LUCK AS RISK AND THE LACK OF CONTROL ACCOUNT OF LUCK

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Abstract: This essay explains the notion of luck in terms of risk. It starts by distinguishing two senses of risk, the risk that an event has of occurring and the risk at which an agent is with respect to an event. It cashes out the former in modal terms (rather than probabilistic) and the latter in terms of lack of control. It then argues that the presence or absence of event-relative risk marks a distinction between two types of luck or fortune commonly overlooked in ordinary usage of the terms "luck" and "fortune." After offering a detailed account of the notion of control, the essay advances a new version of the so-called lack of control account of luck: lucky events are events with respect to which one is at risk and hence events over which one lacks control in the specified way. Finally, it argues that its account steers clear of counterexamples to the lack of control account of luck.

The notions of luck and risk are closely related. Many of the luckiest events we can imagine occur in situations where there is a large amount of risk involved. Being the only survivor in a plane crash or winning roulette after betting one's life savings on one spin are examples of very lucky events that occur in situations where there is a lot of risk involved. In this essay, I aim to investigate the conceptual connection between luck and risk. More specifically, I aim to explain the former in terms of the latter.

Let me start with a quick overview of the philosophical literature on luck so as to frame the discussion. Philosophers who have theorized about luck have characterized the notion using three types of conditions: (1) *chance conditions*, (2) *lack of control conditions*, and (3) *significance conditions*. The core idea of chance

conditions is that lucky events are by chance. Lack of control conditions roughly say that an event is lucky for an agent only if the agent lacks control over it, whereas significance conditions say that an event, even if chancy or beyond the agent's control, cannot be regarded as lucky unless it is significant to the agent.

Each type of condition has several versions, depending on how the relevant notions of chance, control, and significance are cashed out. For example, depending on what is thought to determine the chance of an event occurring, the chance condition is or might be formulated in terms of: (1.1) *accidentality* (the idea is that whatever makes an event accidental is what makes it chancy);[1] (1.2) *indeterminacy* (the idea here is that chancy events are events that were not determined to occur prior to their occurrence);[2] (1.3) *subjective probability* (under this interpretation, the chance component of luck is cashed out in terms of what is expected to occur by the lucky agent);[3] (1.4) *epistemic probability* (this view states that chancy events are events that are not likely to occur given available evidence);[4] (1.5) *the notion of being in a position to know* (according to this view, luck is a matter of failing to be in a position to know that an event will occur);[5] (1.6) *objective probability* (chancy events are events whose occurrence is objectively unlikely);[6] and (1.7) *modality* (chancy events are events that would fail to occur in close possible worlds).[7]

On the other hand, lack of control conditions are formulated in terms of: (2.1) failing to exploit the target lucky event for some purpose (see Riggs 2009); (2.2) not being free to do something that would help produce it and prevent it (see Coffman 2009); and (2.3) there not being a basic action that the lucky agent could perform which she knows would bring about the lucky event (and how it would do so) (see Levy 2011, chap. 2).

Finally, the significance condition is stated in terms of: (3.1) the lucky agent being able to ascribe significance to the lucky event if she were availed of the relevant facts (see Pritchard 2005, 132–33); (3.2) the lucky event having some objective evaluative status for the lucky agent (a sentient being) (see Coffman 2007, 388); and (3.3) the lucky agent having some interest and the lucky event having some objectively positive or negative effect on it (see Ballantyne 2012, 331).

As one can imagine, different definitions of luck result from combining these versions of the significance, chance, and lack of control conditions. We do not need to go into further detail here. It suffices to note that some commentators think that the three types of conditions are necessary (and jointly sufficient) for luck,[8] that others

drop the lack of control condition from their definitions,[9] that some others drop the chance condition and go for a pure lack of control account of luck,[10] and that there are alternative accounts that include neither chance nor lack of control conditions.[11] It is also worth noting that most commentators think that the significance condition is necessary for luck, although this point has recently been disputed.[12]

With this overview of the literature in hand, we can now frame the forthcoming discussion. The aim of this essay is mainly positive—namely, to give an account of luck in terms of the notion of risk. This means that I will not argue against the definitions of luck referred to in the preceding paragraph. In addition, I assume (with most commentators) that a properly stated version of the significance condition is necessary for luck. My sympathies are with (3.3) (this is an assumption for which I will give no argument). Finally, I will only discuss those versions of the chance condition that I consider relevant to explaining luck in terms of risk. In particular, I will not address (1.1), (1.2), (1.3), (1.4), and (1.5). However, (1.6) and (1.7) will be relevant. As regards the lack of control condition, I aim to advance my own account of the notion of control. For reasons of space, (2.1), (2.2), and (2.3) will be only tangential to the discussion.

Without further ado, let me indicate how the essay is structured. In section 1, I make a distinction between two senses of risk that serve to account for luck: the event-relative and the agent-relative senses of risk. In section 2, I present two ways of interpreting event-relative risk: in modal and in probabilistic terms. In section 3, I argue that, although both interpretations of event-relative risk seem correct qua accounts of risk, only the modal interpretation correctly accounts for luck. In section 4, I cash out the agent-relative sense of risk in terms of lack of control and I suggest that any significant event that is lucky for an agent is an event with respect to which the agent is at risk. In section 5, I categorize lucky and nonlucky cases by means of the event-relative/agent-relative distinction concerning risk. As a result, I argue that there are two different types of luck (or of fortune): one that does not involve event-relative risk and one that does involve it. I argue that both arise out of agent-relative risk (that is, lack of control over the relevant event). In section 6, I advance an account of the notion of control so as to explain in which sense an agent is at risk with respect to an event and how this bears on luck. In section 7, I summarize my view and offer a reply to several counterexamples to the lack of control account of luck.

1. Two Senses of Risk

The idea that luck can be explained in terms of risk is already in the literature. For example, E. J. Coffman interprets Duncan Pritchard's modal chance condition for luck (the condition that an event *E* is lucky for *S* only if *E* occurs in the actual world but would not occur in nearly, if not all, close possible worlds where the initial conditions for *E* are the same as in the actual world) (see Pritchard 2005, 128) as being equivalent to the view that luck is a matter of risk, where risk is understood in terms of the notion of easy possibility and easy possibility in terms of closeness between worlds, so that *E* could easily occur at *t′* just in case it would occur at *t′* in possible worlds close to actuality as they are at *t* (Coffman 2007, 390). Pritchard (2014; manuscript.) ratifies this interpretation by explicitly accounting for luck in terms of modal risk.[13]

Although the possibility of explaining luck in terms of risk is already entertained by Pritchard and Coffman, the considerations they offer on the connection between both notions are limited to only one sense of the notion of risk: the risk that lucky *events* had of not occurring. To be clear, there is a sense of the notion of risk that can be used to account for the notion of luck that has to do with the possible occurrence or nonoccurrence of an event, as when we say that there is risk that a World War II grenade on the tip of a cone will fall or that a talk to be given by a speaker with flu will be canceled. Let us call this sense of risk the *event-relative sense of risk*.

