Knowledge and Conditionals of (Dis)connection[1]

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The gist of modal epistemology is expressed in the idea that you fail to know if you do believe truly but it is seriously possible for you to believe falsely. According to subjunctivism, this idea is captured by certain subjunctive conditionals. One formulation invokes a safety condition—"If S had believed P, then P would have been the case," while the other invokes a sensitivity condition—"If P had been false, S would not have believed that P." According to simple subjunctivism, such conditionals do not contrapose and Sosa derives important epistemological consequences which favor safety from this difference. However, simple subjunctivism is inadequate. I return to Goodman and his analysis of factuals and propose modal stability, which is restricted sensitivity or enhanced safety as a proper epistemic condition for the non-accidental connection between the basis for the belief and the relevant facts of the matter. The idea of modal stability combines robustness (benefits of safety) with responsiveness to facts (benefits of sensitivity) and recovers the original motivation for the relevant alternatives theory—when testing for claims of knowledge that p we ask what might be the case if not-p, but we ignore irrelevant possibilities. Epistemic modal conditions should be expressed in terms of conditionals of connection which contrapose within the limits of relevance.

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1.

"Even if p had been false, you would have believed it anyway," looks like a good reason for denying that one knows that p. Formulated in

positive terms, one could paraphrase a famous line from Shakespeare: belief counts as knowledge only if it "alters when it alteration (in facts) finds."[2] Belief (as opposed to, perhaps, love), if it is to be promoted to knowledge, should be finely dependent on facts. However, how fine is fine enough and what if one did not easily believe that *p* without being right? It is tempting to say that belief can still be a good candidate for knowledge, even if it does not *always* alter when it alteration finds. Only when it is seriously possible for you to falsely believe that *p*, do we have a good enough reason for denying your knowledge that *p*. Alternation within limits looks like a plausible reconciliation of these two intuitions. What counts as *serious* is usually specified in terms of modal distance—how far is a certain possibility from the actual world. Modal distance maps the strength of the connection between one's belief that *p* and the fact *p*—if the possibility of believing falsely is close, then there is no connection, or a very unstable one. Within a space of nearby possibilities, modal connection requires that a belief should "alter when it alteration finds," as for very distant possibilities, well, even love will shatter should your beloved one be transformed into a monstrous vermin. The old Platonic insight that knowledge is at least a non-accidentally true belief is then interpreted as the idea that knowledge requires a modally stable connection between the belief and the relevant facts of the matter.

This picture is rough but familiar. Many versions of contemporary reliabilism impose modal conditions on knowledge, understood as a certain necessity, non-accidentality, or anti-luck condition. According to Unger (1968), S knows that *P* just in case it is "not at all accidental that S is right about its being the case that *P*." It not being accidental that one is right about *P* amounts to there being something in one's situation that guarantees, or makes it highly probable, that one were not wrong. *Externalism* in general is sometimes expressed in these terms: you can know something noninferentially, without reasoning from prior knowledge, so long as it is no accident or coincidence that you are right (Sosa 1997: 419). The notion of *serious* possibility comes from Goldman's development of reliabilism with respect to perceptual knowledge (1976: 775). The position I develop in this paper is, in a certain sense, simply a generalization of Goldman's (1986: 46): "A true belief fails to be knowledge if there are any relevant alternative situations in which the proposition *p* would be false, but the process used will cause S to believe *p* anyway."

According to Zalabardo (2012: 4) "Reliabilism ...is the view that whether a true belief has the status of knowledge depends on how the natural order connects the state of affairs the belief consists in with the state of affairs whose obtaining determines the truth value of the belief—that is, S's belief that *p* with *p*." I agree with the centrality of

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[2] Love is not love / Which alters when it alteration finds (Shakespeare, Sonnet 116)

connection—knowledge must be underwritten by some kind of stable modal connection. What is the profile of this connection? First, what are the relata? The state of affairs or the fact that *p* is more or less uncontroversial, but the epistemic *relatum* is not a simple belief that *p*. Various proposals include: evidence for *p*; (conclusive) reason for the belief that *p* (Dretske 1971); experiential reasons for the belief (Sosa 2004a); a basis for the belief (Sosa 2002); a belief based on a method which indicates that *p*; or simply a method of belief formation (Luper 2012: 210). Relativisation is necessary for various reasons. Here is simple a case based on Luper (based on Nozick). I believe that Mary, my daughter, is well because I see her playing tennis, but if she weren't I'd believe she was through wishful thinking. Suppose she just made a dangerous move, overstretching her arm, which might easily have led to a ruptured biceps. My true belief about her well-being is based on perception, but (in the case of her injury) I might easily believe falsely, by way of wishful thinking. Still, the possibility of my using a bad method does not discredit my perceptual knowledge of her well-being.

The possibility of applying a different method of belief formation suggests that non-accidentality might be understood as having multiple dimensions (cf. Yamada 2010).[3] Bogardus (2012) presents a nice analogy with bridges—methods of acquiring knowledge are like bridges to one's destination. If Godzilla is rampaging through the area, even the world's sturdiest bridge might be in danger. It may be false that, were one to take the bridge, one would arrive at one's destination. Yet, if Godzilla has not yet hit the bridge, it remains as sturdy as you like. In one dimension it is no accident that you safely crossed the river using this bridge; in another dimension you were simply lucky. Various cases of accidental knowledge which are supposed to show that modal condition is not necessary for knowledge might in the end just show that the one-dimensional space of possible worlds (measuring the proximity of a simple belief-fact mismatch) is just not pliable enough to map all of our epistemic intuitions.

I will avoid complications, however, and mainly work with the simple idea that knowledge must be underwritten by some kind of stable modal connection between the truth of the belief and the epistemic basis for the belief. The modal nature of the connection indicates that actual true belief is insufficient for knowledge; true belief in some range of counterfactual situations is also required. Which range? Two different ways to characterize them have been extensively discussed. Here is Black (2011: 189):

> First, to say that Smith's belief is true simply as a matter of luck might be to say that there is nothing about Smith's circumstances, in which his belief happens to be true, that ensures that he will believe that C—even if C had been false, Smith might nonetheless have believed that C. This way of giving expression to our anti-luck intuition corresponds to epistemologies known as *sensitivity* theories...

[3] Engel (1992) already introduces different dimensions of epistemic luck.

> Next, to say that Smith's belief is true simply as a matter of luck might be to say that there is nothing about that which led Smith to believe that C that ensures that C will be true—it might have been that Smith's circumstances are just as they actually are, but that his belief that C is false. This way of giving expression to our anti-luck intuition corresponds to modal epistemologies known as *safety* theories...

Well, what is the *difference*? Lucky belief, only accidentally connected with facts of the matter, in terms of safety, is a belief held by Smith such that the basis for Smith's belief that C does not ensure the truth of C. It is possible that Smith's circumstances are just as they actually are, but that his belief that C is false. Not quite so. Smith's circumstances are not exactly as they actually are; in this possible situation the facts about C must have changed for his belief to be false. Which is to say: if C had been false, Smith might nonetheless have believed that C on the same basis (in *roughly* the same circumstances). So his belief is not sensitive. This looks very much like a difference without a difference.

I do not deny that it is possible to understand the passages quoted in a way which does not minimize the difference. Still, I will argue that the two characterizations of one's failure to know are just two perspectives on a broken *liaison*: (i) Smith's basis for his belief that C does not *depend* on the fact that C; (ii) Smith's basis for his belief that C does not *indicate* the truth of C. A standard way to spell out the difference is to express the two conditions in terms of subjunctive conditionals. According to *subjunctivism*,[4] a true belief rises to knowledge just in case certain subjunctives about the truth of that belief hold. A belief that p is safe iff

SAF   S would believe that p only if p were true. (Alternatively: S would have believed that p only if p had been true.)

And a belief that p is sensitive iff

SEN   If p were false then S would not believe that p. (Alternatively: If p had been false then S would not have believed that p.)

