Naturalism

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ABSTRACT: The many kinds of naturalism fall into two main types. Dogmatic naturalists define naturalness using some rule. Progressive naturalists define naturalness in terms of a research program. This research program, illustrated by the sciences, progressively defines things ever more precisely using mathematics. Most traditional religious concepts fail to be natural on any type of naturalism. But progressive naturalists are open to naturalistic revisions of traditional concepts. They do not tie religion to the past, but welcome novel religious and spiritual naturalisms.

1. Introduction

Naturalism is crucial to many debates about God. Among the many different ways of defining naturalism, there are two main categories. The first is *dogmatic*, which tries to define nature or naturalness according to some fixed rule. The second is *progressive*, which views naturalism as a dynamical research program without any fixed doctrines about nature or naturalness. After a brief review of its many well-known problems, dogmatic naturalism is set aside in favor of progressive naturalism.

Progressive naturalism is open-minded – it doesn't reject any concept because of its history. It is open to strings and souls, supersymmetries and spirits. It demands only that every concept participates in a certain kind of research program, commonly found in the sciences. Some ways of defining souls and spirits can be naturalized, while others cannot. Some gods are more natural than others. The demands of progressive naturalism are minimal. But many concepts associated with the old religions have persistently failed to meet even those minimal demands. Progressive naturalists are extremely skeptical about the old religions. But progressive naturalism is dynamic. Progressive naturalists welcome efforts to build new religious and spiritual naturalisms.

2. Dogmatic and Progressive Naturalism

A *dogmatic approach to naturalism* proceeds by defining nature and then defending that definition. The definition is a *theory* of nature. The first problem with the dogmatic approach is that it is held hostage to its origins. It therefore runs the risk of running contrary to scientific progress.[1] It risks degenerating into an ideology.

Suppose John defines naturalism like this: a naturalist asserts that nature was created by God according to the story in Genesis. For a long time, this was our most scientific

cosmology. But as science made progress, it began to challenge that cosmology. So either John defends the Genesis myth against science or John abandons naturalism. Suppose David defines naturalism like this: nature is just our physical universe.[2] But many physical theories since his time have argued for the existence of many other universes.[3] So either David has to fight against those scientific theories or he has to abandon his naturalism. Suppose Hartry defines naturalism like this: nature contains only concrete objects.[4] But some physicists have argued that all concrete things really are identical with purely mathematical abstract objects.[5] So now Hartry either fights against this new physics or he sacrifices his naturalism.

A dogmatist might say that these historical troubles can be avoided by more sophisticated theories of nature. Unfortunately, those sophistications run into their own problems. Suppose Susan aims to avoid historical problems by defining naturalism like this: a naturalist says nature is defined by our best current science. This means that nature changes as science changes; but that is implausible. Finally, Liz aims to avoid all these troubles by defining naturalism like this: a naturalist says that nature is defined by our ideal final scientific theory.[6] Sadly, nobody knows anything about this allegedly perfect scientific theory. So this eschatological naturalism is vacuous.

Dogmatic naturalism suffers because it views naturalism as a *doctrine*. But there is no need to think of naturalism as a doctrine. A *progressive approach to naturalism* regards naturalism as a *research program*.[7] As a research program, naturalism strives to *naturalize* all domains of human thought and activity. A progressive naturalist works to replace less natural theories and practices with more natural theories and practices. The progressive naturalist goes wherever our most natural theories go; they follow theoretical naturalness wherever it leads. If science shows someday that nature is ultimately made of little souls (like Leibnizian monads), then the progressive naturalist won't fight against that science. The progressive naturalist has no unshakable *faith* in any fixed theory of nature. Nature always remains open to further exploration.

3. Naturalness is a Property of Theories

A dogmatic naturalist says naturalness *is a property of things*. For example, material particles are natural while immaterial ghosts or gods are not; physical things involved in causal interactions are natural while mathematical objects not involved in them are not. But progressive naturalists do not tie naturalness to things. They say naturalness *is a property of theories*. Theories are more or less natural, and so can be compared in terms of their naturalness. For example, the oxygen theory of combustion is more natural than the phlogiston theory; evolution by natural selection is more natural than intelligent design; the predicate calculus is more natural than Aristotelian logic.

