

QUESTIONING AS A PHILOSOPHICAL METHOD

1. Questioning as a General Knowledge-Seeking Method

Questioning is not only an important philosophical method; it offers a useful model for many different types of knowledge-seeking. For the time being, I shall in fact treat questioning as a process of information-gathering in general. Only later, once the structure of information-seeking by questioning has been discussed, can we see how variants of this method are particularly adept to serve the purposes of philosophical thinking.

The best known historical paradigm of questioning as a philosophical method is the Socratic *elenchus*.¹ It is of interest to see how several aspects of this celebrated technique can be understood and put into a perspective on the basis of my analysis of questioning as a philosophical method.

Before doing so, we nevertheless have to look at the logical structure of question-answer sequences. Here the first question that is likely to come up is probably going to be the skeptical one: What's so new about the idea of questioning, anyway, as a knowledge-seeking method? It is one of the first ideas likely to occur to anyone interested in philosophical or scientific or hermeneutical method, and it has in fact occurred to a number of philosophers, such as Plato, Francis Bacon, Kant, Collingwood, Gadamer, and Laudan.² Moreover, a large number of different treatments of the logic of questions are on the market.³ It is surely not realistic to expect new insights to ensue from this old idea—or so it seems.

2. The Logical Structure of Questions.

What is new and promising about the approach I am proposing is that it is based on an adequate analysis of the crucial question-answer relationship.⁴ Before we know what counts as an answer (intended, full, conclusive answer) to a given question, we cannot hope to understand how answers to questions one asks can yield information, for we don't really know what an answer to a given question is likely to be. Surprisingly, this crucial question-answer relationship is not analyzed satisfactorily in the earlier discussions of the logic of questions, in spite of the fact that the right analysis follows naturally from the basic idea of considering questions in informational terms. The line of thought—I shall call it, in analogy to Kant's "transcendental deductions," a "model-theoretical deduction"—which yields the right analysis is important enough to be sketched here.⁵ It relies on the idea that having information (knowing something) amounts to being able to eliminate certain alternative situations or courses of events ("possible worlds").⁶ This is the true gist in the often-repeated idea of "information as elimination of uncertainty."⁷ What it means is that a person's, say *b*'s, knowledge state in a "world" w_0 is characterized by reference to the set of all those "worlds" w_1 that are compatible with what *b* knows in w_0 (and by implication to the set of worlds that are excluded by *b*'s knowledge). These will be called the epistemic *b*-alternatives to w_0 . Then it will be the case that a sentence of the form

- (1) *b* knows that *p*

is true in w_0 if and only if it is true that *p* in all the epistemic *b*-alternatives to w_0 .

Furthermore, a wh-question like

- (2) Who killed Roger Ackroyd?

is to be analysed for my purposes as a request for a certain item of information. What information? Obviously, the information the questioner has when she or he can truly say

- (3) I know who killed Roger Ackroyd.

In general, a specification of the informational state that the questioner requests to be brought about is called the *desideratum* of the question in question. Thus (3) is the desideratum of (2).

Now (3) is naturally, not to say inevitably, analyzed as

(4) $(\exists x)$ I know that (x killed Roger Ackroyd)

where “ x ” ranges over persons. For what more could it conceivably mean to know *who* did it than to know *of some particular person* x that x did it?

In model-theoretical terms, (4) means that there is some individual x such that, in each world compatible with everything I know, x killed Roger Ackroyd. This is, of course, but saying that I have enough information to rule out x 's not having done it.

3. Question-Answer Relation Analyzed.

What is now going to count as a conclusive answer to (2)? Let's suppose someone tries to answer the question (2) by saying “ d .” (I am making no assumptions concerning the logical or grammatical nature of this response, as long as it makes (5) below grammatically acceptable. It may be a proper name, definite description, indefinite description, or what not.) This reply is a conclusive answer if and only if it provides the questioner with the information that was requested. For the sake of argument, I shall assume that the reply is true, honest, and backed up by sufficient information. What information does it then bring to the questioner? Clearly, the information that enables him or her to say, truly,

(5) I know that d killed Roger Ackroyd.

