

Pantheism and current ontology

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Abstract: Pantheism claims: (1) there exists an all-inclusive unity; and (2) that unity is divine. I review three current and scientifically viable ontologies to see how pantheism can be developed in each. They are: (1) materialism; (2) Platonism; and (3) class-theoretic Pythagoreanism. I show how each ontology has an all-inclusive unity. I check the degree to which that unity is: eternal, infinite, complex, necessary, plentiful, self-representative, holy. I show how each ontology solves the problem of evil (its theodicy) and provides for salvation (its soteriology). I conclude that Platonism and Pythagoreanism have the most divine all-inclusive unities. They support sophisticated contemporary pantheisms.

Introduction

A *pantheist* claims that (1) all existing things are unified; and (2) the maximally-inclusive unity is divine (see MacIntyre 1967, 34; Levine 1994; Oppy 1997, 320). Much pantheism has been developed in the context of seventeenth- and nineteenth-century monisms and idealisms. However, Levine (1994, 217) correctly points out that these ontologies ‘are no longer generally taken to be philosophically defensible’.

I aim to extend the history of pantheism into the twenty-first century. I therefore examine three *contemporary* ontologies to show each permits the development of pantheism. Each of these ontologies is very much alive in current philosophical, mathematical, and scientific thought. The ontologies are: (1) materialism; (2) Platonism; and (3) class-theoretic Pythagoreanism. I will conclude that sophisticated contemporary pantheisms can be developed within Platonism and class-theoretic Pythagoreanism.

As might be expected, each ontology is deeply controversial. Each ontology has vocal critics. It would be pointless to try to settle disputes among these ontologies. Such a project would be enormous and would shed no light on pantheism. I am concerned only with how pantheism can be developed within each ontology. For each ontology, I will first illustrate ways it can satisfy the claim that some

maximally inclusive unity exists; I will then examine how it can satisfy the claim that its unity is divine or is God.

Pantheism requires a concept of unity. Current ontologies recognize three kinds of unities. Each kind is a one over many. These are: (1) one universal over many particulars; (2) one whole over many parts; and (3) one class over many members. Any attempt to identify the maximally inclusive unity with a universal leads to severe logical problems.¹ So I consider only unities that contain other things as a whole contains parts or as a class contains members.² Inclusion is thus parthood or membership. A whole is sometimes said to include itself as an *improper* part. Since this can be confusing, I always interpret parthood as proper parthood. No unity contains itself as a member or as a part. Any maximally inclusive unity contains all *other* things as parts; it does not include itself.³ I refer to an ontology's maximally inclusive unity as its *maximum*.⁴

Divinity

Pantheology

Each ontology has different versions that define different maxima. For each version of each ontology, I consider how well its maximum satisfies certain attributes traditionally associated with divinity. A pantheist can agree with a theist that *God is a maximally perfect being*. However, the theist and pantheist are not likely to agree on the perfections. I do not consider whether the maximum is a person.⁵ I do not consider whether it has any personal properties or personal relations.⁶ I will consider specifically how the various maxima posited by each ontology stand with respect to: (1) supernaturalness; (2) complexity; (3) plenitude; (4) self-representativeness; (5) holiness. I will also show how these ontologies can support theodicies and soteriologies.

Some ontological attributes associated with divinity

(1) Natural/supernatural. An object is *natural* iff it is included in or identical with some spatio-temporal-causal system (i.e. it is physical). It is *supernatural* otherwise. The ontologies I review do not admit non-scientific objects (e.g. Platonic-Cartesian souls). Their non-physical objects are either abstract objects (the objects of pure mathematics and logic) or possible objects. A maximally inclusive supernatural object contains all existing space-times and is not contained in any space-time. Such an object is 'eternal'. Supernaturalness is traditionally more divine.

(2) Simple/complex. Unity is not simplicity. An object is a *unit* iff it is one particular thing. An object is *simple* iff it has no parts or members. An object is *complex* iff it has some parts or members. Theists sometimes say God is simple.

A pantheist must reject this: a maximally inclusive unity is maximally complex. The complexity of an object is the cardinal number of its parts or members. The finite cardinals are just 0, 1, 2, 3 and so on. An object has *finite complexity* iff the number of its parts or members is some finite cardinal. The theory of infinite cardinals is technical (see Hamilton 1982). We can define infinite complexity informally like this: an object has *infinite complexity* iff it has some proper part or subclass whose cardinality is the same as its own. Greater complexity is greater inclusiveness; hence, for the pantheist, it is greater divinity.

(3) Poverty/plenitude. Theists say that God's existence is necessary. One popular definition says that necessary existence is existence at all possible worlds. So the theistic God exists in all possible worlds (of course, the actual world may be the only possible world). However, it is hard to apply this definition to maximally inclusive unities. A unity that includes all possible worlds seems to have a greater kind of existence than one that merely exists in all possible worlds. The pantheistic God includes all possible worlds; it includes all necessary beings. Its existence therefore exceeds necessity.