My claim (and here comes what I take to be a novel point in the literature) is that there is another interesting application of the notion of risk to the luck debate. In addition to affirming or denying that events are at risk of occurring or not occurring, we also affirm or deny that *agents* are at risk with respect to the possible occurrence or nonoccurrence of events, as when we say that a child is at risk with respect to the possible explosion of the World War II grenade which he has just picked up from the ground and with which he is enthusiastically playing, or less dramatically, the risk at which the members of an audience are with respect to the possible cancellation of the talk they are attending. Let us call this sense of risk the *agent-relative sense of risk*. My proposal is that when it comes to account for the notion of luck as a form of risk we should take into consideration not only the risk that lucky events had of not occurring (as Pritchard and Coffman do) but also the risk at which agents are with

respect to lucky events. The task I undertake next is to give adequate definitions of the two senses of risk just distinguished and to show how they can be used to account for luck.

2. Event-Relative Risk: Modal and Probabilistic Interpretations

How can we understand the term "risk" in sentences of the form "There is risk that event *E* will occur" or "There is risk that event *E* will not occur"? One proposal is already offered by Coffman and Pritchard: we should understand it in terms of *close possibility of occurrence*. Keeping the spirit of their proposal, we can define the event-relative sense of risk as follows:

> *Modal Risk (MR)*: *E* is at risk of occurring at *t* if and only if *E* would occur at *t* in a large enough proportion of close possible worlds.[14]

Why does MR include the expression "in a large enough proportion of close possible worlds" rather than, say, "in most close possible worlds" or "in nearly all, if not all, close possible worlds"? Because there does not seem to be a fixed proportion of close possible worlds in which an event would have to occur to be considered, in all contexts, at risk of occurring. While it is true that in most situations we would not regard an event as being at a significant risk of occurring if it were not to occur in most or at least many close possible worlds (think about ordinary events such as snowing, running out of power while writing a paper, or bumping into a glass door), this is not true of all instances of event-relative risk. Some events are regarded as being at a significant risk of occurring even though they would fail to occur in most close possible worlds. Consider Nicholas Rescher's example of someone surviving a round of Russian roulette with one bullet in the chamber of a revolver with a six-shot capacity.[15] The approximately 0.16 probability of being shot indicates that the person would survive in most close possible worlds. This does not, however, prevent us from claiming that she was at a significant risk of being shot and hence of dying. Examples of this sort indicate that an event can be at a significant risk of occurring even though its occurrence is not *easily* possible.[16]

An alternative to MR, which defines the event-relative sense of risk in terms of close possibility of occurrence, is to understand event-relative risk in terms of *high*

probability of occurrence:

> *Probabilistic Risk (PR)*: *E* is at risk of occurring at *t* if and only if there is high probability that *E* will occur at *t*.[17]

The kind of probabilities that are relevant in PR are *physical probabilities* or *chances*, that is, the kind of probabilities posited by scientific theories, which are determined neither by scientific evidence nor by degrees of belief but by features of the world. This is why most philosophers call them *objective* probabilities. For example, the risk of developing cancer by having a diet based on processed food is greater than the risk of developing cancer by having a diet based on vegetables because the probability of the former is higher than the probability of the latter. PR explains risk in these terms.[18]

What is the correct way of conceptualizing risk in general: MR or PR? In my opinion, both are correct. PR better fits the notion of risk that is used in scientific and technical contexts, where the risk that an event has of occurring is usually determined with scientific models that calculate, for example, the objective probability of occurrence of that type of event in a long sequence of trials.

By contrast, MR better fits the ordinary notion of risk. In everyday life, when it comes to assessing the risk that an event has of occurring, we resort to our cognitive capacity to handle subjunctive conditionals. The judgments delivered by this capacity are arguably less precise than those delivered by a scientific model. What might be regarded as a defect, however, is in fact a virtue, because, on the other side of the coin, it allows us to make lots of true risk ascriptions quickly and on the basis of insufficient evidence, something that has an adaptive value.[19]

Therefore, PR and MR seem to capture two complementary sides of the event-relative sense of the notion of risk. As we will see next, they serve to formulate two different types of objective chance conditions for luck that roughly correspond to (1.6) and (1.7) (see the introductory section of the essay) and, in this sense, they help characterize the phenomenon of luck as an instance of the more general phenomenon of risk. Nevertheless, although the notions of risk that underlie these chance conditions seem both correct, I will show that only chance conditions formulated in modal terms serve to account for luck.[20] In particular, I will show that objective probabilistic chance conditions cannot account for cases of *highly probable lucky*

events.

3. Event-Relative Risk: Modal or Probabilistic?

Intuitively, winning a fair lottery is at risk of not occurring in the sense stated by MR because one would not win in most close possible worlds (which is a large enough proportion). Winning a fair lottery is also a paradigmatic case of luck, so MR can be intuitively used to motivate corresponding modal chance conditions for luck like the following:

> *Modal Chance (MC)*: *E* is lucky for *S* only if *E* occurs in the actual world but would not occur in a large enough proportion of close possible worlds where the relevant initial conditions for *E* are the same as in the actual world.[21]

The same applies to PR. Intuitively, winning a fair lottery is at risk of not occurring in the probabilistic sense because, prior to winning, there was high probability that one would lose. PR motivates corresponding probabilistic chance conditions for luck like the following:

> *Probabilistic Chance (PC)*: *E* is lucky for *S* at *t* only if, prior to the occurrence of *E* at *t*, there was low objective probability that *E* would occur at *t*.

One might prefer to use conditional probabilities to formulate the relevant chance condition:

> *Conditional Probabilistic Chance (CPC)*: *E* is lucky for *S* at *t* only if, prior to the occurrence of *E* at *t*, there was low objective probability conditional on *C* that *E* would occur at *t*.[22]

C is whatever condition one uses to calculate the probability that *E* will occur. For example, the unconditional probability that Lionel Messi will score at the match is high, but given *C* (the fact that he is injured) the probability that he will score is low. Suppose that Messi ends up scoring by luck. CPC explains why: Messi was injured, and therefore, given his injury, it was not very probable that he would score.

Although objective probabilistic chance conditions explain most cases of luck, I will argue that there might be high (conditional or unconditional) objective probability that E will occur at t and yet E might occur by luck at t. In other words, I will show that there are highly probable lucky events and hence that PC and CPC are not necessary for luck. Consider the following hypothetical scenario:

Lazy Luke. In a distant future, the galaxy is populated by billions and billions of people. The billions of corporations of the Galactic Empire are hiring computer technicians. Our hero, Luke, is an unemployed computer technician. He is extremely lazy and does not want to work at all. All he wants is to lie on the couch and play video games. The Galactic Empire's political system, however, forces unemployed people to apply for jobs constantly, so Luke reluctantly switches on his supercomputer and starts applying for billions of jobs. Luke, who is a clever guy after all, uploads a very bad CV to the system. In fact, he makes sure to upload the worst CV of the galaxy (he knows how to do that). Hiring decisions are made based on the number of candidates and the quality of their CVs, so by submitting a disastrous CV, Luke ensures that whenever there is another candidate, he will not be chosen. Furthermore, he knows that his name is on the I.D.L.E. list, that is, the list of Individuals Devoted to Leisure and Enjoyment, which contains the names of those who should never be hired because of their extreme laziness (all companies use I.D.L.E.). Competition for jobs is fierce, so for every single job there are millions of applications (something that Luke knows). He also knows that people normally inflate their CV's.

