

Essays in Honor of Alister McGrath

with Bethany Sollereider, “Introduction to *Essays in Honor of Alister McGrath*”; Peter Harrison, “What is Natural Theology? (And Should We Dispense with It?)”; John Hedley Brooke, “Revisiting William Paley”; Helen De Cruz, “A Taste for the Infinite: What Philosophy of Biology Can Tell Us about Religious Belief”; Michael Ruse, “The Dawkins Challenge”; Donovan O. Schaefer, “The Territories of Thinking and Feeling: Rethinking Religion, Science, and Reason with Alister McGrath”; Andrew Pinsent, “Alister McGrath and Education in Science and Religion”; Andrew Davison, “Science and Specificity: Interdisciplinary Teaching between Theology, Religion, and the Natural Sciences”; Victoria Lorrimar, “Does an Inkling Belong in Science and Religion? Human Consciousness, Epistemology, and the Imagination”; and Alister E. McGrath, “Response: Science and Religion—The State of the Art.”

A TASTE FOR THE INFINITE: WHAT PHILOSOPHY OF BIOLOGY CAN TELL US ABOUT RELIGIOUS BELIEF

by *Helen De Cruz*

Abstract. According to Friedrich Schleiermacher, religiosity is rooted in feeling (*Gefühl*). As a result of our engagement with the world, on which we depend and which we can influence, we have both a sense of dependence and of freedom. Schleiermacher speculated that a sense of absolute dependence in reflective beings with self-consciousness (human beings) gave rise to religion. Using insights from contemporary philosophy of biology and cognitive science, I seek to naturalize Schleiermacher’s ideas. I moreover show that this naturalization is in line with Schleiermacher’s outlook on biology, as he already had evolutionary considerations in mind when he wrote the *Christian Faith* (1830). While Schleiermacher rejects natural theology in a narrow sense (proofs for the existence of God), his project is natural theological in a broader sense, as it roots religion in experiences that we can examine using naturalistic theories.

Keywords: agency; cognition; cognitive science of religion; God-consciousness; philosophy of biology; Friedrich Schleiermacher; subjectivity

INTRODUCTION

Why are human beings religious? Friedrich Schleiermacher argued that religion is a communal, institutional response to certain individual

Helen De Cruz holds the Danforth Chair in the Humanities and is a Professor of Philosophy at Saint Louis University, St Louis, Missouri, USA; e-mail: helen.deacruz@slu.edu.

experiences (notably, feelings) that members of our species share. Religion expresses our taste for the infinite that we as finite creatures all have. To put it in contemporary terms, religious feelings arise out of our condition of being a biological organism, specifically, a human being.

In this article, I examine Schleiermacher's ideas about religious feelings by bringing his work in conversation with contemporary authors in the philosophy of biology. I naturalize Schleiermacher's notion of religion as originating in feeling, thereby situating his defense of religion in a natural theological context. For the purposes of this article, I follow McGrath's (2017, 7) broad conception of natural theology as "a process of reflection on the religious entailments of the natural world, rather than a specific set of doctrines." While Schleiermacher rejects natural theology in a narrow sense (namely, proofs for the existence of God), his project is natural theological in this broad sense. He puts religion on a naturalistic footing, by conceptualizing it in terms of religious feelings (*Gefühl*) which we have by virtue of being biological organisms. Drawing on recent insights in evolutionary biology and cognitive science, I provide an updated and empirically informed version of Schleiermacher's concept of God-consciousness.

In the next section, I situate Schleiermacher's notion of religion as feeling and taste for the infinite, and his notion of God-consciousness. In the following section, I argue that Schleiermacher anticipated insights on the relationship of creatures to their environment by contemporary philosophers of biology, including Richard Lewontin, Peter Godfrey-Smith, and Samir Okasha. The successive section draws these strands together and argues that we can naturalize Schleiermacher's idea that religion is based on feeling. I examine whether Schleiermacher's thoughts on the evolution of consciousness might have been informed by pre-Darwinian evolutionary theories (including by Erasmus Darwin, Benoît de Maillet, Jean-Baptiste Lamarck, and Gottfried Reinhold Treviranus). Finally, the later section I look at recent work in the cognitive science of religion (CSR) to help us specify the feelings that constitute God-consciousness.

SCHLEIERMACHER'S NOTION OF RELIGION AS FEELING AND TASTE FOR THE INFINITE

The Prussian theologian and philosopher Friedrich Schleiermacher (1768–1834) is commonly considered the founder of modern theology. Unlike earlier theologians, he saw experience, rather than reason or tradition, as a way to ground and defend the Christian faith. He saw Christianity not as the sole exemplar of religion, but rather as one of many faiths, which needs its own, distinctive apologetic strategies, and its own dogmatic grounding. This emphasis on experience needs to be situated in the context of Enlightenment Europe, where a widespread identity crisis shook Christian intellectuals.¹ This crisis was rooted in several factors. The

fallout and bitter memories of religious wars that had torn Europe apart in the early modern period had shattered the authority of Christianity as a unified moral and spiritual block. Colonialism and global trade made Europeans more aware of religious diversity, leading to critical self-reflection about unexamined religious assumptions.² Biblical criticism challenged notions of biblical inerrancy, and early science often showed findings that were incompatible with straightforward readings of the Bible, such as early geology indicating an ancient origin of the Earth. Natural theological arguments reached their apex in the early modern period, notably during the Augustan Age in England (1690–1745) where advances in Newtonian physics, astronomy, and early biology contributed to their flourishing (McGrath 2011). However, Kant's ([1781] 2005) influential criticisms of such arguments put a dent in their popularity, dashing the hope that God's existence could be demonstrated through reason and an analysis of the workings of nature.

With natural theology on uncertain grounds in the later decades of the eighteenth century, apologetic strategies shifted. Enlightenment authors such as Kant ([1788] 2002) argued that although we cannot rationally demonstrate religious beliefs are true, we can rationally demonstrate their usefulness. Religion (notably Christianity) is useful because of its guiding role in morality, and because of its civilizing force, a view that was put into practice in colonial missioning efforts.

