It seems to me that Kaufmann's first paper[1] and my reply to it[2] have made the points of agreement and disagreement sufficiently clear and that his new contribution[3] does not offer any essentially new arguments. Therefore I think I may restrict myself here to a few short comments.

I. *Personal knowledge*. It seems to me that we are here in complete agreement on the main point, namely that there cannot be knowledge of synthetic propositions which is perfect, that is, irrefutable, except from tests. I have not spoken of "approximation to perfect knowledge," as Kaufmann says. I have merely spoken of increasing degrees of certainty. It seems

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[1] Felix Kaufmann, "Scientific Procedure and Probability," this journal, Vol. 6, 1945-46, pp. 47-66.

[2] R. Carnap, "Remarks on Induction and Truth," this journal, in this issue.

[3] Felix Kaufmann, "On the Nature of Inductive Inference," this journal, in this issue.

to me that this is customary in science; and I do not see that Kaufmann bas offered any argument against this conception.

2. *Truth*. This seems the main pint of disagreement between us. Kaufmann repeats his earlier assertions that "the concept of truth of synthetic propositions ... has no procedural significance"; that "knowledge of invariable truth of synthetic propositions (whether perfect or imperfect) is unobtainable"; and that "the idea of invariable truth of synthetic propositions is 'meaningless' in the sense in which the term 'meaningless' is used by logical positivists." If "truth" is meant here in the sense of the semantical definition of truth, then I cannot agree with these statements. I have tried to show in my earlier paper by a detailed discussion that knowledge (imperfect, of course) of the truth of synthetic propositions can be obtained, and that therefore the concept of truth is as meaningful in the context of scientific procedure as any other scientific concept. Maybe my arguments were wrong; I should welcome any objections against them. But Kaufmann repeats merely his older arguments without saying a word about my arguments.

3. *Dichotomy of accepted and unaccepted propositions*. It seems to me that there is no great divergence between our views on this point. I admit that a sharp dichotomy is often convenient; Kaufmann believes, moreover, that it is indispensable.

4. *Parallelism between deductive and inductive logic*. Here again our views differ. But I have not been quite able to understand all of Kaufmann's arguments. There seem to be some misunderstandings involved, probably due to my too brief indications; I will try to make these points clear.

a. I do not use the term "to know" in connection with deductive and inductive logic in two different senses. Thus, in the examples D6 and I6 in my previous paper I meant "to know" both times in the same sense, in the ordinary sense of factual knowledge, not merely in the scum of understanding a propositional meaning.

b. Kaufmann says that I interpret both deductive and inductive relations between sentences (and the concept of range on which those relations are based) as truth-relations. This is either a serious misunderstanding or at least a misleading formulation. It is obvious that deductive relations, e.g., L-implication, and inductive relations, e.g., a certain degree of confirmation, are not truth-functions, that is, dependent merely upon the truth-values of the sentences. Moreover, the concept of truth is not used in the definitions of range, L-implication, and degree of confirmation.[4] (To

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[4] For brief indications of these definitions, see "On Inductive Logic," Philos. of Science, Vol. XII, 1945, §§2 and 6. (The word "true" is here used only for the purpose of an informal explanation of "*j* holds in the state-description *i*".) Exact definitions of "range" and "L-implication" will be given in §7 of "Modalities and Quantification," *Journ. of Symb. Logic*, Vol. XI, 1946.

the statement D4 in my previous paper I could have added that also the truth of *i* is irrelevant for D1.) On the other hand, there are important relations between deductive concepts and the concept of truth. Thus, for instance, from the statement "*i* L-implies *j*" (D1 in my previous paper) we can infer 'if *i* is true, then *j* is true" (D5). Note that the latter statement is merely a consequence of the former; it does by no means say the same.

The point where we differ concerns the question, whether the degree of confirmation of a hypothesis *h* with respect to the evidence *e* can be determined without using other rules than the definition of degree of confirmation. I can only repeat that my definition enables us to compute the numerical value of the degree for given sentences *h* and *e* without any other rules; Kaufmann simply repeats that it cannot be done. The serious problem concerns another point: why should a scientist choose just this or any other particular definition? It may well be that a change of the canons of scientific procedure would involve the choice of another definition of degree of confirmation. But that is another question. What I maintain is only that, once a definition is chosen, no other rules are needed for the determination of the values.[5]

RUDOLF CARNAP.

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[5] Prof. Kaufmann has decided to postpone further discussion for another occasion.