

## Conditionals and questions

### A reply to Korzukhin

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Korzukhin challenges my theory presented in “Probabilities of Conditionals in Context” on the grounds that it makes false predictions about two kinds of cases. Before responding to the challenge cases, let me briefly note two methodological points that will be relevant to the discussion.

My theory entails that the meaning of a conditional in a context depends (in part) on what questions are under discussion in that context. But what does it take for a question to be under discussion in a context? On the theory I draw on in my paper (due to Craige Roberts), a question is under discussion in a context just if answering it is a discourse goal of that context. Thus understood, it should be clear then that merely asking a question will not always result in it being under discussion. For instance, normally the question should be *understood* by the relevant parties; after all, how could one have as a goal answering a question that is not understood? Furthermore, conversational participants can reject a proposal to make a question under discussion if they think answering it an unworthy discourse goal.

Secondly, my theory only makes predictions about the intuitions of competent speakers who are attentive to the relevant background information and are able to make the relevant calculations. The intuitions of speakers who are inattentive to the relevant background information or cannot make the relevant calculations are irrelevant to assessing my theory, as are the intuitions of people who do not speak English. It is an interesting question what explains the intuitions of speakers who are unable to intuitively estimate the probabilistic dependencies in some context—one idea is that such speakers disregard the extra partition and as a result think that the relevant

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conditional has its default (Ramseyan) interpretation. Whatever the explanation may be, my theory is neutral on this issue.

With these methodological points out of the way, let us turn to the challenge cases.

## 1 Learning irrelevant information

My response to Korzukhin's first case is that the presentation of the case obscures how the relevant probabilities depend on the relevant partition. As noted above, it is no challenge to my theory that it is possible to describe the relevant background information of some case in such a way that makes it hard to intuitively calculate the relevant probabilities, thus obscuring the predicted intuitions. To see that this diagnosis of Korzukhin's case is plausible, here is a reformulation of the information in that case in a way that makes it easier to estimate the relevant probabilistic dependencies:

**Claw.** Before us is a claw machine that randomly selects one billiard ball at a time from a tub containing shiny red and black balls, and matte red balls (each ball has an equal chance of being selected). We know the following about the distribution of the red balls in the tub: half of the red balls are shiny and half are matte;  $4/5$ ths of the shiny red balls have a dot, and  $1/5$ th have no dot; while  $1/5$ th of the matte red balls have a dot, and  $4/5$ ths have no dot. Since there are three times as many shiny balls as matte balls, the likelihood of the claw grabbing a shiny ball is .75, compared to .25 for a matte ball. The button is pushed, activating the claw. You have not yet observed the outcome of this trial.

Summarizing:

- $P(S) = 3/4$ ,  $P(\bar{S}) = 1/4$  Likelihood of shiny/matte
- $P(D|RS) = 4/5$  Likelihood of dot, given red and shiny
- $P(D|\bar{R}\bar{S}) = 1/5$  Likelihood of dot, given red and matte

Now we ask: how likely is the following conditional?

- (1) If a red ball was drawn, it has a dot.  $R \rightarrow D$

In this situation, I have the intuition that (1) is more likely than not. Behind this intuition lies the following thought. The claw most likely picked a shiny ball. In that event, it is more likely that it picked a red ball with a dot than a red ball without a dot; so, in that event (1) would be likely. Thus, since the claw most likely picked a shiny ball, (1) is likely.

Against this intuition, you might reason along the following lines: "look, the proportion of red balls with dots to red balls without dots is  $1/2$ ; so the probability of (1) must be  $1/2$ !" I admit this is a tempting thought, but notice that such a thought is *always* available—even in the original McGee and Kaufmann cases. And as we saw in those cases, the fact that we can *bias* a Ramseyan interpretation does not show that the relevant conditional lacks a non-Ramseyan interpretation. Furthermore, my theory can explain why the Ramseyan interpretation may be biased after someone runs an argument like the one sketched above. The explanation is that only if (1) is interpreted relative to the trivial partition  $\{E_c\}$  does anything about its probability follow

from facts about its corresponding conditional probability. Therefore, the charitable interpretation of someone making the argument above is to interpret (1) in this way, in which its probability *does* come out equal to its corresponding conditional probability.

What is needed for this case to be a problem for my theory is for there to be no interpretation of (1) on which its probability is non-Ramseyan. My intuition is that it has this interpretation in the context so-described, and I leave it to the reader to verify this intuition. However, Korzukhin also seems to suggest that, even if we in fact have this intuition, it is mistaken. He writes (changes here bring the quote in line with my version of the case), “Is it really plausible that we should think that  $[R \rightarrow D]$  is more likely than not once we [raise the shiny/matte partition]? It seems to me not plausible. After all, [shininess/mattiness] has nothing to do with how likely a red ball is to [have a dot].” However, this thought is mistaken. Although whether the ball is shiny or matte is not *causally* relevant to whether a red ball will have a dot or not, it does affect the evidential likelihood of a red ball having a dot: if we learn with certainty that the ball is shiny, then we ought to think the likelihood of it having a dot given its being red is  $4/5$ ; if instead we learn with certainty that the ball is matte, then we ought to think the likelihood of it having a dot given its being red is  $1/5$ . As such, I see no reason to think that the intuition that (1) is non-Ramseyan is incorrect.