Instead of arguing that religious beliefs are true or useful, Schleiermacher argues that religion is experiential: it is rooted in experiences that are part of human nature. In this view, religion is distinct from science, which aims to understand the world by putting it in human terms, and thus religion cannot be reduced to natural theology. It is also distinct from morality, which is practical. Rather, our continued motivation for religion is rooted in a kind of intuitive religious experience. An early formulation of this thought occurs in his *Speeches on religion*, directed to its “cultured despisers”:

Religion's essence is neither thinking nor action, but intuition and feeling. It wishes to intuit the universe, wishing devoutly to overhear the universe's own manifestations and actions, longs to be grasped and filled by the universe's immediate influences in childlike passivity. (Schleiermacher [1799] 2006, 22)

Rather than a practice or a science, religion is “sensibility and taste for the infinite” (23). Schleiermacher's notion of intuition is close to Kant's ([1781] 2005) use of this term, namely, representations, given in immediate sensation, that provide the raw material for all our other cognitive processes. Because we are so interdependent with the universe, and because its features affect us even in the absence of any action on our part, we have an “intuition of the universe” (25).

This account of religion as feeling is further developed in Schleiermacher's encompassing and influential work on Christian dogmatics, *Christian Faith* (*Der Christliche Glaube, henceforth CG*, [1830] 2016). Throughout his writings, Schleiermacher uses feeling (*Gefühl*) consistently to denote a kind of prereflective self-consciousness, an awareness of ourselves, the world, and God, that we share with other human beings (for example, CG, Section 30.1) (Roy 1997). Schleiermacher's use of *Gefühl* differs somewhat from its common German meaning, which (like in English) has strong connotations of emotion and subjectivity. By contrast, for Schleiermacher feeling is not purely subjective.³ Rather, it is a disposition or mood we have as a result of our engagement with the world and with others, and which we share with other human beings, even with other biological organisms. This religious feeling gives rise to communal expressions of religion. To be human is to be religious, which means to have the religious impulse. To hold Christian beliefs is both an individual response to the religious impulse we all possess, and a communal response, embodied in the Church.

The notion of God-consciousness further develops this idea of religion as feeling. In *Christian Faith*, Schleiermacher identifies *self-consciousness* as the source of religion, that is, in this work he excludes unconscious feelings in his consideration of the origin of religion. Schleiermacher argues that self-conscious, living organisms have three properties: they are *doing*, *feeling*, and *knowing* (CG, Sections 3.2–3). These three properties constitute the basic ingredients of what he calls “remaining-within-oneself” and “stepping-outside-of-oneself” (his terms for our self-consciousness and our consciousness as agents who are in relation to the world). Feeling forms the basis of religion⁴ (CG, Section 3.2). However, identifying religion with feeling does not mean religion would be unconnected with doing and knowing. It is connected to both those things, for example, in rituals and theology. But Schleiermacher thinks that the *origin* of religion is ultimately feeling, the receptivity of creatures to their environment. It is thanks to this feeling that we become aware of two things: the way we are dependent on other creatures in our environment, and the way we are ultimately dependent on God. He calls this latter feeling “God-consciousness,” and equates it with a feeling of absolute dependence.

When we (or any other self-conscious creature) interact with the world, our pre-reflective (immediate) self-consciousness can be further subdivided into two kinds of feelings, “a feeling of dependence, to be sure, inasmuch as the other parts bear an effect on oneself out of their own self-initiated activity,” but also “a feeling of freedom, inasmuch as one also bears an effect on other parts out of one's own self-initiated activity” (CG, Section 32.2). For Schleiermacher, to act means to produce an effect, and a creature is free if it produces its own effects without being coerced. However, our actions are restrained by the world. The world pushes back

against us whenever we try to act. For example, we may try to push an object that is too heavy for us to move, or we may find that we cannot convince a friend to take a given course of action. We are also being acted upon: a storm wind may push us physically, or others may tell us what to do. This push and pull of acting upon the world and being acted upon constitutes the feeling of *relative dependence*.

Because the world poses constraints on our actions, we can never have a feeling of absolute freedom. According to Schleiermacher, whoever thinks they are absolutely free and self-sufficient is simply deluding themselves (CG, Section 4.2). We always are dependent on the environment. We need our environment—at minimum, the air we breathe, the ground we stand on—and other creatures we eat and make use of. Few of us make our own food, or maintain our own roads, or manufacture our own tools. We are enmeshed in a deep web of interdependence. Schleiermacher sees this interdependence not only as a feeling, but also as a reality at a deep, metaphysical level. For Schleiermacher, influenced by Kant's *Critique of Pure Reason* ([1781] 2005), these are connected: metaphysics is reduced to the realm of human experience. To get a sense of what he means with the web of interdependence of which we are part, Sagan's remark (1980, 218) seems apt, "If you wish to make an apple pie from scratch, you must first invent the universe," that is, even things we do freely are constrained by the state of the universe in which we find ourselves, and by the simple fact of being part of the universe. The being that grounds this web of interdependent things, which constitute the totality of the universe, is God: when we become aware of God, we become aware that God "is designated as the one grounding this interconnected being in all its diverse parts" (CG, Section 30.1).

According to Schleiermacher, our feeling of God is qualitatively different from how we perceive the world. The main difference is that we feel absolutely dependent on God, but only relatively dependent on the universe. With God, we do not get the push and pull of acting and being acted upon, as we do with the universe. Nothing we do affects God. Thus, whereas the feeling of the world around us is relative dependence, the feeling of God is absolute dependence.⁵ Schleiermacher explicitly denies that we could have a feeling of absolute dependence on the world, and thereby denies any kind of religious feeling which could be the result of feeling at one with other creatures in the world, as in some non-Christian religions such as Buddhism or neo-Confucianism (see Ivanhoe 2017 for an overview of this oneness hypothesis).

Importantly, Schleiermacher does not intend his claims about the feeling of absolute dependence as some sort of experiential proof for God's existence. In fact, he argues that his rooting of religion in experience would mean the end of traditional proofs for God's existence: "This recognition [of absolute dependence] completely supplants all the so-called proofs for

the existence of God” (CG, Section 33). Rather, he posits that religion is rooted in feeling, and then examines what would follow from this for the Christian faith.

