A Note on Johnson's "A Refutation of Skeptical Theism"[1]

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Abstract: In a recent article, David Kyle Johnson has claimed to have provided a "refutation" of skeptical theism. Johnson's refutation raises several interesting issues. But in this short note I focus on only one—an implicit principle Johnson uses in his refutation to update probabilities after receiving new evidence. I argue that this principle is false. Consequently, Johnson's refutation, as it currently stands, is undermined.

In a recent article, David Kyle Johnson has claimed to have provided a "refutation" of skeptical theism. Johnson's refutation raises several interesting issues. But here I focus on only one—an implicit principle Johnson uses in his refutation to update probabilities after receiving new evidence. I argue that this principle—which I dub "*Equal Distribution*"—is false. Consequently, Johnson's refutation, as it currently stands, is undermined. In section I, I begin by considering Johnson's formulation of skeptical theism, before stating his argument. In section II, I argue that *Equal Distribution* is false. I close by responding to two objections.

I.   Johnson's Refutation

Johnson formulates skeptical theism as implying two claims. First, Johnson claims that skeptical theists are committed to the view that, for each evil, there is a justifying good—a good that outweighs the relevant evil and logically requires the existence of that evil (or something equivalently bad).[2] But many skeptical theists are willing to concede that we are often unable to detect (at a particular time and with some effort) the relevant justifying good. Such evils are called 'seemingly unjustified evils,' since they *seem* not to be justified. Second, Johnson claims that skeptical theists are committed to the view that the existence of seemingly unjustified evils is not evidence against the existence of God *at all*. In other words, learning that there are seemingly unjustified evils does not reduce *to any degree* the probability that God exists. To put the thesis in notation familiar to these discussions: $P(G/E \& k) \geq P(G/k)$, where 'G' is "God exists," 'E' is "there is a seemingly unjustified evil," and 'k' is relevant background information shared by atheists and theists.[3]

Johnson identifies two questions we can ask of a justifying good for a particular evil and our inability to detect it (2013: 431). First, is God's existence probabilistically relevant to the existence of that justifying good? In other words, if God exist, does it increase the probability that there is a justifying good?[4] Second, is God's existence probabilistically relevant to our

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[2] According to Johnson, skeptical theists are committed to this in virtue of being theists (429 fn.18; cf. 427). While I am not entirely convinced this is a commitment of skeptical theism, I will not press the point.

[3] (2013: 429) It is also not clear that this is a commitment of skeptical theism. Perhaps skeptical theism will not be refuted even if seemingly unjustified evils reduce the probability of theism *some*, but not by very much at all (cf. Wykstra (1996: 145-6)). Again, I will not press the point here.

[4] Johnson use of "probabilistically relevant" is curious. He writes as if "A is probabilistically relevant to B" implies that the probability of B, given A, is higher than the probability of A by itself. This is a curious because it seems to eliminate the possibility that A is probabilistically relevant to B by *reducing* the probability of B. However, this does not matter as long as we are clear about this usage.

inability (at a time) to detect that justifying good? In other words, if God exists, does it increase the probability that we are unable to detect that justifying good?[5]

Then, for any seeming unjustified evil and its justifying good, there are then four, mutually exclusive and exhaustive views that a skeptical theist might adopt:

A. God's existence is probabilistically relevant to both the existence and undetectability of the justifying good.
B. God's existence is probabilistically relevant to the existence but not the undetectability of the justifying good.
C. God's existence is probabilistically relevant not to the existence but only the undetectability of the justifying good.
D. God's existence is not probabilistically relevant to either the existence or the undetectability of the justifying good.

At this point, we are able to formulate Johnson's argument. He claims that no matter which of these options that skeptical theist chooses *the probability of God's existence decreases*. It thus follows that the existence of a seemingly unjustified evil reduces the probability of God's existence *contra* skeptical theism. Skeptical theism is refuted. More schematically, we can put the argument like this:

(1) For an existing seemingly unjustified evil, either (A), or (B), or (C), or (D).
(2) If (A), then the probability of God decreases, given that the seemingly unjustified evil exists (i.e. P(G/k) > P(G/E & k)).
(3) If (B), then the probability of God decreases, given that the seemingly unjustified evil exists (i.e. P(G/k) > P(G/E & k)).
(4) If (C), then the probability of God decreases, given that the seemingly unjustified evil exists (i.e. P(G/k) > P(G/E & k)).
(5) If (D), then the probability of God decreases, given that the seemingly unjustified evil exists (i.e. P(G/k) > P(G/E & k)).
(6) So, the probability of God decreases, given that there is a seemingly unjustified evil (i.e. P(G/k) > (G/E & k)).
(7) So, skeptical theism is false.