The naturalness of any term in a theory is the naturalness of the theory in which it is defined. So if the oxygen theory of combustion is more natural than the phlogistion theory, then the term "oxygen" is more natural than the term "phlogiston". Ancient Taoist creation theories are said to posit a *Cosmic Egg* as an original object. If the Big Bang theory is more natural than the Taoist creation theories, then the term "Big Bang" is more natural than "Cosmic Egg". Since the terms in any theory inherit their naturalness from the theory, all the terms which come from the same theory are equally natural. For

example, quantum field theories have terms which appear to refer to particles, forces, fields, space-time points, functions, vectors, numbers, and so on. All those terms are equally natural. In quantum field theories, the terms which apparently refer to numbers are just as natural as terms which seem to refer to material particles.

A progressive naturalist believes that every attempt to define nature produces a theory of nature. By interacting with nature as parts of nature ourselves, we produce theories of nature. We can study the logical and linguistic features of our theories. We can compare newer theories with older theories. We can study the ways that theories evolve. For example, we can discuss the evolution of physical theories from the ancient Greeks to modern string theories. But we cannot directly compare our theories with nature. We cannot measure the degree to which a theory truly describes nature. Since we cannot directly compare our theories with nature, the naturalness of any theory cannot be an *extrinsic* feature of the theory. It cannot be any *semantic* feature of the theory.

Since the naturalness of any theory does not depend on its semantics, it does not depend on *truth*. False theories can be as natural as true theories. As an illustration of this point, consider our two best current physical theories, quantum mechanics and general relativity. They are mutually contradictory. At least one of them is false; both are probably false. But so what. On the progressive view of naturalism, both of those theories turn out to be highly natural regardless of their truth-values. Progressive naturalists, of course, do not accept false theories. But they do recognize that later and more highly accurate theories often include ideas from false theories.

Since the naturalness of any theory does not depend on its semantics, it does not depend on the *degree of confirmation* of the theory. Poorly confirmed theories can be just as natural as well confirmed theories. After all, confirmation requires us to run experiments; but our experiments are constrained by our technologies. It might be technologically impossible to test the theories that aim to reconcile relativity with quantum mechanics. We might never be able to build scientific instruments powerful enough to test those theories. We might never have any confirmation for those theories. And yet those unconfirmed theories may be extremely natural.

Naturalness is tied neither to verification nor to falsification. Progressive naturalism rejects positivism. If naturalness requires some confirmation, then naturalness is dogmatically tied to empiricism. But scientific progress might refute empiricism. The physics that aims to reconcile quantum mechanics with relativity is almost purely mathematical. Suppose it turns out that, starting only from purely formal first principles, pure reason deduces some elegant theory which later turns out to be maximally well confirmed. Empirical evidence played no role in the creation of that theory. Its high degree of confirmation turns out to be empirically inexplicable. A progressive naturalist will not reject that elegant theory because it was not inferred from empirical data. A progressive naturalist will say it is a natural theory.

Since the naturalness of any theory does not depend on its semantics, progressive naturalism is *agnostic about existence*. Our most natural theory of reality may or may not be true; hence the objects to which it refers may or may not exist. Progressive naturalism asserts only that *if* the terms defined in some theory refer, *then* the things to which they do refer are just as natural as their defining theory. If the variables and names refer to things, then they refer to natural things; if the predicates refer to properties and relations, then they refer to natural properties and natural relations.

4. Naturalness and Formalization

Since the naturalness of any theory cannot be any extrinsic feature of that theory, it must be some intrinsic feature of the theory. Since naturalness cannot be any semantic feature of a theory, it must be one of the syntactic features of the theory. So you can evaluate the naturalness of any theory just by looking at it or just by comparing it with other theories. Here progressive naturalists look at the historical development of the various fields of human inquiry. What intrinsic or syntactic features go with progress across many fields of inquiry? One feature stands out right away.

As any field of inquiry makes progress in solving its problems, its theories become more precisely formalized. They use more and more mathematics. It may well be that mathematics is a grand illusion. But the increasing use of mathematics in physics is a fact. The same fact occurs in the other natural sciences (such as chemistry, biology, and psychology): as they make progress, they become more mathematical.

If this observation is correct, it suggests a hypothesis: *the naturalness of a theory is its degree of formalization*. Theories are more or less formal. As they become more formal, the definitions of their terms become clearer and the rules for manipulating those terms become clearer. At the height of naturalness, meaning and rules become exact. There is no ambiguity or uncertainty. Naturalization uses *clarity* to dispel *mystery*. As theories become more formal, they become more purely mathematical. But here mathematics is more of like a manner of thinking than like a collection of contents. To mathematize is to clarify; pure mathematics is the clarification of clarity itself.