This is the state of knowledge (information), actually brought about by the reply “ d ”. But it is not necessarily that state of information requested by the speaker, for this requested state is expressed by another proposition, viz. (4). Hence the reply “ d ” is a conclusive answer, i.e., it provides the requested information, *if and only if* (5) *implies* (4).⁸

But when does this implication hold? First, why should it ever fail? The model-theoretical perspective provides an instant answer. What (5) says that the term “ d ” picks out, from each world compatible with what I know, an individual who in that world killed Roger Ackroyd. The reason why this does not imply knowing who did it is that those several references of “ d ” need not be the same person. We may put it as follows: my knowing that someone or other killed Roger Ackroyd means having enough information

to rule out all courses of events under which someone or other did not kill him. But in order to know who did it, I need further information: I have to have enough information to guarantee that the killer of Roger Ackroyd is *one and the same person* in all the worlds my knowledge has not yet eliminated.

Thus the extra premise one needs to infer (4) from (5) will have to say that the term d picks out the same individual from all the worlds compatible with what I know, i.e., that there exists some one individual x such that in all those worlds $d = x$. But, according to our observation concerning (1), something is true in all the worlds my knowledge does not rule out if and only if I know that it is true. Hence the extra premise needed to restore the implication from (5) to (4) is

(6) $(\exists x)$ I know that $(d = x)$.

This, then, is the criterion of conclusive answerhood. The reply " d " to (1) is a conclusive answer if and only if it satisfies (6).

What is remarkable about this result is not the particular condition (6). Indeed, it is precisely the condition one would expect. By the same token as the near synonymy of (3) and (4), (6) can be expressed more colloquially by

(7) I know who d is.

And this is obviously a necessary and sufficient condition for the reply " d " to satisfy the questioner. For if the questioner does not know who d is, this reply does not enable him or her to know who it was who killed Roger Ackroyd. Instead, it would prompt the further question, "But who is d ?" or some equivalent response.⁹

What is remarkable about the criterion (6) of conclusive answers to (1) is, first of all, that it is generalizable.¹⁰ Even though the technical details of some of the generalizations are messy, the leading idea is clear in all cases.

Even more remarkable is the fact that the aptness of my criterion of conclusive answerhood can be proved. The intuitive model-theoretical argument outlined above can be transformed into a formal argument, which relies on these principles of epistemic logic that codify my model-theoretical assumptions sketched above. Likewise, the generalizations of my criterion likewise can be proved to be correct in the strictest sense of the word in most of the relevant cases.¹¹

In view of the crucial importance of the question-answer relationship (criterion of conclusive answerhood) for any study of knowledge-seeking by questioning, a couple of further remarks are in order. The analysis of the question-answer relationship I have offered is an inevitable consequence of a certain way of conceptualizing knowledge (information). Hence those critics have been barking up the wrong tree who have tried to criticize it by reference to the surface phenomena of language, including unanalyzed and ill-understood "intuitions" that the critics profess to have about the logical implications between different natural-language sentences.¹² The only relevant criticism would be to develop an alternative model-theoretical framework for (an alternative way of conceptualizing) information and knowledge, and an alternative way of codifying the idea that a question is a request of information. There is no need for me to respond to self-appointed critics who have not done this.

4. Further Problems

The outline account given above leads to further problems in virtually all directions. Here is a sample:

(i) Besides being a request for a certain item of information, a question implies certain restraints as to how this request is to be fulfilled. We need an account of these restraints.¹³

(ii) It is not enough to use logicians' time-honored models as implementations of the idea of alternative states of altering or courses of events. For if we do so, we are led to the paradoxical conclusion that everyone always knows all the logical conclusions of everything he or she knows. What is the appropriate generalization we need here?¹⁴

(iii) There is another way of taking a question like (1), viz. to take the requested state of knowledge to be expressible by

(8) $(x) (x \text{ killed Roger Ackroyd} \supset (\exists z) (z = x \ \& \ \text{I know that } (z \text{ killed Roger Ackroyd})))$.

In other words, the speaker wants to be aware of the identity, not just of one person who killed Roger Ackroyd, but of all of them. How are the two representations (4) and (8) related to each other?¹⁵

(iv) What are the precise conditions on conclusive answers to more complicated questions? How are such complex questions to be analyzed in the first place?¹⁶

(v) Many perfectly respectable responses to a question don't satisfy my condition of conclusive answerhood, but nevertheless contribute partial information towards a conclusive answer. How are such *partial answers* to be defined? How can we measure their distance from a conclusive answer?¹⁷

(vi) Such representations as (4) or (8) assume that quantifiers and epistemic operators (e.g., "I know that") are informationally dependent on each other transitively, so that they can be represented in a linear fashion. Can this assumption fail? What happens if it does?¹⁸

5. Strategic Aspects of Questioning—Presuppositions of Questions

Such questions can easily be multiplied.