SEN is almost universally interpreted in accordance with the Lewis-Stalnaker account of such conditionals: in the closest (sometimes the nearest) world in which p is false, S does not believe that p.[5] I will call a combination of the SAF, SEN and standard possible worlds interpretation of the subjunctives involved *simple subjunctivism*. Simple subjunctivism cannot be quite right—when p and q are both true, it is an artifact of these kind of semantics that "if p were the case, then q would be the case" is automatically true, since the actual world is more similar to itself than any other world (and q is true in the actual world). True beliefs will then automatically be safe—not what we want, no luck eliminated, so a different interpretation has to be used

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[4] A term used by Fogelin (1994) and Vogel (2007).

[5] Cf. Black (2011: 189), Alspector-Kelly (2011: 129); Vogel (2012: 122) as a sample list.

for safety (true/true) conditionals. However, I think one should play the game of epistemic modal conditions consistently and with the same set of rules, motivated by the idea of modal connection. Although a good deal of thought has gone into the details concerning how the safety and sensitivity conditions should be interpreted, this point has not been appreciated sufficiently.

Consider the notion of the closest possible world(s). What exactly counts as *the closest* is open to discussion, but some have taken close possible worlds to be *nearby* worlds (Rysiew 2006: 275). This may lead to confusion—the closest need not be nearby. The closest non-human inhabited planet might be in the Gliese 1 system, so far, far away, but still closer than, say the Gliese 876 star system. However, there are no *nearby* non-human inhabited planets: there are none in our Solar system and its vicinity, Alpha Centauri, for instance. When speaking about sensitivity in terms of simple subjunctivism, I will use the notion of *close* worlds (which need not be nearby), and I will reserve the notion of being nearby for those worlds which are "really" near (in roughly the way that Venus is near to Earth and Gliese 1 is not; the question of how to measure distances in modal space is a vexed one).

Let me now state the problem for sensitivity understood in terms of simple subjunctivism: in some cases the closest non-p possibility is not a serious option at all and in some cases the closest non-p possibility is not the *only* serious option. Radical skeptical scenarios belong to the first type—we are told, for instance, to imagine the remote possibility that at this very moment we are a brain hooked up to a sophisticated computer program that can perfectly simulate experiences of the outside world. Is this possibility nevertheless relevant for my actual knowledge that I am not a victim of a brain-in-a-vat illusion? I do not think so, although this is controversial. I will touch upon this again later.

Goldman (1983: 84) illustrates the second case with the following scenario:

> Sam correctly believes that Judy is before him, but if it were Judy's twin sister instead, he would mistake her for Judy. Then, as long as the twin sister's being there is a serious possibility, Sam doesn't know that Judy is before him. Suppose that what would be the case if Judy weren't before Sam is that nobody would be there, and if nobody were there, Sam wouldn't believe that Judy is there. Then Sam's bid for knowledge survives Nozick's condition (3), and nothing else in the analysis is able to defeat it.

Nozick's condition (3) is just SEN. It is clear that *more* no-Judy possibilities should be considered, not just the closest one and only. It might, after all, be merely a happy accident that Sam sees Judy—the connection between the basis of his belief and Judy's presence is not stable. The profile of modal connection is not adequately captured by the sensitivity condition as stated by simple subjunctivism. Goldman objects that Nozick's analysis does not make reference to serious possibilities; it talks about what would be the case if p weren't true. It is not so

clear that conditionals expressing modal connection should be about the closest possibility only—sensitivity is a technical notion, after all. But I agree that an overly simplistic understanding of the subjunctives involved obscures the nature of modal connection. A more sophisticated semantics is usually offered,[6] but then simple subjunctivism faces the problem that *explanans,* an adequate account of subjunctive conditionals, might turn out to be more complicated than *explanandum*, the analysis of epistemic modal connection.

Let me try a different approach. I started with the intuition that a proper modal connection is a necessary condition for knowledge and this necessity was formulated in terms of a conditional of *dis*connection (let us ignore, for the time being, the problem of the epistemic *relatum*):

SEM   Even if p were false, S would believe it anyway.

SEM is a semifactual denying that S knows that p. Goodman (1991: 11) introduced the phrase 'semifactual' for a conditional with a false antecedent and true consequent in contrast to the 'counterfactual' in which both the antecedent and consequent are false. For Goodman, in practice, full counterfactuals affirm while semifactuals deny that a certain connection obtains between antecedent and consequent. Literally, however, a semifactual and the corresponding counterfactual are not contradictories but contraries, and both may be false. SEM has the force of denying "if p had been false, you would not have believed it," but it is actually stronger than required for a denial of SEN. Both Nozick (1981: 199) and Dretske (1971: 9–10) were aware of the fact that a proper denial of SEN is:

> If p were false, then S might still believe that p. (Alternatively: If p had been false, then S might have believed that p.)

So,

D1   S might have believed that p, (even) if p were false.

is enough to deny knowledge. How about:

D2 p might be false, even though S were to believe that p?

I think that the denials are equivalent within the same range of nearby worlds. Let me use the following example as an analogy for an accidental correlation (*Wikipedia*): "Since the 1950's, both the atmospheric CO_2 level and obesity levels have increased sharply." But atmospheric CO_2 does not cause obesity, rather, richer populations tend to eat more food and consume more energy. So we have:

D1'   Obesity might increase even though the level of atmospheric CO_2 would not.

But also:

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[6] Nozick (1981: 680–681) avoids the trivial truth of factuals by adopting a rather complicated semantics for true-true conditionals.

D2'   The level of atmospheric CO_2 might not increase even though obesity would increase.

Both conditionals are true in the same possible situations, those in which obesity increases but the level of atmospheric CO_2 does not. Still, the perspective is different: we tend to understand the first conditional as stating that the level of obesity does not track (is independent of) the level of atmospheric CO_2. We *could* understand the second conditional as stating that the level of atmospheric CO_2 does not track (is independent of) the level of obesity (just think of cows and methane they produce). However, given certain background assumptions about the direction of causation (from CO_2 to obesity) it seems more plausible to suppose that D2' states that the level of obesity is not a good *indication* of the level of atmospheric CO_2.

    In terms of epistemic conditions, D1 is officially a denial of "sensitivity"—our bases for beliefs do not track (are independent of) the relevant facts. D2 is a denial of "safety," our bases for beliefs do not indicate the relevant facts. According to one of Sosa's formulations (Sosa 2002), for a belief to be safe it must be based on a reliable indication. Or, to use the formulation of safety by Black, there is nothing about that which leads us to have reasons for the belief that p that ensures that p will be true. Still, the "truthmaker" for D1 and D2 is the same— a (relevantly similar) possible situation in which one falsely believes that p. D1 (dependency) and D2 (indication) are two perspectives on a modal disconnection representing two aspects of a proper epistemic connection: stability and responsiveness to facts. Safety corresponds to stability and robustness—modal states that concern what could not *easily* have happened (cf. Williamson 2000: 123). The aspect of sensitivity is the aspect of responsiveness to changes and dependency on facts—knowledge attribution depends on whether S's belief that p (or, the cognitive processes responsible for the production of that belief) is responsive to whether p, whether S would believe that p even if some not-p alternative were in fact the case (Goldman 1976: 85). Both are conditions of reliability and they should extensionally co-vary—within reasonable *limits*!

    Responsiveness to changes is often explained in terms of the subject's possession of certain discriminative capacities (cf. Rysiew 2006). Let us therefore take an underwater camera as our analogy for a cognitive, belief forming mechanism. There are two aspects of a good picture taking mechanism: (i) responsiveness to environment (making good and recognizable pictures in variable conditions); (ii) good housing, robustness, stability—the camera should not break easily. The first requirement corresponds to sensitivity and the second to safety. A camera which easily breaks is unsafe and not a good camera and neither is a camera with poor sensitivity that produces blurred pictures. It is true that 11.000 m under the water the camera might become dysfunctional. It is also true that our belief forming mechanisms become

dysfunctional when subjected to radical skeptical scenarios. However, these are extreme conditions, as a camera that does not work 11.000 m under the water can still be a good underwater camera. Discrimination under not too-farfetched conditions makes for a solid camera, while discrimination within reasonable limits of relevant possibilities is good enough for knowledge (or better, necessary, as there might be other conditions for knowledge).

