The relevance of Hume's natural history of religion for cognitive science of religion

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Abstract

Hume was a cognitive scientist of religion *avant la lettre*. His *Natural history of religion* (1757 [2007]) locates the origins of religion in human nature. This paper explores similarities between some of his ideas and the cognitive science of religion, the multidisciplinary study of the psychological origins of religious beliefs. It also considers Hume's distinction between two questions about religion: its foundation in reason (the domain of natural theology and philosophy of religion) and its origin in human nature (the domain of cognitive science of religion).

1. Introduction

David Hume was fascinated by the psychological origins of religious beliefs. His *Natural history of religion* (NHR, 1757 [2007]) contains empirically testable hypotheses about the roots of religious beliefs in human nature. The past few decades have witnessed the growth of a new discipline, the cognitive science of religion (CSR), which also aims to shed light on the cognitive and cultural origins of religious beliefs. Like Hume, CSR authors make eclectic use of anthropological, historical, and psychological data and theories to formulate hypotheses on why religious beliefs are cross-culturally pervasive and what motivates people to hold them. This paper compares some of Hume's thoughts in NHR on the psychological origins of religious beliefs to contemporary theories in CSR.

NHR is not the only place where Hume discusses the psychological origins of religious beliefs. For instance, in section X of the *Enquiry*, entitled *Of Miracles*, Hume (1748 [2007]) explores the cognitive underpinnings of why people are attracted to accounts of miracles, for instance, the "Passion of *Surprize* and *Wonder*" that is an agreeable emotion. To restrict the scope, I will focus on ideas outlined in NHR. My aim is not to provide a systematic and detailed exegesis of this essay. Rather, I will focus on some of its hypotheses, which will serve as a springboard to engage in philosophical reflection on CSR. I start by comparing Hume's methodology to that of CSR, distinguishing between the aims and scopes of 18th-century natural history and contemporary cognitive science. I then look at some of Hume's empirical hypotheses about the causal origins of religious beliefs and practices, and consider their reception by cognitive scientists of religion. The final section of this paper will be concerned with Hume's distinction between two questions about religion: its foundation in reason and its origin in human nature. Does the second question have an impact on the first, i.e., does the causal, psychological origin of religion have an impact on the reasonableness of religious beliefs? I compare Hume's ambivalent attitude to this matter with the ideas of contemporary philosophers and cognitive scientists.

2. The intellectual background of NHR and CSR

Natural histories of religion are the intellectual precursors to contemporary scientific approaches to religion. NHR was not an isolated endeavor; it can be situated in an ongoing intellectual tradition to naturalize religious beliefs and practices. The term *natural history* does not correspond to any scientific discipline in its current form. Its meaning and scope changed throughout its history; in Hume's time, it had become an intricate and polysemic concept (see Sloan, 1990, for review). The roots of natural history as an intellectual endeavor can be situated in antiquity, with authors like Aristotle and Pliny the Elder. Their natural histories were not organized scientific inquiries based on hypothesis testing through experiments, but rather, consisted of collections of reports on a wide range of topics, such as astronomy, botany, obstetrics, and mineralogy.

In the early modern period Francis Bacon drew a distinction between natural history and natural philosophy: the method of natural history consisted of collecting and ordering facts in such a way that we can easily discover causes using induction. Natural histories were not formulated to please the reader, but to serve as "the first matter of philosophy and the stuff and material of true induction." They do so by compiling "a store of things sufficiently large and varied to formulate true axioms" (Bacon, 1620 [2000]b, 224). Natural philosophers relied on these vast repositories of facts. By induction, they were able to distill generalizations (in Bacon's terms "true axioms") from the wealth provided by these data. He thus regarded natural history as an ancillary discipline to natural philosophy: "we propose a natural history which does not so much amuse by the variety of its contents or give immediate profit from its experiments, as shed light on the discovery of causes and provide a first breast to feed philosophy" (Bacon, 1620 [2000]a, 20).

In the discourse *De la manière d'étudier & de traiter l'histoire naturelle*, which was part of the monumental, multi-volume *Histoire naturelle génerale et particulière*, Buffon and (his later suppressed co-author) Daubenton (1749) outlined a methodology for natural history as a discipline. They argued that it is primarily a method of generalizations based on inductions, relying on a large collection of observations. Buffon's work exemplifies how natural history acquired a more science-like character in the course of the 18th century. There was no longer a strict division of labor between collecting evidence (the domain of natural history) and theorizing (the domain of natural philosophy). In the first edition of the *Encyclopaedia Britannica* (1773, 361), natural history is described as "that science which not only gives compleat descriptions of natural productions in general, but also teaches the method of arranging them into Classes, Orders, Genera, and Species."

Natural historians could freely mix the descriptive with the theoretical and the prescriptive. In this prescriptive part, natural historians attempted to naturalize domains of human behavior and culture. This materialist agenda can be seen clearly in writings by d'Holbach (1770) and de La Mettrie (1748) who wanted to explain domains like religion, emotions, morality, the soul, and knowledge in terms of purely natural physical, non-supernatural causes (see Wolfe, 2009, for discussion). NHR locates the origins of religious beliefs in natural human dispositions, such as ignorance and uncertainty about natural causes, and wishful thinking (Malherbe, 1995). For example, Hume (NHR, II) argues that belief in "invisible intelligent power" is caused by

the ordinary affections of human life; the anxious concern for happiness,

the dread of future misery, the terror of death, the thirst of revenge, the appetite for food and other necessaries. Agitated by hopes and fears of this nature, especially the latter, men scrutinise, with a trembling curiosity, the course of future causes, and examine the various and contrary events of human life. And in this disordered scene, with eyes still more disordered and astonished, they see the first obscure traces of divinity.