It would be a serious mistake to take these new problems, and others like it, to constitute evidence against my approach. Here it is in order to anticipate the self-awareness that our discussion of knowledge-seeking by questioning can engender. One of the most important advantages, perhaps the most important advantage, of the questioning model is that by its means we can discuss and evaluate, not just someone's state of knowledge at a given time (*vis-à-vis* the evidence one has at the time) but also entire strategies of knowledge-seeking.¹⁹ Then the value of an answer *A* to a question *Q* of mine (or the value of conclusion *I* draw from such an answer *A*) cannot be measured in the sole terms of the knowledge (theory) this answer *A* yields. Rather, we must also consider the opportunities for further questions and answers that are opened by the original answer *A*. The basic reason for this is that questions cannot be asked in a vacuum. A question can only be asked after its presupposition has been established. Hence one may need answers to earlier "smaller" questions in order to be able to ask the crucial questions whose answers are likely to yield the information really desired.

Here we can also see the usefulness of game-theoretical conceptualizations. From game theory we know that utilities cannot be assigned to individual moves. Utilities, which in my information-seeking games depend essentially on the information (knowledge) sought, can only be assigned to entire strategies.

Likewise, we can see here the importance of another feature of my analysis of questions and answers, *viz.* the role of presuppositions. In the example above, the presupposition of (2) is

(9) $(\exists x) (x \text{ killed Roger Ackroyd}),$

that is

(10) Someone killed Roger Ackroyd.

Obviously, (2) can be sensibly asked only if (10) is true. Once again, my definition is generalizable beyond our particular example. In general the presupposition of a wh-question is obtained by omitting the outmost epistemic operator or operators “I know that” from the desideratum of the question.

The presupposition of a wh-question minus the quantifier is called the *matrix* of the question

6. Significance of New Problems

Self-applied to the knowledge-seeking that is involved in my approach to questions, answers, and question-answer sequences, these observations imply that the approach should not be judged on the basis of the theory it has reached at one time. Even less should the open questions my approach prompts be counted against it. On the contrary, the ability of an approach to lead to interesting problems is a strong reason in its favor. These problems are evidence for its power to give rise to new questions whose answers are likely to essentially increase our knowledge of the subject matter.

This illustrates neatly how my general theory of knowledge-seeking by questioning can enhance our self-awareness of our own philosophical enterprise and its methods.

7. Meno Answered

The nature of the question-answer relation and of the presuppositions of questions deserves a few comments. Part of the philosophical relevance of my observations on these two subjects—especially on the former—can be expressed by saying that they provide a solution to Meno’s puzzle.²⁰ On the basis of what we have found, it is in fact easy to see how Meno’s paradox comes about. Applied to *what is* questions, my criterion of answerhood yields the following result: Suppose Socrates asks the definitory question

(11) What is d ?

The desideratum of (11) is

(12) I know what d is.

Then a reply, say “ b ,” is a conclusive answer only if Socrates (i.e., the questioner) can truly say,

(13) $(\exists x)$ I know that $(b = x)$,

in other words, can truly say,

(14) I know what b is.

Thus it looks as if the question (11) can be answered conclusively only if the questioner already knows an answer. No wonder poor Meno was perplexed by this paradoxical-looking circularity.

The solution to Meno’s problem lies in the fallaciousness of the word “already” in my formulation of the problem just given. The right conclusion to draw from my criterion of conclusive answerhood is not that the questioner must already know what the answer (in our example, the term “ b ”) stands for prior to the reply, but rather that it is part of the task of that reply to provide the collateral information that enables the questioner to say, truly, (13) (= (14)). The right conclusion here is thus that an adequate response to a wh-question will have to serve two different functions. To put the point in the form of a paradox, it is not enough for a reply to provide (what is usually taken to be) an answer to the question (viz. a true substitution-instance of its matrix). It must also give to the questioner enough supplementary information to bring it about that the conclusiveness condition is satisfied, i.e., that the questioner knows what the reply term refers to *after* the reply has been given. This double function of replies to wh-questions is the true moral of Meno’s paradox. It represents an important insight into the role of replies (answers) in discourse.

Speaking more generally, by spelling out the presuppositions for asking different kinds of questions as well as the conditions that conclusive answers to them have to satisfy, we can show just what a questioner has to know before he or she can ask a question and receive an answer to it, and thereby solve Meno’s problem in its most general form.