The divinity of a maximally inclusive unity is better measured by *plenitude* than by necessity. A unity is *plentiful* insofar as it contains some system of possibilities (Kane 1976, 1986). A unity that contains all possibilities of some kind is closed under all variations of that kind – for any object in the system, any consistent variation of that object is also in the system. For example: the system of all possible universes is closed under all physical variations. A *maximally plentiful* object includes all logical possibilities.⁷ One way to make this precise is to say that an object X is maximally plentiful iff, for every property P, X contains some *x* such that *x* instantiates P. A better way is to say that an object X is maximally plentiful iff, for every consistent theory, X contains every model of that theory. So a maximally plentiful unity contains every model of every consistent physical or mathematical theory. A maximally plentiful God contains all physical and mathematical possibilities. An object is *impoverished* insofar as it is not plentiful. Plenitude is not complexity. The logic of the infinite shows that an impoverished object may be as complex as a plentiful object.⁸ Plenitude is more divine.

(4) Self-representation. Since the impersonal pantheistic God is not likely to be a mind, it is not likely to have intentionality or knowledge. It follows that no pantheistic God is literally omniscient. However, it is possible to define the core concept of omniscience in logical rather than psychological terms. If God is maximally inclusive, then omniscience is just God's own self-knowledge. Self-knowledge is mental self-representation. We can drop the mentality. The core of omniscience is that God contains a representation of God. So God is a 'self-representative system' (Royce 1927, 506–507). Royce's perfect map of England within England is the classic example. So God contains a structure that has the same form as God. The theory of self-representation is highly developed in

mathematics (e.g. via reflection principles and elementary embeddings).⁹ We need not go into the technical details. More perfect self-representation is more divine.

(5) Holiness. I consider the degree to which each maximum is numinous (Otto 1958) or sublime (Kant 1790, secs 23–29). Such objects are excessive, glorious, and so on. The holiness of the object is what evokes emotional responses of awe, terror, admiration, worship, and so forth. Greater holiness is more divine.

The soul and personal immortality

A scientifically-minded pantheist can easily adopt the Aristotelian theory that the soul is the form of the body (*De Anima*, 412a5–412b21). The Aristotelian theory coheres well with modern biology and psychology. The body is a kind of living and thinking machine. Its soul is its form. The soul is a very complex universal, property, or structure. It is an abstract pattern that can be instantiated by many particular physical things. This pattern can be analysed as a computer program (Putnam 1967, Moravec 1988, 116–122, Tipler 1994, 124–128). The soul is thus to the body as software is to hardware. It must be stressed that the form of the body is not any sort of Cartesian *res cogitans*.

The idea that the soul is software has recently been used to develop *computational resurrection theories* (Hick 1976, ch. 15; Mackay 1997; Polkinghorne 1985, 180–181; Moravec 1988, ch. 4). Hardware failures need not end computations. The computations performed by the old earthly body (under the guidance of its program) may be continued later by a new resurrection body (under the guidance of the same program). Dilley (1983) and Hudson (2001) have argued that resurrection does not suffer from naive worries about ‘personal identity’. Computational resurrection theories require neither miracles nor any personal God. They can be strictly naturalistic. Computational resurrection theories are thus able to provide pantheists with a doctrine of personal immortality.¹⁰

A pantheist can easily adopt something like Hick’s *pareshatology*. Hick (1976, ch. 20) argues that humans are resurrected many times in progressively more complex worlds. Each resurrection body becomes more powerful, thus allowing the soul-program to realize more and more possibilities (Moravec 1988, 102–108, 2000, 150–154; Steinhart 2003). A pantheist can further adopt something like Hick’s *eschatology*. Hick (1976, ch. 22) argues that the series of resurrections converges to a final union with God. For the pantheist, the series of resurrections converges to the maximum. A naturalistic version of Hick’s *eschatology* can serve as a pantheistic doctrine of personal salvation.

For each ontology, I will examine how it conceives of the soul; I will also examine whether its maximum has the resources to realize Hick’s *pareshatology* or *eschatology*. Any ontology whose maximum allows for personal immortality is more divine.

Theodicy

A maximum is more divine if it can be shown to be maximally good despite the fact that it contains evil.¹¹ A pantheist who wants to say that some maximally inclusive unity is maximally good will have to derive goodness from inclusiveness. One way to do this is to argue that (1) greater inclusiveness is greater being; (2) greater being is greater perfection; and (3) greater perfection is greater goodness. The first step would seem to require little justification. The second and third steps are justified by an Aristotelian-Thomistic tradition that defines goodness in terms of perfection (Stump and Kretzmann 1988).

A thing is *perfect* insofar as it realizes or actualizes the potentialities found in its nature. I am concerned here only with the perfections of living things. The *nature* of any living thing is its soul. On the biological theory that the soul is the form of the body, all living things (from bacteria to humans) have souls. Pantheism is deeply ecological (Levine 1994, 218–239). I reflect this by including souls of all living things in my calculations.

Each full potentiality of the soul is some possible history or *career* of that soul. A career is a possible biography from conception to death. Each career of the soul is a series of *states* just like a biographical book is a series of pages. But each soul has many possible biographies. Hence a soul is like a library in which the books describe careers. All possible biographies of the same soul start out the same but gradually diverge. The distinct possible careers of one soul may share many states and overlap more or less.

