framework and discourse that is put forward and which is reiterated by (large) companies, governments and consumers themselves. However, within the paradigm of climate change accepters there are many agents that shape our experiences and our judgements. The social constructivist addition to cognitive dissonance in light of pro-environmental behavior is thus that an individual is embedded in a larger context and that this context allows the individual to pick facts, knowledge and actions proposed by several discourses in society to overcome the gap between (self-acclaimed) knowledge and behavior. When adhering to different discourses there might be a perceived performative contradiction when looking at an individuals' actions. However, for the individual him/herself the action might be perfectly consonant with claimed beliefs.

3.5 Jevons paradox

3.5.1 Introduction to the Jevons' paradox

In environmental sociology and economics there is a plethora of discussions about efficiency that often revolve around assessments of how modernization and technological advance may help societies overcome environmental problems. One of these theories, Ecological Modernization (EM) theory, holds that processes of modernization can lead to environmental sustainability *without* radical social change by shifting to cleaner, more efficient and less resource intensive technologies. (York & McGee, 2015). However, many works criticize the idea that modern societies are able to overcome problems as pollution, ecosystem degradation and resource shortages through technological advances (York & McGee, 2015). One of the theories criticizing this view is the third paradox introduced in this thesis: the Jevons' Paradox. This paradox was first observed and introduced by William Stanley Jevons in the 19th century. The paradox maintains that a technological increase in efficiency does not necessarily lead to a decrease in the use of a (natural) resources. On the contrary, a *rebound effect* will actually cause higher use and/or consumption of a resource thereby increased efficiency in production may even lead to an overall increase of the use of a resource (Alcott, 2005). This contradicts the view of many governments and NGOs who believe efficiency gains will result in lower consumption of resources thereby decreasing the impact of production processes on the environment (Alcott, 2005).

3.5.2 Theory behind the Jevons' Paradox and the rebound effect

The key in Jevons' argument is the increased efficiency's effects on profitability, price and demand. The word "paradox" refers to the counter-intuitive outcome of Jevons' observation that with increased efficiency more of the resource, in his case coal, is used. A paradox is an apparent contradiction, in this case that of increasing environmental impact whilst employing cleaner technologies (York & McGee, 2015). The name "Jevons' paradox" refers to Jevons' observation that with increased efficiency more coal was eventually used. The name "rebound effect" refers to the effect behind the paradox. The rebound effect functions as an umbrella concept for a multitude of mechanisms that reduce potential energy savings from improved efficiency. The (economic) rationale behind the rebound effect and Jevons' Paradox is that when production becomes more efficient, less of the input is needed to produce certain goods. As less input is needed, the demand and subsequent price fall. Yet, the decrease in price and increased efficiency then increase the demand for the particular product and thus output and consumption rise again. This mechanism makes this seeming paradox theoretically plausible (Alcott, 2005). When the demand rises so much that in the end people consume more, the "saving" is only a theoretical concept as in practice the demand, and the subsequent environmental impact of production, increases. When the eventual impact is larger than 1, and thus more than the initial environmental impact, one speaks of a backfire effect (Alcott, 2005).

The rebound effect and Jevons' Paradox can be observed on a micro- and macro level. On a micro level an example of the Jevons' Paradox is when a driver obtains a more efficient car drives further and more often, thereby decreasing the gain of less pollution from the more efficient use of gas. On a

macro level the Jevons' paradox is observed on the scale of an economy as a whole, where the above mentioned demand and supply effects lower the price for more efficient products and therefore offset potential efficiency gains (Sorrell, 2009).

3.5.3 The Jevons' paradox and climate change

The Jevons' paradox can be observed in many fields directly relating to, and influencing, the natural environment we live in. The first example was provided by Jevons himself, where he observed that increased efficiency in the use of coal did not lead to using less of the fossil fuel (Alcott, 2005). More recently, other domains have gained importance, including the field of green energy and electric cars, where the Jevons' Paradox is used as a critique to many organizations and governments for advocating increased efficiency to attain less use of natural resources (Alcott, 2005). Yet, is it *necessary* that the effects described above occur? Many scholars believe not (Sorrell, 2009; York & McGee, 2015). In theory there can be policies that are designed to ensure that efficiency gains are conferred into actual lower resource consumption (York & McGee, 2015). However, it seems that if these policies are not in place individuals are prone to increase consumption when prices are lower. Therefore, it is interesting to investigate the root causes of this apparent contradiction and assess why and how the society and structures around us make us prone to fall into this paradox.

