

## Hypothesis and Belief

Wylie Breckenridge

I am considering the hypothesis, H, that all Fs are G, and in particular the degree to which I should believe that H is true. I am given a box that I know contains an object, o. I open the box and see that o is a J K (e.g. a black raven). I then adjust my degree of belief in H accordingly. Under what conditions does my seeing that o is a J K lead me to (rationally) increase my degree of belief in H?

Take the hypothesis, RAVEN, that all ravens are black. Sometimes, seeing that o is a black raven increases my degree of belief in RAVEN. Suppose I know that the object in the box is a raven, but I do not know what colour it is. I open the box and see that it is black. Then seeing that o is a black raven increases my degree of belief in RAVEN. But sometimes seeing that o is a black raven does not. Suppose, first, that I have a body of knowledge K and I know that RAVEN follows deductively from K, and that I therefore know that RAVEN is true. In that case my degree of belief in RAVEN will be maximal and so will not be raised by seeing that o is a black raven. In fact, it will not be raised no matter what J and K turn out to be. Suppose, second, that I know that the object in the box is a raven, that it was put in the box by Mr Painter, and that Mr Painter paints black every raven that he touches. Then when I open the box and see that the raven is black my degree of belief that all ravens are black will not increase.

Sometimes, seeing that o is a white shoe does not raise my degree of belief in RAVEN. Suppose I know that the object in the box is white. Suppose also that I put the object in the box myself, so that I know whether or not it is a raven. I open the box and see that the object is a white shoe. My degree of belief in RAVEN is not raised by so doing. But sometimes, seeing that o is a white shoe does raise my degree of belief in RAVEN. Suppose I know that the object inside the box is white, but I don't know whether or not it is a raven. I open the box and see that it is not a raven. Then my degree of belief in RAVEN will increase. (Suppose I have been betting on the truth of RAVEN. Then being told that there is a white thing in the box might make me nervous – perhaps this is a white raven? I will be relieved to see that it is not a raven, and slightly (even if only very slightly) more confident that RAVEN is true.)

Take the hypothesis, GRUE, that all emeralds are grue. Let C be some class of objects, and let the predicate grue be true of an object if and only if it is a member of C and green or not a member of C and blue. Sometimes, seeing that o is a grue emerald raises my degree of belief in GRUE. (How can I see that an object is grue? Assume for current purposes that all members of C, and only members of C, have been stamped with a "C". Then if I see that the emerald is green and stamped "C", I see that it is grue.) Suppose I know that inside the box is an emerald, but I don't know that it is green and I don't know that it is a member of C. I open the box and see that the emerald is green and that it is a member of C. In that case seeing that o is a grue emerald raises my degree of belief in GRUE. But sometimes it does not. Suppose I know that someone else has opened the box and seen that the emerald is green, and then defined C to be the singleton class consisting of just the emerald in the box. Then opening the box and seeing that o is a grue emerald will not increase my degree of belief in GRUE.

Take the hypothesis, LOBSTER, that all lobsters are red. Sometimes, seeing that o is a red lobster raises my degree of belief in LOBSTER. Suppose I know that the

object inside the box is a lobster, but I don't know what colour it is. I open the box and see that the lobster is red. Then seeing that *o* is a red lobster raises my degree of belief in LOBSTER. But sometimes, seeing that *o* is a red lobster does not. Suppose I know that the object in the box is a lobster, that it has been boiled, and that all boiled lobsters are red. Then opening the box and seeing that *o* is a red lobster will not increase my degree of belief in LOBSTER.

I am considering hypotheses of the form, "All Fs are G" – ones that claim that for all objects *o*, *o* is either a non-F or is G. Call an object an *instance* of the hypothesis if and only if either it is a non-F or it is G. A black raven is an instance of RAVEN because it is black; a white shoe is an instance of RAVEN because it is a non-raven; a grue emerald is an instance of GRUE because it is grue; and a red lobster is an instance of LOBSTER because it is red. The examples above show that seeing that *o* is an instance of a hypothesis may or may not increase my degree of belief in the hypothesis, depending on the circumstances. They also show that whether or not it does so is not determined by anything *intrinsic* about the object or the hypothesis. There is nothing 'good' or 'bad' about *o* being a white shoe – there are circumstances and a hypothesis for which I *do* rationally increase my degree of belief in the hypothesis upon seeing that *o* is a white shoe, and there are circumstances and a hypothesis for which I *do not*. And there is nothing 'good' or 'bad' about GRUE – there are circumstances and an object and values of J and K for which I *do* rationally increase my degree of belief in GRUE upon seeing that the object is a J K, and there are circumstances and an object and values of J and K for which I *do not*. Furthermore, they show that whether or not it does so is not determined by anything intrinsic about the object-hypothesis *pair*. There is nothing 'bad' or 'good' about the pair (a white shoe, RAVEN) – there are circumstances in which I *do* rationally increase my degree of belief in RAVEN upon seeing that the object is a white shoe, and circumstances in which I *do not*. I propose that there is a single explanation for why this is so in every case:

(Claim) Seeing that *o* is an instance of H increases my degree of belief in H only if I didn't know that *o* is an instance of H before seeing it.

