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A Refinement of Bertrand Russell's Celestial Teacup Analogy and Richard Dawkins' "Spectrum of Theistic Probabilities"

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Abstract

In this paper the theological views of both Richard Dawkins and Bertrand Russell are refined to make them more precise and consistent. Russell points famously to an example of a celestial teacup as an analogy for the existence of God. More specifically the analogy is used to argue against attempts to shift the burden of proof against the sceptic. In his book *The God Delusion,* Dawkins picks up on this example and uses it as a foundation to argue against agnosticism. While Dawkins' larger framework for considering the existence of God may or may not be appropriate, it is important that the refinements are emphasized to make the arguments clear. In short his "Spectrum of Theistic Probabilities", as introduced in his book *The God Delusion,* is adapted to include the consideration of infinite sets. This consideration makes Dawkins' own expressions of his viewpoint, and the teacup analogy more consistent—as Dawkins' categorization of his own views seem to push the use of the spectrum to its limit. For example, he claims his views don't fall precisely onto one of the 7 milestones of his spectrum. The author offers a correction of this by categorizing Dawkins' own views neatly onto one of the refined milestones.

Keywords

Philosophy of Mathematics, Philosophy of Religion, Bertrand Russell, Richard Dawkins, Philosophy of Science

1. Introduction

In Richard Dawkins' book, *The God Delusion,* Dawkins outlines his views on theology (Dawkins, 2006). More specifically, Dawkins attempts to categorize all

theistic views by laying out his "Spectrum of Theistic Probabilities" and its 7 milestones. Built into the reasoning used to arrive at his "Spectrum of Theistic Probabilities" is a critique of Stephen Jay Gould's "Principle of Non-Overlapping Magisteria". For Dawkins the question of God's existence should be treated like any hypothesis in science. Gould, for his part, believed that the domains of science and religion are entirely separate things—one domain about facts, the other domain about values. Many others have also weighed in on this debate (Bingham, 2012; Came, 2011; Lane, 2012; McGrath, 2008; Daley, 2015; Ruse, 2009, Ruse, 2012; Scruton, 2006; Van Biema, 2006). While it is not the author's intention to offer their opinion on this debate in detail, it is important for the background of this paper.

The main objective of the research in this paper is to refine both Dawkins and Russell's theological views using the precision of mathematical language for clarity. The author also looks briefly at how various perspectives about these refinements will likely be arrived at. As the title hints at and the abstract mentions, this paper seeks to refine Dawkins' "Spectrum of Theistic Probabilities" by heavily revising statements (2), (3), (5), and (6) of the spectrum. Not only is the spectrum itself revised, but later in the paper Dawkins' and Bertrand Russell's theological views are categorized onto the new, revised spectrum. It is now valuable to present Dawkin's "Spectrum of Theistic Probabilities", as it appears in *The God Delusion*. My version, whose explanation follows in Section 2, is more flexible in that it allows, and applies, the existence of infinite sets to the probability that at least one deity exists.

Richard Dawkins' "Spectrum of Theistic Probabilities"

1) Strong theist. 100% probability of God. In the words of C.G. Jung: "I do not believe, I know."

2) De facto theist. Very high probability, but short of 100%. "I don't know for certain, but I strongly believe in God and live my life on the assumption that he is there."

3) Leaning towards theism. Higher than 50%, but not very high. "I am very uncertain, but I am inclined to believe in God."

4) Completely impartial. Exactly 50%. "God's existence and non-existence are exactly equiprobable."

5) Leaning towards atheism. Lower than 50%, but not very low. "I do not know whether 1 God exists but I'm inclined to be skeptical."

6) De facto atheist. Very low probability, but short of zero. "I don't know for certain but I think God's existence is very improbable, and I live my life on the assumption that he is not there."

7) Strong atheist. "I know there is no God, with the same conviction as Jung knows there is one." (Dawkins, 2006: pp. 73-74).