Each soul has its own specific *functional excellences* (talents, skills). Each state of the soul has a *degree of perfection* that corresponds to the degree to which the specific excellences of the soul are realized by that state. Example: Bob is talented at the piano but not at chess; Bill is talented at chess but not the piano; so for Bob, piano-playing states are more perfect than chess-playing states; for Bill, the opposite holds.

A soul-state x is better than (worse than) a soul-state y iff the perfection of x is greater than (less than) that of y . A *change* is any pair (x, y) of states. For any soul S : a change (x, y) is *good* for S iff x is worse than y (it is a change from worse to better); it is *evil* for S iff x is better than y ; it is neutral for S otherwise. Example: you're working an orange with a knife; a good change is to peel it; an evil change is to cut yourself. An evil change is typically physically or psychologically *painful*; a good change is *pleasurable*.¹²

A natural way to define the degree of perfection of any career of the soul is just to let it be the sum of the perfections of its component states. So the perfection of any career of some soul is the extent to which its specific talents are exercised during that career. The distinct careers of souls are actualized at distinct universes. For any soul, we may suppose that any universe contains at most one career of that soul.¹³ For any soul S , if no career of S is realized in U , then the

goodness of U for S is nil; if one career X of S is realized in U, then the goodness of U for S is the perfection of S.

Any universe contains a set of careers of distinct (human and non-human) souls. Soul X *co-operates with* soul Y iff changes in their careers are entangled such that what is good for the one is good for the other. Soul X *competes with* soul Y iff changes in their careers are entangled such that what is good for the one is evil for the other. Consider two possible universes involving a wolf and a rabbit. In universe W_1 : the rabbit escapes from the wolf; the wolf starves and dies. In universe W_2 : the wolf catches the rabbit; the rabbit is eaten and dies. Universe W_1 is good for the rabbit but evil for the wolf; W_2 is evil for the rabbit but good for the wolf. Hence the wolf and the rabbit compete.

Co-operation and competition occur among all careers of all souls (McCabe 1981, 618–619). Much *moral* evil (good) is analysable as competition (co-operation) among humans. Examples of moral competitive entanglement include criminal and victim, master and slave, oppressor and oppressed. Much *natural* evil (good) is analysable either as human competition (co-operation) with non-human organisms and inorganic forces or as non-human competition (co-operation) with non-humans. Examples of natural competitive entanglements include: predator and prey; infector and infected; parasite and host.

Evils suffered due to lost competitions in one universe can be *compensated* by goods in other universes. A career that contains an evil change (x, y) is *compensated by* a career that contains a good change (x, z) . For any set W of universes, and for any soul S, *the evil suffered by S in W is compensated in W* insofar as each career of S in W that contains an evil change (x, y) is compensated by a career of S in W that contains a good change (x, z) . For example, a coin is tossed: heads I win, tails you win; the coin comes up heads in universe U_1 but comes up tails in universe U_2 . Your loss in U_1 is compensated by your win in U_2 ; my loss in U_2 is compensated by my win in U_1 . So the evil you suffer in the set $\{U_1, U_2\}$ is compensated in that set; likewise for myself.

For any set W of universes, and for any soul S, *the goodness of W for S* is the sum over all w in W of the goodness of w for S. Each maximum M contains some set W of universes; *the goodness of M for S* is the goodness of W for S. The goodness of W for any set Z of souls is the sum over all z in Z of the goodness of W for z . So there is goodness in a maximum for a family, town, nation, species, or ecosystem. A maximum whose goodness is greater for more souls is more divine.

For any set W of universes, and for any soul S, *the justice of W for S* is the degree to which the evil suffered by S in W is compensated in W. Each maximum M contains some set W of universes; *the justice of M for soul S* is the justice of W for S. The justice of W for any set Z of souls is the sum over all z in Z of the justice of W for z . So there is justice in a maximum for a family, town, nation,

species, or ecosystem. A maximum whose justice is greater for more souls is more divine.

Materialism

Materialism and its maximum

Materialists typically affirm only the existence of: (1) actual concrete particulars; and (2) the concrete properties and relations among them. They deny the independent existence of (3) possible objects; (4) abstract objects (e.g. mathematical objects and universals). Aune (1985, 35) typifies materialism when he says ' x exists =_{df} x belongs to the space-time-causal system that is our world'. It seems that a materialist can advance only one sort of maximally inclusive unity: the maximum is just the whole actual physical universe (Oppy 1997, 328). It includes as parts all actual physical things (at all places and times). Abstract objects and possibilities are not parts of the maximum. The actual physical universe is often denoted '@'. I use that abbreviation. We can evaluate the divinity of @.

The divinity of the materialistic maxima

For the materialist, the maximum is the whole actual physical universe @. I consider the degree of divinity of this maximum:

(1) Natural/supernatural. @ has both spatial extension and temporal duration. It is a natural object and not supernatural. So it is less divine.

(2) Simple/complex. Current cosmology suggests that @ is both spatially and temporally finite (it is only a few billion light years wide; it is only a few billion years old). Its spatio-temporal volume is finite. The number of basic particles is estimated to be finite. The complexity of @ is likely to be finite. Although the finiteness of @ is not certain, it is highly plausible. Such finiteness decreases the divinity of @.