Today everything seems to be alright: for each job offer, Luke has uploaded the worst CV, has checked that there are more applicants, that he is on I.D.L.E, and so on. Unbeknownst to him, however, there is a problem with the application sent to company No. 86792922, MicroCorp. Due to some unusual interference in the data stream, the contents of the CV Luke has sent to MicroCorp suddenly change in such a way that the human resources department receives a CV full of so many brilliant achievements that they decide to hire Luke instantly (by law, once a company hires a worker, the worker cannot be fired for a period of one year).

Intuitively, it is by bad luck that Luke gets the job (remember: he does *not* want to get a job). So it is by luck that he gets at least one job. PC says that an event (for example, getting a job) is lucky for an agent only if, prior to the occurrence of the event, there was low objective probability that the event would occur. In *Lazy Luke*, however, the probability of getting at least one job is very high. This is so because the probability of a disjunction of independent events (such as getting a job at different places) is ($Pr(E_1 \lor E_2 \lor \ldots E_n) = 1 - (Pr(\neg E_1) \cdot (Pr(\neg E_2) \cdot \ldots (Pr(\neg E_n))$), which means that the bigger n is, the bigger will be the probability of the disjunction (that is, the probability that at least one of the disjuncts obtains). In *Lazy Luke*, n is huge, since the system allows Luke to apply for billions of jobs simultaneously. Thus, given the huge number of applications sent, the probability of getting at least one job is very high. It is by luck that Luke gets a job. Therefore, contrary to what PC requires, low probability of occurrence cannot be necessary for luck.

The result is no better in the case of conditional probabilities. Recall CPC: *E* is lucky for *S* at *t* only if, prior to *E*'s occurrence at *t*, there was low objective probability conditional on *C* that *E* would occur at *t*, where *C* is some condition to be specified. In *Lazy Luke*, *C* might be the fact that, for each job, Luke makes sure (1) to upload the worst CV, (2) to check that there is a considerable number of applicants, (3) to check that he is on I.D.L.E., and so on. In the case of the job at MicroCorp, *C* could also include the fact that some interference in the data stream changes the contents of Luke's CV in such a way that the company receives an excellent CV. The probability that Luke gets a job at MicroCorp conditional on *C* (so understood) is certainly very low. But, once again, for a sufficient number of conditionalized disjuncts the probability that he gets at least one job is very high. Yet it is by luck that Luke gets a job at MicroCorp and, therefore, it is by luck that he gets at least one job. The condition stated by CPC is not necessary for luck.

By contrast, MC explains *Lazy Luke* in a rather simple, natural way: although the probability that Luke gets at least one job is high, it is by luck that Luke gets a job because in most close possible worlds in which he applies for the job offer at MicroCorp there is no data interference, and he does not finally get the job.

It is important to explain why, as in terms of MC, in close possible worlds Luke does not get a job in any other company (that is, why there is no close risk that he will be hired in any other place), given that he has applied for all job offers and hence given the high probability of getting at least one job. The reason is that for each job

offer he *makes himself safe* from the eventuality of getting a job (he submits the worst CV, he checks that there are more candidates, that he is on I.D.L.E., and so on). His actual actions prevent possible worlds in which Luke would get a job from being close, because closeness is fixed by similarity to the actual world, and possible worlds in which he gets a job are dissimilar in that he does not perform such actions. Compare his situation with an inverse scenario: lottery players are not completely safe from the eventuality of winning (suppose the prize is death), despite the low probability of winning, because they are typically not in a position to make themselves safe from that eventuality, say, by rigging the lottery system. The point is that since typical lottery players do not *actually* rig the lottery, possible worlds in which they do not rig it are close, and in some of them they win, hence the risk of winning *despite its low probability of occurring*.[23] I conclude that the most adequate way to characterize the event-relative sense of risk that serves to conceptualize luck as risk is modal, not probabilistic.

4. Agent-Relative Risk as Lack of Control

Lazy Luke, a case of luck, involves not only the risk that Luke gets a job at MicroCorp (event-relative risk) but also the risk at which Luke himself is with respect to that eventuality. This is the agent-relative sense of risk, which, I argue, is an essential part of our understanding of luck. A definition of agent-relative risk should give an answer to the following question: What kind of relation must an agent have with an event in order for that event (its occurrence or nonoccurrence) to be safe for the agent? My proposal is that the relation is a relation of *control*: the occurrence (or nonoccurrence) of an event is safe for an agent just in case the event is under the control of the agent. Luke, for example, submits the worst CV in all job applications, he checks that there are more candidates, that he is on I.D.L.E., and so on. In this way, he has control over the eventuality of getting a job. The agent-relative sense of risk, that is, the risk at which an agent is with respect to a significant event can be accordingly defined as lack of control over the event.

One of my initial assumptions has been that the significance condition for luck is to be understood in terms of (3.3), the lucky agent having some interest and the lucky event having some objectively positive or negative effect on it.[24] The idea is that significant events are events that have a positive or negative impact on our subjective

and/or objective interests. My suggestion is that in the same way as certain events are not lucky because they affect nobody's interests, one is not at risk with respect to certain events that are beyond one's control, precisely because they are not significant to one in the stipulated sense. For example, for most of us, the fall of a leaf in the middle of the Amazon jungle has no impact on our objective or subjective interests, as it neither affects neither our health nor our biological functioning, and has no effect on the objects of our desires or preferences. In the same way, we are at no risk with respect to several atomic nuclei joining in a very distant point of the universe (something that we cannot control). We are certainly at risk, however, with respect to the same nuclear fusion if it triggers a nuclear explosion near us (something that we cannot control either). The reason is clear. In the latter case, the nuclear fusion affects our most important objective interest: being alive.

In view of these considerations, I propose the following definition of agent-relative risk:

> *Agential Risk (AR)*: S is at risk with respect to an event E if and only if (i) S has an interest N, (ii) if E were to occur, it would have some objectively positive or negative effect on N, and (iii) S lacks control over E.

My hypothesis is that any significant event that is lucky for an agent is also an event with respect to which the agent is at risk in the sense specified by AR. A qualification is in order, though. Lucky events negatively *or positively* affect one's interests. Compatibly, AR says that one is at risk with respect to whatever significant event is beyond one's control, which entails that one can be at risk with respect to events that decrease or increase one's well-being. In ordinary discourse, however, the term "risk" is most commonly used as synonymous with "danger" or "hazard," where a dangerous or a hazardous event is a significant event which has adverse or unwelcome consequences for one's interests and over which one lacks control. For example, the ordinary conception of risk as danger is the reason many would not say that lottery players are at risk of winning. But AR stretches the ordinary usage of the expression "at risk of" so that it does not necessarily mean "in danger of." Is this move justified? In which sense are we at risk with respect to uncontrolled significant events that end up increasing our well-being?