Note that the failure of stability ("unsafety") and the failure of responsiveness ("insensitivity") are usually *explained* in the same way. Consider the familiar Russell-Gettier case in which Mrs. Smith forms a true belief about what the time is ("It is 5 o'clock in the afternoon") by looking at a stopped clock, one that just happens to be showing the right time. In the closest not-5-o'clock world Mrs. Smith would still believe it is 5-o'clock; her belief is not sensitive. Why? Because she is unable to discriminate the "5 o'clock in the afternoon—world" from the relevant but incompatible hypothesis. Also, Mrs. Smith could easily believe it is 5-o'clock even if the time were different; her belief is not safe. Why? Well, based on the evidence she has in these circumstances, Mrs. Smith is unable to discriminate between 5 o'clock and the relevant not-5 o'clock worlds. She is both easily prone to error and her belief is not responsive to facts because of her inability to tell apart the relevant alternatives.

In making these judgments, we should take into account those seriously possible situations in which she falsely believes that *p*, but *not* those in which she fails to believe truly. Many have noticed that it is the modal proximity of a false belief that matters for the epistemic (dis) connection, not the proximity of undetected truths. Sosa (2004b: 280) gives the following example:

> If I see a large pelican alight on my garden lawn in plain view, I will know that there is a bird in my garden. And this is not affected by the fact that a small robin sits in the garden in its nest out of view. In such circumstances, there might very easily have been a bird in the garden without my believing it.

One might object that my belief that there is a bird is based on my pelican-experience, and there could not easily have been a bird in the garden without my believing it on this *basis*. How, exactly, should we individuate bases (reasons, methods)? This is a difficult problem that I will avoid; let me just say that the "pelican-experience" seems to be too fine-grained. Yet, there are many other cases. Luper (2012: 212) argues convincingly that we can know things based on reasons (methods) that miss instances (*p* is true but our method of knowing fails to indicate *p*), counter-instances (*p* is false but our method of knowing fails to indicate the falsity of *p*), or both. He gives the case of a gappy thermometer: if a person's temperature is over 101°F, then the thermometer indicates a fever. People are feverish when their temperature is not over 101°F, but the thermometer will not indicate that such persons have fevers.

Suppose Frieda's temperature is slightly over 101°F and the thermometer indicates this fact. She might easily have 100.8°F degrees and be feverish without the thermometer indicating this. Still, using this thermometer, we know she has a fever.

What counts as a denial of knowledge is the possibility of believing falsely, not the possibility of ignorance. We should avoid *errors* in similar cases as Williamson would say, but our potential failures to form beliefs do not discredit our claims of knowledge. This observation unites a theory of modal (dis)connection with its predecessor, the original relevant alternatives theory. If you know that *p*, then, in some sense, you "can't be wrong" about *p*; there are no *relevant* possible situations in which you have the same basis for your belief, but *p* is *false*. Or, in other words, if it is seriously possible for S to falsely believe that *p*, then S fails to know that *p*.

Serious possibility is determined by modal distance, and it is hoped that modal distance captures relevance (modally far-away is irrelevant). Ideally, serious possibility, relevance and modal proximity should match. When in an anti-skeptical mood, philosophers tend to agree that irrelevant (radical skeptical) scenarios are far-away and not seriously possible, so they do not have an adverse impact on everyday knowledge. However, a theory of relevance is everybody's problem. We might end up with a cheese like topology, a set of relevant possibilities that cannot be naturally seen as a "sphere" of nearby possible worlds but rather as a set of unconnected "islands" (Schaffer 2005: 125). Let's hope that this is not the case and work with the usual, not entirely precise notion of relevance (for Goldman 2012: 69, for instance, a situation is relevant only if it is "realistic," fairly likely to occur, or does occur in a nearby possible world).

3.

Simple subjunctivism is not an adequate formulation of epistemic modal connection. We could avoid conditionals altogether and state modal conditions directly, by means of a possible-worlds heuristic.[7] Or, we might try with a semantics that allows for a uniform treatment of modal conditions and interpret epistemic modal conditions in terms of a special type of conditional. I am sympathetic to all of these approaches. Ideally, they should converge—I will try to rehabilitate a conditional of connection introduced by Goodman which allows for a uniform treatment of factuals and counterfactuals and has truth-conditions which respect our epistemic modal intuitions when expressed in terms of possible worlds.

We ascribe a lack of knowledge that *p* to S when *p* is true and S believes that *p* on a basis *b,* but continues to believe that *p* (on this basis) in one of the seriously possible non-*p* worlds. In this case a *semi-*

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[7] This is proposed by Greco (2012: 194), who refers to Hawthorne.

factual, a conditional of disconnection, is true: "Even if p were false, S might still believe that p on basis b". For Goodman, in practice, full counterfactuals affirm while semifactuals deny that a certain connection obtains between antecedent and consequent. However, the same connection can be expressed in terms of a *factual*. Goodman considers the case when we say of a piece of butter that was eaten yesterday and that had never been heated: "If that piece of butter had been heated to 150°F, it would have melted." He then remarks (Goodman 1991: 10):

> The problem of counterfactuals is equally a problem of factual conditionals, for any counterfactual can be transposed into a conditional with a true antecedent and consequent; e.g., "Since that butter did not melt, it wasn't heated to 150°F." That "since" occurs in the contrapositive shows that what is in question is a certain kind of connection between the two component sentences; …

This may or may not be the proper approach to analyzing counterfactuals in natural language, but it certainly looks like a good starting point for analyzing conditionals of *connection*. "Since X, Y" captures Sosa's idea of safety, "Not easily X without Y." In the same way as not-melting of the butter indicates its not-being heated, modal connection requires that the existence of S's reasons (evidence, basis) for the belief that p —the way an object appears to S, for example—is a reliable *indicator* of the truth of p. For Sosa an agent S counts as knowing p only if S believes p by way of a safe "indication," where indications are deliverances of epistemic sources such as perception, memory, inference, etc. (Sosa 1999: 149 and Sosa 2002). Occasionally, he uses a different formulation: a belief that p is basis-relative safe, if and only if it has a basis that it would (likely) have only if true. The idea, however, is the same: the basis for p indicates the truth of p, or, in terms of a conditional: "Since S believes that p on basis b, it is true that p." Dretske's (1971) notion of a conclusive reason R (S knows that P on the basis of R) could also be understood as "since R is the case, so is P."

Not-melting of the butter does not cause its not-being heated, and reasons do not cause facts, so I will understand Goodman's "since" conditionals neutrally as expressing a connection without direction. They can be used causally. McCall (1983) uses "since" and "because" interchangeably to indicate a connection between the antecedent and consequent and analyses a factual: "Since the butter was heated it melted," which we naturally read as stating that the antecedent causes the consequent. Let "A > B" stand for the conditional such that the proposition or state of affairs expressed by A bears a "connection" of a logical or nomological nature to that expressed by B. When A and B are both true, there are two conditionals of connection—a factual: "Since A, B," and a corresponding contraposing counterfactual: "If B were not the case, then A would not be the case." They are extensionally equivalent according to Goodman and McCall. *Epistemic* conditionals connect a basis for a belief that p ('$B_b p$' is a proposition stating that S believes that p on a basis b) with the fact that p and I will understand 'Since $B_b p$,

p' as an *indication* (B$_b$*p* indicates *p*) and 'If *p* were not the case, then B$_b$*p* would not be the case' as *dependency* (B$_b$*p* depends on *p*). The first conditional expresses the aspect of safety, and the second the aspect of sensitivity—but these are, following Goodman, just two aspects of one connection, which is to say that indication conditionals and dependency conditionals validly *contrapose*.

