LOTTERIES, POSSIBILITY AND SKEPTICISM.

(This paper is the Oswaldo Porchat Award winner)

DANIEL IMMERMAN.
(University of Notre Dame) E-mail: dimmerma@nd.edu

Imagine that you parked your car on Avenue A a few hours ago and are now sitting in an isolated corner of the library reading a book. Suddenly, your friend comes up to you and offers you the following argument:

1. It is possible that the following proposition is true: a nearby zoo was flying in an elephant when the plane suddenly had to make an emergency landing somewhere near your car, whereupon the elephant escaped, and, quite irritated, found your car and pushed it several blocks away.[1]
2. If it is possible that this proposition is true, then you are not in a position to know that it is false.[2]
3. If you are not in a position to know that it is false, then you don't know that your car is parked on Avenue A.

–

4. You don't know that your car is parked on Avenue A.

You tell your friend that this argument looks unpromising. This is because you, like most philosophers, are a *fallibilist*. That is, you think that you can know that a proposition is false even if it is possible that the proposition is true. So you tell your friend that you see little reason to accept Premise 2.

Being a philosopher herself and not so easily deterred, your friend offers you a second argument. She first notes some facts that you readily acknowledge: you parked in a

---

[1] As I shall make explicit later, by "possible" here I mean nomically possible given your evidence.

[2] I shall be using the term "position to know" throughout this paper. This term is widely used but rarely defined. Some people use it to mean being one step away from knowing. On their use, one is in position to know just in case if one did just one thing, e.g. made one deduction, one would know. So, for instance, according to these people, I am not in a position to know Goldbach's Conjecture, even if it follows from axioms I believe, because it would take multiple steps to prove it from the axioms. I do not mean to use "position to know" in this sense. Rather, as I shall be using the term, one is in a position to know P (roughly) just in case one's epistemic position is quite close to knowledge in some respect, e.g. one's evidence for P is knowledge-level. Thanks to Robert Audi and Scott Hagaman for pressing me on this point.

neighborhood where cars are sometimes stolen and your car is no more or less attractive to thieves than the other cars nearby. She then argues as follows:

1. There is a good chance that at least one car in the neighborhood has been stolen and you have no special reason to think it isn't yours, as opposed to someone else's.
2. If so, then you are not in a position to know that your car hasn't been stolen.
3. If so, then you don't know that your car is parked on Avenue A.

–

4. You don't know that your car is parked on Avenue A.

This argument looks a good deal better than the first argument, and you tell your friend this. She agrees with you that the second argument is *strong*, that is, it is valid and each of its premises is plausible. But she also maintains that her first argument was strong as well – indeed, quite surprisingly, she holds that the two arguments are of *roughly the same strength*, that is, they are both valid and their premises are of roughly equal plausibility.

In this paper, I will be defending your friend's view, or rather, a generalized version of it. In particular, I will be comparing two sorts of argument, which I will be calling "possibility arguments" and "lottery arguments." Your friend's first argument was a possibility argument and her second argument was a lottery argument. I hope to show that both sorts of argument are strong. More importantly, I also hope to show that they are of roughly the same strength.

One reason my conclusion is significant is because it is somewhat surprising. Another reason is because possibility arguments yield a fairly strong form of skepticism. This is because, as we shall see, possibility arguments target a large number of propositions that you believe – they target any proposition such that its negation is nomically possible, given your evidence. By contrast, it is less clear that lottery arguments target a large number of propositions you believe. In particular, lottery arguments turn on some very specific features being present in a situation. For instance, the lottery argument I provided turned on the fact that there was a good chance that at least one car was stolen and that yours was no less likely to be stolen than any other. It is not clear that similar features are present regarding most of your beliefs. So it might have been hoped that even if one said that lottery arguments were strong, the kind of skepticism one was committed to via them was relatively mild.

In the first section of this paper, I offer precise definitions of "lottery argument" and "possibility argument" and make some initial remarks about the strength of these sorts of arguments. In the next three sections, I give three sorts of arguments for my conclusion, one of which appeals to intuitions, one of which appeals to epistemic principles, and one of which appeals to principles regarding best explanations.

