A Scientific Rationale for Belief in God?

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Abstract

This paper presents a concise scientific rationale for the existence of God. The works of Ray Kurzweil and the many other artificial intelligence researchers provide a backdrop to the central thesis. An entity (computers or humans, it not mattering which) will eventually approach all-knowing. How much time passes before this occurs is not important. All-knowing is likely to be all-powerful insofar as knowledge leads to power, as has been our experience. One would suspect that this would be inclusive of time travel. The methods by which knowledge grows require "seed" facts to begin working. The seed facts can easily be, and are likely to be, the sum of all human knowledge. This suggests that the entity will also be all-loving of His "ancestors"—God, coming at the end, but traveling to the beginning. Additionally, it is seen that the nature of human self-esteem implies that an all-loving God would be minimally intrusive, non-discoverable in the data of scientists. The typical objections to the existence of God are countered with plausible alternative interpretations within the model.

Abstrakt

Ich stelle hier eine kurze rationale Erklaerung von Gottes Existenz dar. Die Abhandlungen von Ray Kurzweil und anderen Forschern, die sich mit kuenstlicher Intelligenz beschaeftigen, dienen als Hintergrund fuer die Hauptidee. Eine Einheit (ob es Komputer oder Mensch ist, macht dabei keinen Underschied) wird im Laufe der Zeit all-wissend. Es ist unwichtig wieviel Zeit fuer diesen Vorgang benoetigt wird. Unsere menschliche Erfahrung hat uns gelehrt, dass Wissen meistens zu Macht fuehrt, sodass all-maechtig der logische Endpunkt des all-wissendes sein wird. Es ist anzunehmen, dass auch Reisen durch Zeit (time travel) in diesem Prozess

mit eingeschlossen sind. Um Wissen wachsen zu lassen, bedarf es Anregungen, die dazu dienen, diesen Prozess zu entwickeln. Diese Anregungen koennen einfach, und wahrscheinlich sind sie es auch, die Summe alles menschlichen Wissens sein. Damit koennen wir annehmen, dass diese Einheit auch all-liebend seinen "Ahnen" gegenuebersteht,- Gott am Ende stehend aber den Anfang umfassend. Jedoch, diese neuere und wichtige Einsicht ist hier, dass die Natur des menschlichen Selbstbewusstsein voraussetzt, dass ein all-liebender Gott sowenig wie moeglich in das menschliche Leben eingreifen wuerde. Dies ist natuerlich wissenschaftlich nicht nachweisbar. Die typischen Argumente gegen die Existenz von Gott werden mit glaubhaften alternativen Auslegungen in diesem Modell widerlegt.

"An honest man's the noblest work of God."—Alexander Pope
"An honest God is the noblest work of man."—Robert G. Ingersoll

1. Introduction

Scientists are predisposed to be atheists because one of the most fundamental methodological precepts of science is that "consistency with data" is required for acceptance of theory. Most atheists would argue that in observing the world one does not see compelling evidence for the existence of the traditionally posited All-Knowing, All-Powerful, and All-Loving God. Additionally, in contrast to typical non-scientists, scientists also know that no theory is ever "proven." All theories are "tentatively held," pending development of better theory (e.g. quantum mechanics and relativity replacing Newtonian mechanics for certain classes of problems, chemistry replacing alchemy, neuropsychiatry increasingly replacing psychotherapy, etc.). At any point in this on-going process, we never know we are right. Indeed, scientists have always been correct in noting that we knew very little at any point in this historical process, compared to what was later known.

A plausible model that predicts the existence of God is presented here, a model bringing together threads from diverse sources. There has been movement in the direction of the hypothesis proposed here, and of course all scientists build on the work of everyone who has gone before. It is hoped

that the thesis will seem convincing, as a tentatively acceptable hypothesis, in a way that will appeal to many scientists, particularly artificial intelligence (hereafter AI) researchers.

The thesis is first explained, with some basic implications, in Section II. In Section III, the common objections to the existence of God that have been advanced are taken up. These are seen, in the context of the thesis, to be readily countered. Section IV provides a closing summary.