This is not a standard view, however. So, let us examine more closely the *rationale* against contraposition. I will examine Sosa's argument against contraposition in a special section. Suppose we understand safety in terms of simple subjunctivism as "If S were to believe *p*, *p* would be true," or "B$_S$ *p* > *p*" and sensitivity as its contrapose: "¬*p* > ¬B$_S$ *p*." Let us also adopt a slightly modified, Nozickian version of Stalnaker/Lewis semantics for true/true subjunctives, so that "If S were to believe *p*, *p* would be true" is true if and only if *p* is true at all close worlds at which S believes *p* (not just the actual one). These conditionals do not contrapose (Williamson 2000: 149):

> B$_S$ *p* > *p* can be true and ¬*p* > ¬B$_S$ *p* false if *p* is true at every close world but S believes *p* at the closest (but not close) world at which *p* is false. Equally, ¬*p* > ¬B$_S$ *p* can be true and B$_S$ *p* > *p* false if S believes *p* at some close but not closest worlds at which *p* is false.

Is this really decisive? S actually truly believes that *p*, but the closest world where S believes falsely is *not* nearby, so S's belief is safe but not sensitive? True, this constitutes a problem for simple subjunctivism— but we saw above how to reply: sensitivity has to be restricted and the closest worlds which are not nearby will then be irrelevant. This objection then loses its bite. Note also that Williamson ascribes to Nozick *different* semantical criteria for factuals (safety) and counterfactuals (sensitivity). Counterfactuals are interpreted according to standard Lewis semantics—"¬*p* > ¬B$_S$ *p*" is true at a possible world *w* if and only if either ¬*p* is true at no possible world (the vacuous case) or, for at least one possible world *x*, ¬*p* is true at *x* and ¬B$_S$ *p* is true at every possible world at least as close in the relevant respects as *x* is to *w*. Setting aside various qualifications (the possibility that there might be worlds that get closer and closer to the actual world without limit), we can say that this condition is true if and only if, in the closest non-*p* worlds, S does not believe that *p*. So we use close (*nearby* in my terminology) worlds for safety and the closest one(s) for sensitivity. But why the different standards?[8]

Sensitive but not safe? S actually truly believes that *p* and there is a world nearby where S believes falsely, but this is not the closest world in the set of nearby worlds (at the closest world where *p* is false S does not believe that *p*). Goldman's twins are an example—Sam cor-

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[8] To be fair, Williamson (2000: 152) considers the option of interpreting sensitivity "¬*p* > ¬B$_S$ *p*" as requiring the truth of its consequent at all contextually relevant worlds at which the antecedent is true. This view makes "B$_S$ *p* > *p*" and "¬*p* > ¬B$_S$ *p*" equivalent in any given context and is similar to the position defended in this paper.

rectly believes that Judy is before him, but if it were Judy's twin sister instead, he would mistake her for Judy. The possibility of Judy's twin sister is nearby but it is not realized in the closest world. But is it not in this situation just a happy *coincidence* that Sam sees Judy? To repeat the moral—for a connection to be stable, it has to hold within a set of nearby worlds, not just the closest one(s). It would be unwise to permit the *dependency* conditional "$\neg p > \neg B_S\, p$" to be true given that there is a world nearby where S believes falsely that p. In that case the connection is unstable; it might be only a happy accident that the closest not-p world is a world where it is not the case that S believes that p rather than a world where S believes that p.

I will adopt McCall's proposal (1983) to model the idea of modal connection (as before, '$B_b p$' is a proposition stating that S believes that p on a basis b). According to McCall, a *counterfactual* "not-$p >$ not-$B_b p$" would be true iff some not-p & not-$B_b p$ is closer to the actual world than any not-p & $B_b p$ world. The key to the notion of connection lies in the requirement that not-p & $B_b p$ worlds must in all cases lie outside the set of not-p & not-$B_b p$ worlds, p & $B_b p$ worlds and possibly also p & not-$B_b p$ worlds centered around the actual world (McCall 1983: 312). The last requirement does not hold in the case of epistemic connections— possibilities where one fails to believe truly do not refute knowledge claims. However, when p and $B_b p$ are both true the idea of a connection requires that for a *factual* $B_b p > p$ to be true, some not-$B_b p$ and not-p world must be closer to the actual world than any not-p & $B_b p$ world. Given these semantics, factuals and counterfactuals of connection are extensionally equivalent within a set of nearby worlds.

To see this, suppose that the actual world is a "p & $B_b p$" world, that a counterfactual "not-$p >$ not-$B_b p$" is true but a factual "$B_b p > p$" is false. In this case some *nearby* not p-world is a $B_b p$-world. Consequently, it might be only a happy accident that the *closest* not-$B_b p$ world x is a not-p world: there is a world which is both near to *this* world x and to the *actual* world where not-$B_b p$ & p. Next, suppose that the actual world is a "p & $B_b p$" world, that a factual "$B_b p > p$" is true, but a counterfactual "not-$p >$ not-$B_b p$" is false. According to McCall (1983: 314), it would seem unwise to permit a factual "$B_b p > p$" to be true given that the closest not-p worlds (nearby) were $B_b p$ worlds, for in that case it might also be only a happy accident that the actual world was $B_b p$ & p rather than a $B_b p$ & not-p world. And if the closest not-p worlds are not nearby then we can exclude them on the grounds of irrelevance.

McCall develops a branched possible world model structure to develop a semantics which corresponds with Goodman's view—in cases where there exists a connection between the antecedent and the consequent, contraposition holds. His model presupposes indeterminism and the details might be problematic, but I think that the general idea holds water. I am inclined to accept what Cogburn and Roland (2013: 10) call a "Linguists' Version of Lewis's Semantics for Counterfactuals" for conditionals of *connection*:

A conditional of the form, "if it were the case that *p*, it would be the case that *q*," is true in context C and world w just in case either (i) there is no *p*-world or (ii) if there is a *p*-world, then all (C, w)-relevantly similar *p*-worlds are q-worlds.

According to this condition indication conditionals ("safety") and dependency conditionals ("sensitivity") *contrapose* within the context C (which we take to be the set of relevant worlds).[9] By way of example, let us examine a paradigmatic case of failure of contraposition for counterfactuals given by Nute in the reference book on conditionals (Nute 1984: 394–395, his numbering):

24.   If it were to rain heavily at noon, the farmer would not irrigate his field at noon.

25.   If the farmer were to irrigate his field at noon, it would not rain heavily at noon.

I assume that the contrapose (25) is supposed to be "obviously" false because we tend to read (25) as if the farmer's actions brought about or made it the case that it did not rain heavily, which is absurd. However, what if this suggestion is removed and we simply concentrate on a connection without any particular direction? For instance:

25'   If the farmer were to have irrigated his field at noon, it would not be the case that it has rained heavily at noon.

Or even better, to use one of Sosa's formulations of safety conditionals (2004a: 40):

25"   It would not be so that the farmer irrigated his field at noon without it being so that it had not rained heavily at noon.

This sounds awkward, but it seems to me that (25") now really follows from (24). Someone might truly say in the evening:

>   *Since* the farmer irrigated his field at noon, it was not the case that it had rained heavily at noon.

We may conjecture that in the case of a "connection" (understood very broadly) between the antecedent and the consequent, subjunctive conditionals contrapose.

4.

