INTUITIONS AND ARGUMENTS: COGNITIVE FOUNDATIONS OF ARGUMENTATION IN NATURAL THEOLOGY

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Abstract. This paper examines the cognitive foundations of natural theology: the intuitions that provide the raw materials for religious arguments, and the social context in which they are defended or challenged. We show that the premises on which natural theological arguments are based rely on intuitions that emerge early in development, and that underlie our expectations for everyday situations, e.g., about how causation works, or how design is recognized. In spite of the universality of these intuitions, the cogency of natural theological arguments remains a matter of continued debate. To understand why they are controversial, we draw on social theories of reasoning and argumentation.

1 INTRODUCTION

Arguments that aim to rationally establish the existence of one or more gods appear in many cultural traditions. For instance, the design argument appears in several polytheistic traditions, including Hinduism and ancient Greek and Roman philosophy (Brown, 2008; Sedley, 2007). It observes that features of the world, such as biological organisms and the structure of the universe, seem fine-tuned to sustain human life. As the 8th-century Hindu philosopher Śaṅkara put it:

> In ordinary life what we do see is that houses, palaces, couches, seats, pleasure-gardens, and the like, which are useful for obtaining pleasure and avoiding pain at appropriate times, are constructed (*racitā*) by intelligent craftsmen. In like manner, observe that this entire universe, externally consisting of the earth and other elements, is suitable for experiencing the fruits of various acts. [...] Since even the most competent craftsmen cannot comprehend (the world's construction), how could the non-intelligent Material Nature (*pradhāna*) devise (*racayet*)

it? In the case of such things as a lump of earth or a stone, no (power of contrivance) is seen, but the design (*racanā*) of special forms out of such things as clay is seen when they are superintended by potters and the like. In the same way, Material Nature (transforms itself) only when connected with a superintending, external intelligence (Śaṅkara, cited in Brown, 2008, 108).

From this, Śaṅkara inferred that intelligent agents (in particular, Brahman) are responsible for the design of the universe. Christian authors like Newton and Paley offered similar arguments (see McGrath, 2011, for an overview).

The enduring popularity of these and other natural theological arguments is no coincidence, but results from stable features of human cognition that operate at two levels: intuitions and argumentative reasoning. Intuitions provide the raw material for premises in natural theological arguments. They arise as a result of individual reasoning processes. Argumentative reasoning occurs in social contexts: on the basis of intuitions, reasoners formulate arguments to examine the plausibility of religious ideas. In this paper we look at intuitions and argumentative reasoning as the cognitive basis of natural theology. Section 2 introduces cognitive approaches to natural theology. Section 3 examines the intuitions that underlie natural theological arguments, focusing on their evidential value. Section 4 discusses the dialectical context in which such arguments are formulated. Section 5 concludes by tying these different stands together.

2 NATURAL THEOLOGY THROUGH THE LENS OF COGNITIVE SCIENCE OF RELIGION

Cognitive science of religion (CSR) is a multidisciplinary field that studies religious beliefs and practices by looking at the cognitive processes that underlie them. It encompasses various disciplines, such as developmental and cognitive psychology, anthropology and neuroscience. CSR authors propose that religious beliefs and practices build on everyday cognitive processes and inference mechanisms, such as perception and memory. This marks a departure from how religion has been typically studied in the humanities and social sciences, i.e., as a primarily cultural phenomenon. For example, Guthrie (1993) argued that our perceptual systems have evolved in such a

way that they are highly sensitive to cues of agency, especially anthropomorphic agency. A configuration of two aligned spots, and a third spot, situated under the two, will be easily taken for a human face. The cultural evolution of supernatural beings builds upon this tendency to overattribute agency.

An emerging consensus in CSR is that religion is natural (see e.g., Bloom, 2007; McCauley, 2011, for explicit defenses of this claim). The term "natural" as applied to religion is polysemic. Some authors (e.g., Dennett, 2006) use it in the sense of *ontological naturalness*: religion can be explained without invoking any supernatural agents or forces. Others (e.g., McCauley, 2011) focus on *maturational naturalness*: religious beliefs and practices emerge early in development, without explicit instruction, like one's first language. Under this latter view, religious beliefs are easy to acquire and process as they key in on how our minds work.

