

The World Tree

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ABSTRACT: An optimistic picture of nature will be painted here. Although it is a deeply spiritual picture of nature, is also radically atheistic. It is a type of religious or spiritual naturalism. A cosmological argument is used to justify the existence of a simple initial object; but that object is not God. An ontological argument is used to justify the principle that every natural thing surpasses itself in every possible way. Nature is an endlessly ramified tree of ever better worlds. These worlds and the things they contain serve as a domain for modal quantification. Your current earthly life will be surpassed by better lives in better worlds. After you die, you will be born again.

1. Introduction

Many naturalists paint a bleak picture of nature. Nature is a meaningless chaos of atoms swirling in the void. Value plays no role in nature. But this pessimistic picture is hard to justify. It certainly does not follow from the natural sciences. An alternative picture of nature will be painted here. It is an optimistic picture of nature. It is entirely consistent with our best science. It is also a deeply religious picture of nature. However, it is radically atheistic. Is a type of religious or spiritual naturalism. It is an *axiarchic* theory of nature, which asserts that nature is generated by goodness.¹

A cosmological argument is used to justify the existence of a simple initial object; but that object is not God. An ontological argument is used to justify the principle that every natural thing surpasses itself in every possible way. Nature is an endlessly ramified tree of ever better worlds. Therefore, To paraphrase Hartshorne, nature is the self-surpassing surpasser of all; and, to paraphrase Anselm, nature is that than which no greater is possible. However, nature is not God, and this picture of nature is not pantheistic. Since you are a thing in nature, you will surpass yourself in every way. Thus your current earthly life is not your only life. After you die, you will be born again.

2. The Cosmological Argument

Old theological arguments, such as the *Cosmological Argument*, can be used for new and nontheistic purposes. The *Cosmological Argument* reasons from the dependencies among things to the existence of some ultimate independent thing. Over the years, there have been many versions of that argument. Aquinas famously gave three versions (the first three Ways in the *Summa Theologica*, Part 1, Q. 2, Art. 3).

One version of the *Cosmological Argument* was developed by Leibniz (1697: 84-86). He argues for the existence of an original independent object which contains the sufficient reason for the existence and nature of all other things. His *Sufficient Reason Argument*

goes like this: (1) The world is an infinite regression of dependent objects. Within this series, each next object depends on the previous object. (2) For any infinite regression of dependent objects, it is possible to ask why there is that regression rather than nothing, and why the regression is as it is. (3) These questions require answers. (4) To answer them, it is necessary to posit some object that contains the *sufficient reason* for the whole series (that is, for the world). (5) But the object that contains the sufficient reason for the series is not in the series. Looking over the objects in the series, Leibniz says “you will not find the sufficient reason in any one of them, nor will you get any nearer to accounting rationally for the world by taking any number of them together” (1697: 85). (6) Consequently, Leibniz says “The reasons for the world are therefore concealed in some entity outside the world, which is different from the chain or series of things, the aggregate of which constitutes the world” (1697: 85).

A more modern version of the Leibnizian argument is based on the difference between contingency and necessity. To say that a thing is *contingent* means that it depends on something else either for the way that it is or for the fact that it is. To say that a thing is *necessary* means that it does not depend on anything else – it is totally independent. (1) Every contingent thing has an explanation. (2) The explanation for any contingent thing lies in some other thing. (3) Every set of contingent things is a contingent thing. (4) The *pleroma* is the set of all contingent things. (5) The *pleroma* is a contingent thing. (6) The *pleroma* has an explanation. (7) The explanation for any set of things is not a member of the set. (8) The explanation for the *pleroma* is not a member of the *pleroma*. (9) If any thing is not a member of the *pleroma*, then it is not contingent. (10) The explanation for the *pleroma* is not contingent. (11) If something is not contingent, then it is necessary. (12) The explanation for the *pleroma* is some Necessary Being.