By uncovering the purported irrational roots of religious beliefs, natural historians of religion not only wanted to describe the causal origins of religious beliefs. They also aimed to promote a more reflective way of forming beliefs in the religious domain (Stark, 1999). This procedure was not unique to Hume; indeed, it appears in other natural histories of religion as well, such as de Fontenelle's *Histoire des oracles* (1728) and de Brosses' *Du culte des dieux fétiches* (1760). It was maintained in the 19th and early 20th century, with authors like Comte (1841), who identified religious belief as the most primitive stage of thinking, and Durkheim (1915), who saw religion as sets of imaginary beliefs that serve as a social glue.

With the increasing professionalization of the sciences, it became clear that natural histories were often widely of the mark because of their exclusive reliance on second-hand evidence in the form of travelers' reports and hearsay. Because such accounts were heavily biased and often racist, they confirmed the prejudices held about nonwestern religions, namely that these were irrational and superstitious, mainly based on ignorance and fear. Anthropologists like Malinowski (1925 [1992]) and Evans-Pritchard (1937 [1965]) could experience religion in nonwestern cultures first-hand and were impressed with the internal consistency, richness, and sophistication of the religious beliefs in Oceania and Africa. However, as a result of the growing emphasis on detailed field studies, encompassing explanations for religion disappeared from scientific practice. Evans-Pritchard, for example, was primarily interested in how belief in witchcraft functioned socially in the Azande, a northern Central African culture, but did not attempt an overarching explanation for why people believe in witchcraft at all.

What are the cognitive roots of religious beliefs, and what can explain their pervasiveness? These questions again became legitimate subjects of scientific study during the last decades of the 20th century with the emergence of the cognitive science of religion (CSR), the multidisciplinary study of religion as a product of human thought processes. Cognitive science aims to understand the nature of human and other minds (animals, machines), with a particular focus on how information is processed. CSR thus superficially resembles natural histories in its pluralistic reliance on observations and theories from various sources and in its tendency to posit bold, comprehensive theories on the origins of religious beliefs in human nature. A crucial difference is CSR's reliance on scientific theories and observations, rather than on the unsystematic collection of mainly second-hand reports in natural histories of religion. In the next section, I will look at some of Hume's theories on the origins of religious beliefs in human nature, their successors in CSR, and the empirical evidence in support of them.

3. Comparing NHR and CSR

3.1 Anthropomorphism, agency, and religious beliefs
Hume's main objective in the NHR is to provide an account of "the origin of religion

in human nature" (NHR, introduction). Religious beliefs, although not universal, are nevertheless widespread. Yet they are also remarkably diverse: "no two nations, and scarce any two men, have ever agreed precisely in the same sentiments" (NHR, introduction). This diversity makes it difficult to characterize religion comprehensively. To Hume, belief in one or more gods (theism) is the defining characteristic of religion: "The only point of theology, in which we shall find a consent of mankind almost universal, is, that there is invisible, intelligent power in the world" (NHR, IV). Interestingly, this belief in supernatural agency is also taken as the central characteristic of religion in CSR. For example, Saler (2008) in his conceptual analysis of religion points to the centrality of belief in supernatural agents. Even Lawson and McCauley (2012, 5), in a work that is mainly about ritual, define a religious system as "a symbolic–cultural system of ritual acts accompanied by an extensive and largely shared conceptual scheme that includes culturally postulated superhuman agents."

The near-universality of religious belief, or more specifically, belief in supernatural beings, is as perplexing today as it was in the 18th century. In spite of the rise of atheism and religious non-affiliation, about 85 to 90 % of the world's population believes in one or more gods (Zuckerman, 2007). How can we explain this belief? Hume argued that belief in gods and other supernatural agents is a result of anthropomorphism:

> There is an universal tendency amongst mankind to conceive all beings like themselves, and to transfer to every object those qualities, with which they are familiarly acquainted, and of which they are intimately conscious. We find human faces in the moon, armies in the clouds; and by a natural propensity, if not corrected by experience and reflection, ascribe malice and good-will to every thing, that hurts or pleases us. [...] The *unknown causes*, which continually employ their thought, appearing always in the same aspect, are all apprehended to be of the same kind or species. Nor is it long before we ascribe to them thought, and reason, and passion, and sometimes even the limbs and figures of men, in order to bring them nearer to a resemblance with ourselves (NHR, III).

The anthropologist Guthrie (1993) has defended a similar claim: anthropomorphism lies at the basis of belief in supernatural beings. We see not only faces in the clouds, but, for instance, also in trees and food items (e.g., Jesus's face on a slice of pizza). Guthrie hypothesizes that this tendency to anthropomorphize certain elements of the environment has an evolutionary origin. Because it is less costly to see an agent who is not there (e.g., a face in a cloud) than to ignore an agent who is there (e.g., a tiger behind a bush), our minds are prone to false positives: we have a tendency to perceive agents who are not really there. As a result, we form beliefs in invisible, supernatural agents. Given the evolutionary importance of members of our own species, most of these perceived agents will have anthropomorphic characteristics.

