Kim's Argument for the Unconfirmability of Disjunctive Laws

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March 19, 2004

Kim [6, p. 12] gives an argument, the conclusion of which seems to be that we cannot allow laws with (arbitrarily) disjunctive antecedents to be counted as "projectible" (in Quine's [8] sense), on pain of an absurd confirmation-theoretic conclusion. I quote the entire passage here for accuracy and completeness:

> That disjunction is implicated in this failure of projectibility can be seen in the following way: inductive projection of generalizations like (L) with disjunctive antecedents would sanction a cheap, and illegitimate, confirmation procedure. For assume that "All Fs are G" is a law that has been confirmed by the observation of appropriately numerous positive instances, things that are both F and G. But these are also positive instances of the generalization "All things that are F or H are G", for any H you please. So, if you in general permit projection of generalizations with a disjunctive antecedent, this latter generalization is also well confirmed. But "All things that are F or H are G" logically implies "All Hs are G". Any statement implied by a well confirmed statement must itself be well confirmed. So "All Hs are G" is well confirmed – in fact, it is confirmed by the observation of Fs that are Gs!

I agree that this conclusion (or "procedure") would lead to an absurd theory of confirmation, if it were allowed to stand. But, I do not think that the disjunctiveness of the generalizations in question plays an essential role in the derivation of said absurdity. Therefore, I submit, it is incorrect for Kim to claim that this is a *reductio* of the "projectibility" (in Quine's sense) of laws with (arbitrarily) disjunctive antecedents.

In this note, I will reconstruct Kim's argument, and provide a diagnosis of the source(s) of the "absurdity" it derives – a diagnosis in which disjunctiveness plays no essential role. I conclude from this analysis that Kim has misdiagnosed the problem with this argument, and that he needs a new argument for the conclusion he seeks (*viz.*, that *disjunctive* laws aren't confirmable). In the Historical Epilogue, I discuss what I take to be a more straightforward and compelling (but still fallcious) argument for Kim's conclusion – one which would have been known to Hempel and Goodman many years ago.

Premise 1. "…'All Fs are G' is a law that has been confirmed by the observation of appropriately numerous positive instances, things that are both F and G."

Let H_1 = "All Fs are G", and let E = a statement summarizing the observations of "appropriately numerous positive instances of H_1, things that are both

*Draft: Please do not quote without permission. Thanks to Josh Sheptow and John MacFarlane for useful comments and suggestions on previous drafts of this paper.

F and G." It is unclear what Kim means by his Premise 1. He might mean that E confirms H_1, relative to some *background* evidence K' (*not* including E), or he might mean that H_1 is well-confirmed – *all things considered* – by the *total* evidence K, which *includes* E. These two senses of confirmation are the two senses Carnap discusses (and to which Kim alludes in his footnote #25 from this passage), and they can be characterized probabilistically, as follows:

- E confirms H, relative to K' ($E \notin K'$) iff $\Pr(H \mid E \,\&\, K') > \Pr(H \mid K')$.
- H is well-confirmed, given K ($E \in K$) iff $\Pr(H \mid K) > r$ [for some r].

The first kind of confirmation is what Carnap calls "confirmation as increase in firmness", and it is a *relevance* notion which requires that E raise the probability of H, relative to *background* evidence K', which is assumed, of course, not to include E itself. I will abbreviate the first sense of confirmation as $C_1(H, E, K')$. The second kind of confirmation is what Carnap calls "confirmation as firmness", and it is not a relevance notion – it requires only that H has a sufficiently high probability, given the *total evidence* K, which does include E, since that is *part* of the total evidence. I will abbreviate this second sense of confirmation as $C_2(H, K)$. With this confirmational backdrop in place, let's return to Kim.

Kim's Premise 1 can be cast in at least two ways: $C_1(H_1, E, K')$ or $C_2(H_1, K)$. It seems that Kim is talking about C_1 here and not C_2, since he clearly wants to say that E (in particular) has confirmed H_1. Moreover, later in the argument (see below), Kim explicitly talks about C_2 as opposed to C_1, and there he uses the locution "well-confirmed", which is absent in this first part of the passage. This suggests he intends Premise 1 to be interpreted as $C_1(H_1, E, K')$, and not as $C_2(H_1, K)$. However, Premise 2 (see below) indicates that he intends C_2 and not C_1 here. Ultimately, I don't think this will matter much, since I think the argument won't be cogent on *either* reading of this first premise. So, to be charitable, let's just grant Kim *both* $C_1(H_1, E, K')$ *and* $C_2(H_1, K)$.