1. Defining terms and initial comparisons.

First, let me offer a precise definition of "lottery argument." As is indicated by the name, lottery arguments are connected to certain facts about lotteries. In particular, it is intuitively plausible that if someone has a ticket in a fair lottery for which the winner has not yet been announced, then she does not know that her ticket will lose.[3] Let us give this someone a name – call her "Lotte." Jonathan Vogel and others have argued that there are other propositions with similar features to the proposition that Lotte's ticket will lose, and that, thanks to these features, these propositions are not known either.[4]

Vogel offers an example that we have already seen, namely that your car has been stolen from where it was parked. Just as there's a good chance, given your evidence, that someone will win the lottery and there's no special reason to think that it won't be you, as opposed to someone else, likewise there's a good chance, given your evidence, that someone in the neighborhood will have their car stolen and there's no special reason to think that it won't be you, as opposed to someone else. Using these similarities, we can offer the following definition:

> A *lottery proposition* is a proposition that belongs to a set of propositions such that there is a good chance, given your evidence, that at least one of the propositions is true and there are no important epistemic differences between the propositions.[5] [6]

---

[3] See e.g. [1, 273], [2, 67], [3, 92], [4, 200], [5, 568], [6, 680], [8, 202], [18, 222], [19, 144], [23, 123], [24, 10].

[4] Two key works on this subject are Vogel's "Are There Counterexamples to the ClosurePrinciple?" [26] and John Hawthorne's *Knowledge and Lotteries* [17].

[5] This definition differs slightly from the definition that Vogel presents. In particular, Vogel builds into his definition that one does not know lottery propositions. Also, he adds a third condition, namely that it is not

Vogel further notes that lottery propositions can be used in a type of skeptical argument that includes the one your friend gave. I will be calling this sort of argument a "lottery argument." A *lottery argument* is of the following form, where S is a subject and P and Q are propositions such that Q entails that P is false:

1. P is a lottery proposition.
2. If P is a lottery proposition, then S is not in a position to know that P is false.
3. If S knows that Q and Q entails that P is false, then S is in a position to know that P is false.

–

4. S doesn't know that Q.

In our original example, P was the proposition that your car has been stolen and Q was the proposition that your car is parked on Avenue A.

---

abnormal for such propositions to be true [26, 17]. It is slightly unclear what Vogel means by this condition and Hawthorne has not followed him in including it, so I have left it out.

In the book, Knowledge and Lotteries, Hawthorne initially defines "lottery proposition" as "a proposition of the sort that, while highly likely, is a proposition that we would be intuitively disinclined to take ourselves to know" [17, 5]. This definition seems too broad to capture the phenomenon Hawthorne is interested in. For instance, it seems to include (i) propositions that are false though highly likely and (ii) logical truths that we believe without good evidence. Later on in the book, he does give a characterization of lottery propositions that is similar to the one I have given, but he uses a different label [17, 16].

[6] It should be noted that I am not requiring that lottery propositions be improbable, given your evidence. This means that some propositions that are probable, given your evidence, will count as lottery propositions on my definition. For instance, the proposition that Lotte's ticket will lose will count as a lottery proposition on my definition. Some might object that this proposition is not relevantly like the lottery propositions that Hawthorne and Vogel talk about and thus that my definition fails to capture the phenomenon of a lottery proposition. Two responses. Firstly, it is not clear to me that this proposition is not relevantly like the lottery propositions that Hawthorne and Vogel talk about. On the contrary, it shares certain key features with such propositions. For instance, it is intuitive that one does not know its denial – that is, it is intuitive that Lotte does not know that her ticket will not lose. Also, an important argument for the conclusion that you do not know the denial of lottery propositions also shows that you do not know the denial of this proposition. We will encounter this argument in Section 3. Secondly, modifying my definition to add in the requirement that lottery propositions have to be improbable does not affect the conclusions of this paper. All I rely on, regarding Hawthorne and Vogel and how they think of lottery propositions, is that they have the intuition that one does not know the denial of lottery propositions. Presumably this intuition doesn't turn on the fact that lottery propositions are improbable – it's easier to know the denial of improbable propositions than it is to know the denial of probable ones. Thanks to Fritz Warfield for pressing me on this.