In the next section, I examine some contemporary ideas about agency and self-consciousness in contemporary philosophy of biology, and highlight some striking parallels with Schleiermacher’s ideas. This will allow me to show that although Schleiermacher’s views on religion as feeling are not natural theological in a narrow sense, they are natural theological in a broader sense of religious entailments of the natural world (McGrath 2017).

ORGANISMS AS AGENTS, SUBJECTS, AND KNOWERS

Biological Agency

In a seminal article, the late evolutionary biologist Lewontin (1983) challenged the idea that biological organisms are passive playthings of the environment, powerless in how natural selection acts upon them. At the time, the standard theory of evolution went something like this: organisms have genes, which are subject to random variation. Organisms who bear these genes are then subject to external forces, such as the weather, geology, and other organisms, including parasites, predators, prey, and conspecifics. As a result of these external forces, some genetic variations survive, while others die out. Thus, over time, natural selection occurs. Lewontin objected to this picture, because it ignores the agency of the individual organism as it interacts with its environment. Each time a gazelle escapes a lion through ingenuity and speed, it exerts selective pressure on lions to become better hunters. Organisms have a stake in their own fate, and exert some influence on long-term evolutionary outcomes. Thus, organisms are *agents*, who act upon their environment. Nearly 40 years later, Lewontin’s insight that the agency of organisms matters in evolution has become standard in evolutionary theory. For example, niche construction theory says that organisms shape not only their own but also other organisms’ environment through their actions. Examples of this include beaver dams, badger burrows, and bird nests (Odling-Smee, Laland, and Feldman 2003).

Note the parallel of this characterization to Schleiermacher’s threefold distinction of organisms that act, feel, and know. The organism as an agent exerts its relative freedom on the world, by influencing it, as well as being influenced. In Schleiermacher’s terms, it is relatively dependent. Organisms feel the pull and push of their environment and act as agents within those constraints.

We can situate the emergence of biological agency in this broad sense in the Cambrian explosion (around 540 million years ago) and the late pre-Cambrian period that preceded it, when we observe a sharp increase in

morphological diversity in the fossil record, including shells for protection, limbs for locomotion, and sensory organs for detecting threats and opportunities, which suggest unfolding predator-prey dynamics that impacted further evolutionary history. While we might think of these dynamics as a kind of natural default, it is important to note that living things did not have to turn out this way. In the Ediacaran period (635–541 mya), which preceded the Cambrian, most creatures did not self-propel and were relatively simple, lacking shells, limbs, and sensory organs. Their simplicity was due to low levels of oxygen in the Earth’s atmosphere. Oxygen had to spread through their bodies by diffusion rather than being pumped around, as happens in our bodies and those of most other extant animals. This slow diffusion of oxygen placed limits on how many cell layers their bodies could have (Godfrey-Smith 2017). During the later phases of the Ediacaran there occurred an increase in oxygen in the atmosphere, likely at least in part caused by cyanobacteria. That initial oxygen increase gave rise to a complex feedback loop, changing the ecology of the seas and caused further rises in oxygen (Fox 2016). Higher levels of atmospheric oxygen enabled organisms to become mobile, propelling themselves with legs, fins, and other appendages. In this way, more complex ways of being an agent arose.

The philosopher of biology Okasha (2018) sets out three criteria for considering a biological organism an agent. An organism is an agent when it shows some of the following: (1) goal-directedness, (2) behavioral flexibility, and (3) adaptedness. First, goal-directedness means that agents do things for a purpose. For example, a male snowy owl brings food to the nest to feed its young. The goal of that behavior is clear: the survival of its owlets. The owl need not be conscious of how this behavior helps his chicks. Still, it has a goal, and the bird can succeed or fail in that goal. Second, behavioral flexibility: many animals adapt their behavior to fit the changing circumstances they find themselves in. For example, honey bees do not just visit any random flower. They can memorize when flowers bloom, what time of day a flower will open, and even when the nectar concentration is highest. They visit flowers when doing so is optimal (Zhang et al. 2006). Third, agents have adaptations that help them further their interests. For example, the snowy owl has both excellent vision and hearing. With its keen sight, it can spot prey even under low lighting conditions. But if the prey hides underneath snow or a layer of plants, the owl relies on its ears. Its excellent eyes and ears help it achieve its interests, to catch food for itself and its owlets. Plants also have adaptations to help them. Cactuses have spines that make them harder to eat. Cactuses do not have conscious desires and wants—still, it makes sense in evolutionary terms to say a cactus has an interest in not being eaten; “interests” in this context means survival and reproduction. Okasha’s three criteria for agency help us to include many creatures we might not

intuitively think of as agents, such as cactuses. Agency, in his view, is a graded notion—a cactus has some properties that make it an agent (goal-directedness and adaptedness) while lacking others (behavioral flexibility). This broad and inclusive notion of agency is in line with Schleiermacher's, who likewise sees agency as the exercise of creaturely freedom for attaining various ends within the constraints of being part of the world.

Subjectivity

To be able to successfully interact with its environment, an organism must not only do things, but must do them sensibly, that is, attuned to its environment. This requires that an organism is conscious of its environment. As the philosopher of biology Godfrey-Smith (2020, 59) notes, agency and subjectivity are closely tied together from a philosophy of biology perspective: “Nothing is gained biologically from taking in information that is not put to use. The evolution of the mind includes the coupled evolution of agency and subjectivity.” Differently put, agents are conscious because they need to be aware of their environment and their place within it in order to act, and consciousness allows for the expression of free agency. Schleiermacher anticipated this view, as he argued that self-consciousness expresses “that relation to finite being which can be perceived by the senses, is split into a feeling of partial dependence and a feeling of partial freedom” (CG, Section 5.1).

Sense organs are the most straightforward fossil evidence we have for the evolution of early forms of environmental awareness and perception. For example, eyes evolved no fewer than 49 times independently (McGhee 2011). In our own phylum, the *Chordata*, camera eyes evolved about 500 million years ago. But they also evolved, independently, in mollusks (octopuses and others), and in some species of worms and jellyfish. Sensory perception is just one aspect of experience. Other aspects include proprioception, pain perception, and the experience of emotions and moods. Such experiences correspond to Schleiermacher's second characterization of conscious organisms, feeling. The notions of feeling, awareness, and perception are captured in the broader category of subjectivity.