That humans tend to overattribute agency seems plausible on evolutionary grounds, but the extent to which it occurs is a matter of debate. For instance, Barrett (2004) has argued that agency detection is not just sensitive, but hypersensitive; he labels this ability HADD, hypersensitive agency detection device. A large empirical literature shows that people across cultures easily attribute intentionality, emotions, and other human characteristics to non-human objects. Cross-culturally, geometric

figures that move across a screen (such as a triangle being "chased" by a circle) spontaneously evoke the impression of intentionality and human emotions, e.g., the triangle is afraid of the circle, the triangle solicits help from a square, etc. (Barrett, Todd, Miller, & Blythe, 2005)[1]. Research on the connection between HADD and religion is sparse. Riekki, Lindeman, Aleneff, Halme, and Nuortimo (2012) demonstrated a relationship between detecting anthropomorphic agents and religion. They showed participants landscapes and other scenes with face-like areas. Subjects who were religious believers or believers in paranormal phenomena were better at finding the faces than non-believers, but they were also more prone to discern faces in the stimuli even where the experimenters had not implemented them. Valdesolo and Graham (2014) found that inducing awe in participants, by showing them scenes of natural beauty, increased both agency detection and religious belief. Next to detecting agency, anthropomorphism in religious belief is also apparent in the way humans interact with their god(s). Humans interact with the gods as they would with fellow human beings. Hume emphasizes this social dimension of religious interaction when describing how polytheists attempt to bribe, placate, and persuade the gods, for instance, "the mind, sunk into diffidence, terror, and melancholy, has recourse to every method of appeasing those sacred intelligent powers on whom our fortune is supposed entirely to depend" (NHR, II).

In a detailed anthropological study, Luhrmann (2012) found that American Evangelicals rely on strategies of normal social interaction to communicate with God: they imagine him as physically sitting by their side, and talk to him as they would to a friend. Neuroimaging studies also suggest that the way humans process beliefs and intentions of supernatural beings is similar to how they think about the minds of ordinary people. Spontaneous prayer activates brain areas typically involved in social interactions, such as the temporopolar region, the medial prefrontal cortex, and the temporo-parietal junction (Schjoedt, Stødkilde-Jørgensen, Geertz, & Roepstorff, 2009). CSR supports the important role of our ability to think about other humans (both their mental states and physical characteristics) in theistic belief. As Hume hypothesized, humans think about God/the gods in anthropomorphic terms, and rely on social skills involved in normal social situations when communicating with gods.

3.2 The origins of religious beliefs: Adaptation or byproduct?
In CSR two competing evolutionary models seek to explain the universality of religious belief. Adaptationist explanations propose that religious beliefs and practices serve a direct adaptive function, in particular, they enhance human cooperation. For example, Bering (2011) argues that belief in morally concerned, supernatural agents (like gods and ancestors) is innate. It is an adaptation that helps us to cooperate better with other people, and that discourages us to violate social norms. The adaptive benefit of fear of supernatural punishment is that we avoid the real punishment dealt out by other humans. By cooperating with other members in their religious community and refraining from freeriding, religious believers enjoy the benefits of mutual reciprocity that are not available to groups where members frequently defect and mistrust each other.

Byproduct explanations propose that religious beliefs and practices do not serve

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[1] While these studies indicate that humans are sensitive to agency and prone to anthropomorphize, they do not necessarily imply that they are hypersensitive to agency or overattribute anthropomorphic characteristics. Rather, participants accurately judge what the creators of these animations wanted to convey.

adaptive functions, but rather arise as a spontaneous byproduct of ordinary cognition. Propensities that contribute to the acquisition of religious beliefs include the tendency to see purpose and design in nature (intuitive creationism), the disposition to regard the mind as ontologically distinct from the body (intuitive dualism), and the earlier-mentioned proneness to anthropomorphize features of the environment. Our evolved cognitive architecture makes religious beliefs readily understandable and appealing, but does not necessarily bring them about (Bloom, 2007). Cultural input is still needed to come to fully-fledged religious beliefs. NHR was written with an analogous debate in the background: the question of whether religious belief was an innate propensity, directly implanted by God, or, alternatively, a byproduct of general features of human cognition. The first position was defended by Calvin (1559 [1960]) who proposed that God has instilled in all human beings an innate sense of the divine (*sensus divinitatis*). To substantiate this claim, Calvin observed that there is

> no nation so barbarous, no people so savage, that they have not a deep-seated conviction that there is a God [...] From this we conclude that it is not a doctrine that must be first learned in school, but one of which each of us is master from his mother's womb and which nature itself permits no one to forget (Calvin, 1559 [1960], 46).

Hume, by contrast, was skeptical of the claim that religious belief is universal:

> The belief of invisible, intelligent power has been very generally diffused over the human race, in all places and in all ages; but it has neither perhaps been so universal as to admit of no exceptions, nor has it been, in any degree, uniform in the ideas, which it has suggested. Some nations have been discovered, who entertained no sentiments of Religion, if travellers and historians may be credited; and no two nations, and scarce any two men, have ever agreed precisely in the same sentiments. It would appear, therefore, that this preconception springs not from an original instinct or primary impression of nature, such as gives rise to self-love, affection betwixt the sexes, love of progeny, gratitude, resentment; since every instinct of this kind has been found absolutely universal in all nations and ages, and has always a precise, determinate object, which it inflexibly pursues. The first religious principles must be secondary; such as may easily be perverted by various accidents and causes, and whose operation too, in some cases, may, by an extraordinary concurrence of circumstances, be altogether prevented (NHR, introduction).