All this highlights in turn a general truth about questions and answers. They are very much a discourse phenomena, and their

theory must be developed as an integral part of the logic and semantics of discourse, as distinguished from the logic and semantics of (isolated) sentences.

8. Different Sources of Information

One feature of the conceptualizations expounded above is that they are independent of the specific nature of the answerer (source of information). For this reason, the theory of knowledge-seeking by questioning that is based on these conceptualizations is applicable to several different kinds of information-gathering. In order to see one of them, we may borrow a page from Kant's *Critique of Pure Reason* and think of the experimental inquiry of the physical sciences as a series of questions a scientist puts to nature.²¹ (The page in question is B xiii.)²² In this application, we can once again see the crucial role of the question-answer relationship. For Kant's emphasis is on the way in which a scientist can actively guide the course of investigation by choosing correctly the questions put to nature. The mechanism of this control is of course precisely the question-answer relationship. A question *Q* predetermines its answers in that they have to be answers to this particular *Q*. I shall not pursue this application here, however.

Another interesting application along related lines is to construe observations—be they scientific, clinical, or pretheoretical—as answers to questions put to one's environment.²³ This point is vividly illustrated in Sherlock Holmes's famed "deductions," which I have interpreted as so many questions put to a suitable source of information. (They will be discussed below.) Not only does Sherlock occasionally call his "Science of Deduction and Analysis" also a science of *observation* and deduction.²⁴ He repeatedly speaks of the same conclusion as being obtained, now by deduction or "train of reasoning," now by observation or perception. Upon meeting Dr. Watson, Sherlock Holmes says: "You have been in Afganistan, I *perceive*" (emphasis added). Yet he later describes a long train of thought (cf. below) he needed to reach that "conclusion."²⁵ On another occasion, Sherlock is surprised that Watson "actually [was] not able to *see* [emphasis added] that that man was a sergeant of Marines," even though Dr. Watson had just referred to this conclusion as a deduction ("How in the world did you deduce that?") and even though Sherlock himself has to use no fewer than thirteen lines to explain the different steps of his train of thought.²⁶

Less anecdotally, assimilating observations to knowledge-seeking questions offers a natural framework for discussing some of the hottest problems in the contemporary philosophy of science, such as the concept-ladenness and theory-ladenness of observations.²⁷ For instance, if an observation is construed as a question, then the information it yields depends on the concepts in terms of which the question is formulated. Likewise, the observation, being a question, depends on the antecedent availability of its presupposition, which ultimately depends on the theory one is presupposing. We are obviously dealing with an extremely promising line of investigation here.

9. Activating Tacit Knowledge

The applications I am primarily interested in here are nevertheless in a still different direction. The source of information need not be outside the questioner. It may be addressed to the questioner's own memory or to whatever other sources of "tacit knowledge" he or she may possess. Then the questioning process becomes a process of activating tacit knowledge.²⁸ It seems to me that there is an especially dire need here of satisfactory semantical and logical analysis, for the process of bringing the relevant items of tacit information to bear on one's reasoning is practically never dealt with by philosophers and methodologists. Likewise, it seems to me that psychologists could profit from a better conceptual framework in dealing with this subject matter. Thus it is an extremely important subject in several respects.²⁹ In earlier papers, I have argued that much that passes as "inference" or "deduction" in nonphilosophical jargon really consists in sequences of implicit questions and answers.³⁰ In many of the most striking cases, such questions are answered on the basis of information that the questioner already has available to himself or herself but which the question serves to call attention to. It is precisely this quality of Sherlock Holmes's "deductions" that so frequently made them look "elementary" once they were spelled out. How did Sherlock know that the good Dr. Watson had been to Afghanistan when he was introduced to him? Here is a paraphrase of Holmes's "train of reasoning":³¹

What is the profession of this gentleman? He is of a medical type, but with the air of a military man. Clearly an army doctor,

then. Where has he been recently? In the tropics, for his face is dark, although it is not the natural tint of his skin, for his wrists are fair. But where in the tropics? He has undergone hardship and sickness, as his haggard face tells clearly. His left hand has been injured, for he holds it in a stiff and unnatural manner. Now where in the tropics could an English army doctor have recently seen so much hardship and got his arm wounded? Clearly in Afghanistan.

Apart from the observations that the famous detective is using, he is relying on perfectly commonplace knowledge about sun tan, medical clues to one's past, and recent military history.