(7) follows from (6) by Johnson's definition of skeptical theism. (6) follows from (1)-(5) by the standard rules of logic. Since the theist concedes that there are seemingly unjustified evils, which nevertheless have justifying goods, and (A)-(D) are mutually exclusive and exhaustive, the theist must concede (1). The controversial premises, then, are (2)-(5). Johnson's arguments for (2)-(5) all rely on a principle I call *Equal Distribution*. Since his reliance on *Equal Distribution* is the same for each of (2)-(5), I'll just illustrate it in the case of (2).

As is usual,[6] Johnson begins by assuming that the probability of God's existence is just as likely as not (2013: 432):

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[5] In introducing these questions, Johnson does not clear distinguish between questions of epistemic probability and ontology. His questions are clearly about epistemic probability. But the examples he provides (e.g. 2013: 430) are concerned with ontology, in particular, whether or not a justifying good would exist whether or not God did or whether or not a justifying good is detectable whether or not God exists. But questions about ontology and epistemic probability might differ—for instance, a justifying good of an evil may necessarily exist if the evil does (so, ontologically, God's existence is not relevant to the existence of the justifying good) but supposing the justifying good is so great God may desire to bring it about (so, epistemically, God's existence is relevant to the existence of the justifying good). I return to this point at the end of section II.

[6] The reason for this is to determine to what degree seemingly unjustified evils are evidence against the existence of God *independently* of arguments the theist might provide for theism.

$$P(G/k) \quad = .5$$
$$P(\sim G/k) \quad = .5$$

Then for a particular evil, e, we can consider three views: (G_1) God exists, and (i) there is a justifying good for e, and (ii) it is detectable; (G_2) God exists, and (i) there is a justifying good for e, but (ii) it is *not* detectable; and ($\sim G$) God does not exist. (Note that we've assume that, for each evil, there is a justifying good for it, so we do not consider the possibility that God exists but there is no justifying good for that evil.) Since this is first case—where God's existence is probabilistically relevant to the existence and undetectability—Johnson claims that G_1 should have a higher value than G_2. He provides an arbitrary value, noting that this conclusion will follow just so long as G_1 does not have a zero probability (2013: 434, fn. 29). Given one further assumption,[7] he is correct about this. So, let us follow his assignments:

$$P(G_1/k) \quad = .125$$
$$P(G_2/k) \quad = .375$$
$$P(\sim G/k) \quad = .5$$

Now suppose, as many skeptical theists will concede, that after spending some time considering what good would justify God in permitting the relevant evil e, we come up empty handed. That is, suppose that we cannot detect a justifying good for e. At that point, we learn two things. First, we now know that E, i.e. that there is a seemingly unjustified evil, namely e. Second, we know that G_1 has been falsified, because it states that the good is detectable. So G_1 should now get a probability of 0.[8] This leaves .125 which needs to be redistributed among the remaining hypotheses G_2 and $\sim G$.[9] How should we redistribute it? While Johnson does not spend much time explicitly addressing this question, his practice in all four cases (and the Smith example he provides) shows that he adheres to the following principle:[10]

> *Equal Distribution*: If there is a set of mutually exclusive and exhaustive hypotheses $H_1 \ldots H_n$, then if one of the hypotheses H_x with a value of a is falsified (gets a probability of 0) due to new information, then for any hypothesis that is not identical to H_x, it's new value is its previous value plus $a/(n-1)$.[11]

More informally, this principle states that if there is a range of (exhaustive and exclusive) hypotheses, and one of those hypotheses is eliminated, then one equally distributes its previous probability among the remaining hypotheses. Applying *Equal Distribution* to our case, once G_1

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[7] The assumption is that the conditional probability of the justifying good being undetectable given that God does not exist is 1 (or very close to it). As we'll see below, it is very important that this assumption is true, even though Johnson does not defend it.

[8] One might object that G_1 should not have a value of 0 but something very close to 0—even if the relevant good is detectable, sometimes we do not detect things we ought to because of fluky events. But Johnson could reformulate his argument—no better, no worse—with G_1 having a value slightly higher than 0, so this would not be a significant objection.

[9] We must redistribute the probability so as to not violate an axiom of probability that holds that the probability of mutually exclusive and exhaustive hypotheses should add up to 1. Since G_1 has been eliminated, G_2 and $\sim G$ are mutually exclusive and exhaustive.

[10] See (2013: 433; 434; 435fn. 32; 442; 18; 443 fn. 45; 444). Note that he does say "…but when you update your probabilities (by taking the probabilities of the falsified hypothesis and dividing it among the remaining ones)…" (2013: 434) which is good evidence that he accepts *Equal Distribution*.