The modal camp in general accepts the idea that if you believed that *p* even if *p* might (seriously) not be the case, then you fail to know that *p*. However, principles of safety and sensitivity are supposed to be two inequivalent ways to express our modal intuition regarding how our beliefs in genuine cases of knowledge should be connected with facts not just in the actual world, but also in a relevant range of possible worlds. Wrongly so, as I think that a proper modal connection

[9] The idea of equivalence within limits, but on different grounds, is defended by Ichikawa (2011: 311), Leplin (2009: 154), Luper (2012: 221–22) and Yamada (2010: 78).

requires reliability throughout a space of relevant counterfactual situations which encompasses both aspects. This position has been hinted at approvingly—Pritchard (2008: 453) says that a rendering of safety and sensitivity in which they are extensionally equivalent would be "a fascinating development." On the other side such a proposal was criticized (Greco 2012) but never fully developed.

Safety is a later arrival on the scene, developed as a criticism and improvement on sensitivity. I will address some of the criticism, but note, I have to address arguments for a *distinction* of the two conditions and the superiority of safety, not the arguments against modal conditions in general (very often both conditions are in the same boat, e.g. with respect to the problems of closure). A typical argument has already been addressed—the alleged cases of sensitive but unsafe beliefs which intuitively do not count as knowledge. Sam truly believes that Judy is before him, but if it were her twin sister Trudy instead, he would mistake her for Judy. The closest possible world where his belief is false is a world where nobody stands before him (his belief is sensitive), but the possibility of Trudy being there is nearby (his belief is unsafe). The reply should be obvious by now: why consider just the closest (one and only) possible world as your interpretation of sensitivity? You have to consider *more* non-*p* worlds (not just the closest one), but not those which are irrelevant. Is this still *sensitivity* (properly understood) at all? Well, "what's in a name?" Pritchard calls the proposed modal condition super-safety, while Greco calls it restricted sensitivity; I have used the name modal stability (Šuster 2013). Never mind the name—considerations about relevance, non-accidentality of a proper modal connection and the equal treatment of conditionals involved motivate the extensional equivalence of safety *enhanced* by sensitivity within a set of nearby worlds and sensitivity *restricted* to a set of nearby worlds.

One of the main arguments for the difference between the two conditions has been the argument from contraposition, mainly developed by Sosa. Basically, safety and sensitivity expressed in terms of subjunctive conditionals are contrapositives, but since subjunctive conditionals do not contrapose, the conditions are different. Although long a proponent of safety, Sosa now thinks that though more adequate than the sensitivity requirement, this requirement of safety is still inadequate, as knowledge requires *aptness*: for a true belief to be knowledge it must be apt—accurate because it is adroit and grounded in a broader intellectual virtue or ability (Sosa 2007: 98). Safety still figures in his account of knowledge (e.g. an exercise of a competence is safe relative to its normal conditions if it would not easily have issued a false belief if exercised in those conditions) and some have argued that this condition is equivalent to basis-relative safety (Fernandez 2010: 44). However, I agree with Comesana (2013) that modal conditions are no longer central to Sosa's epistemology. Nevertheless, Sosa has done a great deal to develop the safety condition in its ability to give a better account of anti-skeptical

knowledge than other modal conditions. There are also other proponents of safety and I think that the issue is still interesting by itself, so in the rest of the paper I will be concerned with Sosa-as-a-safety-advocate and his formulation of the argument from contraposition.

Here is Sosa's reasoning in a nutshell: (i) sensitivity and safety expressed in terms of subjunctives (he calls them 'strong' conditionals) are inequivalent contrapositives; (ii) safety is more plausible than sensitivity; (iii) the plausibility of the sensitivity requirements derives from the corresponding safety requirements so easily confused with them through the failure to appreciate that strong conditionals do not contrapose. Sosa gives various reasons why safety is more defensible than sensitivity as a requirement for knowledge (inductive knowledge, knowledge of necessities, reflective knowledge, Sosa 1999: 145–146). However, superiority is most striking in a Moorean response to radical skepticism.

Consider a typical skeptical scenario—in the closest brain-in-a-vat world (which is, we assume, far, far away) humans do not believe that they are envatted brains. This belief is insensitive but it remains safe, however, as I would not easily believe I was not a brain-in-a-vat without it being the case that I was not a brain-in-a-vat. There are no *nearby* worlds where humans are envatted brains. If sensitivity is required for knowledge then we do not know we are not radically deceived; If safety is required for knowledge, then we know that we are not radically deceived. This is the corner-stone of a (neo)-Moorean response to radical skepticism as defended by Sosa (repeatedly provided in a number of places, even in the book where safety is superseded by aptness, Sosa 2007: 27):

A1. S's true belief that she is not radically deceived is safe but insensitive.

A2. When expressed in terms of subjunctive conditionals, safety is a contrapositive of sensitivity.

A3. Subjunctive conditionals do not contrapose.

A4. S can know that she is not radically deceived.

A5. Safety is a necessary condition for knowledge, but sensitivity is not.

A6. We easily confuse safety with sensitivity or at least think they are equivalent, because it is easy to assume that subjunctive conditionals contrapose.

A7. S's belief that that she is not radically deceived only appears not to be knowledge because it is insensitive, which explains the attraction of skepticism.

If sensitivity is restricted to a set of (relevant) nearby worlds and radical deception worlds count as irrelevant, the difference with respect to radical skepticism vanishes. Still, there is something attractive about this argument, and A3 and A6 have to be addressed from the perspective of conditionals of (dis)connection.

Subjunctive conditionals are commonly understood as counterfactuals (corner conditionals 'A > B', box-arrow conditionals 'A □→ B'—'If it had been so that A, then it would have been so that B'). Sosa is somehow idiosyncratic. He speaks about subjunctive conditionals, the arrow conditionals and strong conditionals:

> My rough-and-ready conception of a (*strong*) *conditional* is this: *sentence that expressively conditions something x on something y, either as a necessary or as a sufficient condition.* If a sentence expresses <p> as sufficient for <q>, then its *contrapositive* is the same except only for negating each of 'p' and 'q' and inverting their positions (Sosa 2004b: 279).

Sosa avoids the counterfactual reading (of the type "If the subject had believed that p, then it would have been so that p") and uses an arrow conditional '$p \rightarrow$ q', a definition of which can be extracted from various places:

> …'x → y' is short for 'It would be so that x only if it were so that y'. This is to be distinguished from 'If it had been so that x, then it would have been so that y', which has unfortunate implicatures or worse (Sosa 2004a: 40).

> 'r → p'…, (in an inequivalent but closely related alternative reading) as "Not easily would it be so that r without it being so that p." (Sosa 2004a: 54).

> And there are also more idiomatic variants, such as: <p> *would be false only if* <B(p)> *were false* (Sosa 2004b: 279).

> It would not be so that p unless it were so that q (Sosa 2004b: 322, footnote 7).

> Here '$p \rightarrow$ q' will be short for 'it would not be so that p without it being so that q'; or we might stipulate that in our usage it amounts to 'that p subjunctively implies that q'; the idea is that its being so that p offers some guarantee, even if not an absolute guarantee, that it is also the case that q. The guarantee is as weak as that offered by the truth of "If I should next release this pencil (held aloft and unsupported, etc., in an actual speech context), then it would fall"(Sosa 2002: footnote 4, 284).

> As a matter of fact, though perhaps not as a matter of strict necessity, not easily would p be the case without it being the case that q (Sosa 1999: 142).

One could roughly characterize Sosa's conditionals as expressing a connection without direction. All the formulations avoid the suggestion (common in the case of counterfactuals) that the antecedent of the conditional makes it the case, brings about, contributes causally to … , the occurrence of the consequent. I take this to be the "unfortunate implicatures" of the "If it had been so that p, then it would have been so that q" formulation feared by Sosa. When saying "I would believe that p on basis b only if p," we want to avoid the suggestion that the truth of (the basis for) our belief somehow makes it the case, brings about, contributes causally to … , the fact that p. Modally stable connection is perhaps best expressed in terms of a negative formulation: "It would not be so that S believes that p on basis b without it being so that p," and I have proposed a paraphrase: "Since S believes that p on basis b, it is true that p."