In this view of religion as a natural phenomenon, the role of reasoning and argumentation remains unclear. If belief in God (or some supernatural being more generally) is natural, then why would one argue for God's existence? Moreover, some studies (e.g., Gervais & Norenzayan, 2012) suggest that reasoning and religious belief do not go well together. Analytic reasoning decreases religious belief, whereas more intuitive styles of thinking increase it. As Sosis and Kiper (2014, 270) write, "adherents do not attain their religious commitments through analytical contemplation; rather, they derive and sustain them by expressing them through rituals, symbols, myths and other elements of the religious system." What are we to make of practices that combine religious belief and reflective reasoning, such as natural theological argumentation? CSR has been mainly concerned with folk religious beliefs and practices, with little attention for theology and philosophy of religion. Most work on CSR and theology has focused on theological incorrectness (e.g., Slone, 2004), which occurs when religious believers unwittingly distort official theological doctrines to fit their intuitive expectations. For example, when Christians have to make inferences about what God can know, they are influenced by their beliefs about what human agents can know. They explicitly affirm that God is omnipotent and omniscient, but when they have to recall a narrative where God saves a drowning boy who prays to help him, they misremember it to the effect that God first had to finish listening to another prayer before he can attend to the boy (Barrett & Keil, 1996). Theological

concepts, such as the Trinity, often present a radical departure from ordinary religious concepts. The Trinity is a puzzling concept for ordinary religious believers as it unites three persons in one substance. Subtle differences in trinitarian concepts between, say, Eastern Orthodox and Western traditions elude them. As a result, they often distort such concepts to fit their more intuitive expectations, although they try to adhere to official teachings of their denominations. For instance, a qualitative study with English parishioners found that they do not see Jesus on an ontological par with God the Father (as western Trinitarians holds), but rather as a man who had an exemplary lifestyle and moral teachings (Christie, 2013).

If reasoning and religion are incompatible, how can we explain natural theology? Norenzayan (2013, 181) argues, "apologetics is doomed to failure as a philosophical enterprise because it fails to capture how our minds accept the plausibility of religious belief." Yet, if sales of popular books, such as *The God Delusion* (Dawkins, 2006), or views on YouTube channels, such as the *Veritas Forum*, are any indication, natural theology is far from doomed. Natural theological arguments continue to generate interest. As we will see in the next sections, natural theological arguments are not completely separated from the intuitions that underlie ordinary religious beliefs. To the contrary, these arguments critically rely on intuitions and cognitive processes that also play a role in folk religious beliefs. In the next section, we will review evidence from CSR that supports this continuity. Subsections 3.1, 3.2 and 3.3 summarize chapters 4, 5 and 6 in De Cruz and De Smedt (2015).

3 INTUITIONS UNDERLYING NATURAL THEOLOGICAL ARGUMENTS

Natural theological arguments aim to establish the existence of God using intuitions that are broadly shared. Such intuitions arise spontaneously, also in the minds of non-philosophers or non-theologians. For instance, the cosmological argument builds on the intuition that contingent, temporal events have a cause for their existence. Since we have the non-reflective belief that everyday events have external causes, we spontaneously wonder, "Why is there something rather than nothing?" This sense of cosmic wonder underlies the cosmological argument, including sophisticated versions based

on probability (Swinburne, 2004) or Big Bang cosmology (Craig, 1998). Even when natural theologians of the past did not explicitly use the term "intuition" and its variants, intuitions played a crucial role in natural theological arguments. In his design argument, Śaṅkara invited readers to consider objects designed for human comfort, such as palaces, couches, and pleasure-gardens, assuming that they would notice a similarity between these artifacts and the universe in its design. Once this intuition is in place, they may be more inclined to accept the argument that the universe, like artifacts, has a designer. We argue that intuitions that fuel natural theological arguments have early developmental origins (De Cruz & De Smedt, 2015). We illustrate this by looking at the intuitions that underlie three popular arguments for the existence of God: the teleological, cosmological, and moral arguments.

3.1 The teleological argument

Teleological arguments (also known as arguments from design) have been formulated in diverse cultural contexts, including in ancient Greece and Rome, medieval and modern Europe, Classical India, and the medieval Islamic world. Many forms of the teleological argument, for instance, Paley (1802 [2006]), propose an analogy between features of the natural world, such as the human eye or a bird's wing, and complex artifacts, such as a mechanical watch. They can be formalized as follows (Sober, 2004, 118): there is an observation O and two possible hypotheses (H_1, H_2) to explain it:

O: the watch/the universe has features such as goal-directedness and complexity.

H_1: the watch/the universe was created by an intelligent designer.

H_2: the watch/the universe was produced by a mindless chance process.

The teleological argument holds that the best explanation for complexity in artifacts is design, and that likewise, the best explanation for complexity in the natural world is design. This is an argument from analogy, as we will see in more detail in subsection 4.3. Given that design entails a designer, the natural world was designed by one or more powerful supernatural beings.

What explains the intuition that natural objects, like artifacts, are goal-directed? Young children have a robust preference for teleological explana-

tions for natural objects, and this remains latently present in adults as well. From about five years of age, young children show a preference for teleological over mechanistic explanations for natural objects. For instance, when offered the choice between teleological and mechanistic explanations, e.g., "the rocks were pointy so that animals could scratch on them when they got itchy" or "the rocks were pointy because bits of stuff piled up for a long time", young children consistently choose the teleological option (Kelemen, 2003, 204). Older children and adults prefer the mechanistic explanation, indicating a reduced appeal to teleological explanations. Yet, several studies show that adults are more likely to endorse wrong teleological explanations under time pressure, e.g., "The sun radiates heat to nurture life on Earth." This tendency is even present in American physical scientists at research-intensive universities (Kelemen, Rottman, & Seston, 2013). Adults — including atheists who explicitly deny any higher purpose in their lives — also appeal to teleological explanations to come to grips with significant life events, for instance, they believe they failed their exams so that they would learn that they could do something else in life (Heywood & Bering, 2014).