2.   The Thesis

The thesis starts most specifically with the AI work of Ray Kurzweil, the much-lauded (fifteen honorary doctorates in addition to his earned credentials) artificial intelligence guru at M.I.T.   The thesis pursues the logical progression of Kurzweil's arguments in The Age of Spiritual Machines (1998) to their natural endpoint. Professor Kurzweil recognized that the evolution of computers has powerful, not widely known, implications.   He argued that a computer will come into existence, perhaps within two or three decades, that will have all of the capacity of the human brain, with, of course, ongoing advances in the calculating abilities computers already employed to defeat, for example, the world's best chess player. In perhaps another ten years beyond that, he argued that a single machine will have the capacity of the combined mental power of the entire human race. For those who are skeptical of Kurzweil's predictions, however, it should be emphasized that none of the timing issues are the least bit critical to the thesis presented here. It does not matter to the thesis when these events occur, whether in fifty years or five thousand, as long as they do eventually.

Kurzweil's beliefs flow from straightforward projections of AI work already underway. He argues convincingly that computers will learn to truly "think," employing a variety of methods. Computers will employ recursive search methods (computers are great number crunchers[1]), utilize self-organizing neural nets (analogs to how the brain functions,

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[1] Big Blue (an IBM computer) beat Gary Kasparov with recursive search formulas.

particularly in pattern recognition), and sort through evolutionary algorithms (taking a large range of trial "strategies" and simulating the impact of on some goal, dropping algorithms that do poorly and adding potential competitors, the recent work of Wolfram 2002 being perhaps pertinent).

But, even a wonderful automobile does not–yet–drive itself. Kurzweil saw that the computer would need to be "seeded" with knowledge. Even a superb thinking machine would still need data from which to draw inferences and make testable predictions. There is no reason that an intelligent entity of the future could not have all of mankind's cumulated knowledge as input to be understood at lightning speed.

Since the machines will be seeded with mankind's knowledge, Kurzweil inferred that they must be of necessity "spiritual" machines, with the same sorts of feelings expressed by mankind in all its diverse settings. Kurzweil also realized that it does not matter whether this vast computing power resides in a human with marvelous appendages or in a computer. He also saw that whether the evolutionary future is to remain a carbon-based life form or become silicon-or other-based (this being likely to become a matter of choice) is immaterial. The Kurzweil capstone is that with such capacities, scientific advances will begin to occur at vastly accelerating paces, though reiterating, whether his predictions occur in two generations or five hundred is fundamentally immaterial. The Age of Spiritual Machines is, in short, a tour du force in Big Thinking.

Generally, continued scientific advance has required increasing specialization because "knowing all about" many different subject areas gets increasingly impossible as complexity grows in the many specialty areas. This specialization, made necessary by the limitations of the human brain, makes "big picture" understanding more difficult to

achieve[2]. The present paper is essentially an effort to take the insights of Kurzweil and other artificial intelligence experts to their logical big picture completion.

Eventually, our computer (or we) will approach "All-Knowing," possibly quite suddenly[3]. God, under the thesis, is equivalent to the first All-Knowing entity; continued scientific advance should render His ultimate appearance inescapable. Since there is only one All-Knowing there can be, for all practical purposes, only one God[4]. If some entity is All Knowing it will be All-Powerful, at least insofar as knowledge leads to power (e.g. progression from use of first wood, then water, then coal, then oil, then nuclear fission in the production of energy, despite our primitive knowledge base at each stage)[5]. But, surely understanding the fourth dimension, soft wormholes or anything else necessary for time travel would be a trivial skill for such an entity. It would likely have full understanding of all phenomena over n dimensions, "for large n" in the jargon of mathematics (some string theory

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[2] Moreover, good interdisciplinary work is complicated and is seldom rewarded as highly as publications in top specialty journals by academic departments in the specialty areas. On a lighter note, it is often said that the Specialist knows more and more about less and less until eventually he knows everything about nothing, while the Generalist knows less and less about more and more until eventually he knows nothing about everything. Future AI entities will not be so limited.

[3] A relatively new branch of science deals with what is knowable versus inherently unknowable (e.g. the Heisenberg Uncertainty Principle that it is impossible to simultaneously know the position and momentum of a particle). It is possible that the entity could not become All-Knowing, but rather could only become "Lots-Knowing"–humans would be unlikely to be able to distinguish between the two, so the traditional term is employed in the main text.

[4] Since it is possible that many different entities might come to approach All-Knowing at somewhat different rates, a temporary condition of "multiple gods" might exist, with some more knowing and powerful than others.