Let me make several remarks with regards to the strength of a lottery argument. Its first premise will be plausible so long as P is well-chosen. Its third premise is also quite plausible; it is an instance of a principle sometimes called “Single-Premise Closure” that is widely endorsed by epistemologists.[7]

Thus, in order to demonstrate that this sort of argument is strong – that is, that it is valid and its premises are plausible – all I need to do is demonstrate the plausibility of its second premise, which I shall call the *Key Lottery Premise*.

Next, let me offer a precise definition of “possibility argument.” *A possibility argument* is an argument of the following form, where S is a subject and P and Q are propositions such that Q entails that P is false:

1. P is nomically possible given S’s evidence.
2. If P is nomically possible given S’s evidence, then S is not in a position to know that P is false.
3. If S knows that Q and Q entails that P is false, then S is in a position to know that P is false.

–

4. S doesn’t know that Q.

In our original example, P is the proposition involving the elephant moving the car and Q is the proposition that your car is parked on Avenue A.

In order to show that this argument is of roughly the same strength as a lottery argument, all I need to show is that Premise 2 is just about as plausible as the Key Lottery Premise. In particular, just like a lottery argument, this argument is valid, its first premise is plausible so long as P is well-chosen and its third premise is an instance of Single Premise Closure.[8] So the only important difference that can affect the relative plausibility of the two

---

[7] On this subject, Richard Feldman writes, “the idea that no version of this principle is true strikes me, and many other philosophers, as one of the least plausible ideas to come down the philosophical pike in recent years” [12, 487]. For some more quotes in a similar vein, see [7, 17]. It should be noted that I am not saying that the third premise has to be defended via a closure principle, but merely that this is one good way to defend it.

[8] I am assuming that, thanks to their similarity, the third premises of these two arguments don’t differ much in plausibility.

arguments comes with the second premise. Call Premise 2 of this argument the *Key Possibility Premise*. Here are the premises side by side:

> Key Lottery Premise: If P is a lottery proposition, then S is not in a position to know that P is false.
>
> Key Possibility Premise: If P is nomically possible given S's evidence, then S is not in a position to know that P is false.

It is also worth noting that the Key Possibility Premise entails the Key Lottery Premise. This is true because a further fact is true, viz. that every lottery proposition is a proposition that is nomically possible given your evidence. Here is an argument for this further fact: suppose there were a lottery proposition that was not nomically possible given your evidence. Then any set it belonged to such that there was no important epistemic difference between the propositions would be such that there was no chance that any of them were true. So it would not be a lottery proposition.

Because the Key Possibility Premise entails the Key Lottery Premise, the Key Lottery Premise will be as or more plausible than the Key Possibility Premise. So in order to show that the Key Possibility Premise is roughly as plausible as the Key Lottery Premise, all I need to show is that the Key Lottery Premise is not much more plausible than the Key Possibility Premise.

In sum, in order to show that lottery arguments are strong, all I have to show is that the Key Lottery Premise is plausible. And in order to show that lottery arguments and possibility arguments are of roughly the same strength, all I have to show is that the Key Lottery Premise is not much more plausible than the Key Possibility Premise.

2. Appeals to intuition.

In this section, I first argue that the Key Lottery Premise is intuitively plausible. I then argue that the Key Lottery Premise is not much more intuitively plausible than the Key Possibility Premise. These claims, together with the conclusion of my previous section, serve to make an intuitive case for the claims that lottery arguments are strong and that lottery arguments and plausibility arguments are of roughly the same strength.