Every thing in the *pleroma* ultimately depends on the Necessary Being. Hence that thing is independent. Let *Alpha* denote this independent object. Since any whole depends on its parts, *Alpha* has none – it is simple. Since *Alpha* is simple, and since all minds are complex, *Alpha* has no mentality. Since all minds are produced by long evolutionary processes, and *Alpha* is original, again *Alpha* has no mentality. *Alpha* is entirely impersonal. Consequently, *Alpha* cannot be any theistic deity. It cannot be the Christian God (Dawkins, 2008: 184-5). And since the term “God” is so closely associated with theism, it is best not to use it at all. *Alpha* is not God. On any theory of perfection, *Alpha* is not maximally perfect; on the contrary, it is minimally perfect.

Alpha is independent, necessary, ultimate, original, and simple. Following Leibniz, the axiarchist says that *Alpha* contains the ultimate sufficient reason for all the dependent things in the *pleroma*. *Alpha* is indeed outside of the system of dependent things. However, that does not imply that it transcends nature. On the contrary, *Alpha* is natural. It is the natural ontological ground of all the dependent things in nature. *Nature* is the *pleroma* plus *Alpha*; it is the class of all independent and dependent things. As a simple, original, and independent thing, *Alpha* is a concrete zero. It is the concrete instantiation of the empty set. Since *Alpha* is independent and original, *Alpha* is whole and complete. Thus *Alpha* is a *world*. Since it is simple, it has no internal structure. It has no space, no time, no matter, no energy, no things. It is a partless dot.

3. The Axiological Argument

Although Alpha exists, it is obvious that there are many other things. Axiarchists need some argument to go from Alpha to these other things. They need some argument to fill up the pleroma. Here axiarchists can turn to the Ontological Argument.² But they do not use this argument to justify God. They modify this argument to suit their own purposes. The result is the Axiological Argument. It has six premises. It runs to the conclusion that every thing surpasses itself in every possible way.

The first premise of the Axiological Argument states that propositions exist. Propositions are abstract objects. The existence of propositions can be defended by well-known indispensability arguments. Because of their roles in the natural sciences, propositions are natural objects. The second premise of the axiological argument states that propositions are ranked by value. Some propositions are better than others. Better propositions entail more surpassing. They entail that more things surpass themselves in more ways. The third premise states that there exists a unique best proposition. It is better than every other proposition. Is that proposition that which no better is possible. By definition, this best proposition asserts that every thing surpasses itself in every way.

The fourth premise asserts that propositions are either true or false. The fifth premise asserts that some propositions are true. The sixth premise is the *principle of the superiority of truth*. Truth is a *value* and true propositions are more valuable than false propositions. Any attempt to refute the superiority of truth must rely on valid inference from true premises. Hence any such attempt assumes the very principle which it aims to refute, and thereby contradicts itself. The superiority of truth is analytically true. And a false proposition does not entail that any thing surpasses itself in any way. It entails no self-surpassing at all. Hence any false proposition has no value.

The Axiological Argument now proceeds as follows: (1) There are some propositions. (2) These propositions are ordered by value. More valuable propositions asserts more self-surpassing. (3) There exists some unique best proposition. It asserts that every thing surpasses itself in every possible way. (4) Propositions are either true or false. (5) Some propositions are true. (6) A true proposition is better than any false proposition. (7) Assume for *reductio* that the best proposition is false. (8) If the best proposition is false, then any true proposition is better than it. (9) But then the best proposition is not the best proposition. (10) Since this is a contradiction, the best proposition must be true. (11) Therefore, every thing surpasses itself in every possible way.

Since this principle of self-surpassing explains the existence of every dependent thing, it is the *ultimate sufficient reason* for all dependent things. And since Alpha contains the ultimate sufficient reason for all dependent things, Alpha contains the principle of self-surpassing. Alpha is animated by this principle. It is the essence of Alpha; it is the power of being in Alpha. Since everything surpasses itself, that principle is present in every thing. It is the deepest universal, the universal essence; it is *Being-Itself*. Since the

power of self-surpassing drives everything to become better than itself, that power is pure goodness. The power of being is the power of goodness. The principle of self-surpassing is *the Good*. But the Good is not God; on the contrary, the Good is an abstract impersonal meaning. This is a Neoplatonic theory of ultimacy. But the Good is not transcendent; the Good is an immanent presence in the depths of every thing.