Godfrey-Smith (2017) outlines two criteria for subjectivity: having a point of view and an agenda. Subjectivity does not mean that a creature needs to have self-consciousness. It only means the creature is conscious, that is, aware of its surroundings. Here, we encounter a potential obstacle: we never will know what it feels like to a nonhuman organism to experience things the way it does. What would it feel like to have the excellent audition that allows a snowy owl to spot a tiny mouse scuttling in the undergrowth in the dusk? Nagel (1974) famously argued that the mental life of a bat will forever elude us; we will never know what it is

like to be like them and hunt for mosquitos at night using echolocation. Fortunately, we do not need to know what it is like to be a bat to say that a bat has subjectivity. It has a point of view, even if we can never gain phenomenological access to its internal mental states. Bats also have an agenda: they want to feed themselves (in social bats, also their roostmates), they want to keep away from predators, and they want to shelter and sleep in a safe environment. In order to accomplish those goals, bats need to be receptive or conscious of some features of their environment.

More controversially, Godfrey-Smith (2017) suggests that not only humans, bats, or snowy owls are subjects, but that *all* cellular life has some subjectivity. Even single-cell organisms such as amoebae are responsive to their environment. They will avoid, for example, sudden increases in heat with the production of heat shock proteins. Such proteins may be less sophisticated than our senses, but they still allow amoebae to sense heat, and they move to avoid it, and deal with it when they are confronted with it. According to Godfrey-Smith, this makes amoebae both subjects and agents. In other words, both agency and subjectivity are a matter of degree, rather than kind. A snowy owl is a more sophisticated subject and agent than an amoeba—it has a larger behavioral repertoire. But both creatures have some degree of agency and subjectivity. As we will see in the next section, Schleiermacher holds that God-consciousness arises out of more primitive forms of consciousness that we also see in other creatures.

Knowledge

At this point, we have established that organisms, especially mobile ones, act upon the world and that the world causes sensations in them. These two features bring us to the third element in Schleiermacher's distinction: knowing. Schleiermacher sees knowing as part of an intimately linked trio of properties of biological agents, doing, feeling, and knowing, and argues that although religion is related to knowing, it cannot be reduced to knowledge. For then, "the best master of Christian faith-doctrine would, at the same time, also unexceptionably be the most pious Christian," something he thinks no-one would agree to (CG, Section 3.4). Being an expert on theology does not necessarily mean being religious (or pious, in Schleiermacher's terms).

It is important to note that Schleiermacher's notion of knowing (*Erkenntnis*) is much more restrictive than the way philosophers of biology use this term. He explicitly denies that "lower animals" have any "actual knowledge," just as he denies them "any complete self-consciousness" (CG, Section 5.1). By contrast, the notion of knowledge in contemporary (philosophy of) biology is considerably more liberal. As with agency and

consciousness, philosophers of biology flesh out knowledge in functional terms, that is, in order to process perceptions, and to combine their point of view, behavioral flexibility, and goal-directedness, organisms must be able to integrate the information they receive into adaptive decisions (Kaas 2000; Godfrey-Smith 2020). In simple, single-cell organisms like amoebae such a central decision system is not needed: they just have senses that are immediately tied to reactions, such as approaching or avoiding heat or cold. But organisms with several senses and complex behavioral patterns (e.g., feeding, fleeing, and caring for others) need a brain (or something analogous) to process information centrally and to make decisions. Their brain acts as a bridge between what organisms feel and what they do.

Organisms that have a brain are knowers: they can represent their environment in a way that helps them make adaptive decisions. It is important to note, as we will see below in more detail, that in behavioral biology “knowledge” means information that allows for adaptive actions, not necessarily true beliefs (though plausibly, there is some connection between both). The first animals with a nervous system (not quite a brain yet) were jellyfish-like creatures that lived about 700 million years ago, in the later stages of the Ediacaran period. Sophisticated nervous systems evolved independently in several clades. For example, octopuses have about 500 million neurons, which is significantly less than mammals (e.g., a mouse has around 8 billion neurons), but more than insects (e.g., an ant has about 250,000 neurons) or nematodes (e.g., *Caenorhabditis elegans* has a mere 302 neurons) (Godfrey-Smith 2016). Within larger brained animals, such as mammals and birds, brain size correlates with behavioral complexity (such as foraging) and social complexity. For example, the brain size of ungulates and the carnivores that prey on them evolved in lock-step, indicating an arms race between predators and prey in outsmarting each other (Holekamp 2007).

The brain provides an organism with a way to behave flexibly in response to its environment. For example, barn owls, and likely also other owls, construct a complex map of the environment based on auditory input. Owls have stereoscopic audition. Their auditory map represents the auditory cues from its environment into a detailed topographical map, combining it with visual memories collected during the day (Pena and Gutfreund 2014). There is not one right way for creatures to represent the environment. It depends on their needs. The topography of an owl’s landscape is very different from that of the mice it hunts. While Schleiermacher would classify this kind of nonhuman knowledge as a form of consciousness, not as knowledge *per se*, contemporary biologists and philosophers of biology see these mental capacities as ways of knowing, shaped by evolutionary forces (Holekamp 2007).