My first claim is that the Key Lottery Premise is intuitively plausible. Recall that the Key Lottery Premise says that if P is a lottery proposition – that is, if it belongs to a set of propositions such that there is a good chance, given your evidence, that at least one of the propositions is true and there are no important epistemic differences between the propositions – then you are not in a position to know that P is false. This claim is intuitively plausible, as has been noted by various philosophers.[9]

My second claim is that the Key Lottery Premise is not much more intuitively plausible than the Key Possibility Premise. The defense of this relies on intuitions about triads of examples, such as the following:

> NORMAL LOTTERY: Norm has a ticket in a lottery that is such that each ticket has a one in a billion chance of winning. All of the tickets have been sold.
>
> PRIVATE LOTTERY: Priv has entered a private lottery for which she has the only ticket, as she is well aware. The lottery will be decided by a process that has a one in a billion chance of coming out a certain way. If it comes out in this way, then Priv wins, and if it does not, she loses. In particular, as she knows, she wins the lottery just in case a designated cat that she has never met, Mr. Tibbles, rescues a drowning baby within the next year.
>
> NO LOTTERY: NoLot has the same evidence as Priv regarding the cat, Mr. Tibbles. But unlike Priv, she doesn't have any lottery tickets that turn on anything to do with Mr. Tibbles.

I submit that philosophers who examine the first two cases will come to the conclusion that there is nothing epistemically different about Norm and Priv's respective positions with regards to the propositions that their respective tickets will lose. In particular, if Norm is not in a position to know that his ticket will lose, then Priv is not in a position

[9] See e.g. [17], [26]. Indeed, as I noted above, both Hawthorne and Vogel include in their definition of "lottery proposition" the idea that lottery propositions are not known.

to know that her ticket will lose. Suppose that one wished to deny this and held that even though no one is in a position to know that lottery propositions are false, Priv is in a position to know that her ticket in the private lottery will lose. Then one would be committed to the following highly counterintuitive consequence: right now, Priv is in a position to know that her ticket in the private lottery will lose. But if others had bought tickets in their own private lotteries, Priv wouldn't be in a position to know that her ticket will lose.[10]

I further submit that philosophers who examine the second two cases will come to the conclusion that there is nothing epistemically different about Priv and NoLot's positions with regards to the proposition that Mr. Tibbles will not rescue a drowning baby within the next year. Suppose that one wished to deny this, and held that even though Priv is not in a position to know that Mr. Tibbles will not rescue a drowning baby within the next year, NoLot is. Then one would be committed to the following highly counterintuitive consequence: right now, NoLot is in a position to know that Mr. Tibbles will not rescue a drowning baby within the next year. But if someone entered her in a private lottery regarding this scenario, then she would lose this knowledge.[11]

But if these intuitive judgments are correct, then if NoLot is in a position to know that Mr. Tibbles won't rescue a drowning baby, then Norm is in a position to know that his ticket will lose.[12] Thus, if one held that NoLot was in a position to know that Mr. Tibbles won't rescue a drowning baby, and thus denied the Key Possibility Premise, one would be intuitively pressed to hold that Norm was in a position to know that his ticket would lose, and thus to deny the Key Lottery Premise. A similar set of cases can be

---

[10] The reason one is committed to this consequence is that at that point, the proposition that Priv's ticket will lose will be a lottery proposition. Of course, to make this example work, I have to build into the case that the private lotteries would be (to some degree) independent of Priv's lottery and that there would be no epistemic difference between her position with regards to her ticket and her position with regards to the other tickets. But this shouldn't cause any problems.

[11] It is doubtful that pragmatic encroachment or contextualism can make this consequence more palatable; we may assume for the purposes of the example that NoLot's ticket would pay next to nothing if she won, that she is not in a conversational context where it matters if she has a winning ticket, etc. Of course, a full defense of this claim would require a survey of all pragmatist and contextualist positions, which is something I don't have space for here.

[12] In particular, if NoLot is in a position to know that Mr. Tibbles won't rescue a drowning baby, then (by an intuitive judgment) Priv is in a position to know that Mr. Tibbles won't rescue a drowning baby, then (by Single-Premise Closure) Priv is in a position to know that her ticket will lose, then (by an intuitive judgment) Norm is in a position to know his ticket will lose. Obviously, this argument assumes Single-Premise Closure. But I have already noted that this principle is quite plausible.

generated for any nomically possible example: figure out its probability and plug it in. But then, it follows that the Key Lottery Premise is just as plausible as the Key Possibility Premise.