Consider next Sosa's typical formulation of a difference between safety and sensitivity:

> S's belief that p is *safe* iff it would not be true that S believes p without it being true that p, whereas it is *sensitive* iff it would not be true that not-p without it being true that S does not believe p. (More idiomatically a belief is *safe* iff it would be true if held, and *sensitive* iff it would not be held if false.) These being contrapositives, they are easily confused, or at least thought

equivalent; but contraposition is invalid for such conditionals (Sosa 2004b: 276).

It is taken more or less for granted that subjunctive conditionals do not contrapose, but why, exactly? Here are some stock counter-examples from the literature:

> "If Boris had gone to the party, Olga would still have gone. So if Olga had not gone, Boris would still not have gone." Suppose that Boris wanted to go, but stayed away solely in order to avoid Olga, so the conclusion is false; but Olga would have gone all the more willingly if Boris had been there, so the premise is true (Lewis 1973: 35).

> The following story is the background for a counterexample to the argument form of contraposition or transposition *(if A then B; therefore if not-B then not-A.):* My dog is a mutt. His paternity is in some doubt, but even if his father were a purebred dog, my dog would still be a mutt since his mother was one. Now consider the contrapositive of the conditional claim made in this remark: if my dog were a purebred, his father would be a mutt. (I assume that *mutt* and *purebred* are contradictory properties, as applied to dogs.) This conditional is not only false, but impossible, and so cannot be a consequence of the true conditional claim made in the story (Stalnaker 1987: 124).

> It can be true that A > C and ¬A > C: if I were to sna*p* my fingers, the truck would go on rolling; if I were not to sna*p* my fingers, the truck would go on rolling—yet if Contraposition were valid, this would entail both ¬C > ¬A and ¬C > A, which is contradictory. It might be true that (even) if the British and Israelis had not attacked the Suez Canal in 1956, the Soviets would (still) have invaded Hungary later in the year, without its being true that if the Soviets had not invaded Hungary when they did it must have been the case that the British and Israelis had earlier attacked Suez (Bennett 2003: 172). If water now flowed from your kitchen faucet, for example, it would then be false that water so flowed while your main house valve was closed. But the contrapositive of his true conditional is false (Sosa 2007: 25).

The list could be extended, but there is a common feature that all the counter-examples have in common—they have premises which we hear as containing a tacit 'even' or 'still.' Let us check the examples listed. Lewis' conditional "If Boris had gone to the party, Olga would still have gone," was redescribed as an *even if* by Hunter (1993: 285):

> It seems to me (1) that the premise is equivalent to an 'even if'; (2) that the premise (which suggests that Boris' presence would have been something of a deterrent to Olga) does not fit the situation described (that Olga would have gone all the more willingly if Boris had been there); and (3) that the 'still' in the conclusion is in the wrong place for a strict contrapositive.

Here are Stalnaker's remarks about his own example:

> One might reject the counterexample on the grounds that the conditional contraposed is an "even if" conditional—a semifactual which should receive an analysis different from the one given to ordinary counterfactual conditionals (Stalnaker 1987: 124).

Bennett's conditionals are clear cases of *even ifs*. How about Sosa's housework problems? Contraposition would yield the absurd:

> If water flowed from your kitchen faucet while your main house valve was closed, it would then be false that water now flowed from your kitchen faucet.

The structure of this conditional is not entirely perspicuous. An analogy with an old joke might help.

> A pious man is praying to God to help him in his financial troubles and make him a winner of a fair lottery. Year after year he prays for the win and then he dies, disappointedly, without ever winning the lottery. He complains bitterly to God and receives a reply: "But why did you not buy a ticket, you miserable man!"

Here is the structure:

> Even if S had won the lottery, it would still be false that S won while not buying a ticket (even God cannot make S a winner in that case!).

And the structure of Sosa's example is the same: "Even if R, it would still not be the case that R without Q":

> Even if water now flowed from your kitchen faucet, it would still be false that water so flowed while your main house valve was closed.

Many took the failure of contraposition for subjunctives as an established fact, but there were always opposing voices. According to Hunter (1993), contraposition is not valid for "even ifs" but "even ifs" differ from ordinary "ifs." Goodman interpreted even-ifs as semifactuals which deny that a certain connection obtains between the antecedent and the consequent. Chisholm (1946: 298) suggested paraphrasing semifactuals before analyzing them. "Even if you were to sleep all morning, you would be tired" is to be read as a denial of the counterfactual connection: "It is false that if you were to sleep all morning, you would not be tired." Semifactuals admit 'even' in the antecedent and 'still' in the consequent and, according to the mainstream view, assert (or imply) their consequents. For Pollock (1976), the subjunctive "Even if A, C" is true only if C is true. However, not all "even ifs" seem to have a true consequent. Suppose I win in a game of chess and we afterwards analyze a pawn c5 variation. "If I had sacrificed the bishop (in this variation), I would have lost," I say, truly. But then I realize: "Even if I had not sacrificed the bishop, I would still have lost (in that variation)." Luckily for me, I did not choose the pawn c5 variation and won the game. Both conditionals seem to be true but they have a false consequent. Perhaps it is better to say that "P even if Q" implies Q no matter which of the relevant P-alternatives occurs, as suggested by Sanford (Sanford 1989: 216). In our case—no matter what I do with my bishop, there was no *connection* between the moves of my bishop and my winning the game (in *that* c5 variation). In the case we are ultimately interested in—no matter what I do would make any difference to whether I know that the skeptical hypothesis is false, so even if I were to be radically deceived, I would still believe I was not.

There is a faint glimmer of hope for a consensus on the semantic classification of even ifs. The field has been dominated by unifiers who

opt for a uniform treatment of *all* subjunctive conditionals (Stalnaker-Lewis style), but there have always been dissenting voices arguing that "even ifs" belong to a special class with different properties. The view that "P even if Q" implies Q (no matter what) is not quite accurate, but it is nevertheless closely related to failures of contraposition. In the cases where "P > Q" is true, but "not-Q > not-P" is not, the probability of the consequent 'Q' is close to 1 (Adams 1998, 143) or, in different terms (Lowe 1995: 51), the negation of Q is contextually impossible. "If it rains tomorrow there will not be a terrific cloud burst," does not contrapose to "if there is a terrific cloudburst tomorrow it will not rain," because, in this context, apparently, a terrific cloudburst tomorrow is not a salient possibility and "Even if it rains tomorrow, there will still not be a terrific cloudburst" looks appropriate. This is an indicative, but most theoreticians would agree that inferences involving counterfactual conditionals conform to many of the same laws as those involving indicatives.

We could also include "even ifs" in a broader category. Davis (1983) introduced a distinction between *weak* conditionals and *strong* conditionals, arguing that any good conditional containing 'then' between its antecedent and its consequent remains good if 'then' is dropped; however, the converse does not hold, because some good conditionals lacking 'then' turn bad when 'then' is inserted into them (Lycan 2006: 19). Here is Lycan's example: (i) If you open the refrigerator, it will not explode; (ii) If you open the refrigerator, *then* it will not explode. The *weak* (i) would normally be used merely to reassure the hearer that there is nothing about opening the refrigerator that is connected with an explosion ("do not worry, even if you open it, …") but the *strong* (ii) suggests that opening the refrigerator would keep it from exploding, perhaps because the refrigerator has been rigged to explode unless its door is opened in time. According to Lycan, weak conditionals are like semifactuals in that they readily take 'even' and they do not contrapose, but they do not so clearly assert their consequents. Furthermore, he adds that he knows of *no* purported counterexample to a contraposition that does not have such a weak conditional or a semifactual as a premise (Lycan 2006: 35)!

I will avoid a detailed analysis of the interactions between "even", "if," "still" and "then." I will speak in general about *weak* conditionals ('even ifs') and *robust* (connection) conditionals. The latter contrapose validly, while the non-contraposing, weak conditionals contain the structure: "(Even) if …, (still) …" which signals a *lack* of connection.

5.