2. The Refined Version of the "Spectrum of Theistic Probabilities" and Its' Explanation

The refinement of the spectrum begins by revising statements (2), (3), (5), and

(6) of Richard Dawkin's "Spectrum of Theistic Probabilities", as mentioned in the introduction. Statements (3) and (5) are rewritten to have corresponding intervals of 50% to 100% and 0% to 50% range of probabilities, respectively, excluding the endpoints of 0%, 50%, and 100% in the intervals. For statements (2) and (6) the values of 0% and 100% are given as corresponding probabilities for the existence of God. For all these revised statements, and to emphasize, the question of God's existence, whether pro or con, is not held to be absolutely certain. Of course, there is potentially some confusion here that should be cleared up before going further, as one might openly wonder how an event can either have 0% or 100% probability without having a certain conclusion about the event's occurrence, as occurs in revised statements (2) and (6) of the refined spectrum. The answer comes about when assigning a probability to certain events involving infinite sets (The CTHAEH, 2019). For example, if I were to pick a natural number at random, the probability of another blindly guessing what number was picked would be 0%. However, it is entirely possible that the correct number could be chosen. Likewise, standing this example on its' head, the probability of guessing a wrong number would be 100%, but not be absolutely certain. In his 7 milestones Dawkins confuses both 0% and 100% probability with absolute certainty, when this isn't the case when allowing for infinite sets.

Infinite sets, which are now accepted by the majority of philosophers of mathematics and working mathematicians, are crucial to the field of Set Theory. Set Theory serves as a foundation for mathematical fields as diverse as analysis, topology, discrete mathematics, and abstract algebra—fields which contain many applications. Historically many theists, first among them George Cantor, have seen the existence of infinite sets, along with other key axioms, as implying God's existence. The Catholic Church at the time even embraced Cantor's ideas, as is evidenced by (Dauben, 1977). However, there is no clear obligation for the atheist to embrace a finitist's position. In fact, due to the theorems of Gödel, the utter majority of mathematicians either have lost hope and any interest in disproving the consistency of modern set theory at worst, or have embraced its' assumptions fully. While there will certainly be more about infinite sets in this context later in this paper, we now turn toward Dawkins' arguments for atheism as it appears in his book, *The God Delusion*.

3. Dawkins' Arguments against Agnosticism and Russell's Celestial Teapot Analogy

To start to see his reasoning for atheism, and against agnosticism, note that in his section of *The God Delusion,* entitled "The Poverty of Agnosticism", Dawkins highlights two types of agnosticism—namely the "Permanent Agnostic in Principle" and the "Temporary Agnostic in Principle". It is the former type of agnosticism that is argued against in this section of his book (Dawkins, 2006: pp. 69-76). As the first argument against this type of agnostic, Dawkins points to the famous philosopher Auguste Comte and the declaration in his *The Positive Phi-*

losophy that the chemical components of stars would never be known (Comte, 1842: p.148). Dawkins points to this as the prime example, among many others, that the limits of scientific thought that exist in one age might very well not exist in another. With this argument applied to theology it can be said that while we might not know whether or not God exists in this age, we shouldn't preclude the possibility of being able to test the hypothesis in another.

In this same section Dawkins also considers the agnosticism of both T. H. Huxley and Bertrand Russell. Regarding Huxley and the original coining of the term "agnosticism", Dawkins notes that agnosticism holds neither a positive or negative creed, but rather is about method. The method is one in which truth is conjectured at by reasoning, and demonstrated through experiment. Dawkins argues that Huxley's views go out of their way to make room for the permanent type of agnosticism in principle. While we might not ever be able to disprove God's existence in the most technical of ways for Dawkins, he argues Huxley went too far to account for this technicality by not taking into account the burden of proof. To further illustrate the point Dawkins refers to Bertrand Russell's famous celestial teacup example in this same section. It is useful here to see Russell's entire quote that is taken from his paper "Is there a God?" which is offered below with the following:

"Many orthodox people speak as though it were the business of sceptics to disprove received dogmatists rather than of dogmatists to prove them. This is, of course, a mistake. If I were to suggest that between the Earth and Mars there is a china teapot revolving about the sun in an elliptical orbit, nobody would be able to disprove my assertion provided I were careful to add that the teapot is too small to be revealed even by our most powerful telescopes. But if I were to go on to say that, since my assertion cannot be disproved, it is intolerable presumption on the part of human reason to doubt it, I should rightly be thought to be talking nonsense. If, however, the existence of such a teapot were affirmed in ancient books, taught as the sacred truth every Sunday, and instilled into the minds of children at school, hesitation to believe in its existence would become a mark of eccentricity and entitle the doubter to the attentions of the psychiatrist in an enlightened age or of the Inquisitor in an earlier time" (Russell, 1952).

