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Questions, Answers, and Presuppositions

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QUESTIONS, ANSWERS, AND PRESUPPOSITIONS *

PHILOSOPHERS of science have long spoken as if the concept of *language* required for their enterprise involved only the declarative parts. I agree with Bromberger's thesis that they were mistaken, and that essential reference to the erotetic (interrogative) apparatus of scientific language is mandatory. This involves logical work on a number of erotetic concepts, among which are (1) the question-answer (q-a) relationship itself, and (2) the concept of presupposition.

Erotetic logic is applicable to both natural and formal languages. Certainly for the latter and also to a lesser extent for the former, the old syntax-semantics distinction is as useful as it is in assertoric logic. I believe that the q-a relationship is best regarded as primarily syntactic, and presupposition as semantic.

1. *Question-answer relationship.* The q-a relationship is central to erotetic logic, something which is sometimes unrealized and sometimes denied. In order to elucidate this relationship it is essential to isolate the concept of a *direct* answer.

The simplest definition of the q-a relationship for which questions is in terms of matrices and substitution: from the question 'which thing is an *A*?' we recover the matrix '*x* is an *A*', and then define the answers as any substitution thereof. This definition, however, obscures the erotetic likenesses and differences among (say) the following questions: (i) What is one of the *A*'s? (ii) What are some of the *A*'s? (iii) Which thing is an *A*? (iv) Which things are *A*? It is illuminating to view these as all utilizing the same matrix (i.e., '*x* is an *A*') while differing in two respects: how many of the substitutions of the matrix (called *alternatives*) are to be selected by each direct answer, and whether or not a direct answer is required to make a "completeness-claim" as to the exhaustiveness of the list of alternatives it selects. These are additional form-specifications laid down by the question, over and above the matrix.

It is possible, as Harrah suggests, to return to the matrix-only way of determining answers, scrapping the additional form-specifications, provided one is willing to grant as an essential part of the language a substantial metalinguistic capability for describing its own expressions. But this is to trade one form of complexity for another, and the exchange may not be even.

As another illustration of what calling for the q-a relationship

* Abstract of an APA symposium paper, commenting on Sylvain Bromberger, "Questions," this JOURNAL, 63, 20 (Oct. 27): 597-606.

to be kept on the side of syntax requires, consider Bromberger's ground-breaking definition of answerhood for why-questions. He makes the relationship partly a matter of semantics; we attempt to retain the essence of his definition while replacing the semantic elements by syntactic surrogates and also bringing to the fore certain elements which Bromberger left in the background (by existential generalization). A direct answer to 'Why is t a B ?' would then have to have four conjuncts: the first is a syntactically recognizable "abnormic law," something like 'No A 's are B 's, except C_1 's and C_2 's'; the second is an explicit statement of the required extrasyntactic conditions on abnormic laws, such as the exclusiveness of C_1 and C_2 ; the third would affirm that t is an A ; and the fourth and last would either say that t is a C_1 , or else say that t is a C_2 .

This may be wrong in detail; the moral is to rely on Bromberger's analysis and still keep answers to why-questions recognizable as such from their syntactic form alone.

2. *Presuppositions.* Everyone knows that 'Has Jones stopped beating his grandmother?' presupposes 'Jones used to beat his grandmother'. It is perhaps less obvious that, once we have the concept of a direct answer, this presupposition can be conceptualized along with all presuppositions in an altogether uniform way: every question presupposes *precisely* that at least one of its direct answers is true. For the grandmother example, we need only reflect on the meaning of the coded answers 'yes' and 'no' to see that this is true.

We therefore define a sentence as a *presupposition* of a question if the truth of the sentence is a necessary condition of the question's having some true answer; or, in more Tarskian terms, if every interpretation which makes the question truly answerable is an interpretation which makes the presupposed sentence true as well. And we may also say that a sentence *expresses the presupposition* of a question if its truth is both necessary and sufficient for the question's having some true answer.

Though semantics does not distinguish between several sentences each expressing the presupposition of a question, the syntax of natural language often allows us to choose a particular sentence as in a privileged way being (and not just expressing) the presupposition, just as it often designates a particular sentence as being *the* contradictory of a given sentence. And even with respect to formal languages we have a certain amount of freedom in designating some particular sentence as being the presup-

position, provided it satisfies the minimal semantic condition of expressing the presupposition. But there is no guarantee that there will exist any sentences at all which are true just in case the question is truly answerable—an incoherence between the assertoric and erotetic parts of a language which may well be the rule, at least for consistent languages. In particular, this incoherence obtains for the erotetic languages developed elsewhere by me, by Harrah, and by Åqvist, and possibly even for the language proposed by Harrah in the preceding abstract.

I should like in conclusion to propose the following linguistic reform: that we all start calling a question “true” just when some direct answer thereto is true.

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PLAUSIBILITY AND JUSTIFICATION IN THE DEVELOPMENT OF SCIENCE *

THE seventeenth-century philosophical revolution, brought to its culmination in the work of Descartes and Newton, was rooted in a conception of matter, the object of scientific investigation, as passive, “inert.” Inertia, as Newton put it, is a “force of inactivity,” of “resisting,” and material objects will change their state (of uniform rectilinear motion or rest) only if acted upon by some external agency.¹ The present paper is concerned with the implications of this view of matter for the development of a science of life, and with the rationale by which, against the background of this view of matter, certain theories of the nature of life were proposed.

* To be presented in an APA symposium of the same title, Dec. 27, 1966.

¹ This conception of matter was closely interlocked with conceptions of the methods by which that matter was to be investigated, and with conceptions of the ultimate aims or ideals of science. These basic views of the aims, methods, and subject matter of science still involved ambiguities—for instance, as to whether matter is ultimately continuous or corpuscular, and as to whether forces can act at a distance or only by contact (or, in other words—as Hume took for granted—whether causation requires immediate contiguity in space and time). Indeed, most of the major epistemological and metaphysical problems, as well as solutions, of classical modern philosophy were set by this framework and the ambiguities therein. See my “The Philosophical Significance of Newton’s Science,” to appear in *Proceedings of the 1966 University of Texas Conference on Newton*.