Calvin's position is roughly analogous to Bering's (2011) proposal of a "God instinct," an innate propensity to believe in God or in beings with god-like properties. By contrast, Hume's view is more akin to byproduct accounts like Bloom's (2007). According to Hume, religious beliefs key in on our intuitive notions about agency and causation. This makes religious beliefs easy to acquire but not inevitable. Given that Hume was an anti-nativist about beliefs in general, his rejection of nativism about religious belief is no surprise. To support his anti-nativism about religion, he observed that there is more variability in religions than in "original instincts," and religious belief is not absolutely universal. On this account, theism is not the inevitable consequence of cognitive development, but arises from a confluence of cognitive predispositions and cultural factors. Hume identifies several factors:

- The tendency to anthropomorphize
- The causal opacity of the environment, for instance, the inability to correctly discern natural causes which leads humans to postulate invisible gods as causes: "We are placed in this world, as in a great theatre, where the true springs and causes of every event are entirely unknown to us; nor have we either sufficient wisdom to foresee, or power to prevent, those ills with which we are continually threatened. We hang in perpetual suspense between life and death, health and sickness, plenty and want, which are distributed amongst the human species by secret and unknown causes, whose operation is oft unexpected, and always unaccountable. These unknown causes, then, become the constant object of our hope and fear; and while the passions are kept in perpetual alarm by an anxious expectation of the events, the imagination is equally employed in forming ideas of those powers on which we have so entire a dependence" (NHR, III).
- Anxiety about the uncertainty of the future, interspersed with unpredictable events, that humans have little control over, such as famines and storms: "The primary religion of mankind arises chiefly from an anxious fear of future events; and what ideas will naturally be entertained of invisible, unknown powers, while men lie under dismal apprehensions of any kind, may easily be conceived" (NHR, XIII).

Contemporary byproduct accounts propose different causal origins for religious belief. Hume's view that ignorance about causes in the environment is a driving factor is incompatible with an enduring persistence of religious beliefs in the face of endorsed naturalistic causal explanations. For instance, Legare, Evans, Rosengren, and Harris (2012) found that South African participants accept that AIDS is brought about by viruses, but that they still invoke witchcraft as an explanation ("witches can put one in the way of viruses"). Yet the general point that religion is a byproduct of ordinary human cognitive dispositions is well supported in CSR. Most CSR authors assume that although religious belief is not universal, it is nevertheless very widespread—only under exceptional circumstances it is prevented. As Barrett (2010) argues, atheism is rare because specific cultural conditions, cognitive effort, and exceptional cultural scaffolding (such as scientific education) are required to move people away from religious belief. Similarly, Hume (NHR, introduction) thinks that it would take "an extraordinary concurrence of circumstances" to prevent the emergence of religious beliefs.

3.3 Theological incorrectness
Many CSR authors have observed a discrepancy between the content of official religious doctrines and ordinary religious beliefs. Religious believers endorse the complex *theologically correct* beliefs that are espoused by their religious traditions, such as belief in one omnipotent and omniscient God. In their everyday reasoning, however, they frequently slip into more intuitive, *theologically incorrect* beliefs. Although theologians put considerable efforts in constructing internally consistent religious worldviews, these views get unwittingly distorted by the lay audience, a tendency that Boyer (2002, 285) called "the tragedy of the theologian". For example, Calvinists may endorse the doctrine of predestination, but nevertheless act as if luck plays a significant role in determining outcomes in their lives, in line with how people intuitively think about chance (Slone, 2004).

McCauley (2011) applies the term *maturationally natural* to capacities and behaviors that are cross-culturally robust, require no extensive or explicit training,

little support from institutions or artifacts (e.g., books), and that emerge spontaneously and early in development. Examples of such behaviors include walking, chewing, and talking. By contrast, *unnatural behaviors* and capacities, such as the ability to do scientific research, require significant cultural scaffolding and training, occur only in some cultures, and do not spontaneously arise in development. McCauley does not regard natural and unnatural as dichotomous properties, but as part of a spectrum. Some things come more easily to us (i.e., fall toward the maturationally natural end of the spectrum), others are hard (i.e., fall at the unnatural end.) He argues that religion falls toward the maturationally natural end of the spectrum, whereas theology is situated at the unnatural end:

> Like scientists, theologians occupy themselves with forms of reflection that are difficult to learn and difficult to master and that occasionally even issue in representations that are just as cognitively unnatural. Theology is one of the few academic undertakings that can result in formulations that are very nearly as distant from and as obscure to humans' common understandings of the world as the most esoteric theoretical proposals of science are (McCauley, 2011, 212).

According to Hume, humans are naturally drawn toward theologically incorrect representations, i.e., interpretations that differ from monotheism, the doctrinally correct view in western culture.

