

ANOTHER LOOK AT THE CANON OF PLAUSIBLE INFERENCE

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Abstract

Interest in plausible inference, that is reasoning under uncertainty, dates back at least as long as in demonstrative inference. However, systematic study of the former is in comparison just very recent, particularly the attempts to formalize it. Axiomatic approaches have focused mainly on the derivation of rules for combining and comparing plausible inferences. Less attention has been directed to how these inferences should be carried out. For instance, modern probability theory, considered by many a candidate for a theory of induction, was constructed as a mere calculus without interpretation and its application conceived separately, lacking a formal analysis, and based instead on the use of special purpose recipes which constitute the entrance of inconsistencies. Consequently, although rules for calculating with probabilities are almost universally accepted, no general agreement has been reached concerning procedures to assign them in the first place.

Nonetheless, a promising idea to cope with this inevitable step has slowly developed, namely to consider that both the axiomatics leading to calculation rules and those leading to assignment rules must be based on common grounds, giving rise to a new integrated vision of inference. As the behaviour of logicians and mathematicians regarding demonstrative reasoning suggests, the choice of languages and axioms for plausible inference should be supported by extramathematical requirements establishing desirable properties to be satisfied. These desiderata were historically taken into account in a tacit and loose way. Only in the 20th century was their explicit joint articulation in the form of canons or rationales proposed.

Here I shall defend the fundamental need for such desiderata in constructing any theory of inference, and clarify their role as a standard for contrasting frameworks. I will also briefly review the most relevant proposals advanced so far, including some of their precedents, and present a canon comprising what I believe should be a minimum set of essential desiderata. In addition to their rationality, I will highlight their moral component, which connects them with the historical origins of the logical conception of probability. Specifically, I will concentrate on those aspects of the canon related to a very critical issue in the foundations of science nowadays, that is the adequate expression and incorporation of evidences to inference.