NATURALIZING SCHLEIERMACHER'S NOTION OF RELIGION AS
FEELING

As we have seen, there is a remarkable parallel between the work of contemporary philosophers of biology and Schleiermacher's discussion of doing, feeling, and knowing as three basic aspects of creaturely life. Schleiermacher points to feeling as the basis for religion. In *Speeches*, he draws parallels between sensory perception and religion:

If the emanations of light—which happen completely without your efforts—did not affect your sense, if the smallest parts of the body, the tips of your fingers, were not mechanically or chemically affected, if the pressure of weight did not reveal to you an opposition and a limit to your power, you would intuit nothing and perceive nothing, and what you thus intuit and perceive is not the nature of things, but their action upon you. (Schleiermacher [1799] 2006, 25)

This idea, which is rooted in the Kantian suggestion that we do not intuit things themselves, but rather how they impinge upon our cognition, echoes what we saw earlier. Both sense perception and brain processing evolved in response to environmental pressures. Schleiermacher then continues, extending this idea of feeling to religion:

The same is true of religion. The universe exists in uninterrupted activity and reveals itself to us every moment. Every form that it brings forth, every being to which it gives separate existence according to the fullness of life, every occurrence that spills forth from its rich, ever-fruitful womb, is an action of the same upon us. Thus to accept everything individual as part of the whole and everything limited as a representation of the infinite is religion. (Schleiermacher [1799] 2006, 25)

The detailed descriptions of sense perception in the *Speeches* are further supplemented with naturalistic, evolutionary accounts of self-consciousness in *Christian Faith*. These accounts give us some tools to naturalize Schleiermacher's view of religion as feeling. This naturalization is not some contemporary projection, seeing Schleiermacher's theology of nature through a twenty-first-century lens without consideration for the original intent of the author. Rather, as I will show, Schleiermacher already had evolutionary considerations in mind when he wrote *Christian Faith*, and perhaps also when he wrote the *Speeches*.

One might object, at this point, that Schleiermacher could not know evolutionary theory. The "official" starting point of evolutionary theory is a matter of discussion. It is commonly placed at 1859, with the publication of the first edition of *On the origin of species*, originally intended by Charles Darwin as an abstract of a longer work. Both the *Speeches* and *Christian Faith* were published decades before. However, evolutionary ideas, at the time called transmutationist theories, were already in circulation in the eighteenth century, and it is likely that Schleiermacher had heard about

them. During the eighteenth century, there were three main ideas to explain inheritance and teleology in biological organisms: evolution, epigenesis, and transmutation (note that the first two terms had different meanings from their current ones). These theories were offered as alternatives to direct divine providence and creation, and aimed to provide natural laws for biology, analogous to laws that already existed in the domain of physics. Evolution (in the eighteenth-century sense) was the idea that gametes already contain the blueprint for the adult form of an organism. This would explain why dogs have puppies, and humans have babies. Epigenesis stated that embryos were initially formless and only later grew into their respective forms. This theory invoked natural teleological forces, such as the *Bildungstrieb* to explain how organisms ended up resembling their parents. It was popular in eighteenth-century German-speaking countries, including Prussia, where Schleiermacher lived and worked (see De Smedt and De Cruz 2020b for an overview).

Transmutation is the direct precursor of evolutionary theory. It holds that species can change (transmute) into other species, as a result of external pressures of their environment. The mechanism by which this occurred was a matter of discussion, including inheritance of acquired characteristics (Lamarck), or differential survival of heritable traits following selection (Darwin and Wallace). Transmutation provided a compelling explanation for why organisms have goal-directed features, but it struggled to explain inheritance (how useful traits got transmitted from one generation to the next). There were many transmutationist theories, and common descent was not a revolutionary concept at the time. An early example is the anonymously published *Telliamed* (1748), the alleged sayings of an Indian philosopher. The author, Benoît de Maillet (the book's title is his name in reverse) did not dare to publish it under his name, nor during his lifetime, because the account of life's origins contradicted the Bible. He proposed that all life originated in the sea, and that species now living on land evolved from others that lived in the sea, purely through natural processes, for example, seals evolved into dogs; seaweeds into shrubs. Such theories were prompted by the numerous finds of fossil shark teeth on land, suggesting the sea was once far more extensive than it is today. Other early works include Erasmus Darwin's *Zoonomia* (1794–96), which anticipated a Lamarckian form of inheritance of acquired characteristics, and Lamarck's (1809) *Philosophie zoologique*, which was widely read at the time.

Perhaps most relevant to Schleiermacher, in terms of geographical sphere of influence, was Treviranus, one of the founders of biology as an autonomous scientific discipline in Germany at the turn of the nineteenth century. His *Biologie, oder Philosophie der lebenden Natur für Naturforscher und Aerzte* was published in Göttingen in 1802, and is known today for its popularization of the term “biology” to denote the life sciences. This

work went through six editions from 1802 to 1822. It was highly popular in continental Europe. It presents a transmutationist theory, based on the increasing fossil evidence, which “we can find on all continents, even on the highest mountain peaks” (Treviranus 1805, part 3, 24).⁶ Like Schleiermacher, Treviranus stressed the interconnectedness of living beings.

The individual possesses its own life, and builds its own world to that extent. However, although each individual life is limited, it is, as it were, an organ in the general organism. Every living being exists by virtue of the universe, but the universe exists equally through it. (Treviranus 1805, part 3, 552)⁷

The parallels between this work and Schleiermacher’s views, make it plausible that he was familiar with Treviranus’ work. In any case, given the wide distribution across Europe of various transmutationist theories, it is plausible that Schleiermacher knew at least some of them.

We also have internal textual evidence, as Pedersen (2017) points out, that Schleiermacher accepted transmutationism. For example, Schleiermacher explicitly states that “we pretty much know, regarding our world, that species have existed that are no longer present and that present species have not always existed. Thus, our proposition must extend to all of these species as well” (CG, Section 46.2). While Schleiermacher notes this as something uncontroversial, the idea that species can go in and out of existence was not generally accepted at the time, given the popularity of the other naturalistic theories (epigenesis and evolution). The only naturalistic theory on offer that proposed that species could go out of existence or evolve into other species was transmutation. Neither epigenesis nor evolutionism endorsed this. From this, we can conclude that Schleiermacher was a transmutationist.