According to (Claim), every case above in which seeing that *o* is an instance of H increases my degree of belief in H is also a case in which I *did not* know (just before opening the box) that *o* is an instance of H. In this I think that (Claim) is right.

Frank Jackson might be happy with the following attempt to go one step further than and give a counterfactual analysis of why we do or do not know that *o* is an instance of H:

(Claim<sup>^</sup>) Seeing that *o* is an instance of H increases my degree of belief in H only if I do not know that there is some property P such that *o* is P and that if *o* had not been P then it would not have been an instance of H.

But to do so would create many problems. Granted, (Claim<sup>^</sup>) seems to produce the right verdict in at least one of the cases above. Take the hypothesis GRUE and the circumstance in which I know that somebody has already sampled the emerald, seen that it is green, and defined C to be the class consisting of just that emerald. Intuitively, seeing that the object is grue will not increase my degree of belief in GRUE. And that is what (Claim<sup>^</sup>) says: I know that the emerald has the property of being the emerald that

was sampled by that person, and that if it had not had that property then it would not have been grue and hence would not have been an instance of GRUE. But take the hypothesis RAVEN and the circumstance in which I know that the object in the box is a raven, that it was put in the box by Mr Painter, and that Mr Painter paints black every raven that he touches. Intuitively, seeing that the object is a black raven will not increase my degree of belief in RAVEN. But that is *not* what (Claim<sup>^</sup>) judges: I know that the object has the property of having been painted black, but I do *not* know that had it not been painted black then it would not have been black - all I know is that Mr Painter paints black every raven he touches; I do not know that none of those ravens are black even without being painted. Similarly, take the hypothesis LOBSTER and the circumstance in which I know that the object in the box is a lobster, that it has been boiled, and that all boiled lobsters are red. Intuitively, seeing that the object is a red lobster will not increase my degree of belief in LOBSTER. But that is *not* what (Claim<sup>^</sup>) judges: I know that the object has the property of having been boiled, but I do *not* know that had it not been boiled then it would not have been red - all I know is that all boiled lobsters are red; I do not know that *only* boiled lobsters are red. These are both cases in which (Claim<sup>^</sup>) *overgenerates* - cases in which it says that my degree of belief in H will increase but in which intuition says that it won't.

There are also cases in which (Claim<sup>^</sup>) *undergenerates* - cases in which it says that my degree of belief in H will not increase but in which intuition says that it will. Take the hypothesis RAVEN and the follow circumstance: I know that the object in the box is a raven, that it is 1kg in mass, that it was put in the box by Mrs Painter, and that Mrs Painter paints white any object that she touches that is not 1kg in mass. Intuitively, seeing that the raven is black will increase my degree of belief in RAVEN. But according to (Claim<sup>^</sup>) it should not: I know that the raven has the property of being 1kg in mass and that had it not had that property then it would not have been black.

I suggest that trying to give a counterfactual analysis of what it is, in (Claim), to have prior knowledge that the object is an instance of H is both doomed to fail and unnecessary. It is doomed to fail because, I believe, it cannot be made extensionally correct. It is unnecessary, I suggest, because our grasp of what it is to know or not know, before opening the box, that the object is an instance of H is better than our grasp of any counterfactual condition that might even come close to being extensionally correct. So I suggest that we concern ourselves with (Claim) and the fine-tuning that it undoubtedly needs, rather than with (Claim<sup>^</sup>) or any of its relatives.

### Bibliography

- Good, I. (1967), 'The white shoe is a red herring', *Brit. J. Phil. Sci.* **17**, p. 322.  
 Goodman, N. (1946), 'A Query on Confirmation', *J. Phil.* **14**, pp. 383-5.  
 Goodman, N. (1965), *Fact, Fiction and Forecast* (Indianapolis: Bobbs-Merrill), ch. 3.  
 Harman, G. (1965), 'The Inference to the Best Explanation', *Phil. Review* **74**, pp. 88-95.  
 Hempel, C. (1968), 'The white shoe – no red herring', *Brit. J. Phil. Sci.* **18**, pp. 239-40.  
 Jackson, F. (1975), 'Grue', in Stalker (1994), pp. 79-96.  
 Sainsbury, R. M. (1988), *Paradoxes* (Cambridge: CUP), pp. 73-91.  
 Sober, E. (1988), 'No Model, No Inference: A Bayesian Primer on the Grue Problem', in Stalker (1994), pp. 225-40.  
 Stalker, D. (1994), ed., *Grue!: the new riddle of induction* (Chicago: Open Court).