The short answer is that we are at risk with respect to those events because

they affect us in ways that diverge from the path traced by our goal-directed controlled actions. When we have control over an event, we can count on it. However, events beyond our control, even those that carry positive effects, are events on which we cannot count, for example, in order to take further action. By way of illustration, inexperienced investors playing the stock market typically buy shares without knowing the relevant financial technicalities or the maneuvers that big investor groups perform to make money at their expense. Even if the prices of the shares rise and they become rich (which is something positive as far as their subjective interests are concerned), the rise of the prices is something on which they cannot count at the time of the investment because it is something beyond their control. Thus, it would be irrational for them to apply for a big loan from a bank to set up an expensive business on the assumption that the forthcoming profit in the stock market would be sufficient to repay it. AR allows for "good" risks, true, but risks after all, and in general we cannot rely on risks, even if unknowingly beneficial.

5. Four Combinations of Risks, Two Ways of Being Lucky (or Fortunate)

Let us put all the pieces together. On the one hand, an *event* can be at risk of occurring (or of not occurring). I have called this *event-relative risk*. On the other hand, an *agent* can be at risk with respect to an event. I have called this *agent-relative risk*. Event-relative risk has been understood in modal terms (MR), and agent-relative risk in terms of lack of control (AR). By combining these two senses of risk, we can come up with four different structures of cases. Suppose that an event E actually occurs. There are four possibilities:

> A. S is at risk with respect to E and E was at risk of not occurring.
> B. S is at risk with respect to E and E was not at risk of not occurring.
> C. S is not at risk with respect to E and E was not at risk of not occurring.
> D. S is not at risk with respect to E and E was at risk of not occurring.<MC>

A-cases constitute paradigmatic cases of luck. A good example of an A-case is winning a fair lottery. When one wins a fair lottery, prior to the lottery draw, the fact that one would win was at big risk of not occurring, that is, one would lose in close possible worlds (event-relative risk). In addition, if the lottery is fair, *one* is at risk of

not winning because one has no control over the lottery process and its outcomes (agent-relative risk).[25]

B-cases also constitute cases of luck. A B-case would be, for example, a case in which one wins a lottery because, unbeknownst to one, the organizer has rigged the lottery in one's favor. In this case, there is no risk of losing the lottery, because the organizer diligently manipulates the lottery system so that one wins in the actual and in all close possible worlds (no event-relative risk). Still, *one* is at risk with respect to the outcome of the lottery because one has no control over the lottery process (agent-relative risk). For this reason, we intuitively say that one is lucky to win.

C-cases, by contrast, involve no risk whatsoever, so we should not expect the presence of luck in them. A C-case would be, for example, a case in which one rigs a lottery in one's favor. Winning in that case would not be by luck, because (1) the eventuality of losing is at no risk of happening (no event-relative risk) and (2) *one* is at no risk of losing, provided that one has control over the lottery process (no agent-relative risk).

D-cases are cases in which the relevant event is at risk of not occurring (or of occurring, depending of the case) and yet one is at no risk with respect to that event. Excellent examples of D-cases are decisions made on a whim (*whimsical decisions*). Let me use one of Jennifer Lackey's examples (Lackey 2008). Suppose that one decides to go to Paris for the weekend on a whim. Since one has made the decision on a whim, the decision was at big risk of not being made (event-relative risk). However, *one* was at no risk of not deciding to go to Paris because, even though the decision was made on a whim and, therefore, one could easily have not made it, it was a self-consciously made decision after all, which means that one had control over the somehow precipitated deliberation process (no agent-relative risk). Interestingly, this means that, although one could easily have not made the decision, it is not by luck that one makes it.[26] In this sense, D-cases are not cases of luck.

Before using this taxonomy of cases to shed some light on the relationship between the notions of luck and risk, let me briefly evaluate Lackey's argument concerning *whimsical events* (significant events that result from whimsical decisions) to the conclusion that conjoining a modal chance condition (for example, MC) with a significance condition does not suffice to define the notion of luck. Keeping in mind that modal chance conditions roughly say that lucky events are modally fragile and that significance conditions say that they are significant, Lackey's argument is as

follows: (1) decisions made on a whim are modally fragile, that is, they would not occur in close possible worlds; (2) given (1), if a significant event that results from a whimsical decision occurs in the actual world, the event would not occur in close possible worlds; (3) significant whimsical events are not by luck; (4) it follows from (2) and (3) that significant whimsical events are modally fragile but not by luck; (5) therefore, conjoining a modal chance condition with a significance condition does not suffice to define luck.

Although I agree with Lackey's conclusion (my account of luck is a version of the lack of control account of luck), I do not think that it follows from the premises, that is, one can accept (1)–(4) without accepting (5). Lackey's error in thinking that the conclusion follows is due to a misconception concerning the clause on initial conditions of MC and similar chance conditions. While it might be true that, if one decides to go to Paris on a whim, one would not go to Paris in most close possible worlds, the only close possible worlds that are relevant to assess whether it is by luck that one goes to Paris in the actual world are worlds in which the relevant initial conditions for the occurrence of the event are the same as in the actual world. As a general rule, one's decision to φ is always among the relevant initial conditions for one's φ-ing. Therefore, close possible worlds in which the relevant initial conditions for going to Paris are the same as in the actual world are worlds in which one makes the decision to go to Paris. In all close possible worlds in which one decides to go to Paris, one goes to Paris. Consequently, MC and similar conditions do not hold, and, therefore, they correctly rule out one's going to Paris as a case of luck.

Let us go back to how the taxonomy of cases above bears on the relationship between the notions of luck and risk. Let us focus first on cases in which there is no luck involved, that is, on C-cases and D-cases. C-cases show that luck does not arise if there is neither event-relative nor agent-relative risk. D-cases further show that the absence of luck is compatible with there being event-relative risk. Together with C-cases, they also show that luck does not arise if there is no agent-relative risk, that is, the absence of agent-relative risk guarantees the absence of luck. According to AR, agent-relative risk is essentially a matter of lacking control over an event. Therefore, there is no agent-relative risk, and hence no luck if one does not lack control over the relevant event, in other words, if one *has* control over the event.

What about cases of luck (A-cases and B-cases)? In both there is agent-relative risk (that is, lack of control over the relevant events) and hence luck. The question is:

Are the events of A-cases and B-cases lucky in the same way? From a theoretical perspective, they are not, as only A-cases involve event-relative risk. But the theory is also backed up by intuition: winning a fair lottery (an A-case) does not intuitively have the same quality of "luckiness" as winning a lottery that, unbeknownst to one, someone has firmly decided to rig in one's favor (a B-case). In other words, the different intuitions elicited by A-cases and B-cases point to the existence of two different senses of the notion of luck. The presence or absence of event-relative risk is what explains the difference.

The distinction has been already noted in the literature, although not in the same terms in which I introduce it here. In particular, Coffman points out that there is a difference between luck and fortune in the following way: "You can be fortunate with respect to an event whose occurrence was *extremely* likely, whereas an event is *lucky* for you only if there was a significant chance the event wouldn't occur" (Coffman 2007, 392).