Actualization of tacit information is also the gist in philosophers' appeals, so prevalent in our days, to what are known as "intuitions."³² I have argued elsewhere that it is a serious mistake to construe them as the data that philosophical theory or explanation has to account for. If they are to have a legitimate role in philosophical reasoning, they must have some other role in philosophical argumentation. But what is that role? We don't find a satisfactory answer in the literature.

10. Analogy Between Interrogation and Deduction

On my model, what does guide the choice of questions that activate tacit knowledge? My answer is: largely the same strategic considerations as govern the choice of the best lines of questioning in general. But what are those strategic principles? It is hard to be specific, but a couple of relevant observations can nevertheless be made. The presuppositions of questions must be among the conclusions a questioner has reached. The crucial questions are typically wh-questions, and their presuppositions are existential sentences. (Cf. (9) above.) The decisive strategic consideration therefore is: Which of the available existential sentences should I use as presuppositions of wh-questions? An answer to such a question will instantiate the matrix of the question, which is an existential sentence. Hence the strategic choice just mentioned is nearly analogous to the choice faced by a deductive strategist. For it has been shown that the crucial consideration in the quest of optimal strategies is the choice of the existential formulas to be instantiated at each stage of the deduction, which is here assumed to be roughly a natural-deduction or *tableaux*-type procedure.³³ In other words, the principles that govern the choice of optimal questioning strategies are extremely closely related to the choice of the principles

that govern one's quest of the best deductive methods. In short, deductive logic is likely to yield the best clues to effective questioning. No wonder Sherlock Holmes called his art of investigation, which I have interpreted as a questioning method, "The Science of Deduction."

The same road can be traveled in the opposite direction. Because of the parallelism between deduction and questioning, suitable questions can trigger the right deductive conclusions by the answerer, and may thus serve inversely as heuristic guides to the right deductive strategies.³⁴

Hence a philosophical inquirer should discard the misleading positivistic generalization model and think of his or her task, not as a series of generalizations from the data offered by "intuitions," but on the model of Sherlock Holmes's "Science of Deduction and Analysis." In so far as my questioning model is applicable, i.e., insofar as Kant is right, such generalization from random data plays a much smaller role in science itself than philosophers seem to imagine these days, let alone in philosophical inquiry.

Another symptom of the insufficiency of the generalization model is that it does not offer any clues as to how our intuitions (the data) have to be changed if they prove unsatisfactory.

Here, then, we can see one of the main services that my questioning model can perform when thought of as a paradigm of philosophical method. It can guide a philosopher in activating the tacit knowledge that constitutes the raw materials of a philosopher's inquiry. In particular, it shows that important guidelines for this task are forthcoming from our familiar deductive logic. Successful thinking is colloquially referred to as "thinking logically." Philosophers might be well advised to take this idea more seriously than they are currently doing.

11. Trivial vs. Nontrivial Reasoning

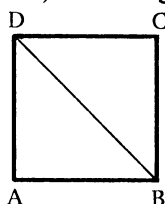
Part of the force of the near analogy between questioning and deduction that I have argued for is brought out by the question: What characterizes nontrivial (synthetic) reasoning? I have argued on earlier occasions for an answer to this question applied to deductive reasoning.³⁵ (It has turned out that this answer was not only anticipated but strongly emphasized by C. S. Peirce, even

though no one had understood his idea in the interim.)³⁶ Very briefly, and omitting all sorts of technicalities, the idea is that a logical inference is trivial (“corollarial,” Peirce would have said) if it does not involve the introduction of any new entities into the argument. An inference is nontrivial (“theorematic,” Peirce calls it) if it depends on the introduction of a new object into the purview of the reasoning. The more numerous such auxiliary objects are that a reasoner has to bring in, the more highly nontrivial is the reasoning. Historically, the paradigm case of such introductions of new objects into an argument have been the so-called auxiliary constructions of elementary geometry, a paradigm reflected by Peirce’s choice of his terms.