In sum, in this section I have shown that an intuitive case can be made both for the Key Lottery Premise and for the claim that the Key Lottery Premise is not much more plausible than the Key Possibility Premise. This helps show that, contrary to first appearances, one cannot endorse the Key Lottery Premise and reject the Key Possibility Premise without being forced to take on counter-intuitive consequences.

3. Appeals to principles

In this section, I identify a strong principle-based argument for the key premise of lottery arguments. By a "principle-based argument" I mean an argument that appeals to general principles. I then note that the principles invoked can also be used to support the key premise of possibility arguments. These claims, together with the conclusion of my first section, serve to make a principle-based case for the claims that lottery arguments are strong and that lottery arguments and plausibility arguments are of roughly the same strength.

The two principles appear in a standard explanation of why Lotte does not know her ticket will lose. This explanation runs as follows: if she knew that her ticket would lose, then she could know of other losing tickets in the same lottery that they would lose. After all, there is no epistemic difference between her ticket and these ones. But once she knew of the other losing lottery tickets that they would lose, then she could by deduction come to know of the winning ticket that it would win. But this is absurd! How could she know this, given that there is a good chance, given her evidence, that this particular ticket will lose?[13] This explanation seems to appeal to the following two principles, which are both somewhat plausible:

> *Good Chance*: For any subject S and proposition P, if there is a good chance, given S's evidence, that not P is true, then S is not in a position to know that P.

[13] For this sort of explanation, see [2, 67], [13, 24], [16, 246-7], [18, 233], [21, 373], [22, 42].

Multi-Premise Closure: For any subject S and propositions P and Q, if S is in a position to know that P and S is in a position to know that Q, then S is in a position to know that P and Q.

These two principles can be used to defend the Key Lottery Premise as follows:[14]

1. If P is a lottery proposition, then P belongs to a set of propositions, such that there is a good chance that at least one member of this set is true. (By definition of "lottery proposition")
2. If there is a good chance that at least one member of this set is true, then S isn't in a position to know that it is not the case that at least one member of this set is true. (Good Chance)
3. If S isn't in a position to know that it is not the case that at least one member of this set is true, then it is not the case that for each member of the set, S is in a position to know that it is false. (Multi-Premise Closure)
4. If it is not the case that for each member of the set, S is in a position to know that it is false, then it is not the case that there is any member of the set such that S is in a position to know that it is false. (By definition of "lottery proposition")

–

[14] Here is the argument in logical notation, where L(P) means that P is a lottery proposition, $\{P_i\}$ is a finite set of propositions, running from P_1 to P_n, GC(P) means that there is a good chance that P is true, and K(S,P) means that S is in a position to know P :

1. $\forall S \forall P L(P) \rightarrow \exists \{P_i\}[P \in \{P_i\} \wedge GC(P_1 \vee P_2 \vee ... \vee P_n)]$

2. $\forall S \forall \{P_i\} GC(P_1 \vee P_2 \vee \ldots \vee P_n)) \rightarrow \neg K(S, \neg(P_1 \vee P_2 \vee ... \vee P_n)$

3. $\forall S \forall \{P_i\} \neg K(S, \neg(P_1 \vee P_2 \vee ... \vee P_n) \rightarrow \neg \forall i K(S, \neg P_i)$

4. $\forall S \forall \{P_i\} \neg \forall i K(S, \neg P_i) \rightarrow \neg \exists i K(S, \neg P_i)$

–

5. $\forall S \forall P L(P) \rightarrow \neg K(S, \neg P)$

5. If P is a lottery proposition, then S is not in a position to know that P is false.

These two principles can also be used to defend the Key Possibility Premise, or a close variant thereof. First note that Good Chance and Multi-Premise Closure together imply that there cannot be a set of propositions such that both (i) one is in a position to know of each one that it is true and (ii) there is a good chance that at least one of them is false. For if there was such a set, then by Multi-Premise Closure one would be in a position to know that none of them is true, but there is a good chance that at least one of them is false, so this contradicts Good Chance.