What I have shown so far is a motivated way of arriving at the distinction underlying Coffman's quote by characterizing the phenomenon of luck as an instance of the more general phenomenon of risk. In a slogan, luck is just risk. More specifically, my view is that luck arises just in case an agent is at risk with respect to an event. But an agent's luck may come in two guises, depending on whether there is risk that the relevant event fails to occur. This is a real distinction, but, contrary to what Coffman thinks, I do not think that the terms "luck" and "fortune" capture it. For both terms can be interchangeably used in ordinary discourse without risk of falsity or infelicitousness. For instance, we would indistinctively (and successfully) apply the terms "luck" and "fortune" to both A-cases and B-cases, for example, to both winning a fair and winning a rigged lottery.

Other commentators have also attempted to distinguish between luck and fortune as if these terms captured a real distinction.[27] This is a mistake: there is a real distinction, but it is not captured by the terms "luck" and "fortune." Our ordinary usage of the terms overlooks the conceptual difference between A-cases and B-cases. In order to distinguish the two sides of the concept to which the terms "luck" and "fortune" refer in ordinary discourse, we can call *luck* or *fortune of type A* the kind of luck/fortune that is present in A-cases and *luck* or *fortune of type B* the kind of luck/fortune that present in B-cases.

A qualification is in order. While there are clear-cut cases of A-luck (for

example, winning a fair lottery) and clear-cut cases of B-luck (for example, winning a lottery that, unbeknownst to one, has been rigged in one's favor), there are some cases in which we do not know whether to ascribe A-luck or B-luck. Contrary to what one might think, this is no objection to the present account, as the ordinary concept of luck or fortune is inherently vague, and consequently we should not expect our analysis of luck to remove all vagueness. On the contrary, it would be positive if it could predict the existence of such cases. In other words, the distinction between the two types (A-type and B-type) of luck or fortune need not be a sharp distinction.

How can we know whether a case is borderline, that is, a case that is neither clearly A-lucky nor clearly B-lucky? In general, if a case is on the borderline between clear-cut A-luck and B-luck, we will be unable to appeal to the modal fragility (A-luck) or modal robustness (B-luck) of the relevant event to explain its being by luck. Rather, the only thing to which we will be able to appeal in order to explain its intuitive "luckiness" or "fortunateness" is the fact that the agent lacks control over the event. That is, the somewhat vague limit between A-luck and B-luck (or A-fortune and B-fortune) emerges when the lack of control intuition does by itself all the explanatory work.

The concept to which the terms "luck" and "fortune" refer in ordinary discourse applies, therefore, to two different types of cases (A-cases and B-cases), but also to cases on the borderline between them. Why is it worth making the distinction? First, because it is a distinction we make at the intuitive level when we judge the outcomes of fair and rigged lotteries differently. If, unbeknownst to you, the organizer of a lottery has decided to make you win, your luck or fortune is not the same as when you win fairly. Second, it is worth making the distinction because it shows how pervasive the phenomenon of luck is.

To illustrate the latter point, consider Lackey's criticism concerning modal chance conditions such as MC (Lackey 2006; 2008). Lackey argues that cases like the following prove that they are not necessary for luck (adapted from Lackey 2006, 285):

> *Buried Treasure.* Sophie has the strong desire to bury a treasure at location *L.* There is no chance that she buries the treasure at any other place. She buries it. Vincent has the strong desire to place a rose bush in the ground of *L.* There is no chance that he places the plant anywhere else. He goes to place it. As he is digging, he discovers Sophie's buried treasure. Sophie and Vincent neither

know each other nor know anything about the other's actions.[28]

Lackey argues that, while Vincent's discovery is intuitively by luck, it would occur in most close possible worlds, which proves that modal chance conditions are not necessary for luck. I agree with Lackey that *Buried Treasure* is a case of luck (or of fortune). No philosophical theorizing will be able to neutralize that intuition. But the absence of event-relative risk indicates that *Buried Treasure* is a case of type B (Vincent's actual discovery would still occur in most close possible worlds, that is, it is sufficiently modally robust, not chancy). However, modal *chance* conditions are not meant to be necessary for luck/fortune of type B. Rather, they help define luck of type A, that is, the kind of luck that involves event-relative risk, which we easily identify in fair lotteries and other gambling games. Luck, in this way, is a pervasive phenomenon that comes in two different guises.

The perceived luckiness or fortunateness in *Buried Treasure* is essentially explained by Vincent's lack of control over his discovery. Or would we say that Vincent's discovery is by luck if he had known that there was a treasure in the area and had used a metal detector? In the next section, I give a detailed account of the notion of control that aims to explain the sense in which we are at risk with respect to events beyond our control, and how this bears on luck. This allows me to specify in which way Vincent lacks control over his discovery.

6. An Account of the Notion of Control

In philosophy, the term "control" has been extensively used to account for a variety of concepts, such as action, property and ownership, freedom, privacy, personal autonomy, responsibility, and luck. Typically, it is assumed that we are all able to distinguish when things are under or beyond our control in such a way that control is regarded as an intuitive primitive notion to which one can resort to explain other concepts. Sometimes definitions or explications of control are given, but they normally aim to clarify its concrete role in the wider philosophical argument where the concept is used. Of course, there is nothing wrong with using the notion in some specific sense to serve some specific philosophical purpose, for example, to account for a special variety of luck—in fact, we cannot assume without argument that the special varieties of luck (moral, epistemic, distributive) can be defined with the same lack of control con-

dition—but what we need here is a generic (yet detailed enough) account of the notion of control that may help us give an adequate account of the notion of luck as we ordinarily understand it.

Daniel Dennett, in one of his works devoted to the compatibility between determinism and free will, defines control as follows: "*A* controls *B* if and only if the relation between *A* and *B* is such that *A* can drive *B* into whichever of *B*'s normal range of states *A* wants *B* to be in" (Dennett 1984, 52). Let me make three points about Dennett's definition. First, the definition indicates that, when we control something or someone, it is our intention, desire, goal, aim, target, plan or purpose to achieve certain outcome concerning that thing or person.[29] Our interests, from the most basic ones (for example, self-preservation) to the most sophisticated (for example, aesthetic and philosophical interests), give shape to our goals, and the actions, practices, and processes that give rise to control are directed toward them. To have *goals* or *aims* is at the core of what is to be a controller.

Second, contrary to what the definition requires, in order for *A* to have control over *B* it does not suffice to have the mere capacity or disposition to drive *B* into a certain state. The reason is that *A* might have the capacity to drive *B* into whichever state *A* wants and yet refuse to do so. In that case, although *A* has the disposition to control *B*, A does not de facto control *B*.[30]

Third, what does "drive" mean? That is, what is the nature of the control relation? In most cases, the relation is *causal*: *A* controls *B* by causing *B* to be in a certain state.[31] These qualifications of Dennett's definition allow us to distinguish a specific sense of the notion of control, which I will call *effective control*:

> *Effective Control*: *A* has effective control over *B* if and only if (i) it is *A*'s aim that *B* is in a certain state *S*, (ii) *A* has a disposition to cause *B* to be in *S* and (iii) *B* is in *S* because of *A*'s disposition to cause *B* to be in *S*.