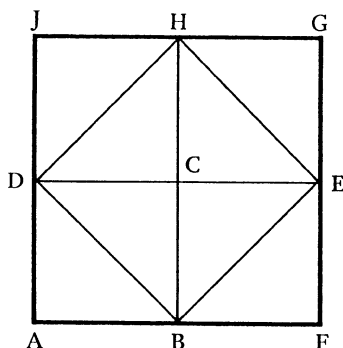
The partial analogy between interrogation and deduction explained above allows us to generalize the trivial-nontrivial distinction to empirical reasoning relying on questioning over and above deductive reasoning in contemporary philosophers’ narrow sense of the term. The extension is neatly illustrated by an example I have used before, viz. “the curious incident of the dog in the night-time” in Conan Doyle.³⁷ The famous racing horse *Silver Blaze* has been stolen from its stable in the middle of the night and its trainer, the stablemaster, has been found killed out in the heath. Everybody is puzzled till Sherlock Holmes directs our attention “to the curious incident of the dog in the night-time.” “The dog did nothing in the night-time.” “That was the curious incident.” What Sherlock is doing here is in the first place to ask a few well-chosen questions. Was there a watchdog in the stable during the fateful night? Yes, we know that. Did the dog bark at the horse-thief? No, it did not. (“That was the curious incident.”) Now who is it that a trained watchdog is not likely to bark at in the night-time? Its master, the trainer, of course. Each question and its answer may be “elementary,” as Sherlock would say, but what makes the entire line of thought nontrivial is that Holmes brings, for the first time in the story, a new factor to bear on the solution of the mystery, viz. the dog. This introduction of a new object into the argument parallels an “auxiliary construction” by a geometer. It doesn’t merely add a psychological twist to the tale; it is what logically speaking enables Holmes to carry out his “deduction.”

The most famous deduction in the philosophical literature to be conducted in the form of a question-answer dialogue is Socrates’s

conversation with the slave-boy in Plato's *Meno*.³⁸ It illustrates forcefully the same power of auxiliary constructions (more generally, auxiliary individuals, in logicians' sense of individual) to facilitate nontrivial conclusions. In the *Meno*, Socrates extends the slave-boy's purview by introducing three new squares adjoining the original one. (See *Meno* 84 d.) The original one is here:



The completed one looks like this:



(The lines BE, EH, and HD are likewise introduced by Socrates in so many words in 84 e–85 a.) Once all these constructions have been carried out the conclusion is obvious: the square of BD can be seen to equal twice the square of AB. This argument depends crucially on the “auxiliary constructions” Socrates is allowed to carry out.

If the role and nature of such auxiliary constructions is not understood and appreciated, the power of philosophical questioning methods to yield nontrivial conclusions will be an intriguing puzzle. It is a small wonder, it seems to me, that this puzzle should have provoked Plato to hypothesize in his doctrine of *anamnesis*, i.e., of a memory-like knowledge of those unexpected conclusions.³⁹ It would also be interesting to try to consider theories of innate ideas in the same light.

12. Thinking as Unspoken Discourse

One way of bringing out the crucial general significance of a suitable questioning model for the conceptual analysis of human thinking in general is the following: Time and again in the course of Western thought, philosophers have proposed to consider *thinking* on the model of *speaking*. Plato describes “thinking as discourse, and judgment as a statement pronounced, not aloud to someone else but silently to oneself.”⁴⁰ Likewise C. S. Peirce asserts that “all thinking is dialogical in form. Your self of one instant appeals to your deeper self for his assent,”⁴¹ and again, “One’s thoughts are what he is ‘saying to himself,’ that is, saying to the other self that is just coming into life in the flow of time.”⁴² One reason why this idea is so suggestive is that, if it is right, the extensive and powerful logic that has been developed for the study of spoken or written *sentences* may be expected to help us to understand the nature of *reasoning* and *thinking*.

Yet this suggestive idea has never led to major insights into the nature of thinking or reasoning. Why? In our days, Peter Geach has made an interesting effort to use the idea and construe the concept of thinking or “judging,” as Geach calls it, “as an analogical extension of the concept *saying*.”⁴³ In spite of Geach’s famous ingenuity, the results are rather meager. We can now see why, more generally, the suggestive idea of thinking as internal saying has not proved as useful so far as one might have hoped. The answer is implicit in Plato’s and Peirce’s formulations. They don’t just compare thinking with saying, but with *discourse*—a discourse between several different selves. Hence it is not any old logic that can be hoped to be useful for understanding reasoning through the Plato-Peirce analogy; only a genuine logic of discourse as distinguished from logic done on the sentence level will do. We could call the latter “sentential logic” in contrast to discourse logic if the term had not been pre-empted. What is striking about most of the usual logical conceptualizations and theories is that they move on the sentence level. They don’t take into account differences between different speakers, for instance differences between what they know. Furthermore, most of the conceptualizations concerning the logic of questions in earlier literature have likewise been sentential.

Characteristically, Geach, too, tries to use the analogy between thinking and saying to examine, not different types of inferences one can make in one's thinking, but the various kinds of judgments one can make, such as "judgments of identification," "judgments about sensible particulars," etc. In other words, his conceptualizations remain predominantly on the sentence level.