4. The Laws of Actuality

Since Alpha is the initial thing, the *initial law of actuality* simply affirms that Alpha exists. Alpha is the simplest of all possible things. Since it is the simplest of all possible things, it is the least valuable of all possible things. It has minimal value because it has minimal complexity. It is the lowest node in the World Tree. Of course Alpha surpasses itself by producing better versions of itself. These are its successors. Since Alpha is a world, its successors are also worlds. The successors of Alpha are members of the pleroma. Each successor inherits the power of self-surpassing from Alpha. So now the process of self-surpassing iterates: the successors beget successors, and so it goes.

The *successor law of actuality* ensures that every world is surpassed in every possible way by some improved version of itself. The successor law has two parts. Its first part states that every world has at least one possible improvement. More precisely, for every world, there exists at least one way in which it can be improved. Each way is a better potential of that world, and each potential is an abstract form. Each better potential is the form of some new world, which is an improved version of the old world. So the first part of the successor law moves from the actuality of each world to its better potentials. It moves from actuality to potentiality. The second part of the successor law asserts that every world improves itself in every possible way. More precisely, for every world, for every way to improve that world, there exists some successor world which is improved in that way. Since the ways to improve any world are its better potentials, and since its successor worlds are actual, the second part moves from actuality to potentiality. The two parts of the successor law work together to ensure that every world is surpassed by every possible minimally better version of itself. They ensure that value increases.

The *limit law* defines infinitely valuable worlds. To define them, it is necessary to define *progressions* and their improvements. A progression is any infinitely long sequence of improvements. Every progression starts with the initial world and continues through its successors. Every progression contains an endless chain of successors. Since every successor is better than its predecessor, every progression is a sequence of increasingly valuable worlds. Just as worlds have potentials, so progressions have potentials. The potentials of progressions are forms of worlds. And, just as potentials can be better than their worlds, so potentials can be better than their progressions. To say that a potential is better than its progression means that it is more valuable than every world in that progression. Since value increases endlessly in any progression, any potential which is better than its progression is infinitely valuable. A way to improve a progression is some form that is minimally more valuable than every world in the progression.

The limit law now has two parts. Its first part states that there is always at least one way to improve any progression. Since progressions are actual, and since ways to improve them are their better potentials, this first part moves from actuality to potentiality. It asserts that every progression has some better potentials. Its second part states that, for every progression, for every way to improve it, there exists some *limit world* which is improved in that way. Since the ways to improve progressions are potentials, and since their limits are actual, this second part moves from potentiality to actuality. The two parts of the limit law work together to ensure that every progression of worlds is surpassed by every possible minimally better version of itself.

5. The Natural History of Hardware

Self-surpassing entails an increase in value: every successor world is more valuable than its predecessor; every limit world is more valuable than every world in the progression of which it is the limit. Increases in value go hand-in-hand with increases in complexity. But what is complexity? Much on complexity has been done in computer science. It is arguable that the most important computational measure of complexity is *logical depth* (Bennett, 1985, 1988, 1990). To put it roughly, Bennett says the logical depth of any thing is the amount of computational work involved in generating that thing from simple initial conditions. Since Alpha is simple, the depth of any descendent of Alpha is the amount of computational work needed to derive it from Alpha.

As the descendents of Alpha get farther away from Alpha, they grow deeper. Since deeper things are harder to produce, depths grows slowly. Hence the slow-growth law states that “deep objects cannot be quickly produced from shallow ones by any deterministic process, nor with much probability by a probabilistic process, but can be produced slowly” (Bennett, 1988: 1). Deep things therefore “contain internal evidence of having been the result of a long computation or slow-to-simulate dynamical process and could not plausibly have originated otherwise” (Bennett, 1990: 142).