(3) Poverty/plenitude. A materialist will want to argue that @ is plentiful; after all, the materialist says that @ contains all that exists. However, plenitude is a thesis about the instantiation of properties or models of theories (it is a 'second-order' notion). There are obviously many properties not instantiated at @. For example: the property of *being a unicorn* is not instantiated in @. All theories but one fail to have models in @. The actual universe is impoverished. It is therefore less divine.

(4) Self-representation. Any intelligent physical thing (e.g. a human body with its brain) contains some mental model of @. Such a mental model of @ is a representation of the whole of @ by a part of @. Although human mental models of @ are representations of @ within @, they are partial and inaccurate. More

intelligent species may represent more of @ more accurately. However, it is hard to believe that any part of @ has the same complexity as @. It is therefore difficult to see how any part of @ exactly represents the whole of @. @ is not a self-representative system. It is therefore less divine.

(5) Holiness. The size and complexity of @ easily evokes awe and other emotional responses associated with holiness. It is glorious. It is 'dynamically sublime' (Kant 1790, sec. 28). These aspects of @ tend toward divinity and inspire pantheism as 'nature worship' (Harrison 1999). However, @ does not seem very sublime when compared with the maxima of other ontologies. The mathematical infinite is missing. The beauty and glory of @ come from abstract laws and structures not found in the materialist's ontology. A strict materialist cannot appeal to any 'natural order'. For such order is abstract. So @, as conceived materialistically, seems to have at best a mind-dependent holiness. Its holiness is not objective. It is therefore less divine.

(6) Soul and immortality. The form of the body is a substantial form. It is a concrete universal. It endures exactly as long as the body endures. For the materialist, resurrection requires the reconstruction of the old body in some new physical medium. Moravec (1988, 116–124) and Tipler (1994, 220) assert that extremely powerful computers in the distant future will simulate all presently existing human bodies. Yet there is neither any good evidence nor any good argument for such speculations. Materialism realizes neither Hick's pareschatology nor his eschatology. Its maximum is therefore less divine.

(7) Theodicy. For any living thing x , exactly one career y of the soul of x is realized in @. The goodness of @ for that soul is therefore just the perfection of y . One career does not realize much of any soul. For any soul, the goodness of any single universe is likely to be low or zero. Every actual soul *suffers* from the fact that all but one of its potentialities are fictions in @ (Mann 1991). Evil changes in @ are not compensated. A competition lost in @ is not won anywhere else. The justice of @ for many souls is low or zero.

A materialist can try to argue that @ is the best of all possible universes just because it is the only possible universe. However low the justice or goodness of @ is for any soul or set of souls, there simply does not exist any greater justice or goodness. This is a kind of fatalism. Its theodicy is at best a kind of Stoic or Nietzschean *amor fati*.

Such fatalism suffers from serious defects. The non-actual careers (of actual or non-actual souls) are *counterfactual stories* told in @. Many of these stories obviously portray better lives for the souls involved. Yet these stories are *false*. For every counterfactual story of some career of some soul, materialism says *there does not exist* any thing that realizes that career. If the account of goodness in terms of perfection is right, then this failure of existence is a failure of perfection. The absence of good is itself an evil. It is a *privation*. Fatalism is hardly an adequate theodicy. So @ is thus less divine.

The maximum of materialism (the actual physical universe @) does not seem to have much claim to be divine or to be God. Although much traditional pantheism does identify this maximum with God, it seems to be a poor divinity.

Platonism

The addition of abstract and possible objects

A materialist affirms only the existence of a system of actual concrete objects (i.e. physical particulars and universals). A Platonist adds various objects to the materialist's ontology. There are many kinds of Platonism. A *thin* kind of Platonism adds only abstract objects (i.e. abstract particulars and universals).¹⁴ Abstract particulars are mathematical objects such as numbers, sets, and functions. Abstract universals are properties of and relations among those abstract particulars. Leibniz is a classical example of a thin Platonist: only one concrete universe exists; other possible universes are merely abstract objects in God's mind (see also Plantinga 1976). A *thick* kind of Platonism adds concrete possibles as well. I do not consider thin Platonism – so 'Platonism' means thick Platonism.

The ontology of *Platonism* therefore includes: (1) all possible physical particulars and universals, and (2) at least every abstract particular or universal needed for any science of any possible universe. Platonism (as I construe it here) entails *modal realism* – all possible physical universes exist.¹⁵ Our actual physical universe @ is only one among these many alternative universes (Miller 2001). The hierarchy of abstract objects towers over the system of possible universes. For example: propositions are sets of possible universes. Lewis (1986) is probably the best modern example of this Platonism.¹⁶

Platonism and the great chain of being

Classical Platonism portrays reality as a 'great chain of being' (Lovejoy 1936). Modern mathematics gives this metaphor a logically precise meaning: reality is an iterative hierarchy. An *iterative hierarchy* is a series of levels (Boolos 1971). Each level can be thought of as something like a link in the classical great chain of being.