3.6 Jevons' paradox and social constructivism

3.6.1 Capitalism and the environment

Climate change shows that the distinction between natural and societal forces is non-existent as our societal forces shape our natural environment (Beck, 2010). This is extremely evident in the Jevons' Paradox where our economic system shapes the usage of natural resources and thus the environment. The current dominant economic system is capitalism. Rosa and Dietz (1998) point out that in capitalist societies there will always be a pressure to reduce production cost by using the environment, as environmental costs are not internalized. Besides, capitalism inherently frames the environment and natural products as resources to be used. There is no room for appreciation of nature other than that of the (market) value of natural resources. Nature is thereby framed as a resource to be optimally used and exploited for the use of humans and society. Therefore, eventually economic growth leads to environmental deterioration.

3.6.2 Narrative of growth

Capitalism is built on ever expanding markets and increasing production and consumption. Beck (2010) holds that the key question for green politics is what our stance is on modernity and economic growth. Because the continuous emphasis on growth has caused that the notion of limits has paralyzed green politics (Beck, 2010). Methmann's observation coincides with Beck. He states that climate protection and the increase of efficiency, without structural change, fits perfectly into the current economic discourse of sustainable development as proposed and upheld by many powerful institutions including the World Bank and the WTO. It sustains capitalism in its present condition without structural change in the worlds' economic structures (Methmann, 2010). However, the current discourse of economic growth with "green" elements reinforces practice as usual including consuming. This eventually leads to empirical observations as the Jevons' Paradox. It seems that Jevons' himself agrees with this view. Jevons' initial observation was that the depletion of resources is *not* a matter of how much of the resource there is, but rather a product of our consumer behavior (Alcott, 2005). As capitalism is built on ever increasing production and consumption, the standard and norm is thus to consume *at least* as much as our ancestors did. With the current growing world population and without challenging this dominant discourse it is inherently impossible to decrease consumption.

Although the capitalist system has been the holy grail in economics for a long time, recently its critics have gained prominence. Economists, philosophers and other scholars that criticize the current

economic system are becoming more popular. Writers as Piketty and Kate Raworth brought ideas of alternative ways to design our economic system to a broader public. Concepts as economic degrowth, focusing on human and natural wellbeing instead of on ever increasing GDP and markets, are challenging the current paradigm of capitalism and economic growth. However, the current economic crisis as a result of the COVID-19 pandemic and resulting government interventions show once again that although another paradigm in economics might be on the rise, the predominant paradigm remains that of capitalism and pursuing economic growth.

3.6.3 Path dependency

Path dependency refers to the phenomenon that by employing certain technologies and ideas societies are put on a certain path that is difficult to deviate from. According to York and McGee (2015) this happens because of two main reasons. First, by investing in specific technological infrastructures large initial investments are made that turn into sunk costs once societies switch to different producing systems. Second, by focusing on innovations to increase efficiency these ideas may result in using more resources as continuously new ideas, programs, technologies and distributional systems are invented that altogether expand the overall consumption (York & McGee, 2015). Although not deliberately intended, this indicates that it is not only the economic system build on growth, but the current discourse of innovation itself that leads to an increase of production.

Part IV: Discussion and synthesis

In the previous chapter the three gaps have been presented and were analyzed individually. This chapter will synthesize the analyses from the previous chapter and critically discuss how social constructivism explains and interrelates the paradoxes.

4.1 General implication of social constructivism

Social constructivism has two main implications, the first being that knowledge and facts are not “true” or “false” but rather depend on the context, narrative and the power structures in place that create the setting of accepting/refusing certain knowledge and facts as true or false (Pettenger, 2007, p. 7). The second implication of social constructivism is that “knowledge” is not something gathered, internalized and stored by individuals independently. Rather, by accepting a social constructivist view (non)knowledge, cognition, denial and facts are socially constructed and -organized (Norgaard, 2009). Individuals have ways to block uncomfortable feelings and society has ways to block and/or organize perception, memory and organization. Therefore, merely focusing on the individual is not sufficient as the social environment of individuals plays an extremely important role in their cognition and/or denying of information and thereby influences their actions. When assessing climate change and the respective behavior of individuals from a social constructivist perspective it entails that the paradoxes in individuals’ behavior are embedded in a larger context and thus this context should be analyzed in order to explain individual behavior.