As an illustration of progressive naturalization, consider the history of physics. A good place to start is with Aristotle; but Aristotelian physics uses very little math. From Aristotle to Newton, the formalization of physical concepts grows slowly. Newton uses Euclidean geometry and the calculus in his theory of gravity. During the nineteenth century, many physical concepts become formalized by classical mechanics. Quantum mechanics and the relativity theories, born around the start of the twentieth century, lead to intensely mathematical definitions of physical concepts. Concepts like *space*, *time*, *force*, *energy*, *mass*, *charge*, and *matter* all become highly mathematical. They become so highly mathematical that, by the end of the twentieth century, theoretical physics looks more and more like a branch of pure mathematics.

Since more natural theories are more highly mathematized, and since mathematical theories themselves are the most highly mathematized, they are the most natural theories. Does this require you to believe that mathematical objects exist? It does not. Progressive naturalism separates naturalness from existence. It permits you to be a nominalist or a Platonist. The progressive naturalist agnostically says only that *if* some mathematical term in any theory refers to some thing, *then* the thing to which it refers is as natural as the theory. But mathematical terms might fail to refer.

Progressive naturalists seek to naturalize all concepts. They don't dismiss any concept out of hand because of some dogmatic prejudice. To naturalize a concept, you can start with its traditional definitions. You then try to naturalize those. You go with the definitions that are most open to progressive formalization. Consider the *soul*. There are many definitions of the soul. Aristotelian said *the soul is the form of the body* (*De*

Anima, 412a5-414a33). And this definition can be naturalized. You can bring all the resources of computational biology to bear on the development of highly mathematical theories of the form of the body. Naturalizing the soul is a small research program inside the larger research program of progressive naturalism.

There are many traditional definitions of *God*. Progressive naturalists study these in terms of their openness to naturalization. One definition is easily naturalized. This is the pantheistic definition: God is the All. If the All is just our universe, then God is that; if the All is a plurality of universes, then God is the multiverse; if the All is the totality of mathematical objects, then God is that totality. The *World Pantheist Movement* contains practicing pantheists (Harrison, 1999). This way of naturalizing God refutes theism; it shows that all the old theistic religions are wrong about God.

5. Some Attractive Consequences of Formalism

One way to evaluate a hypothesis is to study its consequences. The hypothesis that equates naturalness with degrees of formalization has some attractive consequences. The first attractive consequence is *empirical testability*. The progressive naturalist argues that greater formalization means greater empirical testability. Informal theories are typically so vague that they cannot be tested. As theories become more formally precise, they become more susceptible to testing through scientific measurement.

The second attractive consequence is *ontological parity*. Some naturalists divide the terms in scientific theories into those that refer and those that fail to refer. For instance, nominalists say that concrete terms refer while abstract terms do not refer. It is probably impossible to defend that division; it is probably impossible to defend any division.[8] But progressive naturalism does not force you to divide scientific theories. All terms in all theories appear equally in those theories; hence they are treated equally.

The third attractive feature concerns *openness*. Progressive naturalists welcome all asserted objects with open arms. They are open to speculative extensions of science, such as the supersymmetric extensions of the Standard Model of Matter, and all current efforts to reconcile quantum mechanics with relativity. They are open to other possible universes; they are open to purely mathematical objects; they are open to immaterial minds; they are open to spirits of all kinds, from little imps to majestic gods and goddesses. Progressive naturalists say that the naturalness of a goddess is just the degree of mathematization of the theory in which that goddess is defined. And whenever progressive naturalists welcome any asserted object, they seek to naturalize it by formalizing it. You strive to naturalize immaterial minds by formalizing them; you strive to naturalize theology by producing mathematical theories of deities.

The fourth attractive feature concerns *skepticism*. Mathematical existence is just consistency; to exist mathematically is to be consistently definable; hence all consistently definable concepts have mathematical models (Balaguer, 1998: 5-9). Conversely, if some concept cannot be formalized, then it has no mathematical models; but then it is not consistently definable; if it is not consistently definable, then it does not include any existence; it has no content and no instances. This leads to skepticism: if some term perpetually resists formalization, then it probably fails to refer. More generally, if there is no research program which produces an increasingly formalized series of definitions of

some term, then it almost certainly fails to refer. And if the progressive formalization of some term ends with some false theory, then that term fails to refer.