Let us return to matters epistemic. "Even if *p* were false, S would still believe that *p* on basis *b*,"[10] is a non-contraposing weak conditional

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[10] A weaker "Even if *p* were false, S might still believe that *p* on basis *b*,"

which expresses a lack of epistemic connection. Yet we expect robust conditionals, conditionals of connection, to contrapose within the limits of relevance. "Sensitive" beliefs (within limits) have their "safe" counterparts (with sensitivity extended to *all* nearby worlds), but one should also be able to infer dependency from indication: "Since S believes that *p* on basis *b*, it is true that *p*," therefore "If *p* were not the case, then S would not believe that *p* on basis *b*." Normally this is the case: if a reliable thermometer indicates my having a fever, then, if I were not feverish, the thermometer would not indicate fever and I would not form this belief. Now, take the critical case of S's true belief that she is not radically deceived. According to Sosa, this belief is safe but insensitive, but we easily confuse safety with sensitivity because it is easy to assume that subjunctive conditionals contrapose. "Even if she were radically deceived, she would still believe that she is not," seems to be true. Still, S's actually true belief indicates that she is not radically deceived: "Since S believes that she is not radically deceived, she is not radically deceived," does not look like a non-contraposing "even if." So, dependency is violated but indication is not and Sosa's diagnosis looks appropriate.

I think, however, that the proper diagnosis depends on (dis)connections between the basis for the belief and the relevant facts of the matter. One *could* read "Since S believes that she is not radically deceived, she is not radically deceived," as a *weak* and non-contraposing conditional, on the model of even-ifs, where "P even if Q" implies "Q no matter what." If S is not radically deceived "no matter what," the probability of the consequent is close to 1, or, the realization of a skeptical scenario is contextually impossible or a remote possibility that does not count. Contraposition is then really invalid and dependency (sensitivity) fails, since it is not the case that if S were radically deceived, she would believe so. However, one *could* also read "Since S believes that she is not radically deceived, she is not radically deceived" as a *robust* conditional of connection and in this case its contrapose: "If she were radically deceived, she would not believe that she is not," is also true. Let me explain these two options.

Alspector-Kelly (2011: 129–130) introduces an instructive distinction between "near-safety" and "far-safety." If there are no nearby worlds in which a proposition believed is false, then the belief is, according to Alspector-Kelly, automatically safe: it is not easily wrong simply because the proposition believed is not easily false. Such a belief is "far-safe," with far-safe beliefs to believe is to know, no matter why you believe it. In a certain sense, the structure of modal space, the location of the actual world within the set of possible worlds, does "all the work." Sosa sometimes speaks that way: "The possibility of radical

when 'might' is restricted to the space of serious possibilities is enough to deny a connection but the stronger formulation is more common in discussions about the lack of knowledge and skepticism.

deception is so outlandish that one's belief to the contrary would tend to be correct" (Sosa 2010: 79). And "In the actual world, and for quite a distance away from the actual world, up to quite remote possible worlds, our belief that we are not radically deceived matches the fact as to whether we are or are not radically deceived" (Sosa 1999: 147).

On this reading S's true belief that she is not radically deceived is really safe and insensitive, but satisfying standards that low should not really count in S's epistemic credit. True, not easily would one falsely believe that one is not radically deceived without that actually being the case. Yet, one would also not easily believe almost anything without it being the case that one is not radically deceived! No wonder that friends of sensitivity protest—this "knowledge" looks vacuous; S knows that *p* without being able to rule out any not-*p* worlds (Heller 1999: 207; Dretske 2005: 22–23). The appeal to modal remoteness does not *explain* my knowledge that I am not radically deceived, it only analyzes it according to Becker (2007: 162, fn 24). Discrimination or the ability to tell apart would provide an explanation, but on this terrain the skeptic apparently wins—if I have no evidence that tells me I am not radically deceived, how can I know it? The conditional "Since S believes that she is not radically deceived, she is not radically deceived" is true but far-safety does not succeed in establishing the connection which explains the falsity of its contrapose, the insensitivity of this belief.

According to Alspector-Kelly (2011: 130) the knowledge of far-safe propositions in general and of the negation of the skeptical hypothesis ("I am not radically deceived") in particular "imposes no conditions on the agent or her environment whatsoever (beyond, of course, those facts which ensure that the proposition's negation is remote)." If there are worlds in which a proposition that *p* is false, which lie within the boundary of nearby worlds, then safety requires that the agent not believe that *p* in any such world. When this requirement is realized, some feature of the way things actually are with the agent and/or her environment rules out the existence of such worlds. These beliefs are "near-safe." However, does it really follow that "... if the negation of the putatively known proposition is far, mere belief is enough, whereas if it is near, much more is required"? I do not think so. If modal distance is a function of the actual facts, if it is, e.g. because of the actual molecular structure of glass that it is fragile, then the actual facts about the cognizer and her environment sometimes ground epistemic connections, even if the negation of the putatively known proposition is far away.

Far-safety is safety on (a)steroids, safety gone wild, which establishes a connection between A and B on the basis of the following formula: "Not easily A without B because not easily not-B at all." This looks like a spurious connection, close to *dis*connection, expressed as "even if A, still not-B." However, there are types of genuine connections even when not-B is (in a certain contextual sense) out of the question: "Not easily A without B and not easily not B, but A is connected with

B." Take, for example, a connection between cooling a glass of water and its freezing at zero degrees Celsius. The freezing point of water depends on pressure, but the connection is stable; the freezing temperature of water would change by less than a degree if you increase the pressure by a factor of 100. Not an easy task; you would not easily cool the glass of water so that it froze at *one* degree Celsius, because you could not easily produce conditions which would realize this higher freezing point. Yet, if you change the environment radically (increase the pressure enormously), the connection is gone.

This, of course, invokes an externalistic perspective on epistemic connections. Remoteness of skeptical scenarios is established on the basis of actual categorical properties on the assumption that we are safely "placed" in a normal world and our beliefs meet appropriate external conditions. In a hostile environment, normal connections break down, but that is only to be expected. Consider, for example, externalism with regard to mental content. In order to have beliefs, it is necessary to be related to the environment in the right way. Given the radically different environment in skeptical scenarios, we would likely have access to few if any of the contents we actually have, and the connection is gone. However, it is then true, after all, that if I were a brain in a vat I would not believe I was not one. I would lack the conceptual resources required in order to believe anything about brains or vats (Sainsbury 1997: 918–919). The connection is externalistically grounded, so indication (safety) now contraposes dependency (sensitivity)!

Friends of safety and friends of sensitivity *alike* make this externalistic assumption when explaining the possibility of ordinary knowledge (and they face the same charge of begging the question against the skeptic). However, this externalistic move can be extended to our knowledge that we are not radically deceived. Epistemologists typically invoke a difference in the method of belief acquisition in order to make skeptical scenarios irrelevant. For Pritchard (2005: 156), safety requires that the agent's belief be true in the actual world and in a wide class of nearby possible worlds in which the relevant initial conditions are the same as in the actual world— "and this will mean, in the basic case, that the agent at the very least forms the same belief in the same way as in the actual world." Since, by definition, the brain in the vat is not using the same method as the agent in the good case, the skeptical scenario is irrelevant (far-away). Of course, this move can be and has been mimicked by a friend of sensitivity. The modal condition that the belief in question, along with its truth, be replicated in relevantly similar possible worlds—worlds where the belief's basis or its method of formation remain present, does not distinguish safety from sensitivity. Black (2002) employs the fact that Nozickian sensitivity must take explicit account of the methods of arriving at belief. The only worlds that are relevant to whether or not I know that *p* are those in which my belief is produced by the method that *actually* produces it. Skeptical

scenarios are supposed to be realized in possible worlds in which my belief is produced by different methods, so they are irrelevant.