Not only did Schleiermacher accept transmutationism, he also applied it to humans. During his lifetime, the picture of human evolution was very sketchy. Before Huxley’s *Man’s Place in Nature* (1863), scientists did not conclusively argue that humans descended from apes. Nevertheless, in Section 5 of the *Christian Faith*, Schleiermacher attempts to outline a naturalistic account of God-consciousness and self-consciousness that is grounded in speculations about early human evolutionary history. Having identified God-consciousness as the highest form of self-consciousness, Schleiermacher holds that it is not unconnected from “the immediately lower level” (CG, Section 5.1), namely, those feelings biological organisms have when they engage with their environment and when they realize they depend on their environment, but have the power to influence it (relative dependence and partial freedom):

suppose that we go back to the initial, more obscure period of the life of human beings. Everywhere therein we would then find the animalistic life to be almost alone predominant, but the spiritual life would be still entirely

suppressed. As a result, moreover, we would have to imagine the state of a human being's consciousness in that obscure period to be very much akin to that of the lower animals. To us, the state of lower animals is indeed actually quite alien and hidden. (CG, Section 5.1)

In spite of this opacity of animal minds to us, Schleiermacher goes on to remark that while we generally do not think nonhuman animals have the same level of consciousness as we do, "a total lack of consciousness is not attributed to them either" (CG, Section 5.1). In other words, consciousness comes in gradations. These different levels of consciousness arise over deep time as animals acquire a distinction between themselves as subjects and agents in the world, a result of their feelings of freedom and dependence. But the feeling of absolute dependence only arose in the highest level of animals, that is, in human beings. We can see here parallels between Schleiermacher's work and contemporary philosophy of biology, which also accords various degrees of subjectivity to different organisms. For example, Godfrey-Smith (2017) thinks that subjectivity is present in all organisms (including in plants and single-cell organisms), but it becomes more developed when animals acquire a more complex behavioral repertoire that requires the sophisticated integration of different streams of information. Thus, we can draw on textual evidence in *Christian Faith* to conclude that for Schleiermacher religiosity is a result of our nature as evolved organisms, or to put it differently, religion is natural.

Taking this general picture, we can now ask how this religious feeling arose. In the final section of this article, I consider whether work from the cognitive science of religion (CSR) can provide us with a naturalistic picture of Schleiermacherian God-consciousness.

NATURALIZING GOD-CONSCIOUSNESS

As we have seen, for Schleiermacher, God-consciousness arises from our nature as human beings. Today, the science best positioned to give us clues for a naturalistic basis for God-consciousness is CSR. CSR researchers have discovered a range of cognitive propensities that give rise to religious belief—there is not one specific religious feeling. Rather, our religious feeling arises as a result of our interaction with the environment and how we process certain stimuli. One of the best studied religious feelings is *intuitive teleology*. Intuitive teleology manifests itself in two ways, as a sense that things happen for a reason, and as an intuition that natural things around us serve a specific purpose. These two intuitions are both termed intuitive teleology (see De Smedt and De Cruz 2020a for an extensive review and analysis).

Young children spontaneously see objects around them as serving some purpose. In a typical experimental setup (Kelemen 1999), the experimenter asks a young child (aged between 5 and 10) why there are clouds,

or why there are lions. The child then has to pick between two kinds of explanations: a mechanistic one, which explains why the object exists in terms of how it was caused, and a teleological one, which explains the object in terms of its function. For example: Why are rocks pointy? The child can choose between “rocks are pointy because bits of stuff piled up on top of one another for a long time” (a causal explanation), or “rocks are pointy so that animals wouldn’t sit on them and smash them” (a self-serving teleological explanation). Children tend to prefer teleological over causal explanations. Kelemen (2003) found that American and British adults preferred teleological explanations for biological objects, but not for things such as rocks or clouds. By contrast, children especially between age 5 and 10 preferred teleological explanations for why natural kinds and animals look the way they do. They typically say that mountains are for climbing, lions are to go in the zoo, and clouds are for raining.

Does the tendency to think teleologically disappear as we grow older? At first sight, this seems to be the case. Adults (unlike children under the age of 10) prefer mechanistic explanations. Few adults would agree with five-year-olds that mountains are there so we can climb them. However, there is another possibility. Perhaps adults *suppress* their teleological thinking because the scientific knowledge they gain through school and other formal learning contexts is mostly nonteleological. For example, in school we learn geological explanations of how mountains come into existence (through plate tectonics), and this makes the explanation “mountains are for climbing” no longer valid. But when adults are under time pressure, and have to make a quick decision on whether an explanation is true or false, they default to teleological explanations more than to other kinds of statements (Kelemen and Rosset 2009). For example, they incorrectly judge that “the sun radiates heat because warmth nurtures life.” Remarkably, this tendency has also been found in physical scientists under time pressure (Kelemen, Rottman, and Seston 2013). The tendency to think that things have a purpose also increases in people with Alzheimer’s, who are more likely to judge that rain exists “so that plants and animals have water for drinking and growing.” Older adults without Alzheimer’s, on the other hand, are more likely to think that rain exists “because water condenses into clouds and forms droplets” (Lombrozo, Kelemen, and Zaitchik 2007).

A plausible explanation for all these findings is that teleological thinking is intuitive and easy for us, a kind of default we can resort to if the causal explanations we learned at school become unavailable. We spontaneously discern the sense of purpose in natural objects around us, so much so that we need to suppress this tendency even as educated adults. The sense of teleology in the world points both to the interdependence of the natural world, and to a potential source outside of it that causes the teleology. Indeed, Ojalehto, Waxman, and Medin (2013) see our capacity for

teleological thinking not as some sort of error that needs to be corrected. They point out that people in small-scale societies use their teleological thinking to help them discern ecological relationships between animals, plants, and inanimate features of the landscape.

But this interdependence is not a sense of absolute dependence. Rather, it is a sense of how everything fits together. One way to get us from intuitive teleology to absolute dependence is via natural theology. The purposiveness of the natural world is evidence for a creator God. Authors such as Isaac Newton and William Paley argued that the world is like an intricate machine, showing evidence of divine design. However, as we have seen, Schleiermacher is skeptical of natural theological arguments, in line with Kant's criticisms ([1781] 2005). As De Cruz and De Smedt (2015, chapter 4) have demonstrated, we cannot ground the design argument in religious feeling either, because the design argument does not flow automatically from our teleological intuitions. Rather, it is a further explicit reasoning step, only made in very specific cultural circumstances. Moreover, for Schleiermacher, both promiscuous teleology and ateleological religion are imperfections of proper religion, which regards the world as a whole as ordered toward an (eschatological) end. Intuitive teleology is, in Schleiermacher's view, idolatrous (see, e.g., CG, Section 8.1).⁸

