# Kim on the Unconfirmability of Disjunctive Laws

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- Here is the full argumentative passage from Kim [8]:

> *. . . inductive projection of generalizations . . . with disjunctive antecedents would sanction a cheap, and illegitimate, confirmation procedure. For assume that "All $F$s 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 $H$s are $G$". Any statement implied by a well confirmed statement must itself be well confirmed. So "All $H$s are $G$" is well confirmed – in fact, it is confirmed by the observation of $F$s that are $G$s!*





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|---|---|---|
| 1 | $Fa \,\&\, Ga$ confirms $(\forall x)(Fx \supset Gx)$. | Ass (CP) |
| 2 | If $E$ confirms $H$ and $H \vDash H'$, then $E$ confirms $H'$. | (SCC) |
| 3 | $Fa \,\&\, Ga$ confirms $(\forall x)[(Fx \vee Hx) \supset Gx]$. | Ass (RAA) |
| 4 | $Fa \,\&\, Ga$ confirms $(\forall x)(Hx \supset Gx)$. | 2, 3, Logic |
| 5 | $Fa \,\&\, Ga$ does not confirm $(\forall x)(Hx \supset Gx)$. | 1, Intuition |
| 6 | $Fa \,\&\, Ga$ does not confirm $(\forall x)[(Fx \vee Hx) \supset Gx]$. | 3-5, RAA |
| 7 | $(1) \Longrightarrow (6)$ | 1-6, CP |

- The logic here is rather circuitous. But, the idea seems to be that — assuming (1) holds — [(5) must also hold; and, therefore?] (6) must be true [here, (SCC) is *presupposed*].
- From the point of view of modern Bayesian confirmation theory, however, (SCC) is false and neither (5) nor (6) need be true — *even if* (1) is true. Next, I will explain why. . .

- In contemporary Bayesian theory, confirmation is a ternary relation, between evidence $E$, hypothesis $H$, and background corpus $K$. Depending on $K$, positive instances may or may not raise the probability of universal claims [4], [5], [9].
- Here's a $K$ relative to which $Fa \,\&\, Ga$ raises the probability of $(\forall x)(Fx \supset Gx)$, $(\forall x)(Hx \supset Gx)$, $(\forall x)[(Fx \vee Hx) \supset Gx]$.

(K) Exactly one of the following two propositions is true: ($p$) there are 1000 $FG$s, no $F\bar{G}$s, 1000 $HG$s, no $H\bar{G}$s, no $FH$s, and a million other things, or ($q$) there are 100 $FG$s, 1 $F\bar{G}$, 100 $HG$s, 1 $H\bar{G}$, no $FH$s, and a million other things.

- $E \overset{\text{def}}{=} Fa \,\&\, Ga$. $\Pr(E \mid p \,\&\, K) = \frac{1000}{1002000} > \frac{100}{1000200} = \Pr(E \mid q \,\&\, K)$.
- This is a case in which (1) is true but (5) and (6) are both false. Kim's argument also presupposes (SCC) [(2)], which is also not true (in Bayesian CT). Here is a counterexample.
- Let $E \overset{\text{def}}{=}$ card $c$ is black, $H \overset{\text{def}}{=}$ card $c$ is the A♠, and $H' \overset{\text{def}}{=}$ card $c$ is *some* ace. Assume ($K$) that $c$ is sampled at random from a standard deck. For modern Bayesians, this refutes (SCC).





- Carnap [1] distinguished 2 kinds of Bayesian confirmation:
  - **Firmness**. $E$ confirms$_f$ $H$ relative to $K$ iff
    $$\Pr(H \mid E \,\&\, K) > t. \text{ [typically, with } t > \tfrac{1}{2}]$$
  - **Increase in Firmness**. $E$ confirms$_i$ $H$ relative to $K$ iff
    $$\Pr(H \mid E \,\&\, K) > \Pr(H \mid K).$$
- Confirmation$_f$ is "being (absolutely) *well*-confirmed by $E$ *and everything else you know*", but confirmaion$_i$ is "being (incrementally) confirmed (to *some* degree) *by $E$ alone*."
- Kim does talk about being "well-confirmed" in this argument. And, (SCC) *is* implied by confirmation$_f$.
- Unfortunately, while confirmation$_f$ fixes the (SCC) problem, it won't completely save Kim's argument, for two reasons:
  - $\exists K$ such that all of $(\forall x)(Fx \supset Gx)$, $(\forall x)(Hx \supset Gx)$, and $(\forall x)[(Fx \vee Hx) \supset Gx]$ are *well*-confirmed by $Fa \,\&\, Ga \,\&\, K$.
  - Kim's final flourish wouldn't follow anyhow for $\mathfrak{c}_f$, since "$H$ is well-confirmed by *everything* one knows ($E \,\&\, K$)" does *not* imply "$H$ is well-confirmed by *part* of what one knows ($E$)".





- I suspect Kim is implicitly working in a rather Hempelian framework. Similar arguments appear there [7], [6], [2], [3].
- On Hempel's theory [7], there is another way of getting to Kim's "paradoxical conclusion," which goes as follows [2].
  - (i) Observations of $G$s confirm $(\forall x)Gx$. $[\![(\forall x)[(Px \vee \sim Px) \supset Gx]]\!]$
  - (ii) Observations of $FG$s are observations of $G$s.
  - (iii) $(\forall x)Gx$ entails $(\forall x)(Hx \supset Gx)$.
  - (iv) $\therefore$ Observations of $FG$s confirm $(\forall x)(Hx \supset Gx)$.
- As I explain in [2], the move from (i)–(iii) to (iv) invidiously presupposes both (SCC) and the *even more problematic*:
  - (M) If $\ulcorner \phi a \urcorner$ confirms $H$, then $\ulcorner \phi a \,\&\, \psi a \urcorner$ confirms $H$.
- (M) is false for both $\mathfrak{c}_i$ and $\mathfrak{c}_f$. The historical role of (M) in confirmation theory has not been well appreciated [2], [3].
- From an "*objectual*" standpoint — in which "observations" or "things" confirm statements — (M) can *sound* reasonable.
- But, from a *propositional* standpoint — in which *statements* confirm statements — (M) is a non-starter. Confirmation is properly understood as propositional, not objectual [3].





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