As Dawkins notes through Russell's celestial teacup analogy, this example stands against attempts to shift the burden of proof. Dawkins then goes on to argue that simply because we can't be absolutely certain when the burden of proof is shifted, we still have the ability to weigh the evidence in regards to God's existence. In Dawkins' book *The Blind Watchmaker*, for example, arguments against intelligent design are given which make an appeal to a creator unnecessary in the scientific sense (Dawkins, 1996). In the teacup example given by Russell, if we were to weigh the probability for the teacup to exist it would be extremely close to the value of zero, if not zero itself. One could further argue that given time Bertrand Russell could've come up with even more seemingly improbable examples to illustrate his point. In fact, and to emphasize, that seems to be the point of the example—to search the depths of one's mind to come up with

the most bizarre and unlikely of scenarios that is denied the ability to be tested, but yet remains technically possible. In mathematical language, the ideal is that the probabilities for the analogies given would approach a very small limit value for the probability given time to be both accurate and clear. It seems very likely that zero would be the value of this limit, as the starting example of the teacup analogy has an extremely small probability to begin with, and intuitively it would make little sense for the limit to be very small, but non-zero.

Note there have been many comments on the legitimacy of the celestial teacup analogy. Alvin Plantinga, for example, argues there is indeed enough evidence to argue against the existence of the teacup (Gutting, 2014). Peter Van Inwagen holds the argument itself isn't clear or logical upon scrutiny (Van Inwagen, 2012). The author has some sympathy for Plantinga's arguments, as there are many reasons regarding observed human behavior and conspiracy theories for us to disbelieve the existence of the teacup. After all, wasting precious resources to launch a teacup into orbit would generate attention. However, in response to Van Inwagen's arguments, we should give Russell some lead way here in the example. What Russell was reaching for is an analogy that would provide an extremely unlikely example that lacks the ability to be tested. While the example of the teacup itself might not hold up as the correct example to use, others have taken the example and argued for similar analogies, or independently discovered their own. For example, J.B. Bury uses the example of a race of English speaking donkeys, on a planet orbiting Sirius, whose existence would lack testability as an analogy for the existence of God (Bury, 1913: p. 20). Likewise Carl Sagan, in his book *The Demon Haunted World*, offers the analogy of an invisible and undetectable dragon that exists in a garage for his example (Sagan, 1995: pp. 169-188). Both these arguments are similar to the celestial teacup analogy and are, ultimately, the same type of argument.

To further argue for the revisions mentioned in this paper, note there is a key point where Dawkins flirted with the notion of revising his own spectrum to encompass his belief in the near absolute certainty of his de facto atheistic views. To more accurately present his own stance on the subject matter while he was a guest on the "Bill Maher Show", Dawkins described his own theological views as having a value of 6.9 on his own scale. One could easily ask him rhetorically something such as why 6.9, and not 6.99, or a value even closer to 7? As such it is a more accurate categorization to place him as a 6 on my scale, practically speaking. To see this even further consider the following quotation from Dawkins that was inspired in large part by Douglas Adams—with Adams' original quote appearing as a memoriam to the famous author at the beginning of *The God Delusion*: "I am agnostic to the extent that I am agnostic about fairies at the bottom of the garden". The original quote by Adams, which appears at the beginning of *The God Delusion*, is in response to those that hold scientific explanation takes the beauty out of everyday life. The exact quote from Adams, which appeared in the memoriam offered by Dawkins, is the following: "Isn't it enough to see that a garden is beautiful without having to believe there are fairies at the

bottom of it too?" In regards to the given example about fairies and gardens, if one is determined, a countless number of reasons for fairies to exist at the bottom of a garden could be given. However, even more vast and rich are the reasons those fairies couldn't be there.

To further explain note that the two previous sentences do hint at the study of indeterminate forms in calculus where quotients that take an indeterminate form can turn out to equal a number, or exist without bound. In the case of our example, if we were to assign a value of zero to the probability of any hypothetical scenario in which the fairies were to exist, we would have the numerator in indeterminate form and the overall quotient assigned to the probability of God's existence in indeterminate form. While one obviously can't be rigorous in this example, one possible answer for the final quotient of the indeterminate form $(0*\infty)/\infty$ is the probability of zero.