[11] *Equal Distribution* applies only in a case where a hypothesis gets a new value of 0. This is a limit case. We can easily generalize the principle to apply to cases where a hypothesis deceases in value, even if it does not get a new value of 0 as follows:

Generalized Equal Distribution: If there is a set of mutually exclusive and exhaustive hypotheses $H_1 \ldots H_n$, then if one of the hypotheses H_x goes from a value a to a lower value b, then for any hypothesis that is not identical to H_x, it's new value is its previous value plus $(a-b)/(n-1)$.

is eliminated, we must redistribute .125 evenly among our remaining two hypotheses, giving them the following new values:

$P(G_2/E \& k) = .4375$
$P(\sim G/E \& k) = .5625$

But the only remaining theistic hypothesis has *decreased* in value due to learning that we cannot detect a particular justifying good for an evil. So, even if God's existence is relevant to both the existence and detectability of E's justifying good, learning of a seemingly unjustified evil drops the probability that God exists from .5 to .4375—which is all that (2) asserts, thus (2) is true.

Johnson uses this exact same reasoning, with its reliance on *Equal Distribution*, in his defense of (3), (4), and (5)—he provides multiple hypotheses, eliminates one, and uses *Equal Distribution* to redistribute the remaining value. Consequently, to undermine his argument, it is sufficient to show that *Equal Distribution* is false. The next section does just that.

II.   *Equal Distribution* **is false**

In this section, I argue that *Equal Distribution* is false. This undermines Johnson's refutation. Using Bayes' theorem, I'll provide some counterexamples to *Equal Distribution* below. I'll then consider two objections: first, there is something problematic with my using Bayes' theorem, and second, Johnson's refutation can be reformulated in terms of Bayes' theorem (instead of *Equal Distribution*) to reach the same conclusion.

First, before providing some counterexamples, it should be somewhat intuitive that *Equal Distribution* is false. If one has a range of hypotheses, and one is eliminated by a piece of new information, then intuitively the value of each remaining hypotheses should be determined by (i) the probability of that hypothesis prior to learning the new information, and (ii) to what degree that hypothesis predicts that information, i.e. how probability that information is, conditional on that hypothesis. But *Equal Distribution* does not take into account what degree the remaining hypotheses predict the new information. And, of course, not all hypotheses will equally predict a new piece of information. So it should be no surprise that there are counterexamples to the principle.[12]

Here is a simple counterexample. Let us suppose we have three mutually exclusive and exhaustive hypotheses with the following values:

$P(H_1/k) = .475$
$P(H_2/k) = .475$
$P(H_3/k) = .05$

Let us suppose, for a piece of evidence E, H_1 and H_3 highly predict it, while H_2 predicts its denial—that is, H_2 entails its denial. We can represent these using conditional probabilities as follows:

$P(E/H_1 \& k) = .95$
$P(E/H_2 \& k) = 0$
$P(E/H_3 \& k) = .95$

Now suppose we learn that E. This eliminates H_2, requiring us to redistribute .475 among H_1 and H_3. According to *Equal Distribution*, we should have the following values:

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[12] There are cases where *Equal Distribution* gets the right results—for instance, simple cases involving a fair dice, where one gradually learns more information as to what number did not come up. But *Equal Distribution* only gets the right results in these cases because (i) all of the hypotheses—e.g. that it came up a 1, or a 2, or a 3, etc.— begin with an equal value, and (ii) all of the them equally predict the new information (e.g. it is not a 3) as it comes it—e.g. if it came up a 1, then the probability of it coming of a 3 is 0; if it came up a 2, then the probability of it coming of a 3 is 0, etc.

P(H₁/E &k) = .7125
P(H₃/E & k) = .2875

However, a straightforward application of Bayes' theorem shows this is not the case.[13] Let us apply Bayes' theorem to determine the value of H₃ after learning E, represented as P(H₃/E & k):

$$P(H_3/E \text{ \& } k) = P(H_3/k) * P(E/H_3 \text{ \&} k)/P(E/k)$$

We already know two of the values on the right hand:

$$P(H_3/E \text{ \& } k) = .05 \ * \ .95/P(E/k)$$

All that remains is to determine the value of P(E/k). It is equivalent to:[14]

$$P(E/k) = P(H_1/k)*P(E/H_1\text{\&}k) + P(H_2/k)*P(E/H_2\text{\&}k) + P(H_3/k)*P(E/H_3\text{\&}k)$$

