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A CORRECTIVE TO BOVENS AND HARTMANN'S MEASURE OF COHERENCE

ABSTRACT. Bovens and Hartmann (*Bayesian Epistemology*, Oxford: Oxford University Press, 2003) propose to analyze coherence as a confidence-boosting property. On the basis of this idea, they construct a new probabilistic theory of coherence. In this paper, I will attempt to show that the resulting measure of coherence clashes with some of the intuitions that motivate it. Also, I will try to show that this clash is not due to the view on coherence as a confidence-boosting property or to the general features of the model that Bovens and Hartmann use to analyze coherence. It will turn out that there is at least one other measure that is similarly based on the concept of a confidence-boosting property, but does not have the same counterintuitive results.

1. INTRODUCTION

In their *Bayesian Epistemology* (2003a), Luc Bovens and Stephan Hartmann persuasively argue that one cannot define a measure of coherence without making explicit what role coherence is to play. According to them, it makes sense to talk of the coherence of a law firm or an ant-hill, but it makes no sense to argue that they serve the same purpose: coherence in a law firm makes it more efficient, in an ant-hill it aids the survival of the colony (*op. cit.*: 31). Consequently, any attempt to construct a *measure* of coherence should first indicate what type of coherence one wishes to measure, and what role coherence is supposed to play. According to Bovens and Hartmann, the philosophically interesting notion of coherence is as a property of an information set with the role of boosting our confidence in that information set (*ibid.*). On the basis of this idea, they construct a probabilistic theory of coherence.

The result of their approach is not an actual *measure* of coherence, in the sense that each information set is assigned a specific value of coherence. Instead, they define the relation of *being no less coherent than*, “ \succcurlyeq ”. As they explain (*op. cit.*: 3, 35), this relation induces an ordering on the set of all information sets which is not complete, meaning that it will not necessarily be the case that, given two sets of propositions, one of the two is the most coherent. It may be arguable that this indeterminacy is not problematic when it occurs in a case in which it is intuitively not clear which of two sets is the more coherent. However, Douven and Meijs (2005) and Meijs and Douven (2005) have shown that sometimes Bovens and Hartmann’s theory of coherence will also refrain from judgement if one of the two sets is intuitively clearly more coherent than the other. Hence in some cases their measure behaves in an intuitively unsatisfying way. However, the case is even worse: in section 3 of this paper I will show that their measure also fails to satisfy two very general intuitions about coherence.

Nevertheless, the overall goal of this paper is constructive rather than destructive, for in section 4, I show that we need not blame Bovens and Hartmann’s general approach for these counterexamples. Instead, the problem may lie in an additional element, which I will call the maximality requirement, that they add to their theory. In section 5, I will show how abandoning the maximality requirement will lead to a new measure of coherence that is equally based on coherence as a confidence-boosting property, but that does not yield the same counterintuitive consequences. The conclusion of this paper, therefore, will be that the examples proposed in this and earlier papers do not necessarily challenge Bovens and Hartmann’s basic intuitions. I will start by briefly introducing Bovens and Hartmann’s theory of coherence.

2. BOVENS AND HARTMANN’S THEORY OF COHERENCE

Define the notion of an *information set* S as a finite set of propositions, about each of which we have been informed