Each level is indexed by a number. So there are levels numbered 0, 1, 2, 3, and so on. Each higher level is formed from the levels below it. For example: level 2 contains all combination of all objects on levels 0 and 1. Modern mathematics tells us that for any endless series of numbers, there is a limit number greater than every number in the series. For example: the series $1/2$, $3/4$, $7/8$, and so on is an endlessly increasing series; its limit number is 1. Likewise: the series 0, 1, 2, 3, and so on is an endlessly increasing series; its limit number is ω . ω is the least infinite

number (it is greater than every finite number). The generic form of a Platonic hierarchy is defined by four rules:

- V_0 = all physical objects;
- V_{n+1} = all combinations of all objects on all lower levels;
- V_λ = the collection of all objects on all lower levels if λ is a limit number;
- V = the collection of all objects on all V_n for every number n .

The combinations and collections that occur on the various levels of Platonic hierarchies are more formally known as *classes*. The classes at the top of any hierarchy are *proper classes*; all the other classes are *sets*. One of the classes that occurs on the first level V_1 is the empty class $\{\}$. It is an object that no materialist is likely to admit. Classes built up from the empty class are known as *pure classes*. For instance: $\{\{\}\}$ and $\{\{\}, \{\{\}\}\}$ are pure classes. Modern mathematicians standardly assert that all mathematical objects are pure classes. Although philosophers have disputed this (cf. Benacerraf 1965), I think it best to go with the mathematicians. A philosopher who does not want to identify all mathematical objects with pure classes can always add them to V_0 . The Platonic hierarchy can be extended to include all the pure classes needed by any mathematics. The hierarchy contains all physical and mathematical objects the Platonist will want.

Two Platonisms and their maxima

There are many versions of Platonism. I state two versions and examine whether or not each has an all-inclusive unity (a maximum):

(1) First version: all that exists is all possible physical objects and just enough abstract objects to serve the needs of all possible sciences. Lewis (1986, 103) suggests there is some upper bound on the possible sizes of space-times. This is an upper bound on physical complexity. If Lewis is right, then there will be some upper bound on the hierarchy of abstract objects needed for all possible sciences. One good candidate for this hierarchy of abstract objects is known as the Von Neumann-Bernays hierarchy (the VNB hierarchy; see Hamilton 1982, ch. 4; Devlin 1991, ch. 2).¹⁷ I'll refer to this hierarchy as the *little totality*. It is defined by these four rules:

- V_0 = all *possible* physical things;
- V_{n+1} = all combinations of all objects on all lower levels;
- V_λ = the set of all objects on all lower levels if λ is *less than the biggest infinity needed for all possible science (e.g. numbers definable in VNB)*;
- The little totality = the *proper class* of all objects on all V_n for every number n .

(2) Second version: the concrete system includes all possible physical objects; the abstract system includes all possible mathematical objects. Every consistent

mathematical theory describes a part of the abstract system. Balaguer (1998, ch. 3) refers to this as ‘full-blooded Platonism’ (FBP). According to FBP, the concrete and the abstract systems are both plentiful. It is arguable that the best way to achieve mathematical plenitude is to extend the iterative hierarchy through all logically possible levels. To do this, start with standard VNB class-theory and add every consistent ‘large cardinal’ axiom (Drake 1974). The resulting hierarchy includes all possible abstract objects. It includes all models of all consistent axiom systems.¹⁸ The concrete system plus the abstract system is the *big totality*. The big totality is defined by these four rules:

V_0 = all *possible* physical things;

V_{n+1} = all combinations of all objects on all lower levels;

V_λ = the *set* of all objects on all lower levels if λ is *any logically possible limit number (including every consistent large cardinal)*;

The big totality = the *proper class* of all objects on all V_n for any number n .

The divinity of the Platonic maxima

I now examine how well the maxima defined by the two versions of Platonism satisfy the pantheistic criteria of divinity. Each version of Platonism avoids the charge that the identification of the maximum with God is just adding an extra name to something (e.g. the universe) which is already properly named (see Levine 1994, 26–28). I look at the degree to which the attributes of the little totality and the big totality tend to divinity:

(1) Natural/supernatural. The little totality includes all possible space-times. It is therefore not in any space-time. All space-times are in it. So the little totality is supernatural. Analogously, the big totality is supernatural.

(2) Simple/complex. Since there are infinitely many variations of the actual physical universe, the basis of the little totality is infinite. The little totality has infinitely many levels; however, it is bounded by the limits of science. The big totality includes the little totality. Its infinity is not scientifically constrained. Its infinity contains every logically possible cardinal number. Its complexity is maximal.

(3) Poverty/plenitude. The little totality has as its urelemente (its objects on level V_0) all possible physical things. This set of urelemente is physically plentiful. However, since the abstract part of the little totality is constrained by scientific needs, it is not mathematically plentiful. The big totality includes all physically possible universes as well as all mathematically possible universes. It is maximally plentiful.

(4) Self-representation. The little totality and big totality are each sufficiently complex to instantiate all sorts of powerful reflection principles. However, the completeness of any self-representation is blocked by the existence of the physical urelemente. So both totalities fail to be maximally self-representative.