For example, if *libertarian free will* cannot be formalized, then it has no consistently definable models; if it has no consistently definable models, then it does not exist. So if there is no research program which produces increasingly mathematical models of free will, then it probably cannot be formalized; if it probably cannot be formalized, then it probably does not exist. Here there can be only probability, since further study of free will might lead to the formalization. But the skepticism remains: if free will persistently resists all formalization, then free will is probably illusory. And if somebody argues that we *cannot* mathematically define some concept, then it is illusory indeed.

Consider some increasingly natural theories of God. The Stoics said God is some subtle matter distributed throughout all space and time (Cicero, 2008). Hobbes also affirms this idea (see Ghorham, 2013). Perhaps this God can be naturalized: God is some sort of force field (Harvie, 2011). Mormons say that God is a person with a body of "flesh and bone"; this body resembles a human body; it is subject to natural laws (Givens, 2015: ch. 11). So perhaps the Mormon God is open to naturalization. But a physical God need not have a human shape. Tipler (1995) argued that God is an infinite Turing machine which will emerge in the universe at its end. Since it appears at the end of the universe, it is the *omega point*. This God knows the entire past and will use Its knowledge to resurrect our bodies in a software version of an earthly paradise (see Steinhart, 2012). Tipler argues for a digital God and a digital resurrection. Since he defines his ideas with great mathematical clarity, they are highly natural. But this clarity also makes the Tiplerian theology testable. It turns out to be false.[9]

6. Naturalizing the Abstract Sciences

A naturalist strives to naturalize all fields of human thought. For example, a naturalist strives to naturalize logic, mathematics, physics, chemistry, biology, psychology, epistemology, and theology too. As naturalization proceeds, old concepts will be given new meanings. New concepts may be introduced. And old concepts will be thrown out if they persistently resist all efforts at formalization. We can learn about the naturalistic research program by turning to history.

The field of logic reveals progressive naturalization. From Aristotle to the predicate calculus, it becomes ever more formal. Concepts like *inference*, *quantification*, *truth-value*, and *identity* become formalized. Modal logic likewise reveals progressive naturalization. Concepts like *possibility* and *necessity* become formalized.

At least one definition of God is highly logical. It says God is the abstract ground of concrete being. This definition can be naturalized by treating this ground as a proposition and then analyzing it using deontic logic.[10] This propositional deity is the ultimate sufficient reason for all things. It is the necessary ground of all contingency. Its existence can be justified by a Leibnizian cosmological argument. This logical God is highly natural. It can appear as an element in some *natural theology*. To avoid confusion with other definitions of God, this proposition can just be called the *ground*. The ground might not exist; nevertheless, it is natural.

The ground is ultimately responsible for all concrete things. It explains why there is something rather than nothing. So it has some *creative power* which calls concrete things into being. Its creative power is at least as natural as its truth. And, since its creative power is responsible for concrete things, it is not entirely abstract. Many *religious naturalists* define God as the creativity which brings our universe into being and which is active in every physical thing. So another definition identifies God with this creativity (Kaufman, 2000; Peters, 2002). According to the Pew Forum (2008: 5), one quarter of Americans affirm that God is an impersonal force or energy.

The idea that God is an impersonal force or energy resembles the idea that God is *spirit*. On the one hand, spirit has often been defined as a kind of ghostly mental stuff; but that stuff resists naturalization; no research program aims to produce mathematical models of ghostly mental stuff. On the other hand, spirit has been defined as a kind of nonmental energy. Hobbes, Descartes, and Newton all thought of spirit as a kind of energetic fluid circulating through physical things.[11] This definition of spirit can be made more natural by identifying it with the energy of the ground. Spirit might not exist; but progressive naturalists can define it in increasingly natural ways.

The field of mathematics reveals progressive naturalization. Mathematical notations are rendered precise; the axioms for sets by Zermelo-Fraenkel are more natural than the axioms for wholes by Proclus; the geometrical axioms of Hilbert are more natural than those of Euclid. Concepts like *set*, *number*, *point*, *line*, *continuity*, and *infinity* all become formally defined. Turing naturalizes the concept of *computation* and Shannon naturalizes the concept of *information*. Concepts like *machine*, *rule*, *program*, *data*, and *bit* are formalized. The sciences of information and computation are born.