A more promising route from intuitive teleology to God-consciousness does not go via natural theology but via feeling, namely, through the idea of teleology as fate or providence. The sense that God (or in secular analogies, the universe) intends certain things for us is cross-culturally widespread and is also common among atheists. In several interview studies, participants discussed important life events. These could be positive life events, such as meeting their partner, or negative events such as a cancer diagnosis or job loss. Theists, atheists, and agnostics regularly appeal to fate or the universe to explain such events. Banerjee and Bloom (2014, 291), for example, found that atheists would say things like "I think this [bad thing that happened to me] occurred as a way for the universe to show me that no matter what I thought my mission in life was, I was meant to be a person who lived my life for others and strives to make everything around me a little better and more kind and loving." About half of the atheists in this study, and three quarters of theists, spontaneously offered teleological explanations for significant life events. Adults not only apply teleological thinking to their significant life events, but also to less momentous but still relevant moments in their lives. Ramsay et al. (2019) found that adults in Singapore regularly explain ostensibly unremarkable events, such as receiving a small, unexpected gift, spending time with a family member they had not seen in a while, or a fun discussion about hobbies with a work colleague, in teleological terms. More religious adults gave more teleological explanations.

This appeal to teleology for life events (destiny, providence) arises early in development. While only older children (age 8 and above) provide explicit supernatural explanations for things that happen in their lives, 5-year-olds already explain significant life events in teleological terms, for example, they happen “to teach a lesson” or to “send a sign” (Banerjee and Bloom 2015). Adult theists offer more teleological explanations for significant life events compared to atheists, yet atheists cannot suppress this tendency entirely (Heywood and Bering 2014). Legare et al. (2012) speculate that appeals to teleology commonly occur across cultures to explain events that are of deep existential significance, including illness, death, and the emergence of the human species. This cosmic sense of teleology comes probably closest to what Schleiermacher conceives of as a feeling of absolute dependence—the feeling that something outside of us, some agency, is influencing the course of events in the universe. The pervasiveness of this feeling, and the fact that we cannot alter the course of these events, also makes it more consistent with a feeling of absolute, rather than relative dependence. As we have seen, in the case of relative dependence, we can influence certain courses of events or other agents in our lives, but with absolute dependence we have no way to influence what we depend upon. This feeling is what Schleiermacher calls God-consciousness.

In this section, I have not given a definite or complete account of naturalistic roots for God-consciousness. Rather, I sought to show that CSR offers resources to give a naturalistic grounding to Schleiermacher’s feeling of absolute dependence.

CONCLUSION

In this article, I have provided the beginnings of a naturalized account of Schleiermacher’s idea that religion is rooted in feeling. I have shown that Schleiermacher was very likely acquainted with transmutationist theories, and drew on these in his account of cognitive evolution, where feeling arises naturally in living organisms. Schleiermacher’s distinction between acting, knowing, and feeling finds a close analog in contemporary philosophy of biology, with accounts of agency, consciousness, and subjectivity in authors such as Lewontin, Okasha, and Godfrey-Smith. CSR can provide us with further clues about which kinds of “feelings” might be specific to humans and thus be the foundation of God-consciousness. I have proposed intuitive teleology as one such contributing factor. In this way, although Schleiermacher was critical of natural theology narrowly construed as a project to provide proofs for the existence of God, we can situate his account of religion as feeling in a more broad theology of nature (in the sense of McGrath 2017). As such, Schleiermacher’s work has continued relevance and explanatory power.

NOTES

1. This identity crisis went beyond Christians, extending into the Jewish community in Europe (Merrick 2020)
2. For example, as Freeman (2014) shows, the early French natural histories of religion by authors such as Charles de Brosses and Bernard de Fontenelle made explicit parallels between the purported “irrationality” of Christianity and of Indigenous religious belief systems in Africa and the Americas.
3. Schleiermacher cites the Norwegian philosopher and scientist Henrich Steffens (1773–1845) (CG, Section 3.1, fn 5) as the source of his concept of feeling.
4. Schleiermacher uses the term “piety” interchangeably with religion, but for ease of reference and because piety now has taken on a somewhat different meaning, I will use the term “religion.”
5. This idea is connected to Schleiermacher’s views on how God and creatures are causally connected, which I would not go into here (see Pedersen 2017, chapter 4, for discussion).
6. My translation.
7. My translation.
8. Thank you to Daniel Pedersen for this observation.

ACKNOWLEDGMENTS

I would like to thank Daniel Pedersen, Johan De Smedt, and audiences at the Natural Theology in the 21st Century Ian Ramsey Conference (Oxford, 15-17 July 2021) for their helpful comments to an earlier version of this manuscript.

REFERENCES

- Banerjee, Konika, and Paul Bloom. 2014. “Why Did This Happen to Me? Religious Believers’ and Non-Believers’ Teleological Reasoning about Life Events.” *Cognition* 133 (1): 277–303.
- . 2015. “‘Everything Happens for a Reason’: Children’s Beliefs about Purpose in Life Events.” *Child Development* 86 (2): 503–18.
- Darwin, Charles. 1859. *On the Origin of Species by Means of Natural Selection or the Preservation of Favoured Races in the Struggle for Life*. London: John Murray.
- De Cruz, Helen, and Johan De Smedt. 2015. *A Natural History of Natural Theology: The Cognitive Science of Theology and Philosophy of Religion*. Cambridge, MA: MIT Press.
- de Maillet, Benoît. 1748. *Telliamed ou entretiens d’un philosophe indien avec un missionnaire français sur la diminution de la mer, la formation de la terre, l’origine de l’homme, & c.* Amsterdam: Honoré & Fils.
- De Smedt, Johan, and Helen De Cruz. 2020a. “Is Intuitive Teleological Reasoning Promiscuous?” In *Teleology and modernity*, edited by William Gibson, Daniel O’Brien, and Marius Turda, 185–203. London: Routledge.
- . 2020b. *The Challenge of Evolution to Religion*. Cambridge: Cambridge University Press.
- Fox, Douglas. 2016. “What Sparked the Cambrian Explosion?” *Nature News* 530 (7590): 268–70.
- Freeman, Aaron. 2014. “Charles de Brosses and the French Enlightenment Origins of Religious Fetishism.” *Intellectual History Review* 24 (2): 203–14.
- Godfrey-Smith, Peter. 2016. *Other Minds: The Octopus and the Evolution of Intelligent Life*. London: William Collins.
- . 2017. “The Subject as Cause and Effect of Evolution.” *Interface Focus* 7 (5): 20170022.
- . 2020. *Metazoa: Animal Life and the Birth of the Mind*. New York: Farrar, Straus, and Girouz.
- Heywood, Bethany T., and Jesse M. Bering. 2014. “‘Meant to be’: How Religious Beliefs and Cultural Religiosity Affect the Implicit Bias to Think Teleologically.” *Religion, Brain & Behavior* 4:183–201.