Now questions and answers offer the simplest example of a discourse phenomenon that cannot be reduced to sentence-level phenomena. Indeed, there would not be any point in asking a question if the speaker and the hearer knew the same things or if epistemic differences between them did not matter. In view of the importance of the respective epistemic states of the parties in a question-answer dialogue, it is not surprising that my criterion of conclusive answerhood (cf. (16) above) is formulated in terms of what the questioner knows (i.e., knows after he or she has received a reply). If there is anything remarkable in my criterion, it lies in the fact that there is no need to refer to the other features of the dialogical situation.

Hence my theory of questions, answers, and question-answer dialogues offers a handy paradigm case for the study of characteristically discourse phenomena. According to what we have found, this implies that it also promises, via the Plato-Peirce analogy between discourse and thinking, to serve as an analogical model for at least some instructive sample cases of reasoning (thinking). In brief, it offers us the best hope that I can see of vindicating the Plato-Peirce analogy, at least in the case of selected sample problems. Only in terms of a dynamic theory like my theory of question-answer interaction can one hope to bring logical theorizing to bear on the study of reasoning and thinking in the way Plato and Peirce expected.

Several of the developments outlined, mentioned, or anticipated above receive their natural places in this overall perspective. It was for instance mentioned earlier that the process of calling the right items of tacit information to active duty can be approached as if it were a questioning procedure. This characteristically thinking process can in other words be handled by means of an analogy with explicit discourse. Likewise, the deep connections between actual deductive strategies in logic and the skills of a Sherlock Holmes-type practical cogitator uncovered above bear witness to the viability of the same analogy. In the last analysis, it is perhaps

the capacity of the questioning model to throw light on the nature of thinking more generally that makes it so useful a part of a philosopher's methodology. For a philosopher's last but not least task is to enhance our awareness of our own thinking. In philosophy only an examined thought is worth thinking.

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Notes

1. For a recent survey, with references to literature, see Santas 1979, especially ch. 2. Of the earlier literature, cf. Robinson 1953.

2. For Kant, see *Critique of Pure Reason* B xii–xiii; for R.G. Collingwood, see *An Essay on Metaphysics*, Oxford: Clarendon Press, 1940; for Hans-Georg Gadamer, see *Truth and Method*, New York: Continuum, 1975; for Larry Laudan, see his *Progress and Its Problems*, Berkeley: University of California Press, 1977, *Science and Hypothesis*, Dordrecht: D. Reidel, 1981a, and "A Problem-Solving Approach to Scientific Progress," in Ian Hacking, ed., *Scientific Revolutions*, Oxford: Oxford University Press, 1981.

3. See the bibliography in my monograph *The Semantics of Questions and the Questions of Semantics*, Amsterdam: North-Holland, 1976. The best known ones are probably Belnap and Steele 1976; Harrah 1963; Katz 1968; Åqvist 1971.

4. For this analysis, see *The Semantics of Questions* (note 3 above), chs. 2–3, and below, sec. 3.

5. The similarity between Kant's "transcendental deductions" (and "transcendental expositions") and my argument is perhaps not accidental. See my paper "The Paradox of Transcendental Knowledge" (forthcoming).

6. As I have repeatedly pointed out before, the fashionable term "possible world" is highly misleading, and has in fact misled several philosophers. The alternatives considered in the actual applications of my model-theoretical semantics need not be any more comprehensive scenarios than those involved in most applications of probability calculus.

7. What this adage thus amounts to is to assert the *propositional* character of information and knowledge. For a proposition can be characterized in terms of the class of worlds it excludes, which is precisely the "uncertainty" eliminated by coming to know it.

8. This question is of course tantamount to a special case of the question as to when existential generalization is valid in epistemic contexts. I have discussed this problem in *Knowledge and Belief*, Ithaca, N.Y.: Cornell University Press, 1962; *Models for Modalities*, Dordrecht: D. Reidel, 1969; *The Intentions of Intentionality*, Dordrecht: D. Reidel, 1975; and in "New Foundations for a Logic of Questions and Answers," forthcoming.

9. In actual discourse, the likely response is something like, "But what is he like?" The reasons for this are explained in my *The Semantics of Questions*, note 3 above, pp. 45–46, 50–54.

10. Cf. here *The Semantics of Questions* (note 3 above) and "New Foundations for a Theory of Questions and Answers" (forthcoming b).