Another definition of God comes from computer science. Many writers say our universe is a software process running on some hardware substrate (Fredkin, 2003). This hardware substrate is a computer; some say it is God. This is a Spinozistic way of thinking about God. Of course, this cosmic computer is not the Tiplerian God; that Tiplerian God does not exist. This cosmic computer is the *alpha* of all physical things; it is not their omega. The Kalaam Cosmological Argument and the Cosmic Design Arguments (e.g. the Fine-Tuning Arguments) support this digital God. Since it is defined computationally, this God is natural. Moravec (1988) says this digital God can monitor everything in the universe; it can intervene in the universe; it can incarnate itself into the universe through an avatar; it can provide us with life after death via bodily resurrection (Steinhart, 2012). Moravec thus argues for a complex *digital theology*, which finds some support among *transhumanists* and *singularitarians*. Digital theology easily incorporates the ground and its energy. The ground is the ultimate sufficient reason for the digital God. And the energy of the ground, which is spirit, powers that digital God and every software object (every physical thing) running on it.

Moravec's digital theology cannot be falsified by showing that our universe is not running on some classical Turing machine (Steinhart, 2014: sec. 50). Mathematicians have defined computers far beyond such machines. Computation covers the entire *constructible hierarchy of pure sets*. So Moravec's digital theology would be falsified if our universe has no model in the constructible hierarchy.

7. Naturalizing the Concrete Sciences

The physical sciences have a long history of progressive naturalization; as time goes by, they grow increasingly mathematical. The chemical sciences also reveal progressive naturalization. Chemical concepts like *atoms*, *covalent bonds*, and *molecules* become more and more formalized. Chemistry provides the basis for biology: living things are complex molecular machines. As biology makes progress, it becomes more and more heavily mathematical. But formalization in biology involves heavy use of computers. It involves building computational models of genetic networks, protein networks, cells, organisms, and ecosystems. Life is an informational process.

Living things are obviously complex. So the naturalization of biological concepts leads to the formal analysis of complexity. Living things evolve from simple to complex. Evolution is an algorithmic process; it is a vast computation running on the surface of the earth. Life climbs Mount Improbable (Dawkins, 1996). The study of complexity in chemistry shows that all complex molecules evolved from simpler molecules; likewise all complex physical things evolved from simpler things. If any physical thing in our universe is complex, then it has been produced by an evolutionary process which climbed up through all lower levels of complexity.

The mathematical ideas behind the evolution of complexity appear to be general. They apply in biology, chemistry, and physics because they apply to everything. They apply to entire universes. If any universe is complex, then it has been produced by an evolutionary process which climbed up through all lower levels of complexity. These ideas inspire evolutionary cosmologies: simpler universes evolve into more complex universes. But cosmological evolution is also an algorithmic process. These ideas lend further support to digital physics, which argues that every universe is a software process running on a hardware substrate. More complex universes require more complex hardware substrates. So these hardware substrates evolve.

Our universe is complex; and if it is running on some hardware god, then that god is also complex. All gods are complex; but all complex things have evolved; so if our universe runs on some hardware god, then it is the product of divine evolution. It is at the end of some lineage of hardware gods. This leads to a *digital polytheism* (Steinhart, 2013, 2014). It starts with some simple self-reproducing computer. Through recursive self-improvement, simpler computers beget more complex computers. But all these cosmic computers are gods. If any god produces many offspring, then the lineages of gods branch to make a genealogical or phylogenetic tree. Every divine computer in this tree runs its own universe. Since the gods of digital polytheism are computers, they are highly natural. They easily fit into many natural theologies. For example, the ground is the ultimate sufficient reason for the entire tree of gods. Spirit runs through this tree like sap, powering every digital god. This tree of gods can be justified by formalized Ontological Arguments (Kiteley, 1958; Millican, 2004).

Digital polytheism resembles *process theology*. Process theology says God is a series of stages. The earlier stages of God produce the later stages. On one interpretation, the stages of God are gods running their own universes. If that is right, then all the digital gods are just parts of God. However, since the God of process theology is personal, while this tree of gods is not personal, it may be confusing to refer to it as God. For the digital theologian, it is more accurate to refer to this tree as *nature*. Although this digital theology is highly formalized, it is also extremely speculative. Progressive naturalists

give it neither more nor less credence than it deserves. For progressive naturalists, it is far more interesting that this formalization shatters the old concept of God into a system of new concepts like ground, spirit, digital gods, and nature.