4.2 Paradigms and discourses

A social constructivist approach shows that climate accepting and denying can be approached as two separate paradigms according to Polsby’s (1998) definition: the paradigms of *accepters* and *deniers*. I argue that these are two paradigms as the ontology of their worldviews are so inherently different that their realities are incommensurable. To overcome cognitive dissonance individuals can first adhere to one of these paradigms. If one chooses not to believe in climate change, cognitive dissonance in this domain is (rather easily) overcome as there is no need to synthesize actions and beliefs. However, this thesis focusses on the accepting paradigm, aiming to understand why people in the *accepting* paradigm fail to act according to their beliefs.

The social constructivist view provides an interesting explanation. In the *accepting* paradigm there are still multiple discourses put forward that promote different actions. What is good/bad behavior thus becomes fluent and dependent on the context. In the light of these discourses individuals can choose which discourse and subsequent knowledge claim best suits their action. With the plurality of discourses and frameworks available (almost) any action can be justified and thereby cognitive dissonance can be resolved. This stresses the importance of a social constructivist view, as solely focusing on individuals and their actions fails to grasp the underlying structures. This view is stressed by, amongst others, Norgaard (2009) who states that these different discourses the dominant perceptions in a society organizes patterns of perception by individuals. As a result, individuals can shop a suiting identity from the plurality of actions available. Whereas before the choice of the smoker who learns smoking is bad for ones' health was to either stop or neglect the adverse effects of smoking, nowadays this smoker does not only have a large variety of different cigarettes with different (health) effects but he also has the choice of a myriad of other actions to compensate these effect. Different information and beliefs can be mixed to achieve a state of perfect consonance where actions and beliefs are perfectly aligned, at least for the individual him/herself. For an outsider adhering to another discourse and subsequent course of action, the course of action chosen by this individual may seem dissonant and counterintuitive leading to critique and misunderstanding.

4.3 Downgrading complex systems

The abovementioned fusion of good and bad has significant implications. It becomes increasingly difficult to point at someone who is performing good and who is performing bad, as what is good and bad depends on the paradigm and discourse an individual adheres to. Although there is an external reality and certain actions may have a definite negative effect on the external environment, in people's *perception* it might be good. This effect of perception of what is good and bad is intertwined in the immensely complex systems we live in nowadays. As Kollmuss and Agyeman (2010) mention, the (natural) systems are difficult and the effects of human behavior on these external systems are often so immensely complex we cannot grasp it and prefer to display these effects in too simple and linear models that do no justice to what is actually happening. Therefore, I argue that although it is often difficult to distinguish what is good and bad, people that are low performers in light of climate change and related action, are the people that fail to grasp the complex systems but who claim to understand the effects and systems. High performers on the other hand are the people who do grasp (to a certain extent) the immense complexity of human-nature interrelations and act on this. The implication of this on the Dunning-Kruger effect is that these people that fail to understand the systems behind our interaction with the environment often believe they do understand and make rules and policies based on their self-acclaimed knowledge. On the other hand, high performers that *do* understand these systems often believe everyone (to a certain extent) knows what is going on and understands how to interpret models, read graphs and translate this into real-life solutions and actions. The result is that they can be reluctant in promoting certain behavior, as they know that no behavior is perfect. Yet by the high-performers failing to promote action, most of the actions that are proposed come from ill-informed people, including policy makers and companies, that nonetheless are confident in promoting action as they believe to understand human-nature interactions.

One could say that this in turn influences the discourses and even the two paradigms as explained under the implication of social constructivism on cognitive dissonance. As people who understand complex systems, often scientists and experts, are reluctant in showing their results and promote certain forms of action, the people who fail to grasp these systems are over-confident in showing results and promoting actions. This might explain, to a certain degree, why we often hear about how simple it is to act in accordance with pro-environmental knowledge ("just recycle your waste") whereas provoking and structural changes are far less discussed.