The tendency to see teleology in the natural world and in one's personal life is pervasive, but does this mean humans are intuitive creationists? In Hume's *Dialogues Concerning Natural Religion*, Cleanthes argues that we perceive design, just like we perceive teleology: " Consider, anatomize the eye; survey its structure and contrivance; and tell me, from your own feeling, if the idea of a contriver does not immediately flow in upon you with a force like that of sensation" (Hume, 1779, Dialogues III, 77–78). However, attributing design requires additional background information. Both adults and young children take the history of objects into account when they decide to attribute design. For instance, when they are shown objects and are given two divergent reports of how they came into being, either by accident (e.g., a strip of cloth was caught in a machine by accident, which resulted in holes punched in the cloth at regular intervals) or design (e.g., a person carefully cut equidistant holes with a pair of scissors), participants are more prone to call the latter object a belt if they think it was intentionally created (Gelman & Bloom, 2000). On the other hand, adults and children who heard the accidental story described it as a strip of cloth with holes in. The importance of background information also reveals itself at the neural level: participants

who listen to a piece of electronic music show a high activation in brain areas involved in the attribution of mental states, such as the anterior medial frontal cortex, superior temporal sulcus, and temporal poles. By contrast, subjects who are told this is a random computer-generated piece do not show this activation (Steinbeis & Koelsch, 2009). Experiments like these suggest that we do not perceive design automatically, even if the object exhibits some complexity and regularity. Humans are not intuitive creationists, rather, the teleological argument already assumes design (i.e., theism) when it attributes design intentions, and then argues for a creator.

3.2 The cosmological argument

Cosmological arguments infer the existence of God from the existence of the universe. Some cosmological arguments, such as Thomas Aquinas's second and third way rely on the intuition that causal chains are finite, and therefore, there is a first cause. Others, like Leibniz's, invoke the principle of sufficient reason: every contingent state of affairs has a reason or explanation. A third class of cosmological arguments assumes that the universe is only finitely old, and that objects that begin to exist have an external cause for their existence. This *kalām cosmological argument* was influential in medieval Muslim philosophy (Shihadeh, 2008), and has contemporary defenders (e.g., Craig, 1998). Cosmological arguments typically consist of two moves: first, they propose that the universe requires a cause or explanation for its existence, and second, they identify this cause or explanation as God:

(1) Whatever begins to exist has a cause of its existence.

(2) The world began to exist.

(3) Therefore, it must have an originator (from 1 and 2).

(4) This originator must be eternal; otherwise it too must have an originator (from 1).

(5) The originator is God.

Infants already have the intuition that contingent events (especially those where disorder turns into order) have external causes, and they prefer agents

as causes of such events. For instance, when a disordered pile of blocks turns into a neat stack, or when beads arrange themselves into regular patterns, infants look longer if the cause turns out to be a mechanical claw, rather than a human hand. This suggests that they expect that human agents cause these events (Newman, Keil, Kuhlmeier, & Wynn, 2010; Ma & Xu, 2013). Other looking time experiments similarly indicate that infants have a preference for agents over non-agents as causes for events. For example, 12-month-olds expect a human hand, but not a toy train, to cause a beanbag to land on a stage (Saxe, Tenenbaum, & Carey, 2005). Young children who witnessed inanimate objects moving without any apparent external cause sometimes appealed to invisible mechanical devices, such as batteries, or, more frequently, to invisible persons who made the devices move (Gelman & Gottfried, 1996).

Older children and adults spontaneously provide causal explanations. When adults have to recall a story, they spontaneously make causal inferences (not present in the original scenario) to reconstruct the event. For instance, when a character in a story finds that her wallet is missing, participants will spontaneously reconstruct the story as if her wallet was stolen by a pickpocket (Hassin, Bargh, & Uleman, 2002). In cases like these, people offer accounts in terms of invisible generative causes. As humans are able to do this even after a single instance of an event, they seem to have no problem inferring generative causes for unique events. The cosmological argument keys in on this spontaneous search for hidden causes, and the preference for agents as causes for ordered complexity.

3.3 The moral argument

Moral arguments make an inference from the (purported) existence of a moral sense or objective moral norms to the existence of God:

(1) If objective binding moral norms exist, then God exists.

(2) Objective binding moral norms exist.

(3) Therefore, God exists.

In this simple formulation, the moral argument's first premise draws an explicit connection between God and objective binding moral norms. Re-

cently, a large cross-cultural survey conducted by the Pew Research Center[1] found that people worldwide regard belief in God as a necessary condition for being a moral person. This view is especially prevalent in poorer countries with weaker systems for law enforcement.