8. Naturalizing the Mind

Progressive naturalists strive to naturalize the mind. They strive to naturalize all psychological concepts by defining them mathematically. To this end, they adopt a *physiological strategy*. The physiological strategy asserts that minds are brains and that brains are digital machines (Burks, 1973; Moravec, 2000). So the physiological strategy becomes a *computational strategy*. It defines a clear research program: given any mental process, figure out its associated brain process; given any brain process, figure out its associated computation; identify the mental process with that computation.

Consider *consciousness*. Progressive naturalists reason like this: either consciousness is mysterious or not; if it is, then it is illusory; if it is not, then it can be formally defined. This possibility justifies research programs which aim to formally define consciousness. Such research programs do exist. Here naturalists can follow the Churchlands (1986, 1995). And they can appeal to theories which define consciousness in terms of *integrated information* (Tononi, 2008; Tegmark, 2015). Integrated information theory uses the mathematics of information and computation to formally define the consciousness of a physical system as a quantity *phi*.

The physiological and computational strategies for naturalizing the mind are highly successful. They are confirmed by medicine, cognitive science, neuroscience, artificial intelligence, and so on. Despite the successes of the physiological strategy, many writers still argue that the mind is not the brain. They say the mind is an immaterial substance which causally interacts with the brain. While many naturalists dogmatically reject such mind-body dualism, progressive naturalists are open to it. They ask only for a research program which formally defines the immaterial mind and its linkage with the brain. After all, since mathematical structures need not be material, the immateriality of the mind cannot not block its formalization. Computers can be made out of purely mental stuff (Putnam, 1975); they can be *spiritual machines* (Richards, 2002). However, since immaterial minds have persistently resisted formalization, progressive naturalists are extremely skeptical about mind-body dualism. It is almost certainly false.

Likewise, despite the many successes of the computational strategy, many writers still argue that minds are not computers. They say that concepts like free will, agency, the first-person perspective, qualitative experience, and consciousness cannot be defined computationally (Goetze & Taliaferro, 2008: 7). These concepts are mysterious. They persistently resist all formalization. Here progressive naturalists say that if these concepts are really mysterious, then they are empty illusions.

Now consider the *God* of *classical theism*. This God is an immaterial thinking substance (Swinburne, 1994: ch. 6; Plantinga, 2008: 2). Most dogmatic naturalists reject this God because He is not material; or not physical; or not found in science.[12] But progressive naturalists do not attack classical theism from any dogmatic position. They will accept this God *if but only if* there is some research program which formalizes His definition. Since classical theism persistently resists all formalization, progressive

naturalists are *extremely* skeptical about this God. Since progressive naturalism is dynamical, and oriented towards the future, it has little interest in criticizing classical theism. It is more interested in new alternatives. It is interested in the digital theologies of the transhumanists, singularitarians, and others. It is interested in religious and spiritual naturalisms (Crosby, 2002; Peters, 2002; Stone, 2008).

9. Religious Naturalism

Theistic religions say that humans and gods interact in many ways. For example, people *pray* to the gods for help; the gods in turn perform helpful *miracles* for people. Since naturalistic gods do not intervene in their worlds, it is not likely that these concepts can be naturalized. Naturalism rejects prayers and miracles. This rejection of human-divine interaction spreads out into the other theistic worship practices. If these are the only religious activities, then naturalism makes religion obsolete.

However, worship is not the only way to engage the deities. The religious naturalists and spiritual naturalists have their own symbols and practices (Crosby, 2014). These practices often rely more on spirit than on any gods. One naturalistic practice involves taking *entheogens*. Those who take psilocybin often report experiencing a profound energy flowing through their bodies and all other things (Griffiths et al., 2006). This spiritual energy binds all things together into a natural unity. Another naturalistic practice involves dancing at festivals known as *raves*. Rave dancers enter hyper-arousal trances. During their trances, they likewise report that spiritual energy binds their bodies and all other things together into a natural unity (Sylvan, 2005: ch. 3).

Breath traditionally symbolizes the spiritual energy flowing through all things. Hence the practices of hatha yoga can be naturalized. Many traditional Buddhist meditative practices are based on breathing. These are naturalized as mindfulness meditation (Flanagan, 2013; Harris, 2014). Similar practices are found in ancient Stoicism. They are likewise adopted by spiritual naturalists (Irving, 2009). Naturalists can and do have mystical experiences (Comte-Sponville, 2006: ch. 3). Those experiences may reveal nature itself; but they do not reveal it in any theoretical way.