More can be added to this external core; the belief that we are illusion-free is rationally coherent within our overall view (Sosa 1999: 147). To use Sosa's well-known distinction, the "animal" externalistic perspective can be enhanced by reflective knowledge. Ampliative inferences like induction and inference to the best explanation provide a reflective basis for a belief in the denial of skeptical hypothesis, and if plausibility is an acceptable standard then we are justified in rejecting skeptical scenarios (Leplin 2009: 141).

If skeptical scenarios are irrelevant and the basis for our belief that we are not radically deceived is appropriately connected with the facts of the matter then *indication*: "Since S believes that she is not radically deceived, she is not radically deceived," is a robust conditional of connection. In this case its contrapose, *dependency*: "If she were radically deceived, she would not believe that she is not," is also true, within the limits of relevance. There are various strategies to implement his result. The simplest option is to interpret the irrelevance of skeptical scenarios as (perhaps contextual) impossibility and adopt the Lewisian strategy of interpreting counterfactuals with impossible antecedents as trivially true (on the model of "If pigs had wings …"). Recall (Cogburn and Roland 2013: 10):

> A conditional of the form, "if it were the case that *p*, it would be the case that *q*," is true in context C and world w just in case either (i) there is no *p*-world or (ii) if there is a *p*-world, then all (C, w)-relevantly similar *p*-worlds are q-worlds.

In the case of "If she were radically deceived, she would not believe that she is not," the condition (i) is fulfilled. Two other options were also mentioned—a radically deceived person would not believe that she is not because she would lack the conceptual resources to form beliefs (Sainsbury 1997), or because her belief that she is not would be produced by methods other than actual, perceptual ones (Black 2002: 157).

6.

According to Sosa, we find the position of the skeptic plausible because we confuse the sensitivity condition, which is incorrect, with the safety condition, which is correct, and we invalidly contrapose the latter and confuse it with the former. I have argued that the issue is more complicated, as robust conditionals do contrapose; it is weak conditionals that do not. "Since S believes that she is not radically deceived, she is not radically deceived" is ambiguous between the weak reading (not radically deceived no matter what) and the robust—connection—reading. Its contrapose, "Even if she were radically deceived, she would still believe that she is not," is true, given the disconnection reading, but false given the connection reading. Indication based on connection is extensionally equivalent to dependency (within the limits of relevance).

Does the insensitivity of one's belief that one is not radically deceived *explain* the attraction of skepticism? Insensitivity reflects our intuitions about our inability to know the denial of a skeptical hypothesis, but it does not really explain it. McGinn poses a legitimate question when he asks what facts about the believer and her relation to the world make it true that if it weren't the case that *p* she would not believe that *p*. He offers a capacity to tell the difference between true propositions and false ones within some given class of propositions as an explanation ("global reliability," McGinn 1999: 17). On the face of it, dependency (sensitivity) more readily meets this explanatory requirement because we usually relate the agent's responsiveness to changes to her capacity to discriminate. However, the same relation holds between robustness of the basis for the agent's belief (safety) and her ability to tell apart. If S is unable to discriminate between relevant alternatives then her true belief that *p* is not responsive to the falsity of *p* (it is not sensitive). Suppose that the falsity of *p* is a serious possibility: in this case her true belief that *p* might easily be false (it is unsafe).

The critical question is always: when you actually believe that *p* on basis *b*, is it seriously possible for *p* to be false, but you continue to believe that *p* on the same basis? If so, then the connection is fragile and in this case even if not *p*, you might still believe that *p*. Yet "even if" is silent about the sources of disconnection. A reliabilist has a ready reply—one's (un)reliability grounds the connection and the capacity to discriminate is the mark of reliability (Goldman 1976). In this spirit Sosa (2000: 42) agrees with Lehrer that the real source of skepticism is precisely the indescernibility condition:

> If there is no discernible difference between that evidence I have for believing *p* if *p* were true and the evidence I would have for believing *p* if the denial of *p* were true, then I do not know that *p* on the evidence I have for believing that *p* (Lehrer 2000: 35).

The skeptic wants us to consider remote worlds in which the skeptical hypotheses are true and the evidence we have there is not reliable to conclude that it is not reliable in the actual world. However, of course, we have no means of distinguishing being in that condition from not being in that condition. This is the source of our oscillation between the connection and the disconnection interpretation of our belief that we are not radically deceived and the relevant facts of the matter. In the actual world, things being what they are, evidence is reliable, even if, in other worlds and other situations, it would not be. On the other hand, it seems that nothing we could do would make any difference to whether we know that the skeptical hypothesis is false, and that if it isn't false. Connection seems to be purely a function of our standards of remoteness, not of our justification. We are back to far-safety and its explanatory deficiencies.

I think that considerations about the explanatory lacunae of modal epistemology led Sosa to a new requirement of aptness. Necessary true

propositions are the most striking examples of far-safety—there are no worlds in which such a proposition is false. Take a simple case of two mistakes in a mathematical proof that cancel each other out, resulting in the correct conclusion C (Miščević 2007: 49). Suppose that mistakes are extremely hard to detect, so that the thinker, call her Jane, is justified in trusting her calculation. Jane's true belief in C is safe (necessarily true, so there are no worlds where she believes falsely) but still lucky, so not knowledge. Miščević proposes that with respect to *apriori* ("armchair") propositions we focus on the truth value of the belief that is formed in nearby possible worlds on the same basis as in the actual world, even when the resulting belief is not of the *same* proposition. Had Jane's ways of thinking been slightly different, she would not have managed to arrive at the same true belief as in the actual world, she might have ended up with believing the negation of the target proposition. The agent's belief is true in the actual world, but her cognitive structure and/or functioning might have differed in a minimal way from the actual one, and her beliefs would be false. However, once we see that characterization of luck should have a strong agent-concerning component, "we understand that exclusive focus upon modal instability of truth(s) is unwarranted even in the a posteriori cases" (Miščević 2007: 64).

The very idea of modal (or anti-luck) epistemology is now threatened. The requirement of cognitive stability of the cognizer (Miščević 2007: 67) corresponds to *aptness*. Sosa earlier (1999: 146) objected that sensitivity cannot deal with the problem of necessary truths (one cannot make the supposition that they are false). He now recognizes that safety faces the same problem, given that belief of any necessary truth is automatically safe. Aptness, the manifestation of epistemic competence, is now required to account for the divide between beliefs in necessary truths which are knowledge and those which are not (Sosa 2011: 85). According to Sosa, aptness may perhaps suffice with no need of safety as a separate condition at all. One may wonder, however, whether with the decline of safety the Moorean anti-skeptical strategy is still an option.

In any case, modal epistemology in general is endangered. I do not have much to say about these objections in this paper, as I still believe that the main insight of modal epistemology will remain: if it is seriously possible for S to falsely believe that *p*, then S fails to know that *p*. So let me summarize: the idea that what is distinctive about knowledge is captured by certain conditionals should be explained in terms of conditionals of (dis)connection and not in terms of simple subjunctives. The epistemic modal connection between one's basis for believing and the truth of one's belief should be stable (it should hold throughout the space of nearby worlds) and responsive to changes—those which are relevant. The fact that the epistemic connection breaks down in an unfriendly environment is the lesson from externalism. Safety (stabil-

ity) and sensitivity (responsiveness) are then two extensionally equivalent aspects of one modal relation (within a restricted space of possible worlds) or one modal connection viewed from two perspectives.

Once we drop the requirements of sensitivity *unlimited* (we ignore far-away worlds) and sensitivity *unique* (we do not consider just the closest, one and only world), safety is no longer superior but equivalent to sensitivity. Sosa often remarks that the requirements of safety and sensitivity are very similar and easily confused. It now seems that they go together through the good times (the heydays of modal epistemology) and the bad times (decline raised by problems of explanation) alike. What if appearances are not misleading? To amalgamate Groucho Marx and David Lewis, one could equate them with a *sotto voce* proviso: Safety may look like Sensitivity and talk like Sensitivity, but don't let that fool you—it really is Sensitivity! Psst!—within limits (which are difficult to specify).

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