And we know that following values already hold from above:

$$P(e/k) = .475*.95 \ + .475*0 + .05*.95$$

$$P(e/k) = .49875$$

Plugging this in to the equation above, we get the following value for H₃ (and the corresponding value for H₁):

P(H₁/E &k) = .905
P(H₃/E & k) = .095

So, a straightforward application of Bayes' theorem shows that *Equal Distribution* is false. This is because *Equal Distribution* fails to take into account those key conditional probabilities that represent how well a hypothesis predicts new information. In fact, by manipulating *just* those conditional probabilities one can produce other counterexamples. For instance, suppose one keeps all the same values of the previous counterexample except one: P(E/H₁ & k). In the previous example, this value was quite high—.95. But, supposing it was quite low, say, .05, we could construct another counterexample. Since *Equal Distribution* does not take into account the conditional probabilities of the hypotheses, given the new information, for this new counterexample, it will predict the same values, namely:

P(H₁/E &k) = .7125
P(H₃/E & k) = .2875

But, as the reader can easily verify by applying Bayes' theorem, the correct values are:[15]

P(H₁/E &k) = .3333
P(H₃/E & k) = . 6667

I think there are three lessons to be learned from these counterexamples. First, *Equal Distribution* is false, and so Johnson's refutation as it currently stands is undermined. Second,

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[13] Strictly speaking, Bayes' theorem is just a theorem in the logic of probability. This kind of application is to use Bayes' theorem as a useful tool for determining epistemic probabilities (see Wykstra and Perrine (2012: 384-6) for discussion of this use).

[14] This is according to the total probability theorem.

[15] Rounded off.

there's a general lesson to be learned from the two counterexamples to *Equal Distribution*, namely that when calculating the probability of a hypothesis, given new information, the conditional probabilities can play an extremely important role.

The third lesson is applying the general lesson to the case of skeptical theism. Johnson's aim is to refute skeptical theism, i.e., to show that learning that there are seemingly unjustified evils reduces, to some degree, the existence of God. To do this he should provide certain conditional probabilities, specifically, the probability of there being seemingly unjustified evils, given God exists—P(E/G & k)—and the probability of there being seemingly unjustified evils, given God does not exist— P(E/~G & k). Until he does that, he'll be unable to refute skeptical theism.

One might concede that I am correct that using Bayes' theorem it is easy to construct counterexamples to *Equal Distribution* but press two objections as to how this is a critique of Johnson's refutation.[16] First, one might point out that, in presenting his refutation, Johnson himself does not use Bayes' theorem in his argument, even using an example "for the sake of those unfamiliar with Bayes' theorem" (2013: 430).

But it is unclear how this is response to my criticism. Johnson's resistance to using Bayes' theorem in his formulation of the refutation seems primarily due to presentational reasons— fewer people would understand it, if it were formulated in terms of Bayes' theorem, since fewer people understand Bayes' theorem. Johnson's resistance to using it does not seem to stem from a substantive disagreement with using Bayes' theorem. In fact, the example Johnson uses is to "clarify and simplify" Rowe's Bayesian defense (2013: 433) not supplement that defense with a different principle. Further, at one point, Johnson seems to explicitly accept Bayes' theorem as "being the definitive method for determining epistemic probabilities" (2013: 428), and he is very clear we are here concerned with epistemic probabilities (2013: 427). Thus, even though Johnson does not use Bayes' theorem in his argument, his apparent acceptance of it means that there is no barrier to me using Bayes' theorem to showing *Equal Distribution* false and thereby undermining his argument.

(It is possible that I've misread Johnson and that he actually rejects Bayes' theorem for *Equal Distribution*. But if this is what he thinks, then he is departing from something than almost all parties of this dispute—including Rowe and Wykstra—accept, and the burden of proof would be on him to justify such a departure.[17])

A second objection is to concede that *Equal Distribution* is false, but that Johnson's argument could easily utilize Bayes' theorem to get the same result, i.e. that (2)-(5) of the argument above are true. After all, Johnson's four possible cases, (A)-(D), seem highly relevant to the key conditional probabilities that I've claimed need to be provided for his refutation to succeed. So, one might think, while there is something problematic with a simpler presentation of the argument that utilizes *Equal Distribution*, there's a quick "Bayes' theorem" fix that is immune from my objection.

I agree that Johnson's four possible cases, (A)-(D), are relevant to the key conditional probabilities, and I agree they offer a useful way forward for determining the key conditional probabilities. However, not all of the conditional probabilities are settled from the mere fact that one is considering one particular case. And in so far as it is Johnson who is providing the

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[16] Thanks to [RfBV] for raising versions of both of these worries.