The slow-growth law entails that depth is cumulative. It obeys Dennett’s *Principle of Accumulation of Design*: “since each new designed thing that appears must have a large design investment in its etiology somewhere, the cheapest hypothesis will always be that the design is largely copied from earlier designs, which are copied from earlier designs, and so forth” (1995: 72). Any deep thing lies at the top of an escalator which started with Alpha and climbed up through all lower levels of depth.

An important generalization of logical depth is known as *parallel depth* (Machta, 2011). Machta writes that parallel depth “can only become large for systems with embedded computation” (2011: 037111-1); and that “depth is sensitive to embedded computation and can only be large for systems that carry out computationally complex information processing” (037111-6). Axiarchists affirm that complexity resembles parallel depth: as things grow more complex, they begin to perform internal computations. Hence as worlds grow more complex, they begin to perform internal computations. As the depths of worlds grow larger and larger, they turn into *computers*.

Along any lineage of worlds, Alpha is surpassed by successors which begin to process information. Those successors turn into finite state machines. And now the limit law of actuality entails that progressions of these finite machines produce infinite limits. They evolve into machines with infinite memories. Thus progressions of finite state machines evolve into Turing machines. Those Turing machines evolve into Giunti machines (Giunti, 1997). They evolve into accelerating Turing machines (Copeland, 1998a, 1998b). They evolve further into various machines operating on transfinite ordinals (Hamkins, 2002; Koepke, 2005, 2006; Koepke & Siders, 2008). And they also evolve further into various continuous computers (Moore, 1996; Blum et al., 1998).

6. The Natural History of Software

As these computer worlds become more complex, they support ever higher stacks of internal virtual computations. The distinction between software and hardware emerges. A universe is a system of software objects supervening on a hardware core. Since the hardware cores of worlds support universes, those cores can be referred to as *digital gods*. However, that terminology is mainly honorific. Software and hardware objects are parts of worlds. Since every world is a descendent of Alpha, every part of every world is also a descendent of Alpha. Every part of any world inherits the principle of self-surpassing from its world; hence it inherits that principle from Alpha.

The logic of self-surpassing produces an endlessly ramified tree of ever more complex universes. Early universes are very simple; but their descendents become increasingly complex wholes with increasingly complex parts. These universes contain deeply nested mereological structures, whose parts are interrelated in myriad ways. The laws of universal self-surpassing apply to universes. There exists an initial universe, which is the first system of software objects to supervene on some hardware core. Every universe is surpassed by its successors. The successors of any universe are better versions of that universe. Every successor universe inherits the principle of self-surpassing from its predecessor. And every progression of universes is surpassed by its limits. The limit of any progression is a better version of every universe in the progression. Every limit universe inherits the principle of self-surpassing from its progression.

Just as the initial world is the root of an infinitely ramified tree of ever better worlds, so the initial universe is the root of an infinitely ramified tree of ever better universes. The class of universes in this tree is the class of possible universes. Since universes produce all and only the greater versions of themselves, modal plenitude is false (contra Lewis, 1986 and Tegmark, 1998). There are abstract universe-forms which are not concretely instantiated by any universes. Cosmic evolution is a vast computation. However, contra Schmidhuber (1997), it does not run all computable universes.

As the universes become more complex, the things inside them become more complex. Scales of material complexity emerge (e.g. Chaisson, 2001); and scales of biological complexity emerge (e.g. Bower, 1988; Adami et al., 2000). As these physical universes

grow deeper, and their parts become deeper, they begin to contain software objects which perform their own internal computations. They contain virtual machines running on top of virtual machines. Universal computers emerge inside of universes. Human animals are virtual machines capable of universal finite computation.

Universes are wholes containing parts. Since every universe is surpassed in every possible way, every universe is improved in every way. But the improvement of any whole is composed of the improvements of its parts. Every way to improve any part of any universe is included in some way to improve that universe. Consequently, since every universe is improved in every way, it follows that every part of every universe is improved in every way. Suppose a universe contains things A and B. The improved versions of A are A_1 and A_2 while those of B are B_1 and B_2 . Hence the improved versions of the universe include $\{A, B_1\}$, $\{A, B_2\}$, $\{A_1, B\}$, $\{A_1, B_1\}$, $\{A_1, B_2\}$, $\{A_2, B\}$, $\{A_2, B_1\}$, $\{A_2, B_2\}$. Analogous remarks apply to progressions of universes and things.