It follows that the propositions that one is in a position to know are such that there is not a good chance that at least one of them is false. Next, note that this will severely limit the extent of the propositions that one is in a position to know. For it means that all of the propositions one is in a position to know have to form a set such that there is not a good chance that even one of the propositions is false. This restricts the set to such a degree that it is highly unlikely the elephant proposition ended up in it.[15] And if it did, there are many other examples I could have picked instead.

To see this more clearly, let us consider an example. Take a list of a hundred things I am fairly confident in. For instance, maybe the first item is that Paris is the capital of France, the second is that I have a pet cat, and so on. Suppose the propositions are independent of each other. Then even if I am ninety nine percent confident in each, because there are a hundred of them and they are independent, I should only be thirty seven percent confident that every single one is true.

More generally, suppose that someone wrote out a list of all the claims you were in a position to know. And suppose the claims had to be such that there was not a good chance, given your evidence, that even a single one was false. If you're anything like me, this would not be a very long list – a hundred, or maybe a thousand items at the most. And given the shortness of the list, it is highly unlikely that the elephant claim would

[15] By "the elephant proposition" I mean the proposition described in the first premise of the possibility argument your friend gave, namely: a nearby zoo was flying in an elephant when the plane suddenly had to make an emergency landing somewhere near your car, whereupon the elephant escaped, and, quite irritated, found your car and pushed it several blocks away.

make it. Thus, the Key Possibility Premise, or a close variant of it, follows – you are in a position to know few, if any, propositions that are nomically possible given your evidence.

In short, there is a strong principle-based defense of the Key Lottery Premise that is such that the principles it invokes can also be used to support the Key Possibility Premise, or a near-variant.

It took more work to see the principle-based argument for the Key Possibility Premise than to see the principle-based argument for the Key Lottery Premise. And this helps explain why you might have thought that certain standard general principles supported the Key Lottery Premise without realizing that they also supported the Key Possibility Premise.

4. Appeals to best explanation

At this point, you may agree that the Key Lottery Premise and the Key Possibility Premise are of roughly equal plausibility. But you might conclude that this simply shows that neither one is very plausible. Instead, you might be thinking, we should reject the Key Lottery Premise and explain intuitions about lotteries in a new way. But in this section, I shall be arguing that the other standard ways of explaining intuitions about lotteries also lend support to the Key Possibility Premise.

The first explanation appeals to the notion of "sensitive belief." S's belief in a proposition P is *sensitive* just in case if P were false, S would not believe P. It is worth noting that Lotte does not have a sensitive belief that her ticket will lose. For, suppose that she believes that her ticket will lose. Then even if her ticket wasn't going to lose, she would still have believed it would lose. This is alleged to show that she doesn't know her ticket will lose.[16] This explanation appeals to the following principle:

> Sensitivity: For any subject S and proposition P, if S is in a position to know P, then if P were false, S would not believe P.[17]

---

[16] See e.g. [5], [8, 205], [25, 14-5].

[17] Sensitivity is sometimes stated in the following way: for any subject S and proposition P, if S knows P, then in the nearest world to S in which P is false, S does not believe P.

It is easy to give an argument for the Key Possibility Premise that appeals to Sensitivity. In particular, the argument uses the following abbreviation: P*: P is false or I don't believe P is false or I don't believe the consequences of everything I believe. It runs:

> 1. If P is nomically possible given S's evidence, then S doesn't sensitively believe that P*. (From definition of P*)[18]
> 2. If S doesn't sensitively believe that P*, then S is not in a position to know that P*. (Sensitivity)
> 3. If S is not in a position to know that P*, then S is not in a position to know that P is false. (Single-Premise Closure).
>
> –
>
> 4. If P is nomically possible given S's evidence, then S is not in a position to know that P is false.