4.4 The economic driving forces

The economy and current economic system can be regarded as an agent constructing the way we perceive nature and thereby the behavior we display. First of all, capitalism frames nature as a resource that should be (optimally) exploited. Capitalism will always put nature and the environment under pressure as negative externalities are not internalized (Rosa & Dietz, 1998). Yet this is not the only way in which we construct nature and natural resources. The paradigm of economic growth, inherent and exemplary of capitalism, shapes the way we see economics: we can never go down, the only way of economics and corresponding GDP is up. Adopting a social constructivist view thus makes two things blatantly clear. First, our dominant economic system frames nature as a resource, classifying it in monetary terms. Second, we are bound to a paradigm of economic growth, where we must consume *at least* as much as the generation before us.

This has several implications for the Jevons' Paradox. First, the classical explanation of the Jevons' Paradox, that when there is less demand of a natural resource producing a specific good the price will drop, leading to more consumption as the negative external effects are not internalized in the price of the good. Second, the focus on growth implies that we can never produce less, only more. With a growing world population and increasing part of the population that wants to have higher living standards, consumption and the corresponding use of resources must increase. The efficiency gain has to be very high to offset this mechanism. Third, the focus on growth and the market-based economy will create markets for products that are made more efficient and therefore can be labeled as 'good'. Examples include ecolabels and markets for second hand products. This causes that an increase in efficiency does not automatically lead to less production and thus use of the resource, but that new markets are created where goods are sold for an (often) higher price. Thereby a part of the increase in efficiency is being eaten up by new markets that emerge. This effect also corresponds to cognitive dissonance theory because interestingly, eco-labels promoted by actors as "good" may in fact lead to an overall higher consumption thereby diminishing the environmental impact. Yet, at the same time these labels and increasingly efficient products make consumers feel good about themselves and their actions, as they believe to be engaging in a pro-environmental activity. This is an example of the complex systems and the linear way of thinking where more efficient products are labelled as "good" whereas consumers and other actors often fail to grasp the complex systems behind them.

Part V: Conclusion

In this thesis I have argued that the cultural, institutional and symbolic systems in society and the (power) structures, traditions and social practices they are embedded in influence and shape our (self-claimed) environmental knowledge and the way we see and justify our (lack of) pro-environmental behavior. Thereby social constructivism has the potential to explain apparent contradictions in human pro-environmental behavior as the Dunning-Kruger effect, cognitive dissonance and the Jevons' Paradox.

Social constructivism implies that there are no low- and high-performers as what is good and bad is fluid. What are considered as low- and high performers depends on an actors' understanding of the complex human-environmental feedback systems. However, we can still see the Dunning-Kruger effect in so much as that low performing individuals overestimate their own ability and knowledge and high performing individuals downscale their own knowledge. This results in (ill-informed) politicians advocating policies they do not fully understand whereas scientists and experts/scientists being reluctant in promoting their courses of action. In this thesis I have presented two paradigms: the *accepting* and *denying* paradigm. Although this thesis has focused on the *accepting* paradigm, cognitive dissonance theory helps to understand why some ignore effects from climate change as they adhere to a paradigm where climate change denial is at the very core of the belief system. For those who adhere to the *accepting* paradigm I have argued that what is good and bad becomes embedded

in different discourses and courses of action put forward and reiterated by different (groups of) actors. People can cherry pick facts and knowledge claims that suit their actions, thereby achieving cognitive consonance. This means that people following another discourse within the accepting paradigm can perceive the action of other individuals as dissonant, yet for the individual itself the action is consonant with claimed beliefs. The Jevons' Paradox sheds light on the importance of the capitalist system which frames nature as a good to be optimally exploited without internalizing costs. I have argued that the Jevons' Paradox is the manifestation of the current capitalist system and subsequent discourse of economic growth which inevitably lead to increasing consumption.

Several authors including Beck and Latour argue that climate politics is about transforming the basic concepts and institutions of modern nation-states. Social constructivism plays an important role in criticizing the status quo as oppression, inequality and injustice are always justified by those in power. When the elements of previously held certainties are deconstructed one can reconstruct the world according to different principles. By analyzing three paradoxes and gaps between human knowledge and (pro-environmental) behavior using social constructivism I have shown that these theories and paradoxes are eventually explained and reinforced by social constructivism. Therefore, I stand with Latour and Beck and believe societal concepts and institutions in our political, societal and economic systems contribute to the persistent gap between environmental knowledge and behavior. This inevitably leads to the rather skeptical view that effective climate change cannot be attained without altering the basic concepts and institutions in our contemporary societies.

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