A driver safely driving his car has effective control over his car because (i) he has the aim and (ii) the disposition to maintain or modify the trajectory of the car, its speed, and so on (a disposition that must be stable and integrated with the other driver's dispositions), and (iii) those parameters are so because of the driver's disposition. In general, all instances of control that involve causal influence of the controller on the controllee are instances of effective control.

Consider now the following possible situation. *A* has the relevant aim and the disposition to drive *B* into a certain state; *B* is already in the state *A* wants *B* to be; *A* has done nothing to drive *B* into that state (that is, *B*'s being in that state is not because of *A*'s disposition). Since condition (iii) is not satisfied, *A* does not have effective control over *B*. Can *A* still have control over *B*? As the following examples show, the answer is positive:

1. NASA sends an astronaut to the moon. The launch, trajectory, speed, and landing of the spacecraft have been carefully planned by the NASA engineers in such a way that, if all the parameters are as expected, the spacecraft will automatically land on the moon without the need for the astronaut to intervene. If, however, an unforeseen event were to have changed some of the relevant parameters, the astronaut would correct them. When everything goes as planned, the astronaut exerts no causal influence on them. We can still claim, however, that the astronaut, when checking the control panel, has control over the spacecraft.

2. The main concern of doctors is to keep patients healthy. When patients are ill, doctors apply the most adequate treatment and constrain patients to adopt healthy habits. In this way, they exert causal influence on the parameters that determine their patients' state of health. But when patients are healthy, doctors just keep an eye on them and eventually run tests to assess their current state of health, so that if something turns out to be abnormal, they can be in a position to provide proper medical care. In this latter case, doctors have no causal influence on the parameters that determine the patients' state of health, but it still makes sense to say that they have control over them.<MC>

What astronauts and doctors have in common is that they *monitor* relevant parameters that, respectively, determine the spacecraft's trajectory and speed and the patients' state of health. Even if causal influence is not sustained, they can have control over them in this way. I call this form of control *tracking control*:

Tracking Control: *A* has tracking control over *B* if and only if *A* monitors *B*.[32] Monitoring has two components. When *A* monitors *B*, *A* keeps track of, registers, or gathers information about *B*. This is the *epistemic* or *informational component* of

monitoring. In addition, the information that *A* registers about *B* enables *A* to initiate, stop, or continue some performance or action that contributes to the achievement of the relevant goal; in a sense, the information compiled disposes or puts *A* in a position to perform goal-directed actions. This is the *dispositional component* of monitoring.

When only the first component is in place, *A* carries out a *merely informational monitoring* of *B*. This is the case of an eventual eavesdropper, who just wants to find out what other people are saying. Ascriptions of control might be true when *A* carries out merely informational monitoring of *B*. This would apply to such ascriptions as "The eavesdropper controls the conversation." Nevertheless, for the most part, monitoring is not merely informational but also *dispositional*, as when a spy eavesdrops in order to get crucial information that could stop an ongoing conflict.

What do we mean when we say that *A* controls *B* in an ordinary sense? When used in ordinary contexts, the term "control" may refer to: (1) effective control, (2) tracking control through merely informational monitoring, (3) tracking control through dispositional monitoring, and (4) a combination of effective and tracking control (plausibly through dispositional monitoring). Case (2) is exemplified by the eventual eavesdropper case above. The following exemplifies (1), (3), and (4): the ascription "The doctor controls the patient's infection" is true if a doctor runs tests to determine the cause of the infection—(3)—if she administers antibiotics to the patient —(1)—and if she does both things—(4). It is worth noting that in most cases tracking and effective control go hand in hand, especially when control follows feedback or feedforward schemas.

The question this section has aimed to answer is the following: In which sense are we at risk with respect to significant events beyond our control and how does this bear on luck? In other words, how should we understand the term "control" in AR and consequently the relevant lack of control condition for luck (given that, as I have argued, luck arises just in case there is agent-relative risk)? The term "control" in AR should be read in the ordinary sense. This means that, depending on what form of control is salient in the context, one might be at risk with respect to an event either when one lacks effective control, or tracking control, or both.

Nevertheless, although the notion of control in AR is the ordinary one (so that context makes salient the relevant form of control in each case), I am inclined to exclude merely informational monitoring as a proper form of control, that is, as a form

of control that is able to put an agent in a safe position with respect to an eventuality. Consider again the eavesdropper case. Suppose that the conversation the eavesdropper is controlling gives him information about a potential risk for him. If he is monitoring the conversation in a merely informational manner such that he does not thereby acquire a disposition to act in a way that would put him in a safe position, he is still at risk with respect to the potential occurrence of the event. In brief, the only kind of tracking control that may exclude agent-relative risk is dispositional tracking control. *The lack of control condition in* AR *should be read accordingly.*

We can now state in which way Vincent (in *Buried Treasure*) lacks control over his discovery. The ascription "Vincent controls his discovery" is false not in virtue of a lack of effective control (arguably, Vincent exerts some degree of effective control when digging) but in virtue of a lack of tracking control. To compare: things would have been different with a metal detector, as he could have monitored the location of the treasure and have thereby acquired a disposition to exert proper effective control over his discovery. In that case, his discovery would not have been by luck.

7. The Lack of Control Account of Luck and Its Counterexamples

My view on luck, in a nutshell, is as follows: An event E is lucky or fortunate for S if and only E occurs and S is at risk with respect to E. S is at risk with respect to E if and only if (i) S has an interest N, (ii) if E were to occur, it would have some objectively positive or negative effect on N, and (iii) S lacks control over E. Condition (iii) must be understood as follows: S lacks control over E if and only if S lacks either effective control, dispositional tracking control, or both. Context and the type of event that E is make salient the form of control that is relevant to assess (iii) in each case. In addition, there are two types of luck or fortune: type A and type B, whose paradigmatic examples are, respectively, winning a fair lottery and winning a lottery that, unbeknownst to one, has been rigged in one's favor. An event E is A-lucky or A-fortunate for S if and only E occurs but was at risk of not occurring and S is at risk with respect to E. E is at risk of not occurring if and only if it would fail to occur in a large enough proportion of close possible worlds. An event E is B-lucky or B-fortunate for S if and only E occurs, E was *not* at risk of not occurring and S is at risk with respect to E. In sum, luck essentially arises out of lack of control, but not taking into account the modal profile of lucky events means overlooking the important difference

between the A-type and the B-type of luck.

Lackey (2008) has offered counterexamples to the lack of control account of luck (my view is a version of it), both to the claim that lack of control over a significant event suffices for the event to be lucky and to the claim that being a lucky event entails lack of control over it. Against the sufficiency claim, Lackey argues that one's neighbor's playing a computer game right now, one's cat sleeping this afternoon, or a chef's making eggplant parmesan in Florence today are nonlucky events over which one lacks control. This set of counterexamples can be easily ruled out with the significance condition that is embedded in AR: one is not at risk with respect to those events, because one does not have an interest N such that the events have some objectively positive or negative effect on N. To put it briefly, the proposed counterexamples are cases of nonsignificant events.