The laws of universal self-surpassing therefore apply to all things in all universes. Any thing can be taken as initial. Every thing is surpassed by its successors. The successors of any thing are better versions of it. Every successor thing inherits the principle of self-surpassing from its predecessor. The successors of things inhabit successor universes. And every progression of things is surpassed by its limits. The limit of any progression is a better version of every thing in the progression. Every limit thing inherits the principle of self-surpassing from its progression. The limits of progressions inhabit limit universes. Hence every thing surpasses itself in every possible way. Every thing is the root of an infinitely ramified tree of ever better versions of itself. If anything is the root of some surpassive tree, then all the things in that tree are counterparts of that root. The descendents of any thing are its counterparts. Since all things in all universes are descendents of Alpha, they are all counterparts of Alpha.

The surpassing relation is an order relation. Any lineage containing successors and limits is structured like the ordinal number line. Hence things in any lineage have positions on the ordinal number line. The ordering of things in any lineage parallels the ordering of things in time. Things with greater positions are *later than* things with lesser positions; things at lesser positions are *earlier than* things with greater positions. The later things in any lineage carry information about the earlier things. Information flows through any lineage like it flows through some causal chain. Hence the things in any lineage are *temporal counterparts* (Sider, 1996, 2001; Hawley, 2001). Earlier things *will be* their later counterparts and later things *were* their earlier counterparts.

Your current earthly life is one of the things in our universe. Your life is spatially and temporally extended; it is a four-dimensional process. Your life can be surpassed in many ways. Your life is surpassed by better versions of your life; those better versions of your life are the improvements of your life; they are your successor lives. Your successor lives inhabit successor universes. Since your successor lives are later than your life, they are the future counterparts of your current life. You will be your successor lives. After you die, you will live again. You will be reborn. This is a naturalistic conception of life after death. It resembles conceptions of life after death found in Theravada Buddhism, in

Hick (1976: chs. 15, 20), and in Steinhart (2008, 2014). More generally, the laws of actuality apply to your current earthly life. Hence your current earthly life is the root of an infinitely ramified tree of ever better lives.

Since all things are counterparts of Alpha, they are ontological cousins. All things in all universes are connected by this ontological relation. And the same power, the power of being, the power of goodness, animates all things. During mystical experiences, people become aware of this power, and of this interconnection.

7. The Emergence of Evil

As universes surpass universes, they become more complex. Within them, highly complicated physical structures appear and interact. These all have their own natures, which strive for their own types of greatness, and which come into conflict. An example is Darwinian evolution on earth, in which each organism strives to reproduce its kind, or to maximize its own number of offspring, and in which those many strivings cooperate or compete, thus ensuring the survival of the fittest. Thus the universal self-surpassing eventually manifests itself in evolution by natural selection on earth.

Obviously enough, the conflicts among the strivings of organisms lead to both good and evil consequences. Conflict is good insofar as it drives evolution to greater heights of value. For instance, conflicts among the strivings of organisms drive evolution from the unicellular level up to the appearance of rational animals like human beings. Conflict is evil insofar as it leads to disease, damage, or death. Since evils emerge from the conflicts among goods, there is no being that is the source of all evils.

Every universe is surpassed by its descendents. The things in any universe are likewise surpassed by descendent things in descendent universes. These universes and their things are improvements of their ancestors. Thus any conflicts among things in one universe are eventually resolved by their descendents. Over the long course of self-surpassing, all axiological demands are satisfied. For any proposition, if there is some universe at which it ought to be true, then there is some later universe at which it is true. Thus *every proposition that ought to be true will be true*. Every thing in any universe has positive potentials which it does not realize in that universe; but its descendents in later universes do realize those potentials; hence every thing will realize all of its positive potentials. Every thing is completely realized in its tree of surpassive counterparts. Every thing flourishes in that tree; it is saved or redeemed in that tree.