> Even where this notion of a supreme deity is already established; tho' it ought naturally to lessen every other worship, and abase every object of reverence, yet if a nation has entertained the opinion of a subordinate tutelar divinity, saint, or angel; their addresses to that being gradually rise upon them, and encroach on the adoration due to their supreme deity. The virgin *Mary*, ere checkt by the reformation, hath proceeded, from being merely a good woman to usurp many attributes of the Almighty (NHR, VI).

Translated in McCauley's terminology, polytheism is more maturationally natural than the theologically correct monotheism, because the beings worshipped in polytheistic belief systems are more responsive to social interactions and our everyday concerns. They can be reasoned with, flattered or bribed, unlike the rather distant Christian God of Hume's time.

Although CSR has not yet specifically researched the relative naturalness or unnaturalness of polytheism and monotheism, Hume's hypothesis that social cognition may result in theologically incorrect beliefs has received some tentative empirical support. In a series of experiments, Barrett and Keil (1996) tested the distinction between implicitly held theologically incorrect ideas and reflective, theologically correct beliefs. They asked Christian participants a series of questions that probed their understanding of their theology, for example, if God could attend to more than one event at the same time. Most participants gave the theologically correct answer: of course God can do so, given his omniscience, omnipotence, and omnipresence. However, when asked to remember stories involving God, they unwittingly distorted them to fit God's actions and thoughts into intuitive expectations they had about normal people. For example, they misremembered a story involving petitionary prayer, saying that God first had to finish hearing someone else's prayer before he could attend to the prayer of the protagonist. In this study, God is already

placed in a narrative context, where properties like omniscience and omnipresence are not salient. It is possible that the narrative context, rather than latent theologically incorrect beliefs, could generate the false memories. Purzycki et al. (2012) asked Christians whether God knows various facts. They found that Christians are quicker to point out that God knows socially relevant information (e.g., John cheated on his taxes, Ann gives to the poor) than that he knows socially irrelevant information (e.g., the number of moons around Jupiter). Still, if God is omniscient the content of what he knows should not matter. As we saw in section 3.1, humans rely on their normal social cognition to think about God: in our social interactions, socially relevant information is more crucial than dry factual knowledge. The fact that in the eyes of believers, God knows more about socially relevant information is in line with Hume's observation.

3.4 Are humans intuitive intelligent design creationists?
Hume holds that some beliefs enjoy epistemic support even if they are not justified by demonstrative arguments, for instance, inductions based on custom. In Hume scholarship, such beliefs are commonly referred to as *natural beliefs*. This is not Hume's terminology; it was introduced by Kemp Smith (1905). Hume scholars disagree on which beliefs are natural. For example, belief in an external world is a plausible candidate for a Humean natural belief (McCormick, 1993), which finds its roots in our imagination: "That opinion has taken such deep root in the imagination, that 'tis impossible ever to eradicate it, nor will any strain'd metaphysical conviction of the dependence of our perceptions be sufficient for that purpose" (Treatise 1, IV, 2).

There is an ongoing debate on whether or not Hume thought belief in creationism was a natural belief, i.e., that it is intuitively apparent and that we are justified in holding it without argument or deliberation (Goodnick, 2012). Several passages in the *Dialogues concerning natural religi*on (Hume, 1779 [1991]) are consistent with this reading, for instance, Cleanthes: "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" (*Dialogues*, III). Hume also speaks eloquently of the intuitive appeal of the design argument in the last dialogue of the *Dialogues* and in the introduction to the NHR: "The whole frame of nature bespeaks an intelligent author; and no rational enquirer can, after serious reflexion, suspend his belief a moment with regard to the primary principles of genuine Theism and Religion" (NHR, introduction).

This passage seems to suggest that belief in intelligent design[2] is a spontaneous product of our normal cognitive functioning when we survey the world. Interestingly, this would make belief in intelligent design non-inferential and not based on reasoning or argument. Indeed, one needs to use reasoning to come to an atheistic conclusion. Cleanthes again: "The most obvious conclusion, surely, is in favour [of] design; and it requires time, reflection, and study, to summon up those frivolous, though abstruse objections, which can support Infidelity" (*Dialogues*, III). A recent proponent of this view is Evans (2010), who considers the empirical evidence on which natural theologians rely as "natural signs" that point to God's existence. Such natural signs include moral principles, the sense of awe felt for the cosmic order, the fine-tuning of the universe. They can be compelling irrespective of the strength of the

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[2] The concept of intelligent design, which states that the world is observably the creation of an intelligent designer was already in use in the 18th century. http://evolvingthoughts.net/2013/11/the-origin-of-intelligent-design-in-the-18th-and-19th-centuries/.

arguments that make use of them (e.g., the argument from design or the cosmological argument)—the believer can acknowledge the signs that lie at the core of these arguments, and recognize their force.

It is a matter of debate whether Hume endorsed Cleanthes' view of an intuitive intelligent design creationism. In the NHR, Hume seems to argue against Cleanthes: most people, including most monotheists, are not religious believers because of a disinterested contemplation of order in the natural world, but because of the anxiety caused by an uncertain future. Making an empirical claim, Hume stresses that ordinary folk do not believe in God because they discern design in nature:

> Even at this day, and in *Europe*, ask any of the vulgar, why he believes in an Omnipotent Creator of the world; he will never mention the beauty of final causes, of which he is wholly ignorant: He will not hold out his hand, and bid you contemplate the suppleness and variety of joints in his fingers, their bending all one way, the counterpoise which they receive from the thumb, the softness and fleshy parts of the inside of his hand, with all the other circumstances, which render that member fit for the use, to which it was destined (NHR, VI).