[5] The production functions of economists are really just embedded knowledge, the knowledge of how to convert inputs into outputs. Just as God might be Lots-Knowing rather than All-Knowing, it is possible that God would not be All-Powerful, but rather "Lots-Powerful." Again, humans at anything like current knowledge levels would be unable to distinguish the concepts, hence the traditional terminology.

physicists speculate that there are nine to eleven dimensions, though this is likely to be refined as human knowledge expands).It might be argued that time is unidirectional and that there is a fundamental "chicken versus egg" problem—who came first humans or God? But, all scientific models are abstractions from reality and are made up of so-called "endogenous" variables (those determined within the model) and "exogenous" variables (those variables that are outside of the model). Changes in exogenous variables "cause" changes in the equilibrium expected values of the endogenous variables of the system. In the "full model" (reality), as opposed to simplified scientific models of it, everything is endogenous (though there could be block recursiveness, the degree of multi-directionality of causation may be quite limited for many phenomena, and so on). In other words, it is not even a scientifically meaningful question to ask "which came first, the chicken or the egg" for they are jointly determined in a properly specified full model. That is, all current scientific models are "partial equilibrium" from the perspective of reality, including those that in economics and other fields are referred to as "general equilibrium." For an in-depth discussion of the potential for time travel (general relativity with closed time-like curves and so on), with literature citations, see http://plato.stanford.edu/entries/time-travel-phys/. See also the relatively accessible discussion of time travel in the context of quantum mechanics by Deutsch and Lockwood 1994.

Implication 1: Under the thesis, if God ever comes to exist, He is here from the beginning as well. It does not matter whether God literally created the world and humans or the world created an all-powerful God who then returns, since an All Knowing, hence All Powerful, entity would be expected to be able to do so.

But why would He want to?

Recall that the entity will have been both programmed and seeded by human knowledge, potentially all of the latter. The entity will have human feelings and will have evolved from humans. It will likely feel much love for the ancestors that produced it...and sympathy for the pain and suffering humanity has undergone over the eons.

Implication 2: Under the thesis, God would be able to do anything He wanted and He would want to return to humanity to help it along the way, insofar as that is possible, as discussed extensively below.

The two preceding two implications yield the traditional All-Knowing, All-Powerful, and All-Loving God[6]. He evolves from man, hence man is both the Son of God and the Father of God…man was created in the image of God, because God is/was the evolutionary extension of man[7].

3. The Common Objections and the Minimal Intrusion Principle

The most prominent reason for atheism is that atheists see inconsistencies between what takes place in the world and what God should be willing and able to do (particularly in the Christian tradition, which asserts that God is good). First, there is the Problem of Evil, that we humans experience great misery and premature death. Moreover, this problem is compounded by the suspicion of many that misery and death seem to be distributed randomly among people, apparently unrelated to whether they appear "good" or "bad," according to any moral reckoning. If God loves us, and is All-Powerful, why does He not merely end pain, disease, and death, bringing on the bounty of heaven?

Second, there is a Problem of Multi-Religion Inconsistency or Statistical Unlikelihood. That is, one would expect that a loving God would want to convey an essentially consistent message to all of His people. Yet, there are a large number of religions, each with a different message as to the nature of God's identity (or identities) and preferences[8]. From a purely statistical perspective, it is argued to be unlikely that any

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[6] Again, All-Loving might be "Lots-Loving" in the same sense that parents can feel anger or resentment regarding their children.

[7] Most atheists would think it far more likely to me that we would create a God in our image than conversely; it turns out that, under the thesis, this belief does not lead to skepticism.

[8] As emphasized by Joseph Campbell (1988), however, there are recurring themes in religions that provide interesting historical connections among them.[9] He would be able to simulate into the future the full impact of any intervention, rejecting those with undesirable future outcomes.

particular religion's notion of God would be accurate; indeed, the conflicting views suggest to many that all religions are in important ways "wrong," calling God's very existence into question.