(5) Holiness. The size and complexity of the little totality is constrained by the notion of scientific possibility. This constraint seems to negate any awesomeness or glory or sublimity of the little totality. The scientific limits on the little totality rule out any full instantiation of the mathematically sublime. The big totality is not constrained physically or mathematically. It is sublime without qualification. The big totality is mathematically infinite in a truly awesome way. Moreover, while all the other maxima have axiomatic definitions, there is no axiomatic definition of the big totality. There is no complete way to specify all possible large cardinals. There is a very real sense in which the big totality is ineffable. We can only describe it *analogically*: for any levels X and Y , if X includes Y , then X is more like the big totality than Y . It is thus arguable that the big totality has the kind of *transcendence* required by divinity. Any cognition that grasps the big totality as a whole must be a kind of mystical intuition (Rucker 1995, 202–218). The big totality therefore has a far greater claim to holiness than any other maximum.

(6) Soul and immortality. The soul (the form of the body) is an eternally existing abstract entity. The form exists after the death of any or all of its instances. Platonism has the resources needed to support Hick's theory of serial resurrections. Platonism affirms that (1) the earthly universe @ exists; (2) for any universe U , it is possible that U is embedded in a larger resurrection universe U^* ; (3) since all possibilities exist, for every U , the next resurrection universe U^* does exist; (4) therefore: there exists an endless series of resurrection universes @, @*, @** and so on. All possible resurrection universes exist. For each finite earthly career of each human soul, for every way that career can be extended into the transfinite, there is some resurrection universe in which that career is extended into the transfinite. Platonism allows for a very rich system of resurrections. It permits the realization of Hick's pareschatology. However, since the resurrection bodies always remain tied to physicality, and since the Platonic maxima are not physical, it is not possible for any series of resurrection bodies to converge to either Platonic maximum. So Platonism cannot realize Hick's eschatology. Its totalities are thus less divine.

(7) Theodicy. For any soul S , a set of universes W is *best for* S iff for every career of S , there is some universe in W at which that career is realized. For any set X of souls, a set of universes W is *best for* that set iff for every career of every soul in X , there is some universe in W at which that career is realized. So any maximum that contains all possible universes is both best for every possible soul and for the whole set of all possible souls. Any such maximum is that than which no better is possible. It is therefore maximally (perfectly) good. Since either totality (little or big) of Platonism includes all possible universes, each totality of Platonism is maximally good. Evil occurs only in the parts of the totality; but the totality as a whole is perfectly good.

For every possible soul, for every possible career X of that soul, for every evil change that happens to X in some universe, there is a variant in which some

compensatory good event happens to a counterpart of X. Consider again the universes involving the wolf and the rabbit. They are predator and prey. In W_1 , the rabbit escapes from the wolf; the wolf starves and dies. In W_2 , the wolf catches the rabbit; the rabbit is eaten and dies. Universe W_1 is good for the rabbit but evil for the wolf; W_2 is evil for the rabbit but good for the wolf. If only one universe exists, then there is an uncompensated evil; if both exist, then each evil is compensated by an appropriate good. Modal compensation covers: (1) natural conflicts between humans and organisms that attack or infect them; (2) moral conflicts among people; (3) misfortunes. Since every possible evil is compensated by some good, the whole system of possible universes is maximally just. Injustice occurs only in the parts of the maximum; the maximum as a whole is perfectly just.

The totalities of Platonism are both better candidates for God than the actual physical universe. The little totality suffers from conceptual constraints that make it a poor candidate for a pantheistic God. The big totality does not suffer from these constraints. The big totality is the best candidate for a pantheistic God so far. Nevertheless, class-theoretic Pythagoreanism provides a better candidate.

Class-theoretic Pythagoreanism

The purification of physical objects

Platonists put physical things on the bottom level of their hierarchies. Quine has frequently observed that physical things can be identified with pure classes (Quine 1969, 147–152; 1976; 1978; 1981, 15–18; see also Harman 1967 and Gottlieb 1976, 63).

If all physical things are pure classes, and if all mathematical things are also pure classes, then all that exists are pure classes and their properties. This result is *class-theoretic Pythagoreanism*. Rucker (1995) puts it like this:

If reality is physics, if physics is mathematics, and if mathematics is set theory, then everything is a set. I am a set, my thoughts are sets, my emotions are sets The whole physical universe could be a single large set U If the universe is completely finite, then U is a set somewhere in V_ω And even if it is infinite, we wouldn't expect it to be so very far out – surely U must lie in $V_{\omega+\omega}$ Under this viewpoint, all the possible universes would be sets in V . (200–202)

It should be obvious that class-theoretic Pythagoreanism is controversial. However, it is not my purpose either to defend or to criticize any ontology. I am only concerned with how the ontology permits the development of pantheism. The pantheism of modern Pythagoreanism shares no theology with the ancient Pythagorean religion.

Pythagoreanism is like the full-blooded version of Platonism. However, the bottom level of the hierarchy is empty. It is empty because the urelemente are all identified with pure classes on higher levels. There are no empirical or physical

limits on the height of the Pythagorean hierarchy. It rises through all consistent large cardinals:

- $V_0 = \{ \}$;
- V_{n+1} = all combinations of all objects on all lower levels;
- V_λ = the set of all objects on all lower levels if λ is *any logically possible limit number (including any consistent large cardinal)*;
- V = the *proper class* of all objects on all V_n for any number n .