Instead he explicitly wrote:

> in all nations, which have embraced polytheism or idolatry, the first ideas of religion arose not from a contemplation of the works of nature, but from a concern with regard to the events of life, and from the incessant hopes and fears, which actuate the human mind (NHR, II).

On the basis of this, Goodnick (2012) concludes that after all Hume does not believe that humans are intuitive intelligent design creationists. By contrast, Hardy (2012) contends that Hume does believe that we have a natural inclination to discern design in nature, but that it can be easily "perverted by various accidents and causes" (NHR, introduction), in particular, by everyday worries and concerns. Hardy (2012) reads Hume as arguing that belief in design is a product of our cognitive makeup that constitutes an epistemically virtuous road to theism.

The question of to what extent we see design in nature has received a great deal of attention in CSR. Kelemen has extensively studied the cognitive basis for belief in intelligent design. She found that children have a natural propensity to see goal-directedness in nature, even in objects and events that have no intrinsic purpose. For instance, preschoolers spontaneously say that "Clouds are for raining", and they prefer teleological explanations over non-teleological ones, for example, they prefer "Rocks are pointy so that animals can scratch their backs on them when they itch" to "Rocks are pointy because stuff piled up over long periods of time" (Kelemen, 2003). Adults are likewise prone to endorse incorrect teleological explanations when they are put under time pressure (e.g., "The sun is there to nurture life on Earth"). This tendency is also manifest in professional natural scientists from Ivy League institutions (Kelemen, Rottman, & Seston, 2013). A recent study by Heywood and Bering (2014) shows that people irresistibly see purpose in important life events. Even atheists, who profess that natural events do not have a meaning or purpose, spontaneously offer teleological explanations when they describe life events (e.g., "I failed that important test so that I could see that even if I failed a course, my life wouldn't actually end"). Like Hume (or in any case, like Cleanthes), Kelemen does

not consider our ability to see teleology and design as separate, but as part of the same faculty: to discern teleology is to observe design. She thus readily describes children as "intuitive theists" (Kelemen, 2004).

Intuitive teleology lessens with education, presumably because children get taught sophisticated non-teleological mechanistic explanations. Once they learn how mountains get formed, they no longer maintain that mountains are there "for climbing", an explanation typically endorsed by five-year-olds. Participants with less formal schooling than most western adults, such as some Romani, reason more teleologically (Kelemen & Rosset, 2009). People with Alzheimer's tend to have a higher preference for teleological explanations than age-matched neurotypical controls, presumably because they lack access to their previously learned non-teleological explanations (Lombrozo, Kelemen, & Zaitchik, 2007). Taken together, this research indicates that intuitive teleology is a spontaneous tendency that needs to be actively resisted in order to overcome it. Whereas Hume thought intuitive teleology could be easily subdued by worries and fears, it is in fact tenacious and requires extensive schooling in alternative causal frameworks. On the whole, this can be taken as evidence for Cleanthes' position, a view, as we have seen, that Hume himself may not endorse.

Hume's other empirical claim, that observing teleology amounts to seeing design, is not unequivocally supported. For instance, although they reasoned more teleological, the Alzheimer patients in Lombrozo et al.'s study were not more religious than the control group. If there were a direct link between a non-inferential observation of teleology and intelligent design, we would expect a positive correlation. When asked for their spontaneous beliefs about the origin of species, children come up with a variety of explanations, including spontaneous generation. Only in middle childhood do they come to grips with concepts like divine creation or intelligent design (Samarapungavan & Wiers, 1997; Rottman & Kelemen, 2012). De Cruz and De Smedt (2010) argue that the spontaneous perception of teleology in nature does not make humans intuitive intelligent design creationists. They must still make an explicit link from teleology to design, and from there to a designer. While these links may strike proponents of the contemporary Intelligent Design movement as obvious, they are not, as Cleanthes argued, non-inferential. Humans seem to have a propensity to see purpose in the world, but this does not automatically give rise to a belief in an omnipotent and omniscient creator. While it would require more empirical work, Cleanthes' view that perceiving teleology is the same as perceiving design is not vindicated in CSR.

4. Separating two questions concerning natural religion?

NHR starts with a distinction between the causal origins of religious beliefs and their reasonableness:

> As every enquiry, which regards Religion, is of the utmost importance, there are two questions in particular, which challenge our principal attention, to wit, that concerning it's [sic] foundation in reason, and that concerning its origin in human nature (NHR, introduction).

First comes an endorsement of the design argument (which is not further argued for), giving the impression that only the second question needs to be addressed. However, the deep and probing criticism of the design argument in *Dialogues*, especially of the

intuitions on which it rests, indicates that Hume does not think these questions can be so neatly separated, especially given that the design argument was the flagship natural theological argument for the existence of God during the 17th and 18th centuries (McGrath, 2011). Even in NHR, Hume does not treat the origin and justification of religious beliefs as separate, drawing a distinction between true religion, a thin form of philosophically-informed monotheism, and false religious beliefs, which include not only polytheism but also, for instance, the Roman Catholic adoration of saints.