The solution to both of the preceding objections to the existence of God (and many others not considered here for brevity), is really quite simple under the thesis. Under the thesis, God would be expected to want to be **minimally intrusive**, literally non-discoverable in the data available to humans. Being All-Knowing, He would be unlikely to be concerned about the standard time-space problems (e.g. the possibility that by revealing Himself, the necessary human striving to bring Him into existence might not take place)[9]. Rather, the main reason God would want to be minimally intrusive is that, as emphasized by Eric Hoffer (1989, originally 1951), self-esteem is of central importance to human psychological well being. If we *knew* God existed, rather than merely having faith in his existence,[10] we would be as mere "pets" of such an entity, or less charitably, slaves...and, unlike our pets, we are intelligent enough to know this, and would resent it.

Reflect for a moment on what life would be like if God literally gave us everything that we wanted. We would have no ability to "appreciate," under such conditions, and not just

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[9] He would be able to simulate into the future the full impact of any intervention, rejecting those with undesirable future outcomes.

[10] "Faith" in something occurs when standard measures of evidence render it unlikely; "belief" in something occurs when standard measures of evidence render it likely, though not certain; hence the title of this paper.[11] The "Devil," under the thesis, is a contrivance invented by God to explain to primitive peoples the Problem of Evil. Since an All-Powerful being could clearly kill the devil, the latter must just be the dual of God's good. The bad happenings made necessary for God to remain undiscovered in the data are attributed to the Devil, but our need for self-esteem in accomplishment is the ultimate reason for evil on earth, under the thesis. It should, however, be strongly emphasized that we, as humans, are unlikely to be able to observe the behavior of others and guess with any accuracy whether they are "good" or "bad." Indeed, and only partly in jest, one might assert that one is as likely to find a true believer in a strip joint or tavern as in a church. Many people go to church to make social connections, to appear pious, and so on...hypocrisy is rampant in on earth, making human judgements of who is good or bad quite suspect.

because the goods we consume would have no meaning if we did not have to work to get them. There would be more general problems of inability to appreciate happiness without the contrast of sadness, for example. One might suspect that we could just ask God for some sadness to attempt to better appreciate happiness, but that would be unlikely to work because we would know the resulting sadness to be fundamentally artificial. Life would have no meaning, we would lack self-esteem, and we would therefore be unhappy.

Thinking about this another way, does any worthwhile goal that we pursue come effortlessly, or does how much we have to work to achieve that goal have an impact on how "worthwhile" we feel it to be? A perception of God's existence might be about the most worthwhile goal a human could seek...but that might not be so if He just appeared in front of us effortlessly. As Beverly Sills expressed this, "There are no shortcuts to any place worth going". God, evolving from us, would quickly come to understand our psychological needs.

A more speculative reason why God might want to be minimally intrusive is that He would likely want each human being to know what all human beings went through on the evolutionary journey to God. God would want everybody to know, as humans, the entire gamut of human experience. We would want, hence God would want, that perceived experience to be the approximate truth, not some artificial Disneyland adventure ride.

Implication 3: Since God is All-Loving under the thesis and concerned about our happiness, He would not want to destroy our self-esteem by revealing His existence in an unambiguous way; there must be what seems to us like minimal intrusion, leading to faith rather than knowing.

Returning to the Problem of Evil from this perspective, it is clear that God can neither eradicate evil nor even be sure to have it properly punished, while rewarding good. For then people would know of God's existence rather than merely having faith in that, and we would lose our self-esteem as thinking creatures. This provides an explanation for why so

many seemingly bad people get rich and why busses crash and kill innocent children[11].

Even small children know that self-esteem not based on real merit is artificial (e.g. the blue ribbons for all participants, regardless of the quality of the performance, or the meaningless A, when every student gets one). If God gets "discovered" in the data (and statisticians are getting very good at discerning patterns in time series and cross-sectional data), we would inevitably have the problems discussed above. However, it would clearly be trivial for an All-Knowing entity to escape detection by humans. To avoid detection, though, requires that God's ever increasing good appear to be almost completely offset by ever-increasing evil, and that the distribution of both must at least *seem* nearly random to human observers.