For Pythagoreanism, as for full-blooded Platonism, V is maximally plenitudinous. Every consistent theory (physical or mathematical) describes some part of V . I refer to the maximum of class-theoretic Pythagoreanism as the *plenum*.

The divinity of the Pythagorean maximum

I now examine how well the plenum satisfies various pantheistic criteria of divinity. The plenum is much like the big totality of Platonism. Just like the big totality, the plenum is supernatural, maximally complex, maximally plentiful, and holy. It has the same theodicy. It differs from the big totality in three important ways.

First, the plenum is more self-representative than the big totality. Reflection principles and theorems about elementary embeddings hold with maximal strength in the plenum. For example: (1) extend the language of set theory by adding a function symbol j ; (2) add a *wholeness axiom* that says that $j: V \rightarrow V$ is a non-trivial elementary embedding of V into itself (Corazza 2000). The function j reveals how V mirrors itself. It shows that V is a self-representative system. The plenum approximates the ideal of divine self-representation more perfectly than any other maximum. No greater degree of self-representation is logically possible. Hence the plenum is more divine than the big totality.

Second, all objects in the plenum are of the same kind. They are all pure classes. While all other maxima are structured by many relations, the plenum is structured by exactly one relation: the membership relation \in . The big totality contains two kinds of things (physical and mathematical) structured by many relations. The plenum contains one kind of thing structured by one relation. So the plenum can be regarded as more perfectly unified than the big totality. It is therefore more divine.

Third, Pythagoreanism provides for the realization of both Hick's pareschatology and his eschatology. For the Platonist, there is an upper bound on the complexity of concrete systems (physical universes). However, for the Pythagorean, there is no such upper bound. There are concrete systems far more complex than any physical universe. These systems involve mathematical generalizations of space, time, and causality. One good way to think of such super-physical worlds is to conceive of them as infinite games. For the Pythagorean, the series of

resurrections goes on through concrete systems of arbitrarily high complexity (thus realizing Hick's pareschatology). Since the series rises without limit, it ultimately converges to the maximum (thus realizing Hick's eschatology). For every career of every soul, there is a series within the plenum in which that career converges to the plenum itself. The plenum is therefore more divine.

The Pythagorean plenum is a better candidate for the pantheistic God than the totalities of Platonism. Among all the ontologies I've reviewed, the plenum is the best candidate for the pantheistic God. It is the greatest and most unified maximum. It satisfies the pantheistic criteria for divinity more than any other maximum.

Conclusion

Pantheism asserts: (1) there exists an all-inclusive unity; and (2) the all-inclusive unity is divine (is God). I have reviewed three contemporary ontologies to see how pantheism fares with respect to each. The ontologies are: (1) materialism; (2) Platonism; (3) class-theoretic Pythagoreanism. I showed (1) how each ontology has an all-inclusive maximum and (2) how well any such maximum satisfies certain pantheistic criteria of divinity.

Materialism provides at best a maximum (the whole actual physical universe) that is a poor candidate for God. It is therefore surprising that so many pantheists identify God with the whole actual physical universe. Platonism provides (at least) two maxima: (1) the little totality, and (2) the big totality. Each is a better candidate for God than the materialist's maximum. The big totality satisfies the various attributes of God very well. However, the Platonic dualism on which it is based undercuts its self-representation, its unity, and its soteriology. Class-theoretic Pythagoreanism posits one maximum: the plenum. The plenum has all the advantages of the big totality. However, the plenum has greater self-representation, greater uniformity, and better soteriology. It is therefore more divine. The plenum is an excellent candidate for a pantheistic God.

Notes

1. If the maximally inclusive unity is a universal, then it will be something like 'pure being' or 'being as such'. However, it is arguable that existence is not a property so there are no universals like 'pure being' or 'being as such'. It is further arguable that our best current theory of existence is the Quinean theory that 'to be is to be the value of a bound variable'; but no logic has variables that range over 'pure being' or 'being as such'.
2. It is sometimes argued that there are different kinds of unity: a heap of sand (a mere aggregate or sum) has one kind of unity; an organism or mind has a more perfect kind of unity. Nobody today can seriously argue that reality is an organism or that it is a mind. A scientific pantheism cannot affirm that the unity of all things is the unity of life or thought. Such views are relics of seventeenth- and nineteenth-century monisms and idealisms. For my purposes, the maximally inclusive unity is a whole of which all other things are parts or a class of which all other things are members. Levine (1994, 29–30) criticizes such unity as merely 'formal unity'. He points out (30) that Plotinus's One, Hegel's *geist*, and

Lao Tzu's *tao* are not formal unities; however, I see no way to make scientific sense of such unities.

Levine says 'Formal unity will not do' (30). I reply that the notion of unity offered by current part-whole and member-class theories is (1) even richer than the obsolete unities discussed by Levine, and is (2) scientifically viable.