The mere fact of providing a causal, naturalistic account of religion does not necessarily debunk or cast doubt on its tenets. However, a natural history of religion can become subversive if it traces beliefs to unreliable mechanisms, e.g., unreliable cognitive dispositions or fortuitous cultural developments. NHR identifies anxiety and ignorance about causal factors that influence our lives as the ultimate ground of religious beliefs (Kail, 2007). This anxiety prompts humans to anthropomorphize their environment, leading to the earliest religious beliefs, in Hume's view a form of polytheism where multiple invisible powers control the environment, "intelligent, voluntary agents, like ourselves; only somewhat superior in power and wisdom" (NHR, V). By anthropomorphizing the causal factors in human lives, they become explicable, more familiar, and offer the illusion of control, as gods can be appeased, cajoled, and bribed. The result is a belief in many gods that people can turn to in times of distress. In this way, the constant anxiety about the uncertain and causally opaque environment is assuaged. Gradually, as people model their pantheon on the human social order, one of these agents acquires more power and worship (henotheism), a process that ends in belief in one God, conceived as omnipotent, omniscient, and omnibenevolent. The route that brings ordinary people to belief in God is thus not one based on reasoning and argument but on wishful thinking and other unreliable belief-forming mechanisms. This form of epistemic luck is incompatible with knowledge:

> they [believers] coincide, by chance, with the principles of reason and true philosophy; tho' they are guided to that notion, not by reason, of which they are in a great measure incapable, but by the adulation and fears of the most vulgar superstition (NHR, VI).

Not all forms of epistemic luck preclude knowledge. For example, suppose Catherine believes that God exists, based on a highly complicated fine-tuning argument that requires extensive knowledge of physics and probability theory. If this argument is sound, she is evidentially lucky to hold her belief in God, as she is lucky to know enough physics and probability theory. Yet it still seems plausible to regard her luck as compatible with knowledge—plausibly, if the argument is sound, Catherine knows God exists. By contrast, if people across cultures believe that God exists on the basis of false beliefs, then their belief is not sensitive to God's existence—they would believe it even if God did not exist—making their belief veritically lucky. Note that Hume also outlines an epistemically virtuous route to theism, namely the perception of design in nature, but that he argued that most people do not follow this high road (Hardy, 2012).

The question to what extent naturalistic explanations of religious belief destabilize its rationality has been at the center of philosophical reflections on naturalistic (often evolutionary) explanations of beliefs, especially in the domains of religion and morality (e.g., Bergmann & Kain, 2014). Strictly speaking, a debunking genealogy of a belief that p does not prove that p is false. It may be that God, being omniscient and all-powerful, chose this process to instill religious beliefs in humans.

For example, while Plantinga (2000, 145) thinks that God instills belief in him through reliable cognitive mechanisms (the *sensus divinitatis*), he argues that, in principle, even unreliable mechanisms, such as Freud's proposed wishful thinking, could have been chosen by God, and thus that genealogical accounts like Freud's or Hume's do not discredit religious beliefs. If that were the case, though, the genealogy of religious beliefs would not mesh well with the classical theistic attribute of omnibenevolence.

One difficulty in assessing whether NHR destabilizes religious belief is that this genealogical account is not followed by contemporary CSR authors. Anthropological observations indicate many other possible candidates for early religious beliefs, such as ancestor worship, which is nearly universal (Steadman, Palmer, & Tilley, 1996), and shamanism, which is already depicted in Paleolithic cave paintings and mobiliary art (Lewis-Williams, 2002). Polytheism is probably more recent than either of these. Anxiety and uncertainty about the future, two psychological causes for religious belief that Hume proposed, have received little attention in contemporary CSR. For instance, Boyer (2002) remarks that religions that offer reassurance, such as a loving God who whisks those who believe up into heaven, is not found in places where life is significantly more dangerous or unpleasant than in the west; quite the opposite. If anything, religious beliefs in societies where famine, high infant mortality, and homicide pose significant dangers even add non-existent dangers and unnecessary worries to the existing ones, such as the threat of witchcraft and the danger of imaginary beings. However, positing terrifying beings that one can appease fit with a Humean fear-based account: inchoate worries can be rendered concrete in the form of a fearsome being that can be appeased through rituals. Terror management theories explore the ways in which belief in immortality can assuage fear of annihilation at death. For example, experimentally priming death increases participants' beliefs in supernatural beings, including that of atheists (Jong, Halberstadt, & Bluemke, 2012). However, such theories are not (yet) incorporated in mainstream CSR literature.

CSR authors regard a multiplicity of cognitive propensities as jointly responsible for the susceptibility to religious beliefs. It is not obvious whether these factors undermine the reasonableness of religious beliefs. As we have seen, the majority of CSR authors hold that these everyday cognitive processes operate when we think about religious beings. For example, as we have seen, believers use inference systems for other minds when they think about God's beliefs and thoughts. When they discern God's agency, they rely on cognitive mechanisms for detecting naturalistic beings, especially human agency. Does this mean that they are mistaken when they perceive supernatural agency? Wilkins and Griffiths assume that this is the case:

> The idea that religious belief is to a large extent the result of mental adaptations for agency detection has been endorsed by several leading evolutionary theorists of religion. [...] These mechanisms are "hyperactive," leading us to attribute natural events to a hidden agent or agents. So none of the contemporary evolutionary explanations of religious belief hypothesizes that those beliefs are produced by a mechanism that tracks truth. [...] If the "hyperactive agency detection device" theory is correct, then people believe in supernatural agents which do not exist for the same reason that birds sometimes mistake harmless birds passing overhead for raptors. These beliefs are Type I errors, and they are the price of avoiding more costly Type II errors (Wilkins & Griffiths, 2013, 142–143).