There is another reason people become atheists, that will be significant to many, that should be discussed in the context of the thesis. Many atheists feel that religious tract accounts of God's apparently nasty, vengeful, and egotistical ways render Him too "petty" to plausibly exist. It is certainly the case that in the scriptures of Christianity, Islam, and Judaism, God engages in and condones some seemingly abhorrent acts, and is, moreover, demanding of worship. To sensitive/moral atheists, this sort of behavior is taken as evidence that God does not really exist. However, under the thesis God must be actually giving us what we want, because He loves us. Clarifying, consider reading a news account of a heinous act (e.g. the deliberate setting of a forest fire that does immense

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[11] The "Devil," under the thesis, is a contrivance invented by God to explain to primitive peoples the Problem of Evil. Since an All-Powerful being could clearly kill the devil, the latter must just be the dual of God's good. The bad happenings made necessary for God to remain undiscovered in the data are attributed to the Devil, but our need for self-esteem in accomplishment is the ultimate reason for evil on earth, under the thesis. It should, however, be strongly emphasized that we, as humans, are unlikely to be able to observe the behavior of others and guess with any accuracy whether they are "good" or "bad." Indeed, and only partly in jest, one might assert that one is as likely to find a true believer in a strip joint or tavern as in a church. Many people go to church to make social connections, to appear pious, and so on...hypocrisy is rampant in on earth, making human judgements of who is good or bad quite suspect.

damage to life and property). How many of us, upon reading that the individual involved "may face 65 years in jail," would not think, "Good!" If *we* are vengeful, why would a God, evolving from us and who loves us, be different? And who of us would be fully modest and self-effacing were we to possess great knowledge and power. Reiterating, we get the kind of God we want, because He loves us...as we evolve into a better species we are likely to be "given" the perception of a better God. The word of God cannot under the thesis be static, because what we want is not static, and God loves us (possibly accounting for the trend toward greater benevolence in the New Testament vis-a-vis the Old Testament). Attempts to preserve, as meaningful for today's world, static literal interpretations of religious scripture are likely to be misguided.

Much of the preceding relates to the ubiquitous theological discussions of free will versus determinism. We must, as humans with self-esteem, at east have the illusion of free will. Humans cannot ever know the exact mix of free will and determinism, as a corollary of God's desire to be minimally intrusive, the latter stemming ultimately from our own human preferences. That is, we really do not want to know of God's existence; rather, belief in God—but without absolute certainty—enables us to retain our self-esteem and to pursue happiness. It is *possible* that everything that takes place is God-determined, despite it appearing random to humans. And the appearance of randomness or the illusion of free will might be necessary for our self-esteem, hence a loving God would preserve ambiguity.

What about the Problem of Multi-Religion Inconsistency? The humans of this time, are attempting to interpret the various historical writings that are viewed as inspired (Bible, Koran, Torah, Bhagavad-Gita, Tao and so on). But we can't understand the writings very clearly because any signal we

would receive from God would require human interpretation and would likely come out wrong, at least in the details[12].

But, one asks, why would God make it hard for us, if he loves us? Again it is possible that humans might stop striving for knowledge if they really knew God existed, and that might threaten God's survival, since we cause Him to come into existence under the thesis. This is unlikely to be a pertinent argument, as already discussed.

More likely is the idea that we must, as part of actual or illusory free will, figure out what is God's will from the mixture of inspired and human inputs into the world's religious writings. God's will is clear, under the thesis, only in that it is in our best interest, because he loves us. We all do things that we think "aren't good for us" (e.g. drink too much, get fat, jealous, or arrogant) and God might agree with our assessment...or might not—He loves us. We often do not know what is in our interest, how best to behave, what God's will is, because even inspired writers of religious treatises are trapped in human bodies. The different religions, arising in different cultures, might well be merely differing responses to similar interventional stimuli[13].

As to the many purported "miracles" described in historical writings, a skeptic might ask why miracles were reported then, if God wants to be minimally intrusive, but not now. It is quite possible, since becoming All-Knowing is likely to be a process and not instantaneous, that God could perform physical feats (e.g. time travel, various miracles) prior to a full understanding of their implications for human well being. Perhaps after a few blatant miracles early on, God (and we, in fact, under the thesis) came to realize that it is not in our interests as humans to "know" of the existence of God, but

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[12] "Do unto others as you would have them do unto you" is pretty clear and is present in virtually all religions in one form or another. The religious writings considered collectively, however, are likely to have a good bit of the problem seem in the parable of the blind men attempting to describe the elephant, each from a limited perspective.

[13] Even for mundane events like a bank robbery, witnesses often describe the robber very differently because of their differing backgrounds and presuppositions.

rather we must believe—and continue to strive, preserving our self-esteem, and thus our happiness.

There are a great many controversies in theological circles. It seems likely that most of the belief that divide the world's peoples would have to be misinterpretations because, under the thesis, God loves us all[14].