- Holekamp, Kay E. 2007. "Questioning the Social Intelligence Hypothesis." *Trends in Cognitive Sciences* 11 (2): 65–69.
- Huxley, Thomas H. 1863. *Evidences as to Man's Place in Nature*. London: Williams and Norgate.
- Ivanhoe, Philip J. 2017. *Oeness: East Asian Conceptions of Virtue, Happiness, and How We are All Connected*. Oxford: Oxford University Press.
- Kaas, Jon H. 2000. "Why is Brain Size So Important: Design Problems and Solutions as Neocortex Gets Bigger or Smaller." *Brain and Mind* 1:7–23.
- Kant, Immanuel. (1781) 2005. *Critique of Pure Reason*, edited by Paul Guyer and Allen W. Wood. Cambridge: Cambridge University Press.
- . (1788) 2002. *Critique of Practical Reason*. Translated by Werner Pluhar. Cambridge: Hackett.
- Kelemen, Deborah. 1999. "Function, Goals and Intention: Children's Teleological Reasoning about Objects." *Trends in Cognitive Sciences* 3:461–68.
- . 2003. "British and American Children's Preferences for Teleo-Functional Explanations of the Natural World." *Cognition* 88:201–21.
- Kelemen, Deborah, and Evelyn Rosset. 2009. "The Human Function Compunction: Teleological Explanation in Adults." *Cognition* 111:138–43.
- Kelemen, Deborah, Joshua Rottman, and Rebecca Seston. 2013. "Professional Physical Scientists Display Tenacious Teleological Tendencies: Purpose-Based Reasoning as a Cognitive Default." *Journal of Experimental Psychology: General* 142:1074–83.
- Lamarck, Jean-Baptiste. 1809. *Philosophie zoologique, ou exposition des considérations relatives à l'histoire naturelle des animaux*. Paris: Duminiel-Lesueur.
- Legare, Cristine H., E. Margaret Evans, Karl S. Rosengren, and Paul L. Harris. 2012. "The Co-existence of Natural and Supernatural Explanations across Cultures and Development." *Child Development* 83:779–93.
- Lewontin, Richard C. 1983. "The Organism as the Subject and Object of Evolution." *Scientia* 118:65–82.
- Lombrozo, Tania, Deborah Kelemen, and Deborah Zaitchik. 2007. "Inferring Design: Evidence of a Preference for Teleological Explanations in Patients with Alzheimer's Disease." *Psychological Science* 18:999–1006.
- McGhee, Michael. 2011. "Spirituality for the Godless." *Royal Institute of Philosophy Supplement* 68:227–44.
- McGrath, Alister E. 2011. *Darwinism and the Divine: Evolutionary Thought and Natural Theology*. Malden, MA: Wiley-Blackwell.
- . 2017. *Re-Imagining Nature: The Promise of a Christian Natural Theology*. Malden, MA: Wiley-Blackwell.
- Merrick, Teri. 2020. *Helmholtz, Cohen, and Frege on Progress and Fidelity: Sinning against Science and Religion*. Cham, Switzerland: Springer.
- Nagel, Thomas. 1974. "What is it Like to be a Bat?" *Philosophical Review* 83:435–50.
- Odling-Smee, F. John, Kevin N. Laland, and Marcus W. Feldman. 2003. *Niche Construction: The Neglected Process in Evolution*. Princeton, NJ: Princeton University Press.
- Ojalehto, Bethany, Sandra R. Waxman, and Douglas L. Medin. 2013. "Teleological Reasoning about Nature: Intentional Design or Relational Perspectives?" *Trends in Cognitive Sciences* 17 (4): 166–71.
- Okasha, Samir. 2018. *Agents and Goals in Evolution*. Oxford: Oxford University Press.
- Pedersen, Daniel James. 2017. *The Eternal Covenant: Schleiermacher on God and Natural Science*. Berlin: De Gruyter.
- Pena, Jose L., and Yoram Gutfreund. 2014. "New Perspectives on the Owl's Map of Auditory Space." *Current Opinion in Neurobiology* 24:55–62.
- Ramsay, Jonathan E., Eddie M.W. Tong, Avijit Chowdhury, and Moon-Ho R. Ho. 2019. "Teleological Explanation and Positive Emotion Serially Mediate the Effect of Religion on Well-Being." *Journal of Personality* 87 (3): 676–89.
- Roy, Louis. 1997. "Consciousness according to Schleiermacher." *Journal of Religion* 77 (2): 217–32.
- Sagan, Carl. 1980. *Cosmos*. New York: Ballantine Books.
- Schleiermacher, Friedrich. [1799] 2006. *On Religion. Speeches to Its Cultured Despisers*. Translated by R. Crouter. Cambridge: Cambridge University Press.

- . [1830] 2016. *Christian faith*. Translated by N. Tice, C. L. Kelsey, and E. Lawler. Louisville, KY: Westminster John Knox Press.
- Treviranus, Gottfried Reinhold. 1805. *Biologie, oder Philosophie der lebenden Natur für Naturforscher und Aerzte*, Vol. 3. Göttingen: Johann Friedrich Röwer.
- Zhang, Shaowu, Sebastian Schwarz, Mario Pahl, Hong Zhu, and Juergen Tautz. 2006. "Honeybee Memory: A Honeybee Knows What to Do and When." *Journal of Experimental Biology* 209 (22): 4420–28.