I have just offered an argument invoking Sensitivity that yields a fairly strong skeptical conclusion. Some people who endorse Sensitivity respond to such arguments by denying Single-Premise Closure.[19] But this way of responding forces them to deny something plausible, and thus is consistent with my claim that possibility arguments are strong – rejecting them in this way forces one to deny something plausible.

The second explanation is that Lotte's evidence that her ticket will lose the lottery is statistical. This is alleged to show that she doesn't know her ticket will lose.[20] This explanation appeals to the following principle:

> Statisticality: For any subject S and proposition P, if S's evidence for P is statistical, then S is not in a position to know that P.

---

[18] Here is how this follows from the definition of P*. Either S believes that P* or S doesn't. If S does believe P*, then if P* were false, by the definition of P*, S would believe that P*. If S doesn't believe P*, then obviously S doesn't sensitively believe P*.

[19] See e.g. [7, 17].

[20] See e.g. [14], [15, 1142-3], [20], [21], [1, 416], [24].

This principle is ambiguous because it is not obvious what is meant by S's evidence being "statistical." One way of disambiguating the notion is to say that S's evidence for P is statistical just in case there is no nomic connection between S's evidence and P.[21] Obviously, on this way of understanding Statisticality, there is an argument from Statisticality to the Key Possibility Premise, for on this definition, Stasticality just is a statement of the Key Possibility Premise.

Another way of disambiguating the notion is to say that S's evidence for P is statistical just in case S thinks of S's evidence in statistical terms.[22] On this way of disambiguating Stasticality, it doesn't explain why Lotte doesn't know that her lottery ticket will lose – she need not be thinking about her evidence in statistical terms in order to fail to know this.[23]

The third explanation is that one cannot appropriately act on one's belief that one will lose the lottery. For instance, it is inappropriate to sell one's lottery ticket for a penny. But if one knew that one's ticket would lose, one could appropriately do so.[24]

Such an explanation appeals to the following principle:

> Actionability: For any subject S and proposition P, if S is in a position to know P, then S can appropriately act as if P.

This principle is ambiguous because it is not obvious what the scope of the "can" is – in particular, does it cover any action at all, or just actions that one is considering? On one disambiguation, it covers any action at all.[25] In such a case, this principle can be used to support the second premise of our possibility argument as follows:

> 1. I cannot appropriately take a bet that pays a penny if the elephant hasn't moved my car and costs a googol dollars otherwise.[26]

---

[21] See e.g. [14], [20], [21, 290-1], [24].

[22] See e.g. [15, 1142-3], [21], [1, 416], [24].

[23] Hawthorne explains this point in detail at [17, 9].

[24] See e.g. [13, 16], [15, 1142], [20, 338], [21, 373], [22, 42].

[25] For endorsements of principles similar to Actionability for which the scope is any action, see e.g. [9, 73], [11, 52], [10, 188].

[26] A googol is ten to the hundred.

2. If so, then I am not in a position to know that the elephant hasn't moved my car. (By Actionability).

–

3. I am not in a position to know that the elephant hasn't moved my car.

On another disambiguation, the scope is only the actions S is considering or that are available to S. On such a disambiguation, this principle doesn't explain why Lotte does not know her ticket will lose. After all, if Lotte is a typical human being, she is probably not faced with the decision to sell her ticket for a penny. Indeed, we can even stipulate that the law doesn't allow her to sell her ticket. Surely that would not allow her to come to know that her ticket will lose.

In short, it might have looked as if you can explain the intuition that Lotte does not know her ticket will lose by talking about Statisticality or Actionability without being forced to endorse the Key Possibility Premise. But once we are precise about these principles, it becomes clear that you cannot. Meanwhile, as we have seen, similar things hold if you explain the intuition that Lotte does not know her ticket will lose by endorsing Sensitivity. So the other standard ways of explaining intuitions about lotteries also lend support to the Key Possibility Premise.

In the last three sections I have argued that the Key Lottery Premise and the Key Possibility Premise are supported by intuition, by plausible principles, and by appeals to the best explanation of the intuition that Lotte doesn't know her ticket will lose. In my first section, I argued that so long as these premises are plausible, then lottery and possibility arguments are strong. This suggests that the possibility argument is more plausible than it first appeared. Your friend was right after all.[27]

References.