These ideas parallel the Plotinian account of evil. Plotinus argued that everything derives from the creative activity of the One, which is purely good. But then how to explain evil? Plotinus says it emerges from the conflicts among goods (*Enneads*, 4.4.32). And yet, since nature is animated by conflict, even this conflict is good (*Enneads*, 2.3.16). For Plotinus, all evil is local. Evil is in the parts but the whole of reality is good (*Enneads*, 3.2.3, 3.2.11, 3.2.17, 4.4.32). These points are affirmed here.

8. Some Evidence for Universal Self-Surpassing

Universal self-surpassing entails the emergence of complexity hierarchies at every scale in nature. It entails that universes become increasingly optimized for the internal evolution of complexity. So universal self-surpassing is confirmed by any evidence that our universe is finely-tuned for life (Barrow & Tipler, 1986; Leslie, 1989).

Universal self-surpassing entails says that evolution runs as widely and as quickly and as high as it can in our universe. It predicts that planets are common relative to stars; pre-biotic chemistry on planets is common relative to planets; simple life is common relative to pre-biotic chemistry; complex life is common relative to simple life; and intelligent life is common relative to complex life. Universal self-surpassing is confirmed by recent discoveries that planets are common in the Milky Way (Cassan, A. et al., 2012). However, it does not make detailed predictions about these commonalities.

Universal self-surpassing is therefore confirmed by any evidence that the things in our universe fall into physical complexity hierarchies. It is thought that there are such complexity hierarchies (see Jagers op Akkerhuis, 2008). Universal self-surpassing is confirmed by any evidence that there are general tendencies to increasing physical complexity in our universe. It is thought that there are such tendencies (see Chaisson, 2001, 2006). It is confirmed by any evidence that there are more specific arrows of physical complexity, such as *arrows of atomic or biological complexity*. It is thought that there are such arrows (Bower, 1988; Bedau, 1998). Of course, claims for these tendencies and arrows are controversial; but they have been defended.

And universal self-surpassing is consistent with the thesis that evolution in our universe is severely constrained by local physical laws (e.g. the second law of thermodynamics). Within any local structure (such as a particular universe), local evolution may rise, peak, and fall. But evolution continues globally beyond any particular universe. As the things in our universe work together to actualize all greater versions of themselves, they actualize the future greater versions of our universe.

9. Conclusion

Hartshorne said that “God is the self-surpassing surpasser of all” (1948: 20). One way to interpret this says that God contains a series of stages (God is a process) in which every earlier stage is surpassed by every later stage, but that God surpasses every stage in the way that a container surpasses its contents. If the reasoning here is sound, then what Hartshorne says about God can be said about nature. Thus nature is the self-surpassing surpasser of all.³ Although nature is not God, it can be argued, from universal self-surpassing, that nature is infinite, sublime, eternal, necessary, supremely valuable, absolute, unsurpassable, numinous, and transcendental. Hence nature is holy.

Perhaps this attribution of holiness to nature deserves to be called *pantheism*. However, it may be objected that, since even pantheism contains some latent theism, the holiness of nature is not even pantheistic. It may be that *axiarchism* is a better label for this position. An axiarchist says that value is ontologically fundamental (see Leslie, 1979, 1989; Rescher, 1984, 2000). Since this conception of nature is ultimately based on surpassing, which always involves greater value, value is indeed the creative and abysmal source of nature. Nature is maximally filled with value.

Notes

¹Axiarchism asserts that reality is ruled by value. Axiarchism has been developed by Leslie (1979, 1989), Rescher (1984, 2000, 2010), and Steinhart (2014).

²The axiarchic argument is inspired by the ontological arguments of Kiteley (1958) and Millican (2004) and the axiological argument of Steinhart (2014: sec. 127).

³Every axiological requirement is satisfied if and only if nature is maximally filled with value. Leslie says that the logic of value necessarily “demands the existence of as much good as possible” (1979: secs. 11.21-22; see also 2001: 6, 135-6, 148-9).

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