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RELEVANT DEDUCTION AND
HYPOTHETICO-DEDUCTIVISM: A REPLY TO GEMES

1. Introduction

In my 1991 paper I gave a survey of my theory of relevant deduction and its applications. One of them was hypothetico-deductive theory confirmation (dealt with in Sections 1.3, 2.3, 4.2 and 5.1.1). Gemes (1994, this volume) gives some interesting critical comments on this part of my paper. His logical observations are correct, but his interpretation of my account to theory confirmation is essentially incomplete. Due to the survey character of my (1991) paper, Section 5.1.1 explains the application of relevant deduction to theory confirmation rather sketchily. Gemes' interpretation of my account, (HD-2), follows from what I say there, but it does not capture a further important condition, namely that theories as well as data have to be represented by the method of relevant consequence elements, which I suggest in later parts of my (1991) paper (Sections 5.1.4–5) as a general method of theory and knowledge representation, and which is implicitly assumed—though, on my fault, not explicitly mentioned—in my account of theory confirmation. In the following, I will show that given this additional condition, all the author's objections to my account of theory confirmation—the points (2), (3) and (4) of his introduction—can be refuted. I agree with the author's criticism of principle (P1) as being "generally reasonable"—point (1) of his introduction—but still think that (P1) is important for a hypothetico-deductive concept of confirmation. Finally I show that the author's suggested solution with help of content parts is a relevance criterion close to mine, but differing from mine in one significant point.

2. On Gemes' Criticism (1)

I agree with Gemes that the principle of strengthening the confirmans (P1) is not reasonable for every account of confirmation, in particular not for a probabilistic account like that of Carnap. But I think that (P1) or at least a similar principle is both reasonable and important for the hypothetico-deductive account of confirmation—for a simple reason:

for example, one wants to say that the conjunction of observation statements \( S^* := \bigwedge \{ Fa_i \land Ga_i \mid i \leq n \} \) confirms \( T := \forall x(Fx \rightarrow Gx) \), because \( S^* \) implies a sentence \( S \) – namely \( \bigwedge \{ Fa_i \rightarrow Ga_i \mid i \leq n \} \) – which confirms \( T \) and no sentence \( S' \) which falsifies \( T \). Note that (P1) requires that the sentence \( S^* \) must not falsify \( T \). Hence, (P1) makes confirmation not monotonic but only semi-monotonic (i.e., if \( S \) confirms \( T \), then \( S' \land S \) confirms \( T \) provided \( S \land S' \) does not falsify \( T \) – this observation is due to Gemes). A more refined version of (P1) can be stated by requiring in addition that \( S^* \) implies no sentence \( S' \) which disconfirms \( T \), provided a suitable hypothetico-deductive definition is given – but I need not discuss this question here. My main point is that the first paradox of confirmation (in Section 1.3 of my paper) cannot be removed by simply rejecting (P1), as Gemes seems to suggest, because (P1) or a similar principle is important for the hypothetico-deductive account to explanation.

3. ON GEMES' CRITICISM (II), (III) AND (IV)

In Section 4, Gemes discusses my reformulation of (HD-1)–he calls it (H-D2) – explicited in terms of conclusion and premise relevant deduction. After showing that (H-D2) indeed avoids several unacceptable consequences, he points out several further inacceptable consequences of (H-D2). But Gemes’ explication of my account is incomplete. I assume that the theory \( T \) as well as the sentence \( S \) are represented as conjunctions of their relevant consequence elements (in the same way as in Section 5.1.4 of my paper where I suggest to axiomatize theories \( T \) by logically equivalent subsets of their relevant consequence elements). Let me recapitulate Definition (35) of my 1991 paper:

\[(RCE)\] A is a relevant consequence element of \( B \) if \( B \vdash A \) is a conclusion relevant deduction and there exists no finite set \( \Delta \) of conclusion relevant consequences of \( B \) such that \( A \) is logically equivalent with the conjunction of \( \Delta \)'s elements and each \( C \in \Delta \) is shorter than \( A \).

My assumption concerning (H-D2) then is this:

\[(H-D2^*)\] \( S \) confirms \( T \) iff for some \( S' \) and \( T' \) which are logically equivalent with \( S \) and \( T \), respectively, and are conjunctions