No matter how we interpret Kim's first premise, it is clear that Kim simply assumes here that positive instances of "projectible" universal generalizations H (*i.e.*, H's that involve only "natural kinds" in Quine's [8] sense) always succeed in confirming H. I will call this crucial assumption the "Quine–Nicod" condition. I.J. Good [2, 3] and Patrick Maher [7] have shown that Quine–Nicod is false on either a C_1 or a C_2 reading. It is important to note that the falsity of Quine–Nicod has nothing to do with the disjunctiveness of predicates in H, since it can fail even for laws involving only "natural kinds" (in Quine's sense). Moreover, as Maher [7] recently emphasizes, Quine–Nicod fails even relative to "tautological" background knowledge (and so its failure does not depend on smuggling some additional information into the background corpus). As a result, Kim's argument is already enthymematic. Nonetheless, let's continue with a complete analysis of the argument.

Premise 2. "But these are also positive instances of the generalization 'All things that are F or H are G', for any H you please. So, if you in general permit projection of generalizations with a disjunctive antecedent, this latter generalization is also well confirmed."

Let H_2 = "All things that are F or H are G". This is a puzzling step. Kim seems to be saying that H_2's being "well-confirmed" somehow follows from H_1's being "well-confirmed". But, this is fallacious, even if we grant Kim both $C_1(H_1, E, K')$ *and* $C_2(H_1, K)$, and we interpret Premise 2 disjunctively as "either $C_1(H_2, E, K')$ or $C_2(H_2, K)$." *I.e.*, the following argument, which applies the converse consequence condition (CCC) to either C_1 or C_2 is fallacious:

(2a) $C_1(H_1, E, K')$ *and* $C_2(H_1, K)$

(2b) H_2 entails H_1 [which we know from logic here]

(2c) Therefore, $C_1(H_2, E, K')$ *or* $C_2(H_2, K)$.

Carnap [1] showed that (CCC) is invalid for both C_1 and C_2 confirmation. Therefore, charitably, this must not be how Kim is reasoning. Instead, it seems that Kim is sinply assuming (for "*reductio*") that H_2 is "projectible" in Quine's sense, and (as above) that Quine–Nicod is true. But, if that's what he is assuming, then Premise 1 plays no logical role in the argument, since Premises 2 and 3 *alone* will now suffice to derive the conclusion (see below).

Moreover, as I mentioned above, the Quine–Nicod condition is false, even when applied only to so-called "projectible" generalizations. In other words, Quine–Nicod *by itself* leads to an absurd confirmation theory – one which is inconsistent with either C_1 or C_2 confirmation – and for reasons that have nothing to do with disjunctiveness. So, Premise 2 either rests on a (CCC) inference from (2a) and (2b) to (2c), which is invalid (as Carnap [1] showed), or Premise 2 assumes a Quine–Nicod condition for H_2, which is false, even if we grant the strong form of Premise 1, and even if we assume (for "*reductio*") that H_2 involves "projectible predicates" (*i.e.*, predicates that denote "natural kinds"). Either way, the argument faces a serious challenge at this stage. But, putting this to one side, I'll continue with a full analysis of the argument.

Premise 3. "'All things that are F or H are G' logically implies 'All Hs are G'. Any statement implied by a well confirmed statement must itself be well confirmed."

Let H_3 = "All Hs are G". Of course, Kim is right that H_2 entails H_3, for the same reason that H_2 entails H_1 [*viz.*, material implication is such that $X \vee Y \supset Z$ entails $X \supset Z$ and $Y \supset Z$]. And, Kim knows that he must be careful when he claims that "Any statement implied by a well confirmed statement must itself be well confirmed." His footnote #25 indicates that he is well aware of the two senses of confirmation C_1 and C_2 that I defined above, and that (as Carnap [1] showed) the following inference – which applies the special consequence condition (SCC) to C_1 – is invalid:

(3a) $C_1(H_2, E, K')$

(3b) H_2 entails H_3 [which we know from logic here]

(3c) Therefore, $C_1(H_3, E, K')$.

This is why Kim talks here about "H_3 being well-confirmed" rather than "E confirming H_3." And, Kim is correct that, if one assumes C_2 rather than C_1, then the above argument *is* valid. That is, the (SCC) for C_2 is valid:

(3a′) $C_2(H_2, K)$

(3b) H_2 entails H_3 [which we know from logic here]

(3c′) Therefore, $C_2(H_3, K)$.

Of course, we can avoid worrying about the equivocation by employing the "and/or" trick we used above, and casting this inference in the following way:

(3a″) $C_1(H_2, E, K')$ and $C_2(H_2, K)$

(3b) H_2 entails H_3 [which we know from logic here]

(3c″) Therefore, $C_2(H_3, K)$ or $C_1(H_3, E, K')$.