Wilkins and Griffiths do not provide any independent reasons to assume why such beliefs are the result of *misfiring* of this capacity. They simply assume that religious beliefs are the result of unreliable agency detection, and then go on to explain this as a Type 1 error. It might be that HADD, as its name (hyperactive) suggests, is prone to false positives and that therefore, it is prima facie probable that any of its outputs are likely to be Type 1 errors. However, Godfrey-Smith (1991) observes that an agency detection system that systematically misfires would be maladaptive, and likely would not evolve. The agency detection capacity *is* truth-oriented, exemplified by the fact that humans are proficient at detecting agency of other humans and animals. Moreover, the extent to which HADD is sensitive depends on ecological circumstances: prey animals might benefit significantly from detecting all agents in their environment (thus making them more prone to false positives), as failure to do so might result in them ending up as dinner. By contrast, predators that fail to detect agents might miss out on a meal, whereas oversensitiveness to agency could lead them to expend energy pursuing imaginary prey. Without a systematic review of how accurate HADD is in humans (i.e., how prone it is to Type 1 and 2 errors), it seems premature to regard religious beliefs as probably false if we assume them to be outputs of HADD.

Should we surmise that religion's foundation of reason and its origin in human nature are two separate questions, without any mutual implications? This is not necessarily the case. If it turns out that the cognitive mechanisms giving rise to religious beliefs are truly unreliable, as Hume proposed in NHR, it would be hard to maintain their reasonableness without at least some additional reasons for belief. Moreover, natural theological arguments are not immune to the influence of CSR since the intuitions on which they are based have origins in stable features of human cognition (see De Cruz & De Smedt, 2015, for discussion).

Take the cosmological argument, which infers the existence of God as a plausible explanation for the existence of the temporally and physically finite universe. As Hume remarked, some forms of this argument are based on assumptions about causation:

> 'Tis a general maxim in philosophy, that whatever begins to exist, must have a cause of existence. This is commonly taken for granted in all reasonings, without any proof given or demanded. 'Tis suppos'd to be founded on intuition, and to be one of those maxims, which tho' they may be deny'd with the lips, 'tis impossible for men in their hearts really to doubt of (Treatise 1, III, 3).

However, further on Hume argues that this idea is not intuitively certain (i.e., not obvious or self-evident), and that it cannot be derived from scientific work either. Rather, it is based on experience, the observation of a constant conjunction of cause and effect. Current cognitive scientists have further explored the causal intuitions of infants, young children, and non-human animals. This research indicates that even young infants who see a contingent event, such as a pile of blocks becoming a neat stack, look spontaneously for a cause of that event, and prefer an agent to be that cause (Newman, Keil, Kuhlmeier, & Wynn, 2010). If cosmological arguments are based on intuitions that we hold since infancy, we can potentially explain their intuitive appeal using tools from CSR. It seems we cannot neatly separate the origins of religious beliefs from their foundation in reason. Let me conclude by briefly

reflecting on NHR's conclusion, where Hume recommended suspension of judgment about religious belief, and retreat into the comforts of philosophy:

> The whole is a riddle, an ænigma, an inexplicable mystery. Doubt, uncertainty, suspense of judgment, appear the only result of our most accurate scrutiny, concerning this subject. But such is the frailty of human reason, and such the irresistible contagion of opinion, that even this deliberate doubt could scarcely be upheld; did we not enlarge our view, and, opposing one species of superstition to another, set them a quarrelling; while we ourselves, during their fury and contention, happily make our escape into the calm, tho' obscure, regions of philosophy (NHR, XV).

"[T]his subject" is an ambiguous phrase. It probably does not refer to Hume's analysis of the causal origins of religious beliefs, but likely to its explanandum, religious belief (Kail, 2005). This final paragraph is especially puzzling as Hume rarely explicitly embraced philosophy as escapism; instead, he tends to insist on a return to the practicalities of common life[3], "'Tis happy, therefore, that nature breaks the force of all sceptical arguments in time, and keeps them from having any considerable influence on the understanding. Were we to trust entirely to their self-destruction, that can never take place, 'till they have first subverted all conviction, and have totally destroy'd human reason." (Treatise, 1, IV, 1).

As it was in the 18th century, the rationality of religious belief is a continued subject of debate. The question of whether or not the naturalistic origins of religious beliefs cast doubt on their rationality is the subject of speculation, as, for instance, in the essays collected in Schloss and Murray (2009), or in the 2013 special issue on CSR in *The Monist*. In spite of this, most CSR authors continue to investigate the origins of religious beliefs in human cognition and culture without explicit reference to this question, and only few philosophers of religion incorporate findings from CSR. If, as Hume believed, the origin and justification of religious beliefs are not two neatly separable questions, philosophy of religion could profit from an increased interaction with CSR.

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[3] Thanks to Eric Schliesser for this observation.

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