While it is unknown whether the framework given by Dawkins' "Spectrum of Theistic Probabilities" for the categorization of theological views holds any merit, it would seem that the rewritten 7 milestones are more consistent with the celestial teacup analogy, the other analogies provided, and Dawkins' own categorization of his views on the matter. It is interesting here to make note of George Cantor and his theological views, as this is not the first time in history someone has attempted to apply the notion of infinite sets in a theological context. Whether they are able to be applied to any definition of God has been debated, as there is an extremely large amount of literature that attempts to contrast the notion of the infinite in both mathematical and theological contexts. It is the author's contention in this context that Cantor was misguided to place such a heavy theological significance to his theorems, as the author holds sympathy towards the revised framework and the theological views of Russell and Dawkins. To see why we will now look at Cantor's discoveries and his personality in more detail.

4. The Case of George Cantor

Certainly Cantor was a complex case, and it took lots of time and effort to work out the consequences of his discoveries. No doubt they're quite remarkable, and their mathematical importance shouldn't be underestimated. However many, including Cantor himself, attached a theological significance to them that has been mentioned in section three of this paper. While the world during Cantor's time didn't have the applications to point to the significance of his theorems, and specifically the assumption of infinite sets, we now do. Let us consider then one of Cantor's axioms—namely the assumption of the existence of at least one infinite set. It can be stated that the study of Real Analysis, used for many applications, typically begins with the study of infinite sets such as the natural, rational, and real numbers as a building block for further study of the field. This course is often required at the PhD level, and if one doesn't take Real Analysis they'll almost assuredly run into Cantor's theorems and the study of infinite sets elsewhere. There is a solid reason for this requirement, as the content of Real

Analysis seeks to prove many of the important theorems which serve as a foundation for probability theory and all of statistics, just for examples. These two fields are used heavily to study stochastic processes as seen in finance, network and computer simulations, trading, modeling, quality control, queueing processes, and many other applications not mentioned. While the engineer, statistician, or computer scientist can certainly practice without the proofs, it can be stated that most in these fields would agree that Cantor's assumption of infinite sets had an indirect hand in discovering (or creating) many mathematical applications, with Real Analysis being just one field mentioned out of Topology, Discrete Mathematics, and Algebra.

To say it again, all these fields are extremely likely to hold applications derived indirectly, and in part, from Cantor's assumption of infinite sets. While the possibility hasn't been eliminated for some breakthrough that would eliminate the need to appeal to infinite sets for some of these types of proofs (and indeed, the possibility may never be eliminated), the majority of those concerned would hold that Cantor's theorems, with the key axiom, will always hold some measure of truth. Much as we might say Einstein's relativity refined Newtonian mechanics, but did not replace its' study entirely, it seems likely that further adaptations of Cantor's theorems won't make them entirely antiquated—even though the slim possibility remains open that someone will entirely replace Cantor's theorems through finitistic methods. As untrained physics students will very likely always begin their formal study with Newtonian mechanics, Cantor's theorems serve as a foundation of sorts for much of higher level mathematics that are extremely likely to stand the test of time.

Given all these observable, very likely consequences of infinite sets, there is no compelling reason to reject their existence out of fear of the theological arguments that follow. Certainly some will remain determined to see Cantor's assumption of infinite sets as implying proof of the divine, as some believers are bound and determined to do with nearly anything. While Cantor himself was guilty of over-romanticising his own theorems, that is quite typical of one that has spent years in an asylum. Not that we shouldn't give Cantor's theorems the proper respect they deserve and didn't receive in their time. The lack of respect, after all, may very well have contributed to Cantor overreaching and not being able to properly assess his own work. While Cantor's work was of extreme importance mathematically, the continued lack of attention towards his work probably caused Cantor to fixate on the world's failure to properly assess it—thereby causing him to obsess about it with all or nothing thinking. The choice was then given for Cantor to either reject the importance of his own theorems, or overinflate their worth, as a product of both sickness and lack of social understanding can cause.