Naturalists can have their own religious holidays and festivals. They celebrate the solstices and equinoxes (Toland, 1720; Harrison, 1999; Crosby, 2014). Some argue that *Burning Man* is a naturalistic religious celebration (Pike, 2005; Gilmore, 2010). If they are right, then it is a festival in which fire is used in sacred rituals. Fire functions as a symbol of natural spiritual energy. Burning Man is one of many spiritual fire festivals in the United States. The *Spark Collective* also hosts spiritual fire festivals. These many fire festivals are sometimes collectively grouped as the *Family of Fire*. The Family of Fire may be an emerging naturalistic religion.

10. Conclusion

Many naturalists are hostile towards religion. Their hostility is often motivated by the assumption that the only religious options are the old religions. Those old religions involve concepts that are not natural. So naturalism, whether dogmatic or progressive,

refutes the old religions. But the old religions are no longer the only options. New ways of being religious and spiritual are emerging rapidly. Many of these new ways are highly naturalistic. They involve natural theologies and natural practices. A few of these ways have been mentioned here. But even a small search of the world wide web reveals a great network of new religious naturalisms not mentioned here. Naturalists need not reject either theology or religion. Having abandoned the old supernaturalisms, we stand today on the shores of an unexplored ocean of religious and spiritual possibility. If we set sail into that great sea, who knows what new worlds we might find.

Notes

[1]Rea uses materialism to illustrate this point. Many naturalists are materialists. But "As many naturalists have agreed, science *could* discover that materialism is false"; if it did, then would "naturalism follow science and reject materialism? Or would it follow materialism in being rejected by science?" (2002: 23). Rea argues that naturalism "must be compatible with *anything* science might tell us about nature or supernature. Thus, no version of naturalism can include any substantive thesis" (2002: 55).

[2]David Armstrong defines naturalism as "the doctrine that reality consists of nothing but a single all-embracing spatio-temporal system" (1978: 261). He says all things in this system causally interact. Draper defines nature as "the spatio-temporal universe of physical entities together with any entities that are ontologically or causally reducible to those entities" (2005: 278). For similar definitions see Rea (2002: 55).

[3]See Tegmark (2003) for a discussion of possible universes in current physics.

[4]Hartry Field is a nominalist (1980); nominalists deny abstract objects.

[5]Tegmark says all physical things *are* mathematical objects (1998).

[6]Moser and Yandell use the one true final theory to define naturalism. They say naturalism is the view that "every real entity either consists of or is somehow ontically grounded in the objects countenanced by the hypothetically completed empirical sciences" (2000: 4). For similar definitions see Rea (2002: 59).

[7]Progressivists agree with Giere that naturalism should be understood "not in terms of theses about the world but in terms of a set of *strategies* to be employed in seeking to understand the world" (Giere, 1999: 70). Rea (2002) argues that naturalism is a research program. It involves rules for *belief formation* and *revision*.

[8]Resnik (1997: ch. 6) argues that there is no clear distinction between mathematical and physical things in current physics. Confirmational holism suggests that there is no way to draw any division between real and unreal terms in any theory.

[9]Tipler's fourth testable prediction is that the mass of the Higgs boson to be 220±20 GeV (1995: 146); however its mass turns out to be very close to 125 GeV. Tipler's fifth testable prediction states that the Hubble constant is less than 45 (km/sec)/mpc (1995: 149); it is estimated to be around 70 (km/sec)/mpc.

[10]The definition of God as the abstract ground of concrete being begins with the Platonic form of the Good and the Plotinian One. It is revived by Tillich (1951). It becomes propositional with Leslie (see 1989: ch. 8). It can be identified with the proposition *e* in Andersonian deontic logic (Lokhorst, 2006).

[11]Hobbes defined spirit as a subtle material fluid (*Answer to Bramhall*, 309; *The Elements of Law Natural and Politic*, part 1, ch. XI, para. 4). Descartes defines spirit as a natural wind or flame (*The Passions of the Soul*, art. 10; *Treatise on Man*, in Cottingham, p.100). Newton writes about spirit as energy at the end of the *General Scholium*.

[12]Writing as an atheist, Nielsen says "Naturalism denies that there are any spiritual or supernatural realities. There are, that is, no purely mental substances and there are no supernatural realities transcendent to the world" (2001: 29). This dogmatic naturalism rules out the definition of God as a bodiless person.

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