From a CSR perspective, the connection between morality and God can be explained as the result of cultural evolution: historically, cultures used belief in watchful, punishing deities to enforce socially appropriate behavior. People who think they are being watched behave in a more prosocial way than those who do not. This has been experimentally demonstrated in several settings. For instance, a self-serve coffee and tea station had a banner with either a pair of staring eyes or a picture of flowers hanging right above the prices. These pictures were alternated each week. During the weeks when the eyes were on display, there was more money collected in the box (Bateson, Netttle, & Roberts, 2006). Belief in morally concerned, watchful deities may be an effective way to reduce the temptation to cheat. Several studies found that people indeed behave more generously towards others when they are primed with god concepts (e.g., Shariff & Norenzayan, 2007). Norenzayan (2013) speculates that during the Neolithic larger, cohesive groups that stably held beliefs in watchful, punishing deities had an advantage over groups without such beliefs: they could cooperate better and had less problems with cheating and freeriding. Over time, these groups became prevalent as they successfully outcompeted other groups for limited resources. This historical situation contributes to the widespread belief in premise 1 of the moral argument.

Its second premise is fueled by our intuition that moral norms and judgments have an absolute, non-subjective character, that they transcend individual preferences and cultural values, and that they are true even if everyone believed they were false. There is empirical support for the claim that humans are intuitive moral realists, i.e., that they intuitively believe that morality is objective and that it does not change according to cultural preferences. Young children believe that a non-moral norm (e.g., not chewing gum in class) could change if teachers accepted it, but that moral transgressions (e.g., pulling another child's hair) would remain wrong, even if teach-

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[1]   Pew Forum's Global religious landscape, 2012,
http://www.pewglobal.org/2014/03/13/worldwide-many-see-belief-in-god-as-essential-to-morality/

ers allowed it (Nichols & Folds-Bennett, 2003). Goodwin and Darley (2008) observed similar objectivist tendencies among undergraduates. Participants believed that moral statements were almost as objective as scientific facts, and more objective than social conventions or personal taste. According to the students, moral statements they agree with strongly are also the most objectively true — the more they agreed with statements, the more objectively true they were. This strong intuitive sense that moral norms are objective lies at the basis of moral arguments for the existence of God.

3.4 The evidential value of intuitions in natural theology

What is the evidential value of intuitions that underlie natural theological arguments? This question ties into a larger debate on the evidential value of intuitions in philosophy more generally. Some authors, such as Williamson (2007) and Cappelen (2012), argue that appeals to intuitions are just a form of linguistic hedging: I see it this way, but you might see it differently. Today, philosophers cannot draw on traditional psychological justifications, such as that intuitions would be memories of our prenatal life in the World of Forms, as Plato held, or that intuitions are innate ideas, instilled by God, as Descartes assumed.

Thanks to recent developments in cognitive psychology, contemporary philosophers are in an excellent position to revisit the psychological origins of intuitions. Cognitive scientists are studying the psychological bases of intuitions, e.g., in moral cognition (Haidt, 2001), dual-processing approaches to reasoning (Evans, 2008), and conceptual knowledge in infants and young children (Carey, 2009). In a broad psychological sense, intuitions are assessments that arise as a result of unconscious, inaccessible reasoning processes. Intuitions appear spontaneously, without conscious deliberation. One set of intuitions that has received attention, and that is relevant for the study of natural theological argumentation, is core knowledge[2] (see also De Cruz, 2015). According to developmental psychologists (e.g., Carey & Spelke, 1996; Spelke & Kinzler, 2007), humans have early-developed inference-mechanisms that generate intuitions about the physical, biological, and psychological world.

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[2]   The concept of core knowledge sometimes goes by alternative names, such as "folk theories", "intuitive knowledge" (e.g., Gelman & Legare, 2011), or "core cognition" (Carey, 2009).

Examples of domains of core knowledge include intuitive physics, which guides our expectations about physical events, intuitive biology, which provides us with beliefs about growth, development, and behavior of organisms, and intuitive psychology, which allows us to predict and explain the actions of others by appealing to internal mental states.

Can the psychological origins of intuitions say anything about the cogency of natural theological arguments? Using a reliabilist strategy, one can examine whether a particular type of cognitive process is usually reliable (Goldman, 2007). For example, a recent cross-cultural study has revealed that people tend to deny knowledge in Gettier cases (Machery et al., in press). Differently put, humans across cultures have a concept of knowledge that is more demanding than justified true belief. According to Boyd and Nagel (2014), such a demanding concept of knowledge is effective in helping us navigate our social world: it allows us a better picture of whether someone really knows that p, or is merely lucky in this belief. Since keeping track of what others know is ecologically important for social creatures like us, we are sensitive to factors like luck to judge whether someone really knows a state of affairs. In this way, the epistemic intuitions that underlie philosophical thought experiments such as Gettier scenarios are reliable.