5. What Advantages Are There to Being a "6" on the Amended Spectrum?

What then are the advantages for the sceptic to adopt the given framework pre-

sented by both Dawkins and Russell, the adaptations presented in this paper, and classify themselves as "6" on the refined spectrum—as it seems both Russell and Dawkins are more consistent in their views when classified in this way? The shifting of the burden of proof against the sceptic very much leads to a fact that, while true, the atheist should regard solely as a technicality providing no weight for, or against, the probability that God exists. While there can be no entirely disqualifying proof against the existence of deities by the very nature of the question, we can still weigh evidence against their existence. What people really demand when shifting the burden of proof against the sceptic is proof against God within a very limiting, read conservative, epistemological framework. The atheist's response in the past has been to point out the ridiculousness of playing along. While a strong response in itself, the adaptations in this paper classify the evidence presented by the technicality in relation to the other evidence. The atheist using the adaptations in this paper are classifying the shift in the burden of proof as providing a dead technicality that should hold no weight in regard to human action, or even how we view the probability of God's existence. No one should live their life upon the technicality provided when the burden of proof is shifted since there is other evidence the atheist could point to in regards to the probability of interest. In regards to this probability, the atheist could contend it has been historically overrated, is human nature to overestimate it, and is so unfathomably small (if non-zero) on the basis of the evidence that it would be best to just go ahead and estimate the probability as zero for human standards.

Concerning human action if we take the probability of interest as zero it allows the atheist to avoid decision problems such as Pascal's Wager, as is mentioned in detail in (Oppy, 1990: pp. 159-168). To see this note then that the expected payout from belief in a deity in Pascal's Wager would be in indeterminate form. In other words, the accompanying payout for belief in a deity, and being correct, would be multiplied by the probability of zero for the purposes of what the expected payout for belief would be. This value wouldn't necessarily be infinite as such, which is needed for the Pascal's Wager argument to be effective.

6. Likely Reactions of Existential Theologians

It is the case that while some would consider the question of God's existence to be outside the scope of science, either the awkwardness of the question as a scientific hypothesis or the improbability of the hypothesis itself can't be ignored. Along this line of thought note that even certain types of theologians, namely those of the existential variety, would hold that if the question of God's existence was considered solely under a scientific lens it would not seem very probable. To think of Kierkegaard in this way, for example, one is reminded of the notion of absurdity. To quote from Kierkegaard, and quickly summarize his thoughts, the following is offered: "If I am capable of grasping God objectively, I do not believe, but precisely because I cannot do this I must believe".

For Kierkegaard faith and reason stand in opposition. In order to reason out a proof for God's existence, or even weigh the probability for the existence of God,

one must see things objectively. Therefore anyone that attempts to understand God in this way, for Kierkegaard, is missing the overall point. Indeed, to religious thinkers like Kierkegaard, "believers" that seek objective proof for the existence of God are guilty of displaying insecurity in their own beliefs by needing them to be so concretely displayed. For Kierkegaard the notion of faith invites paradox and contradiction, much as we would hold life itself to be messy in this way. While this brings us full circle, and back to the debate between Gould and Dawkins highlighted in the first paragraph, we now move to the concluding remarks in this paper.

7. Conclusion

In conclusion the value of this paper lies in the fact that it ties Dr. Richard Dawkin's views on theology, Bertrand Russell's celestial teacup example, and similar analogies, to the notion of mathematical infinity. Although the author knows that mathematicians and philosophers of mathematics that are finitists might have no sympathy towards the refinement discussed here, many of them might also hold scepticism towards God. While the notion of mathematical infinity might be incompatible with theological scepticism, the author would argue this is not the case, and there certainly is no mathematical proof that this is the case. In final conclusion, arguments have been presented linking the given framework considered to the existence of infinite sets, especially the theological views of Richard Dawkins and likely, also, Bertrand Russell's celestial teacup analogy and other similar analogies. While the author has certain sympathies towards the framework, and strongly feels that there will be no good reason why one can't be an atheist that accepts both the framework, its improvements given here, and the existence of infinite sets, the author's point has been to make the views of Dawkins and Russell consistent and clear, hopefully, by appealing to mathematical language. While there certainly is no mathematical proof against the author's views, the author recognizes that the Dawkins' and Russell's theological views won't appeal to everyone—as is evidenced in Section 6 of the paper. Though this is the case, the author hopes to have made the various positions in regards to the improvements given clear. Certainly theologians won't accept the framework, improved or not, but should recognize that it is more consistent and clear in the form found in this paper—even if the goal is to attack and reject it.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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