Lackey proposes another set of counterexamples to the sufficiency claim that do involve significant events: a daughter being picked up from school by her mother, a daughter being properly cared for by her father, and the sun rising every day. As regards the first two events, Lackey (2008, 258) admits that "there is a sense in which both of the events discussed above are lucky: [the child's father] is lucky that he has the sort of wife whom he can depend on to pick up their children, and [the daughter] is lucky that she has a father who takes proper care of her," but she quickly withdraws the claim, arguing that this sense of luck would make us deem too many events as being lucky, and it clearly differs from the sense of luck of the type of events proponents of the lack of control account are interested in (for example, winning a fair lottery). As regards sunrises, Lackey thinks that it is clear that we lack of control over them and that they are not lucky for us.

I have two comments on this set of counterexamples. First, it is not obvious that there is no control involved. As regards the first case (a daughter being picked up from school by her mother), it is not clear that the child's father does not control the fact that his daughter is being picked up from school safely if, say, he can phone (monitor) his wife at any time to know whether she is on her way to pick her up. When the father performs that or similar actions, he has tracking control. As regards the second case (a daughter being properly cared for by her father), it is not clear that the daughter has no control over the events that make her be properly cared for if, say, the child knows of the existence of social services and knows how to call for aid to remedy the eventual carelessness of her father. When the daughter performs that or

similar actions, she can monitor relevant parameters of her own situation (tracking control) and call for aid (effective control).[33] Unfortunately, Lackey's cases are underdescribed. Finally, it is clear that, although we have no causal influence on the sun and hence no effective control over it, we do monitor sunrises in a dispositional way, that is, in a way that *disposes* us to perform goal-directed actions. When one keeps track of the time the sun rises, one can count on it, for example, to wake up and go to work. The same applies to many other nomic necessities: when one is able to monitor an event that occurs as a matter of natural law, one is able to count on the occurrence of that event safely. In sum, my account of the notion of control explains why all these alleged counterexamples are not cases of luck.

Second, suppose that it turns out that there is lack of control in Lackey's examples. Then, the sense in which the relevant events would be lucky would be the sense in which B-cases are cases of luck: although there is no risk that the events fail to occur, the agents in question are at risk with respect to them precisely because of their lack of any form of control. Lackey is right in thinking that the sense of luck that arises in this kind of cases, which is clearly different from the sense of luck involved in, for example, winning a fair lottery, make us deem too many events as being lucky. It is no objection, however, to the lack of control account of luck I am presenting here that it leads to a proliferation of lucky events. As I have argued, luck is a more pervasive phenomenon than many commentators think, and this is reflected by our ordinary ascriptions of luck. My account of luck in terms of risk explains in a motivated way why it is so pervasive.

On the other hand, Lackey also charges against the necessity claim (the claim that if an event is lucky for one, one lacks control over it). She proposes the ingenious *Demolition Worker* counterexample:

> Ramona is a demolition worker about to press a button that will blow up an old abandoned warehouse, thereby completing a project that she and her co-workers have been working on for several weeks. Unbeknownst to her, however, a mouse had chewed through the relevant wires in the construction office an hour earlier, severing the connection between the button and the explosives. But as Ramona is about to press the button, her co-worker hangs his jacket on a nail in the precise location of the severed wires, which radically deviates from his usual routine of hanging his clothes in the office closet. As it

happens, the hanger on which the jacket is hanging is made of metal, and it enables the electrical current to pass through the damaged wires just as Ramona presses the button and demolishes the warehouse. (Lackey 2008, 258)

Lackey claims that the explosion is both under Ramona's control and by luck. However, does merely pressing a button suffice for having control over an explosion, at least in this case? Hardly, since an important feature of the case, as Lackey introduces it, is that Ramona is one of the persons who have been working for weeks on the design of the controlled explosion, which means that the extent to which Ramona should have control over the explosion encompasses not only the mere production of the explosion by pressing the button (effective control) but also the monitoring of the explosion system (tracking control). In particular, not having properly checked the relevant wires before the explosion or having failed to foresee the presence of rodents or other problematic animals are things for which we can blame Ramona and the rest of co-workers responsible for the design of the alleged controlled explosion. If they had monitored these things adequately, they would have been in a position to take proper action and to demolish the warehouse in a way that we would not classify as lucky. In conclusion, although Ramona has effective control over the explosion, she lacks tracking control over it, and in the context provided by Lackey both forms of control are salient. Therefore, the explosion occurs by luck, just as the lack of control account predicts.

8. Conclusions

What is luck? In this essay, I have argued that the concept to which the terms "luck" and "fortune" refer in ordinary discourse can be adequately defined in terms of risk. In particular, I have argued that luck arises just in case an agent is at risk with respect to an event, which means, in turn, that luck arises just in case an agent lacks control over a significant event. I have also argued that in order to understand properly what luck is, we must take into account not only the risk at which an agent is with respect to lucky events but also the risk that lucky events had of not occurring, which means, in turn, that we must take into account their modal profile. Only in this way we can fully appreciate the distinction between two intuitively different forms of luck: the

kind of luck that is instantiated when one wins a fair lottery, and the kind of luck that is instantiated when one wins a lottery that, unbeknownst to one, someone has firmly decided to rig in one's favor. Finally, I have given an account of the notion of control that explains why my version of the lack of control account of luck steers clear of several counterexamples.

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[1] This view is endorsed by Rescher (1995, 32). See Latus (2003, 465, n. 17), Pritchard (2005, 127, 130; 2014), and Riggs (2009, 205) for relevant discussion. See also Unger (1968) for a related discussion in epistemology.

[2] See Coffman (2007, 389), Levy (2011: 14), Pritchard (2005, 126–27, 131), and Steglich-Petersen (2010, 363) for relevant discussion.

[3] Rescher (1995, 35) and Latus (2003) seem to uphold this view. See Steglich-Petersen (2010, 366–67) for relevant discussion.

[4] See Steglich-Petersen (2010, 367–68) for relevant discussion.

[5] Steglich-Petersen (2010) defends this view, which turns luck into an epistemic notion.

[6] Baumann (2012) upholds this view. Rescher (1995, 211–12 and passim) seems to uphold it too, although at some other places he seems to defend (1.3).

[7] Different formulations of modal chance conditions may be found in Coffman (2007, 390), Levy (2011, 19), and Pritchard (2005, 128; 2014).

[8] This is the case of Coffman (2007), Latus (2003), and, apparently, Levy (2011); Levy does not explicitly endorse a lack of control condition but nevertheless builds it into his proposed chance condition.

[9] This is the case with Baumann (2012), Pritchard (2005), and Rescher (1995).

[10] This is the case with Riggs (2007 and 2009).

[11] See McKinnon (2013) for an alternative account according to which "skill is what we call the expected value of an ability, and luck is any deviation, whether positive or negative, from this value" (McKinnon 2013, 510).