Applying this strategy to natural theological arguments, we can examine whether the teleological, causal, and moral intuitions that underlie natural theological arguments are generally truth-conducive. It seems that, in everyday conditions, they are. When an ordinary event happens, such as an unfortunate plane crash, we are right to try to identify an external cause of this event. Natural theology stretches the bounds of our ordinary intuitions by reaching beyond our everyday experience. Whether our causal intuitions are also reliable when we consider the origin of the universe as a whole is unclear. Reliabilism encounters the generality problem. To assess whether a given token process is reliable, we need to settle the appropriate type process. In the case of the cosmological argument, it is unclear whether our ordinary causal reasoning processes are the appropriate type process. Ordinary causal intuitions are not always reliable, for example, they break down in the domain of quantum mechanics, which suggests that they may be more appropriate for events involving middle-sized objects, the context in which our causal intuitions evolved. This objection is, of course, an ancient one. Hume (1779) and

Kant (1781 [2005]) cautioned against making extrapolations from everyday causal cognition to the universe as a whole. Likewise, the Buddhist atomist Dharmakīrti (6th–7th century AD) argued that cosmological arguments go beyond what is permitted through inductive extrapolation: one cannot generalize from ordinary causes and effects in everyday circumstances to a unique being such as God (Dasti, 2011).

The case of the cosmological argument illustrates that we cannot draw straightforward conclusions about natural theological arguments from the psychological processes that underlie their premises. This does not mean that their psychological underpinnings are irrelevant. Suppose, for instance, that intuitive moral realism is a cognitive illusion. According to Ruse and Wilson (1986, 179) "Human beings function better if they are deceived by their genes into thinking that there is a disinterested objective morality binding upon them, which all should obey." Currently, this hypothesis lacks sufficient empirical support[3]. However, if it turned out that Ruse and Wilson are correct, we would have an undercutting defeater for the intuitive moral realism that supports premise 2 of the moral argument. This would not mean the premise is false, but it would mean it is not prima facie true.

4 ARGUMENTS IN NATURAL THEOLOGY

4.1 The cognitive basis of argumentation

Reasoning is the individual or social process by which we, individually or collectively, make inferences from premises in order to reach a conclusion. Descartes (1619 [1985], rule III) contrasted (deductive) reasoning with intuition as follows: "Thus we distinguish at this point between intuition and certain deduction; because the latter, unlike the former, is conceived as involving a movement or succession; and is again unlike intuition in not re-

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[3]   At most, there is evidence for a connection between intuitive moral realism and altruistic behavior. When participants are primed with moral anti-realism (e.g., Do you agree that our morals and values are shaped by our culture and upbringing, so it is up to each person to discover his or her own moral truths?") or receive no prime, they are less generous in donations for charitable causes than when they receive a prime that makes moral realism more salient (e.g., "Do you agree that some things are just morally right or wrong, good or bad, wherever you happen to be from in the world?") (Young & Durwin, 2013, 304).

quiring something evident at the moment, but rather, so to say, borrowing its certainty from memory." When we intuit, we spontaneously reach conclusions, whereas reasoning involves finding and evaluating reasons for why the conclusion is true.

Until recently, most philosophical and psychological studies of reasoning took as the exemplar case of reasoning the lone reasoner, the person who thinks very carefully, weighing various considerations, to reach a conclusion. This picture is challenged by recent work on the social function of reasoning. According to the argumentative theory of reasoning (Mercier & Sperber, 2011), cognitive capacities that are involved in reasoning evolved in a social context where we evaluate the arguments of others (to decide whether to change our minds), and where we try to persuade others by good arguments. This social perspective sheds light on some peculiar features of reasoning, such as the robust presence of biases. For example, reasoning is subject to confirmation bias, the tendency to interpret claims in a way that confirms one's prior beliefs, and to view claims that do not match these with suspicion, or ignore them blithely. People are better at finding weaknesses in other people's positions than in their own. Moreover, they are unable to predict how well they will do in assessments of their knowledge, even when they received extensive feedback earlier (Eva, Cunnington, Reiter, Keane, & Norman, 2004). When adults are asked to give arguments for their position on social issues, they tend to produce weak arguments, such as circular ones. This is remarkable in light of the fact that even five-year-olds have a preference for non-circular over circular arguments. By ten years of age, the ability to detect circularity in an explanation is robust (Baum, Danovitch, & Keil, 2008). By contrast, people are better at evaluating the knowledge and arguments of others: in one experiment where participants were asked to individually solve a puzzle and then present its solution to the group, participants nearly always identified the correct solutions, based on arguments made by those who solved them (Trouche, Sander, & Mercier, 2014). On the lone reasoner view, where reasoning functions to improve one's individually held beliefs, these cognitive limitations are surprising — confirmation bias and an inability to see the weaknesses in one's own line of reasoning are not conducive to good reasoning in a solitary context. However, if reasoning is a social process,

it is unsurprising that people have confirmation bias and are not that good at presenting arguments.