[17] For instance, if Johnson were to argue that, in these particular cases, Bayes' theorem and *Equal Distribution* get the same result, then his use of *Equal Distribution* would be permissible. But to argue that they get the same result, he'd have to provide the key conditional probabilities—which is exactly what I'm urging is necessary! (Thanks to [RfBV] here.)

refutation, the burden of proof is on him to provide and justify *all* the relevant conditional probabilities.

To illustrate this point, I'll consider how to apply Bayes' theorem to the first case we considered above. In this case, recall, we are assuming that God's existence is probabilistically relevant to both the existence and undetectability of a justifying good for a particular evil *e*. We then have three mutually exclusive and exhaustive hypotheses: (G_1) God exists, and (i) there is a justifying good for *e*, and (ii) it is detectable; (G_2) God exists, and (i) there is a justifying good for *e*, but (ii) it is *not* detectable; and (~G) God does not exist. We assumed the following initial values:

$P(G_1/k)$ = .125
$P(G_2/k)$ = .375
$P(\sim G/k)$ = .5

In order to use Bayes' theorem, we would have to provide the relevant conditional probability for each hypothesis (where 'E' is 'we are unable to detect the justifying good for *e*'):

$P(E/G_1 \ \& \ k)$ = ?
$P(E/G_2 \ \& \ k)$ = ?
$P(E/ \sim G \ \& \ k)$ = ?

The first two conditional probabilities are easy to determine. Given that G_1 says that that the justifying good *is* detectable, the conditional probability of E, given G_1, is 0 (i.e. $P(E/ G_1 \ \& \ k) = 0$).[18] Given that G_2 says that that the justifying good is *un*detectable, the conditional probability of E, given G_2, is 1 (i.e. $P(E/G_2 \ \& \ k) = 1$). So far, so good. But what about the conditional probability of E on ~G? This is an important conditional probability. If its value is above .75, then Johnson's (2) is true: learning that E reduces the probability of theism, even if God's existence is probabilistically relevant to both the existence and undetectability of a justifying good for a particular evil. However, if the value is .75 or below (2) is false, and learning E either does not reduce the probability of theism or even raises it slightly.[19]

But at this point Johnson has not provide a value for this conditional probability, and it does not fall out of anything that's been said yet. One might be tempted to think that the value for this conditional probability falls out of the fact that we are considering the first case where God's existence is probabilistically relevant to both the existence and undetectability of a justifying good. In particular, one might be tempted by the following line of reasoning:[20]

If God's existence is probability relevant to both the existence and undetectability of the justifying good, then it follows (as Johnson sees it) "if God does not exist, the [justifying good] does not exist at all" (2013: 434). Consequently, the non-theistic hypothesis, ~G, should not be formulated as 'God does not exist'—as I did above—which leaves open whether the justifying good exists, but instead as "God does not exist (and neither does the relevant [justifying good])" (2013: 434). But when it is formulated this way, the conditional probability of E, on ~G, is 1 (i.e. $P(E/\sim G \ \& \ k) = 1$). For if there is no justifying good (as ~G now asserts), then the probability of us not detecting it is 1 (since it's not there to be detected)! So, from the mere fact that we are considering this first case, this conditional probability merely falls out. Further, it is higher than .75, which means that Johnson's 2 is true.

Tempting though this line of reasoning may be, it is too quick. And clearly the problem is the first step: from the mere fact that God's existence is *probabilistically relevant* to the

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[18] Again (cf. fn. 8), we could permit this value to be slightly higher, but not much would hang on it.
[19] I've omitted the calculations here; but they method is the same as the one used above.
[20] Thanks to [RfBV] for suggesting something like this line of reasoning to me.

existence of a justifying good, it does not follow that if God does not exist, then neither does the relevant justifying good. To use an analogy, the existence of a kindly neighbor is probabilistically relevant to my having homemade cookies during the holiday season—the probability of my having homemade cookies is more likely, given such a neighbor, than it is by itself. But from the mere fact that I do not have a kindly neighbor, it does not follow that I do not have homemade cookies during the holiday season! So one should not formulate the non-theistic hypothesis, ~G, in this first case as Johnson does, and this quick attempt to vindicate his refutation fails.

In conclusion, I've undermined Johnson's refutation of skeptical theism by showing that the principle he relies on—*Equal Distribution*—is false. I constructed counterexamples to it using Bayes' theorem. I considered whether Johnson's argument could be reformulated using Bayes' theorem. I argued that it cannot because Johnson has yet to provide some key conditional probabilities. While the four possibilities (A)-(D) he draws our attention to are interesting and important, more work needs to be done before they can be used to refute skeptical theism.

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