4. Conclusion

In many respects the argument presented here is very simple, and has found repeated application throughout history. If mankind can conceive of something (flight, unraveling the secrets of DNA, or God's existence), we can bring it about—as has so frequently happened in the past, as science fiction later became science fact[15].

The thesis in review: 1) we evolve into an All-Knowing entity, 2) such an entity is All-Powerful, including the ability to time travel, 3) the entity loves mankind, as we love our own

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[14] For example, the notions, possibly obsolete at this time, of a "chosen people" and that God is male might plausibly stem from the ethnic and gender characteristics of the AI researchers that were the *proximate* causes of His existence. Or, equally speculatively, the maleness of God might stem from the fact that mutations, most of which are non-useful but some of which likely led to greater human mental capacity—hence to God—are six times more likely to come from males, due to the fragile XY chromosome, than from females.

[15] In some respects, the text notion that human "thinking" about the existence of something (e.g. the submarines of 20,000 Leagues Under the Sea) sets in motion acquisition of the knowledge to bring that something into being is related to Rene Descartes' "Proof of God." Descartes sequence of argument is, roughly:

1. I exist (Axiom)
2. I have in my mind the notion of a perfect being (Axiom, partly based on 1)
3. An imperfect being, like myself, cannot conceive of a perfect being (Axiom)
4. Therefore the notion of a perfect being must have originated from the perfect being himself (from 2 & 3)
5. A perfect being would not be perfect if it did not exist (Axiom)
6. Therefore a perfect being must exist (from 4 & 5)

The Great Chain of Being notions of early philosophy, when combined with those of Descartes and those presented here yield, if not a "proof," what is hoped to be a rather convincing thesis regarding the existence of God.

parents and ancestors, 4) being All-Loving implies minimal intrusion to protect human self-esteem, and, finally, 5) the need for minimal intrusion clarifies why the common objections to the existence of God may be misguided, under the thesis.

Being minimally intrusive to give self-esteem as well as an honest history to us all, pretty much guarantees that there will never be a scientifically satisfying "proof" of God's existence, in the sense of "consistency with data." Atheists sometimes argue that if the purported deity is beyond detection by modern science, there is no good reason to believe. But, the present argument weakens this position somewhat by providing a reason why God would not want to be scientifically detectable.

However, it should be noted that from a traditional scientific perspective the title to this paper is misleading, hence the question mark in the title. A truly "scientific" proposition must be at least potentially refutable, with reference to data. But, in the present setting, the proposition itself explains why such data will not be observable by humans. We must then find other reasons to believe or to disbelieve, perhaps having an experience that is inexplicable with respect to science. In the absence of the ideas expressed here, even those truly having a supernatural experience might find themselves suppressing that explanation, feeling that God must not exist since science has not yet detected Him. But, the failure to detect God is weak evidence for His non-existence in a world where He plausibly does not want to be discovered. God will obviously not be discovered if He does not wish to be.

One might ask "What's in it for God?" That is, if our esteem and happiness derive from successfully striving for the knowledge to improve the human condition, would becoming All-Knowing lead to boredom? The process of *becoming* All-Knowing would likely be fascinating for God, just as becoming "more-knowing" is for humans. However, actually being All-Knowing might well lead to boredom. This raises the, unanswerable at this time to humans, question of whether there has been one Big Bang or many. While exceedingly speculative, upon becoming All-Knowing, God might wish to institute another Big Bang to see what types of species emerge

and how long it takes one or more of those species to recreate Him...a process that could be continued indefinitely, whenever All-Knowing led to boredom.

In sum, the thesis provides a framework potentially offering guidance, if not understanding, for most on-going religious controversies. The discipline of economics is instructive in many respects. One of the central tenets of that discipline is that voluntary exchange in a competitive world maximizes the wealth of nations. That is, the perfectly functioning market system has been shown to give us the most of the things that we care about. But of course economics is mute on what it is that we *should* care about. On the one hand, God wants us to have what we want, because He loves us. But even we know that our preferences are often suspect—is it appropriate, for example, to buy another electric toothbrush or pint of high-fat ice cream in a world of poverty and starvation? It would seem, however, that those who believe that God wishes mankind to lead an ascetic "minimalist" life-style would be wrong, for human pleasure must be a good thing, under the thesis.

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