[1] Peter Baumann. "Lotteries and contexts." *Erkenntnis*, 61:415–428, 2004.

[2] Laurence BonJour. "The myth of knowledge." *Philosophical Perspectives*, 24:57–83, 2010.

[27] Thanks for helpful comments to Robert Audi, Scott Hagaman, Ryan Hammond, Caleb Perl, Blake Roeber, Jeff Snapper, Monica Solomon, Dan Sportiello, Fritz Warfield and members of a 2014 Dissertation Research Seminar at the University of Notre Dame.

[3] Stewart Cohen. “How to be a fallibilist.” *Philosophical Perspectives*, 2:91–123, 1988.

[4] Stewart Cohen. “Knowledge, speaker and subject.” *The Philosophical Quarterly*, 55(219):199–212, 2005.

[5] Keith DeRose. “Knowledge, assertion and lotteries.” *Australasian Journal of Philosophy*, 74(4):568–580, 1996.

[6] Dylan Dodd. “Against fallibilism.” *Australasian Journal of Philosophy*, 98(4):665–685, 2010.

[7] Fred Dretske. “Is knowledge closed under entailment.” In *Contemporary Debates in Epistemology*. Blackwell, 2005.

[8] David Enoch, Levi Spectre, and Talia Fisher. “Statistical evidence, sensitivity, and the legal value of knowledge.” *Philosophy and Public Affairs*, 40(3):197–224, 2012.

[9] Jeremy Fantl and Matthew McGrath. “Evidence, pragmatics and justification.” *The Philosophical Review*, 111(1):67–94, 2002.

[10] Jeremy Fantl and Matthew McGrath. “Critical study of John Hawthorne’s knowledge and lotteries and Jason Stanley’s knowledge and practical interests.” Noûs, 43(1):178–92, 2009.

[11] Jeremy Fantl and Matthew McGrath. *Knowledge in an uncertain world*. Oxford University Press, 2009.

[12] Richard Feldman. “In defense of closure.” *Philosophical Quarterly*, 45(181):487–494, 1995.

[13] Richard Fumerton. *Epistemology*. Blackwell, 2006.

[14] Alan Goldman. “Knowledge, explanation, and lotteries.” *Noûs*, 42(3):466–481, 2008.

[15] Michael Hannon. “Fallibilism and the value of knowledge.” *Synthese*, 191:1119–1146, 2014.

[16] John Hawthorne. “Lewis, the lottery, and the preface.” *Analysis*, 62(3):242–51, 2002.

[17] John Hawthorne. *Knowledge and Lotteries*. Oxford University Press, 2004.

[18] Christoph Kelp. “Classical invariantism and the puzzle of fallibilism.” *The Southern Journal of Philosophy,* 46:221–244, 2008.

[19] Jennifer Lackey. *Learning from words: Testimony as a source of knowledge*. Oxford University Press, 2008.

[20] Eugene Mills. “Lotteries, quasi-lotteries, and scepticism.” *Australasian Journal of Philosophy*, 90(2):335–352, 2012.

[21] Dana K. Nelkin. “The lottery paradox, knowledge, and rationality.” *The Philosophical Review*, 109(3):373–409, 2000.

[22] Glen Ross. “Reconsidering the lessons of the lottery for knowledge and belief.” *Philosophical Studies*, 161:37–46, 2012.

[23] Donald Smith. “Critical notice of knowledge and lotteries.” *Philosophical Books*, 46(2):123–131, 2005.

[24] Martin Smith. “ What else justification could be.” *Noûs*, 44(1):10–31, 2010.

[25] Martin Smith. “Knowledge justification and normative coincidence.” *Philosophy and Phenomenological Research*, Forthcoming.

[26] Jonathan Vogel. “Are there counterexamples to the closure principle.” In Michael David Roth and Glen Ross, editors, *Doubting: Contemporary Perspectives on Skepticism*, pages 13–27. Kluwer, 1990.