Natural theological argumentation exhibits biases we find in other domains of reasoning as well, with theists being more favorably disposed toward theistic arguments and atheists more in favor of arguments against God's existence (De Cruz, 2014; De Cruz & De Smedt, 2016). Tobia (2016) presented participants with a ontological argument for or against God's existence. Subjects had to evaluate whether the argument was logically valid, and how strong it was. Predictably, theists were more inclined to believe the theistic ontological argument was logically valid. In both theists and atheists, strength ratings accorded to prior belief: theists found the theistic ontological argument stronger, and atheists favored the atheistic argument. These results do not bode well for philosophy of religion, and feed worries (e.g., Draper & Nichols, 2013) that philosophy of religion is riddled with biases. However, it is in line with other findings in experimental philosophy that indicate that philosophical specialization does not attenuate biases: Schwitzgebel and Cushman (2012) demonstrated that professional philosophers, even ethicists, are just as susceptible as laypeople to order effects, the order of presentation of moral dilemmas.[4]

If the social theory of reasoning is correct, we should expect that confirmation bias plays a role in how philosophers evaluate natural theological arguments. But argumentative practices could help correct for these biases. For instance, as a result of confirmation bias, theists might be unaware of plausible objections to particular arguments. But such objections can be pointed out to them by atheists, who examine arguments for theism with extra scrutiny, as a result of their disconfirmation bias against such arguments. This could then lead to theists sharpening their arguments. Consider the fine-tuning argument. The original design argument which focused on biological properties presented two possible origins for the appearance of complexity and design in nature: chance or design. Proponents of this classical design argument (e.g., Paley, 1802 [2006]) then argued that design was a better explanation

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4   Note that discussions on bias in experimental philosophy have tended to focus on individual assessments of arguments and intuitions elicited by thought experiments. They have not yet examined to what extent argumentative practices might mitigate individual biases, or more generally, how philosophers interact with each other in an argumentative context.

than chance. However, the classic design argument did not take into account that a combination of chance and non-random selection of favorable characteristics could create complexity. The fine-tuning argument (see Collins, 2009, for review) avoids this response, since it does not focus on biological organisms but on the conditions for life in our universe. Prima facie, it seems very unlikely that all these conditions (including physical laws and cosmological constants) would be fine-tuned in such a way as to allow for carbon-based life, or any life at all. An objection to this fine-tuning argument is that fine-tuning is merely the result of an observation selection effect (Sober, 2004) — the very nature of our existence introduces a bias: we cannot observe an environment in which there are no observers, so our evidence will always be biased toward observations of environments in which observers can exist. This objection is based on the weak anthropic principle: "What we can expect to observe must be restricted by the conditions necessary for our presence as observers" (Weisberg, 2005, 810). Swinburne (1990) responds to this line of argument by appeal to intuitions elicited by the following scenario: suppose you will be executed by a firing squad composed of 12 competent marksmen who each have 12 firing rounds. If, after firing 144 bullets, you are still alive, this observation is surely subject to an observation selection effect, but it remains surprising, and the fact that you are alive requires an explanation. The most plausible explanation in this case is that your survival is the result of design (e.g., the firing squad willfully misfiring to spare your life). Some authors have argued on the basis of this that even with the observation selection effect, the observation of fine-tuning is still relevant evidence for the fine-tuning of the universe (e.g., Weisberg, 2005). Thanks to the dialectics of natural theological argumentation, the fine-tuning argument is an improvement on the classic design argument since it responds to a number of objections raised to the original argument, and presents a tougher challenge for the nontheist to answer (namely, why we live in a life-permitting universe), a challenge that is hard to respond to in an ontologically parsimonious way, e.g., without invoking multiple universes, one of which would happen to be ours.

4.2 Natural theological argumentation as a practiced skill

Arguing about religion in the context of natural theology differs in several respects from ordinary argumentative contexts. As we have seen, people tend to produce shallow, unconvincing arguments during informal discussions. In more formalized settings, the stakes are higher. For example, giving a weak argument in a court of law may incur costs: it provides the other party with ammunition (e.g., "Look, they are just contradicting themselves") and takes away valuable time for formulating more compelling arguments. Similarly, philosophers and theologians who argue poorly can expect to be penalized, for example, by rejection through peer-review.

It is helpful to think about natural theological arguments as the products of social reasoning in a highly specialized context. Humans are naturally endowed with an "intuitive metarepresentational mechanism, a mechanism for representing possible reasons to accept a conclusion — that is, for representing arguments — and for evaluating their strength" (Mercier & Sperber, 2011, 58). Everyone can argue and provide reasons for the beliefs they hold. But in some highly specialized domains of knowledge, such as natural theology or philosophy of religion in general, reasoning is a practiced skill; its practitioners are well aware of the argumentative moves they can make and that others can make against them. Just like chess players know what moves are available to them (e.g., when one's king is in check, the only moves that are allowed are those that remove the check), skilled reasoners know what moves they can and cannot make. Some of these implicit rules are broad, for instance, philosophers take care not to make logical mistakes, such as affirming the consequent or denying the antecedent. Others narrowly apply to the subject of the debate, for example, Aquinas scholars who discuss the interpretation of a contested passage have to be in line with widely accepted views about Aquinas' philosophy.