[12] Pritchard (2014, 604) points out: "We shouldn't expect an account of the metaphysics of lucky events to be responsive to such subjective factors as whether an event is the kind of thing that people care about enough *to regard as* lucky. That's just not part of the load that a metaphysical account of luck should be expected to carry."

[13] More precisely, Pritchard argues that there is a close relationship between the notions of luck and risk by showing that judgments about luck and risk go hand in hand. His point is that in order to account for this correlation risk must be defined in modal terms using a measure of closeness between possible worlds fixed by intuitive similarity (according to Pritchard, the alternative would be a probabilistic measure of closeness, but it would not serve to capture the sense of luck involved in lotteries). That said, Pritchard acknowledges two differences between luck and risk: (1) risk concerns unwanted events, while luck concerns both wanted and unwanted events; (2) we can meaningfully talk of very low levels of risk but not of luck—for example, he thinks that if a lottery is rigged to ensure that one is guaranteed to be the winner, it

is not a matter of luck that one wins, but the case might still be described as a case of risk. In this essay, I address (1) and (2) (see, respectively, sections 3 and 5).

[14] For risk of nonoccurrence: E is at risk of not occurring at t if and only if E would not occur at t in a large enough proportion of close possible worlds. See Broncano-Berrocal 2014 for relevant discussion on the application of MR to the epistemic case.

[15] Rescher (1995, 25). See also Levy (2011, 16–18) for relevant discussion. Levy uses this example to argue that "the degree of chanciness necessary for an event to count as lucky is sensitive to the significance of the event" (2011, 17), so there is no fixed proportion of close possible worlds in which the event would have to occur to be considered lucky in the actual world, since the significance of the event may vary from case to case.

[16] This goes against Coffman's proposal that risk is a matter of there being an easy possibility that an event will occur (or will not occur, depending on the case).

[17] For risk of nonoccurrence: E is at risk of not occurring at t if and only if there is high probability that E will not occur at t (or low probability that E will occur at t).

[18] The probabilities that PR takes as values must be nontrivial (that is, probabilities other than 1 or 0). The reason is that if an event has probability 1 of occurring we would not say that it is at a high risk of occurring; we would say rather that it is a certainty that it will occur.

[19] Of course, this is not to say that we must avoid doing probabilistic calculations when it comes to assess the risk of a given situation. Probabilistic calculations can certainly help us determine whether there is risk that an event will happen, and, more important, they can guide us when our counterfactual capacities deliver incorrect judgments, as often happens in well-known errors, such as the gambler's fallacy. After all, our cognitive capacities are reliable but not infallible.

[20] Pritchard (manuscript) thinks that PR is not the correct way of conceiving of risk. To show that, he gives two examples that supposedly prove that two equivalent events with the same probability of occurrence might have different levels of risk. I do not share Pritchard's intuitions about the cases and I do think that PR is a legitimate and correct way of conceptualizing risk, but note that if it turns out that PR is an inadequate way of capturing the metaphysics of risk (as Pritchard argues), then that would count in favor of my argument that chance conditions modeled on PR do not serve to account for luck.

[21] MC is basically Pritchard's modal chance condition for luck (Pritchard 2005, 128) modified so that it includes Levy's phrasing "in a large enough proportion of close possible worlds" (Levy 2011, 17)for the reasons exposed above.

[22] Baumann (2012) endorses this kind of chance condition for luck.

[23] Here I am assuming what Williamson calls the "no close risk" conception of safety, which according to him, "permits us to make ourselves safe from a disjunction of dangers by making

ourselves safe from each disjunct separately, and to check that we are safe from the disjunction by checking that we are safe from each disjunct in turn" (Williamson 2009, 17). In *Lazy Luke*, the relevant disjunction is composed of all the job offers Luke applies for. He successfully makes himself safe from all disjuncts except one, the job at MicroCorp, hence his bad luck when he is hired.

[24] See Ballantyne (2012) for the original proposal.

[25] If one does not have control over the lottery process and its outcomes, one is not only at risk of losing but also at risk of winning (remember that AR can be applied to positive events as well). In general, we are attracted to lotteries because they allow us to expose ourselves intentionally to the whims of luck by engaging in a game whose relevant parameters are beyond our control. This lack of control gives us hope of winning even though we know that the probability of losing is extremely high.

[26] The same applies to *torn decisions*, which Mark Balaguer uses to defend a naturalistic libertarian account of free will. He defines torn decisions as the kind of decisions we sometimes make when we have reasons for two or more options and we feel torn as to which reason is the best, so we end up just choosing one of the options (Balaguer 2010, 71).

[27] For Pritchard (2005, 144, n. 15), fortunate events are events that count in one's favor over which one has no control. In Pritchard 2014, he further specifies that fortune "tends to be concerned with relatively long-standing and significant aspects of one's life, such as one's good health or financial security" (2014, 607). For Levy (2009, 495–49), fortunate events are nonchancy events that have luck in their causal history (namely, in their proximate causes).

[28] Latus (2003, 468) and Rescher (1995, 35) give analogous examples.

[29] Ascriptions of control are made about all sorts of things: cars, emotions, persons, animals, the volume, passports, the crime rate. Plausibly, what we mean by such ascriptions is that we control behaviors, events, or states related to them.

[30] This is, I believe, a potential problem for Coffman's definition of control (Coffman 2009). Coffman (see point (2.2) in the introductory section of the essay) cashes out control in terms of being free to perform certain actions. However, being free to φ is compatible with deciding not to φ. SpecificallyIn this way, (s that if one has the choice to φ but decides not to, one has control over the event that the action of φ-ing aimed to control. Yet one may not have de facto control over the event precisely because one has not φ-ed. As regards (2.3), the epistemic conditions it includes are, as Levy (2011, chap. 5) acknowledges, so demanding that agents rarely satisfy them (so most of their actions are by luck). In my opinion, (2.3) does not match our ordinary notion of control, at least the kind of control that matches the *ordinary* way we think about luck

(which might be different from the way philosophers think about luck in the free will debate).

31 Some uses of the term "control," however, may not allow for causation. Suppose that it is acceptable to say of some mental event that it controls a physical event. Some philosophers might not be willing to qualify the relation between these events as causal (perhaps they would prefer to qualify it as a relation of *determination*). The definition can be tweaked accordingly.

32 Something like monitoring is what Riggs (2009) seems to have in mind when he proposes that luck arises only if the agent does not successfully *exploit* the relevant event for some purpose. He exemplifies the point with a case in which someone exploits an eclipse in his favor (namely, to survive). Riggs argues that knowing that there will be an eclipse and putting that knowledge into action prevents the eclipse from being lucky for that person, as a simplistic lack of control account of luck would entail. Nevertheless, Riggs does not seem to consider the exploitation of an event in one's favor as a form of control: "The eclipse was not a matter of luck for [that person] because, *though it was out of his control*, he nonetheless exploited its occurrence to procure his survival" (Riggs 2009, 218; emphasis added). Monitoring, I argue, *is* a form of control.

33 Calling for aid seems a form of effective control, as the daughter's words are the origin of the causal chain of events that leads to the relevant aid.