Either way, the argument is in trouble, since it requires a premise that Kim is not entitled to, because his argument for $C_2(H_2, K)$ in Premise 2 was unsound [*i.e.*, either invalid, or based on an *independently* false confirmation theory].

Conclusion. "So 'All Hs are G' is well confirmed – in fact, it is confirmed by the observation of Fs that are Gs!"

Here, Kim is only entitled to the conclusion that $C_2(H_3, K)$. He is *not* entitled to the conclusion that $C_1(H_3, E, K')$ (his footnote #25 on Carnap, Hempel, and confirmation seems to indicate that he is aware of this). So, it is puzzling why he chose to add the flourish at the end that H_3 "is *confirmed by* the observation of Fs that are Gs!". There is simply no way that this can be inferred reasonably from what he says in the passage (or from any reasonable background theory of confirmation). So, the absurdity that "All Hs are G" will be confirmable by FGs (if one allows disjunctive predicates to denote "natural kinds" in Quine's sense) simply does not validly follow from what Kim says. And, even if it did, it would not *soundly* follow, since the underlying (Quine–Nicod) principle of instance confirmation presupposed by Kim is false, and for reasons that have nothing to do with the disjunctiveness of H_2.

Historical Epilogue. Hempel [5] and Goodman [4] already knew a similar "procedure" for arriving at the conclusion that FG's confirm "All Hs are G":

1. All FGs are Gs. [logic]
2. All Gs confirm that "Everything is a G" [Quine-Nicod condition]
3. "Everything is a G" entails that "All Hs are G" [logic]
4. All Gs confirm that "All Hs are G" [(2), (3), and the (SCC), see below]
5. All FGs confirm that "All Hs are G" [(1), (4), logic]

The two controversial steps in this argument are the use of the false Quine–Nicod condition in (2), and the application of (SCC) in (4), which is invalid for C_1 confirmation, but valid for C_2 confirmation. The (SCC) is just what Kim uses in Premise 3 of his argument, and the use of Quine-Nicod in (2) is analogous to Kim's use of Quine–Nicod on H_2 in Premise 2 of his argument. Everything else in the argument is just plain logic. So, the Hempel-Goodman argument uses the same principles already used in Kim's argument. Moreover, it derives the conclusion from an *even more disjunctive* hypothesis: "Everything is a G", which is equivalent to "All $(F \vee \sim F)$s are G". If anything, this is an even more compelling way to articulate Kim's worries about disjunctiveness.

Of course, I am not endorsing the Hempel–Goodman argument. I am merely pointing out that the conclusion Kim "derives" can be obtained in an even more compelling way, using only the same principles he applies in his own argument (and, that this "procedure" has been known for many years). Like Kim's argument, the Hempel–Goodman fails at step (2), since it assumes the Quine–Nicod Condition, which is false – even for "projectible laws" (*i.e.*, even for laws involving "natural kinds" in Quine's [8] sense), and even relative to tautological background knowledge (see [7]). Furthermore, like Kim's argument, the Hempel–Goodman argument incorrectly applies the (SCC) in (4). If one assumes C_2 confirmation throughout, then the use of (SCC) in (4) is valid. But, then, one cannot derive the conclusion that FGs (in particular) confirm "All Hs are G", since that is explicitly a C_1 confirmation claim of the form "E (in particular) confirms H," not a C_2 confirmation claim of the form "H is well-confirmed, given the total evidence K". On the other hand, if one assumes C_1 in (4), then the step is invalid. This equivocation between the two senses of confirmation C_1 and C_2 (to which Kim alludes in his footnote #25) gives Kim's (and Hempel–Goodman's) argument a false sense of cogency.

In the end, both of these arguments rest on a false confirmation-theoretic principle (Quine–Nicod), and on an equivocation between confirmation as firmness (being "well-confirmed" all things considered) *vs* confirmation as increase in firmness (being "confirmed by E" in particular). As a result, both arguments are fallacious, and for reasons that have absolutely nothing to do with disjunctiveness, since both failings of the arguments would be failings whether the hypotheses in question were disjunctive or not.

I conclude, therefore, that Kim has not produced a *reductio* of the assumption that disjunctive predicates are "projectible". Rather, he has produced a *reductio* of a (broadly Hempelian) theory of confirmation that accepts both the Quine–Nicod condition and the special consequence condition (SCC). Of course, this wasn't the conclusion Kim invited us to draw (and it won't be news to contemporary confirmation theorists who gave up on such theories years ago).

References

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