## 2 Learning nothing

Korzukhin’s second challenge case is one in which adding a new question under discussion allegedly does not result in any difference in our intuitions about the probability of some conditional, contrary to what my theory predicts. The case is analogous to the oracle case I discuss in my paper, except that it presents the relevant QUD in a much more complicated way. In this case, my response is that either the question of whether I will eat the mushroom and die or not eat the mushroom and survive ( $\{(E \wedge D) \vee (\bar{E} \wedge \bar{D}), (\bar{E} \vee \bar{D}) \wedge (E \vee D)\}$ ) is not under discussion in that context, or we are unable to compute intuitively how this question affects the semantic value (and thus probability) of the relevant conditionals.

As we saw above, it is not guaranteed that merely asking a question is enough to make it under discussion in a context. For a question to be under discussion, answering it must be a discourse goal, and we ordinarily do not adopt goals of answering questions we do not understand. Since the question in Korzukhin’s second case is so complicated, it would not be surprising that it is not under discussion, despite your fellow survivor’s demands; in that case, my theory would not make the prediction Korzukhin claims it would. However, even if this question were under discussion, that does not ensure that we are in a position to draw on that knowledge to compute the semantic value (and hence probability) of the relevant conditionals. Since the question is so complicated and unnatural, this is a plausible hypothesis about why we fail to get the predicted intuition in this case. As mentioned earlier, perhaps when we cannot make the relevant calculations, we simply judge that the relevant conditionals have default (Ramseyan) interpretations.

A more promising way to test the theory would be to draw on simpler questions and see whether raising them in the course of a conversation changes our judgments

about the probability of some conditional. To that end, here is a simpler example that aims to raise a problem structurally analogous to the one Korzukhin attempts to raise. I'll argue that, nonetheless, in this case the predictions of my theory are plausible:

**Coin.** A coin has just been flipped, and Smith has just made a bet about the outcome (that is, bet on heads or bet on tails). You know that Smith usually bets on heads. Thus, you are more confident that Smith bet on heads rather than tails. Since you don't think that whether Smith bet heads or tails depends on the outcome of the toss, you are thus more confident that Smith bet on heads if it was heads than that Smith bet on tails if it was tails.

But did Smith win the bet? You wonder. Suppose he did. Then the likelihood that he bet on heads given that it landed heads would be 1, and equal to the likelihood that he bet on tails given that it landed tails. Suppose he didn't win. Then the likelihood that he bet on heads given that it landed heads would be 0, thus equal to the likelihood that he bet on tails given that it landed tails. So, the likelihood that if it landed heads, Smith bet on heads is just the likelihood that he won, which is the likelihood that if it landed tails, Smith bet on tails.

In this case, my theory predicts that, initially,  $P(H \rightarrow B_H) > P(\overline{H} \rightarrow \overline{B_H})$ .<sup>1</sup> But then after the question whether Smith won his bet is raised, my theory predicts that  $P(H \rightarrow B_H) = P(\overline{H} \rightarrow \overline{B_H}) = P(W)$ . This may seem surprising: my theory predicts that the probability of some conditional may change merely as a result of considering a new question (without thereby learning any new information). Yet, my intuition is that this in fact happens in a case like **Coin**. Furthermore, my theory provides a principled answer to how this happens—the semantic value of the conditional changes when the context changes to include a new question under discussion.

The rhetoric behind Korzukhin's resistance to this result seems to rest on the assumption that the only contextual parameter that matters in assessing an indicative conditional is the available information in the context<sup>2</sup>; thus, any theory which predicts that the semantic value (or probability) of a conditional may change without changes in the available information must be false. But it is generally regarded that at least one other contextual parameter (similarity to the actual world in certain respects) also matters to the semantic values of conditionals. Thus, we should be suspicious of rhetoric suggesting that only information matters (this isn't to say that an argument for such a claim couldn't be made, only that it has not yet been made and we have reason to regard this claim with suspicion).

### 3 Conclusion

To some extent, Korzukhin's challenges to my theory come down to a battle over intuitions. However, I have argued for two claims here. The first is that our intuitions in the kinds of cases Korzukhin considers are likely not relevant to the assessment of my theory, since they involve cases where intuitively estimating the relevant probabilistic dependencies is extremely difficult. Once the cases are simplified, the predicted intuitions are (to my ear) much easier to get. My second claim is that Korzukhin's

<sup>1</sup> Here,  $H$  = the coin landed heads,  $B_H$  = Smith bet heads,  $\overline{H}$  = the coin landed tails, and  $\overline{B_H}$  = Smith bet on tails.

<sup>2</sup> The relevant line: "I was before, and should remain confident now (pending new information) that one of them is likely and the other not" (Korzukhin 2016, p. 5).

arguments for the conclusion that intuitions friendly to my theory are incorrect fail. In cases like **Claw**, the probability of the conditional's consequent does depend on both its antecedent and the question of shiny/matte. Finally, there are independent reasons for thinking that the semantic value of a conditional depends on more than just the available information—similarity to the actual world counts too. My theory merely proposes that such similarity is constrained by a relevant partition.

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