The argumentative moves in natural theology are constrained by background assumptions. For instance, when debating God's existence, authors presuppose a thin and underdetermined concept of monotheism, rather than a fully-fledged concept of God as espoused in, say, Mormonism or Anglicanism. In a deliberate attempt to change the field, one can, of course, question the rules of the game, and argue that philosophy of religion should embrace

richer concepts of God (e.g., Trakakis, 2008). But, these criticisms are not leveled against the arguments; rather they question the constraints within which these arguments are formulated. Given that arguments for and against theism are formulated in a formalized context with implicit assumptions and rules, we need to examine whether these are conducive to good reasoning.

4.3 Analogies as argumentative tools

We will now provide one illustration of a common argumentative move in natural theology (and philosophy more generally), namely argumentation through analogy. Analogies are pervasive in everyday discourse, for instance, love is like a journey, the Internet is like a highway. Structurally, analogies map properties of a source domain (e.g., journey) onto a target domain (e.g., love). The source domain is the better-known domain of knowledge that a reasoner can draw upon to elucidate issues in the target domain. Although this mapping from source to target domain is never perfect, analogies can be useful to gain insights into poorly understood domains. In good analogies, the structural properties of target and source domain are similar, so that the reasoner can increase her understanding of the target domain. Analogies play an important role in scientific reasoning and creativity. For example, Kepler drew an analogy between light and *vis motrix* (the motive power of the Sun, a precursor to gravity) to gain insights into planetary motion, in particular why planets further from the Sun revolved more slowly. Kepler's analogies played a critical role in the formulation of his three laws of planetary motion (Gentner et al., 1997). Similarly, evolutionary psychologists (e.g., Cosmides & Tooby, 1994) use artifact analogies such as Swiss army knives to elucidate their ideas about our evolved, functionally adapted minds with several specialized modules for specific cognitive functions, e.g., face recognition (De Cruz & De Smedt, 2010).

Analogies are not only used to increase our understanding of an unfamiliar situation, but also to convince an interlocutor through argumentation. For example, one could use the love-is-like-a-journey analogy to emphasize that there are ups and downs in a relationship, that is, to argue to give a difficult relationship another chance. While analogies commonly figure in argumentative reasoning, there is no agreement on what form they have, or what

criteria should be used to evaluate them. Brewer (1996, 966) proposes the following general structure for arguments from analogy:

(1) z has characteristics F, G, ...

(2) x, y have characteristics F, G, ...

(3) x, y have also characteristic H.

(4) The presence in a thing of characteristics F, G,[...] provides sufficient warrant for inferring that H is also present in that thing.

(5) Therefore, there is warrant to conclude that H is also present in z.

Natural theological arguments often take the form of an analogy. Arguments from design, for instance, emphasize that natural objects (such as eyes or trees) have complexity and teleology as characteristics, just like artifacts (watches, pleasure gardens). Artifacts have a designer, therefore, there is warrant to conclude that natural objects also have a designer.

How can we know whether there is warrant to conclude that the property is present in the target domain? This is a difficult question to settle, and one of the reasons why natural theological arguments are hard to evaluate. As Hume already noted:

> If we see a house, Cleanthes, we conclude, with the greatest certainty, that it had an architect or builder; because this is precisely the species of effect which we have experienced to proceed from that species of cause. But surely you will not affirm, that the universe bears such a resemblance to a house, that we can with the same certainty infer a similar cause, or that the analogy is here entire and perfect. The dissimilitude is so striking, that the utmost you can here pretend to is a guess, a conjecture, a presumption concerning a similar cause (Hume, 1779, 51).

Hume, speaking through the mouth of the skeptical Philo, was correct in observing that the analogy from artifacts to natural objects is not a near analogy. It is a distant analogy, where the source and target domain are far apart. However, this by itself does not render the analogy invalid. It could still work if the structural properties are similar. Hume argued that if the analogy with artifacts is maintained, it is not clear whether one can speak of

design. He observed that artifacts that show ingenuity and design are often the result of gradual change:

> If we survey a ship, what an exalted idea must we form of the ingenuity of the carpenter who framed so complicated, useful, and beautiful a machine? And what surprise must we feel, when we find him a stupid mechanic, who imitated others, and copied an art, which, through a long succession of ages, after multiplied trials, mistakes, corrections, deliberations, and controversies, had been gradually improving (Hume, 1779, 106–107)?