3. If the unity includes itself as a proper part or member, we get self-referential paradoxes like those discovered by Russel and Burali-Forti. If the maximally inclusive unity includes all existing things as proper parts or members, then it cannot be an existing thing.
4. Ontological arguments typically make inferences to maximal objects. For Augustine, God is 'that to which nothing is superior' (1993, 40–64); for Anselm, God is 'that than which no greater can be conceived' or 'that than which no greater is possible' (1077, chs 2 and 3). Aquinas's Fourth Way reasons from any ordered series to an upper bound (where there are degrees more or less, there is a most). If we interpret the order relations 'is superior to' and 'is greater than' as 'is more inclusive than' or 'is more complex than', then the traditional ontological arguments can be made into arguments for the existence of the pantheist's maximally inclusive unity. The maximally inclusive unity is an object at the top of an ordered complexity hierarchy (a great chain of being – Lovejoy 1936).
5. Levine (1994, 3) says that pantheism 'is the belief in one God, a God identical to the all-inclusive unity, but it does not believe God is a person or anything like a person'.
6. Theism typically asserts that God (as a person) engages human persons in social relations. So God has familial, moral, legal, and political relations with humans. Familial: God is a father; political: God lays down laws and is a king; moral: God is virtuous or benevolent; God keeps his promises; legal: God is a judge; God punishes or rewards. A pantheist may admit the existence of an objective moral order or an objective justice. However, a pantheist will not admit that God and humans are a society.
7. To say that an object exists at all possible worlds is to say that its existence is invariant through all possible variations. So a collection is necessary if and only if membership in the collection is invariant through all variations. Say U is *necessary* = for every x , if x is in U , then every variation of x is also in U . Necessity is thus equivalent to *closure*. Closure under all logically possible variations is plenitude.
8. The ordinal ω is as complex as the whole system of hereditarily finite sets (HFS). But HFS contains every possible finite combination of its urelements. So HFS contains every member of ω ; but ω does not contain every member of HFS. So ω is a subclass of HFS but HFS is not a subclass of ω . HFS is more plentiful than ω .
9. A whole satisfies a *reflection principle* if and only if (to put it roughly) for every property of the whole, there is some part that also has that property. For example: if the whole is infinite, then there is some part of the whole that is also infinite. An *elementary embedding* is (to put it very roughly) a function from the whole universe V to a part M of the universe that preserves all (first-order) truths about V . So if there is an elementary embedding from V to M , then M is a kind of logical mirror of V .
10. Levine (1994, 248) says 'Pantheists deny personal immortality'. Yet Plotinus is arguably a pantheist who affirms personal immortality; likewise Leslie (2001) is a modern pantheist who affirms personal immortality.
11. Pantheism does not face the traditional theistic 'problem of evil' (Levine 1994, 196–218). A pantheist will therefore not have a theodicy in any theistic sense. However, a pantheist may still want to argue *both* (1) that the maximum is maximally good; *and* (2) that the maximum contains evil. Note that good and evil are metaphysical concepts orthogonal to the moral concepts of right and wrong.
12. Pain is not evil; pain signals evil. Pain signals the destruction of some organ: it therefore signals the loss of the organ's functional excellence, skill, or talent. Say an object is an *organ* of X iff X depends on it for doing some function. For any person P , P 's *natural* organs include the parts of P 's body; P 's *artificial* organs include the tools on which P depends; P 's *social* organs include the other persons on which P depends. The organs involved in good or evil changes may be natural, artificial, or social. Hence the loss of health, property, family, or friends is painful; the recovery of these is pleasurable.
13. For each career of each soul, we ought to refer to smallest space-time volume that contains that career; but we can get by with the idea that one universe contains one career.
14. Thin Platonism has the actual physical universe @ plus lots of abstract objects. Its maximum is the sum of all these. The maximum of thin Platonism is natural; it is less than maximally complex; it is impoverished; it is only capable of partial self-representation; it is not sublime. Its theodicy is at most a sort of Leibnizian 'best-of-all-possible-worlds' theodicy without the personal Leibnizian God (see Leslie 1979, 1997). So the maximum of thin Platonism is only slightly more divine than @. It is a poor God.

15. Forrest (1997, 312) says: 'Positing many universes would replace pantheism by polytheism. For our universe would be a god but the sum of them would seem to lack the unity required to be God.' I reply that all mereological sums or sets have exactly the same kind of unity. Moreover, Platonism's maxima are far more complex than the mere sum or set of possible universes. Modal realism does not entail polytheism.
16. I read Lewis as believing in sets and classes. See his (1986), 3–4, 50, n. 37. Lewis (1991) complicates things; but I'm just using Lewis as a close exemplar.
17. A strictly set-theoretical Platonist is likely to deny that there are any proper classes; hence there will not be any maximum of any set-theoretic hierarchy (see Bigelow 1996, 127). However, class-theories like VNB are by now so widely accepted among mathematicians that one is not likely to find many strictly set-theoretic Platonists today.
18. It is arguable that an iterative hierarchy extended through all consistent large cardinals contains models of all mathematical theories. It contains all mathematically possible set-theoretic and class-theoretic universes (Hamilton 1982, sec. 4.5). For example: it includes well-founded universes and non-well-founded universes (Aczel 1988). The universe of non-well-founded sets appears as a graph in the hierarchy.

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