Why Pascal was Wrong After All

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Here's an argument for why you should believe in God.[1] Alan Hájek doesn't think it works in the end, but here is the argument first.[2]

No matter how committed of an atheist you might be, you should give some positive probability (just needs to be greater than 0) that God exists. Someone might give a one in a Googol chance that God exists or you might think there's a very high probability that God exists. Regardless of what you believe, you should believe there's some probability greater than 0 that God exists. If you think the probability is 0, how are you so sure?

Granting this premise, here's all the possible outcomes for either wagering for God or wagering against God. I'll explain what the values mean in a second.

Action (↓)	God Exists	God Doesn't Exist
Wager for God	∞	f_1
Wager against God	f_2	f_3

To wager for God means "adopting a certain set of practices and living the kind of life that fosters belief in God" for the rest of your life (p.28). This ensures no cheating by, for example, wagering for God only on Sundays. To fail to wager for God means to wager against God.

Each action and outcome is associated with some utility value. You can think of it as a unit for measuring happiness. For example, if I wager for God and it turns out that God exists, I will (supposedly) be granted salvation, which is infinite utility. All other values ($f_1, \ f_2, \ f_3$) are some finite values that are not important enough to specify. We could imagine that f_1 and f_2 are negative and f_3 is positive, but the lesson will be that their actual values do not matter.

Now granting that this table is correct, we have one more premise to think about. We should choose to do the action that has maximum expected utility. This should seem intuitive, but of course, you might have some objections to this premise.

[1] But it's not an argument for the existence of God!

[2] "Waging War on Pascal's Wager," *The Philosophical Review* 112:1 (2003):p.27-56

Click here for an explanation of expectation

Expectation or expected value is a weighted sum. It answers the question of what do we expect to happen when there are more than one possible outcomes for some action we take. To calculate expectation, we take each outcome and weight it by its corresponding probability of occurring. To find the expected utility of wagering for God, we would multiply the probability that God exists by ∞ and add the result of multiplying the probability that God doesn't exist by f_1. This sum would be ∞ so the expected utility of wagering for God is ∞.

Now, we have all 3 premises of Pascal's Wager: (i) we should give a positive probability to God's existence, (ii) the table, and (iii) we should do the action that has maximum expected utility. If we calculate the expected utility for each action from the table, wagering for God wins out because it has an expected utility of ∞ and wagering against God has some high finite expected utility at best.

It's important to note here that anything multiplied by ∞ is still ∞ and anything added to ∞ is still ∞ so it doesn't matter how low of a probability you give to God's existence as long as it's greater than 0. This is why the actual values in the table do not matter. Infinity trumps all.

Thus, we should wager for God because it has the highest expected utility. This is why you should believe in God.[3]

Not convinced? There is a whole slew of arguments out there against each premise of the Wager. For example, "the many Gods objection" disputes that the table is exhaustive because there are many religions out there. How do we know which God to wager for? We might need to add rows for wagering for other Gods. Then, Pascal's Wager fails because it doesn't tell us which God to wager for.

But Hájek thinks that the Wager fails at a more fundamental level.[4] He argues that the Wager is not a valid argument.

Click here for an explanation of validity

First, an argument is a list composed of some premises (there may be none!) and a conclusion. An argument is valid if its conclusion is always true when its premises are true. For example:

1. If I am an egg, then I can fly.
2. I am an egg.
3. I can fly

Our argument–though I agree looks absurd–is in fact valid. If premises 1 and 2 are true, there is no way 3 can be false. We think this argument is absurd because premises 1 and 2 are false. Then, we may call this argument unsound.

[3] This argument is called Pascal's Wager as mentioned before.

[4] Hájek credits Antony Duff and Richard C. Jeffrey for the origins of his argument.

A sound argument is a valid one, where its premises are also true. An unsound argument is valid but one or more of its premises are false.

By arguing for this claim, Hájek is avoiding spending any time on whether any of the premises are false. He is granting any defender of the Wager all the premises but still showing that the argument fails. He's essentially beating them at their own game. How cool is that!

Here's how it goes. What Hájek shows is that there are other actions (he calls these mixed strategies) that also have infinite expected utility. Then, wagering for God will not be the only action that has infinite expected utility so it won't be true that we should wager for God because it has the highest expected utility. We could instead do this other action that has infinite expected utility so it also has the highest expected utility.

Notice here that this reasoning means the premises of the Wager could be all true but the conclusion false. It could be the case that we should do some mixed strategy because it also has the highest expected utility. Thus, the Wager is invalid.

A mixed strategy is best explained with an example. For starters, let's say the strategy is that I flip a coin and wager for God if it lands heads and wager against God if it lands tails. Then, if we calculate the expected utility $(0.5(\infty)+0.5(f_1)\ )$, we get ∞! This mixed strategy of flipping the coin also has infinite expected utility like just wagering for God.

But it gets worse. We can use other absurdly low-probability events in mixed strategies. One strategy could be wagering for God if I win the lottery and another could be wagering for God if an asteroid lands on top of me today. These all have infinite expected utility so it isn't the case that we should simply wager for God. There's no reason to simpy wager for God over all these mixed strategies. They all have the same expected utility of infinity.

If you think this is bad for Pascal, it gets even worse. As Hájek points out, every action we take is a mixed strategy. There's a positive probability that you'll wager for God by the time you finish reading this sentence. Thus, the act of reading that sentence had infinite expected utility. By similar reasoning, every action has infinite expected utility. It seems like things have really gone off the rails now.