In this passage, Hume prefigures work on cultural evolution. As Rogers and Ehrlich (2008) have shown, the design of Polynesian canoes exhibits small, gradual modifications over time that have resulted in more seaworthy vessels over the centuries. Also, as Hume remarked, since many artifacts are the joint project of several designers, the uncomfortable conclusion would be not for monotheism but polytheism.

More recent arguments against design include the "no designer worth his salt" objection (see Sober, 2007, for review), the argument that many adaptations are imperfect and that their structure suggests a blind process of evolution rather than deliberate design, for example, the panda's thumb, the human prostate, and the awkward structure of the mammalian eye. Other authors, such as Sarkar (2011), point to the fragility of natural objects — often cited as an example of fine-tuning and hence design by contemporary proponents of the design argument (e.g., Behe, 1996) — as examples of incompetence:

> Human intelligence suggests that complex systems are better (that is, more reliable and, in that sense, more reflective of intelligence) when they have sufficient built-in redundancy to guard against easy collapse. In a well-designed house we have fire exits besides doors; in planes we try to have multiple engines, besides emergency exits. Why is the bacterial flagellum and similar irremediably fragile systems not more a sign of incompetence (Sarkar, 2011, 299–300)?

Such argumentative moves display the features of reasoning as a social process, such as confirmation bias toward one's own views, and disconfirmation bias toward the views of others. Note that in the case of the design argument, some of the hardest challenges are not those that discard the analogy, but rather those that go along with the analogy from artifact to natural object, but that, as we have just seen, point out that classical theism

does not immediately follow because the natural structures betray imperfect design.

As we have seen, in the case of the design argument, the social process of reasoning has led to more sophisticated arguments and better objections. However, it remains an open question whether the invisible hand of argumentation can always work effectively in natural theology. Philosophy of religion is dominated by theists, in particular Christian theists (Bourget & Chalmers, 2014; De Cruz & De Smedt, 2016). Due to confirmation bias, weaknesses in arguments cannot be weeded out as effectively if reasoners have the same background assumptions. Nevertheless, the minority of nontheists has significantly changed the field in the last decades, especially in the analytic tradition.

5 CONCLUSION

By way of conclusion, we tentatively offer some ideas on how intuitions and the social dimensions of reasoning interrelate in natural theology. We have examined the intuitions that lie at the basis of natural theological arguments and the social contexts in which these arguments are proposed and defended. Intuitions provide the raw materials for many of the arguments. These intuitions emerge early in development and are a stable part of human cognition. However, accepting these intuitions in natural theology depends on background assumptions about theism. Natural theological arguments are a skillful form of argumentation that is nevertheless constrained by features of social reasoning. There is a large body of empirical evidence suggesting that processing fluency has an influence on evaluations. Fluent mental processes tend to require fewer cognitive resources, are quicker, and are often accompanied by a subjective feeling of processing ease. Beliefs that fit well with core knowledge tend to be processed more fluently, and, as authors such as Sperber (1996) have argued, they have a better chance of being culturally transmitted. Next to this, ideas that we can process more fluently are also evaluated more positively; this is both the case for perceptual processing fluency (e.g., clear writing versus fuzzy writing) and for conceptual processing fluency (e.g., processing a familiar idea

versus an unusual one) (see Winkielman, Schwarz, Fazendeiro, & Reber, 2008, for an overview).

Obviously, processing fluency is not the only factor that influences how ideas are evaluated. As we have seen, reasoners also use consistency with earlier beliefs (confirmation bias). Natural theological arguments frequently rely on deeply-seated intuitions that we use in a variety of situations, such as the causal intuitions of the cosmological argument, or the teleological intuitions at work in design arguments. Natural theological arguments that rely on core knowledge are easier to process and this may account for them being more persuasive, and hence more culturally successful. This is tentatively confirmed by the fact that arguments that do not rely on such intuitions tend to be less cultural widespread than arguments that do. For example, the Hindu philosopher Udayana (fl. 10th century) provided the following socioteleological argument for the existence of God: starting from the assumption that all culture and civilization was present at the beginning during a golden age, and then gradually declined, one must wonder how the earliest humans received all the arts of civilization. This knowledge must have been imparted by some superhuman teacher, God (Brown, 2012, 42–43). This argument depends on several culture-specific assumptions, such as the idea of a golden age at the beginning of time and the gradual decline of civilization, which may explain why this argument is not widespread. By contrast Śaṅkara's earlier-discussed design argument (8th century) relies on intuitions about teleology and design that emerge early in development (e.g., that things in the natural world are there for a purpose), which explains why arguments similar to this recur cross-culturally, such as with the classical Roman author Cicero (106–43 BCE) or the Christian author William Paley (1743–1805).

In sum, the recurrence of natural theological arguments, such as the design, cosmological, and moral argument, that rely on our early-developed teleological, causal, and moral intuitions, may be explained by the persuasive force of the intuitions that underlie them. We can expect such arguments to continue to be debated in philosophy of religion, theology, as well as in the broader public sphere.

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