11. One version of the formal argument is in effect given in my book, *Models for Modalities*, Dordrecht: D. Reidel, 1969a, pp. 121–27. (In saying this, I am

relying on the observation made in note 8 above.) The methodological situation is discussed briefly in my paper, "Questions With Outside Quantifiers," in R. Schneider, K. Tuite, and R. Chametzky, eds., *Papers From the Parasession on Nondeclaratives*, Chicago: Chicago Linguistics Society, 1982, pp. 83–92.

12. These critics are typically victims of a widespread failure by philosophers of language and linguists to understand what a genuine theory or theoretical explanation is in language theory.

13. They have not been discussed satisfactorily in the literature. One main feature here is the relativity of the request to the truth of the presupposition of the question; cf. *The Semantics of Questions* (note 3 above), pp. 28–29.

14. An answer is provided by Veikko Rantala, "Urn Models," *Journal of Philosophical Logic*, 4 (1975): 455–74; and Jaakko Hintikka, "Impossible Possible Worlds Vindicated," *ibid.*, pp. 475–84. Both are reprinted in Saarinen 1979. The philosophical implications of this answer are studied in my book, *Logic, Language-Games and Information*, Oxford: Clarendon Press, 1973.

15. See *The Semantics of Question* (note 3 above), chs. 4–5.

16. The most explicit generalization is found in my "New Foundations for a Theory of Questions and Answers" (forthcoming b).

17. See chapter 3 of *The Semantics of Questions* (note 3 above).

18. See "Questions With Outside Quantifiers" (note 11 above) for a somewhat surprising answer.

19. For the whole subject of questioning strategies, see Jaakko Hintikka, "Rules, Utilities, and Strategies in Dialogical Games," in Hintikka and Vaina 1983.

20. Plato, *Meno* 80 d–e.

21. This is part and parcel of Kant's "Copernican Revolution" in philosophy, which means focusing on what *we* do and what conceptual tools *we* use in acquiring the knowledge we have or can have.

22. Cf. my essays on Kant, collected partly in *Knowledge and the Known*, Dordrecht: D. Reidel, 1975a.

23. Cf. here Hintikka and Hintikka, 1982.

24. Arthur Conan Doyle, "A Study in Scarlet," in Baring-Gould 1967, vol. 1, pp. 143–234, especially pp. 159–60.

25. *Ibid.*, pp. 150, 160.

26. *Ibid.*, pp. 164.

27. The classical, albeit not necessarily definitive, statement of this view on observation is found in Hanson 1958, especially ch. 1. How neatly the theory-ladenness of observations fits into the model of knowledge-seeking by questioning was already pointed out in Hintikka and Hintikka 1982.

28. Cf. here Jaakko Hintikka, "The Logic of Information-Seeking Dialogues: A Model," in W. Essler and W. Becker, eds., *Konzepte der Dialektik*, Frankfurt a.M.: Vittorio Klostermann, 1981, pp. 212–31.

29. An indication of the problem situation is found by comparing philosophers' accounts of deductive inference with their accounts of inductive (and other non-deductive) inference. In the latter field, one of the prime problems is the reliance of certain promising accounts, especially the so-called Bayesian one, on what is known as *the requirement of total evidence*. What it means is that the total body of evidence one has at one's disposal is referred to essentially in the account. Of course, that is not only not what one actually does in a scientific inference, but it is arguably impossible to do. Now an analogous problem of total evidence (totality of premises at one's disposal) haunts what philosophers say of people's actual deductive inferences. They have nothing to say of how the deducer selects the appropriate premises from the totality of potentially available premises. In so far

as an account is attempted of what people actually do when arguing deductively, the current accounts are hence subject to the same objection to reliance on total evidence as their nondeductive cousins.

30. See the papers referred to in notes 19, 23, and 28 above.

31. The paraphrase is very close to the original. Essentially all that I have done is to use the interrogative mode more often than Doyle. See "A Study in Scarlet" (note 24 above), pp. 160–62.

32. Cf. here my paper, "Intuitions and the Philosophical Method", *Revue Internationale de Philosophie* 35 (1981b): 127–46.

33. These procedures go back to Beth 1955, pp. 309–42. It is reprinted, with further references to the literature, in Jaakko Hintikka, ed., *The Philosophy of Mathematics*, Oxford: Oxford University Press, 1969. Beth's original paper remains, in spite of several inaccuracies, the freshest exposition of this technique. The *tableaux* method is closely related to Hintikka's slightly earlier method of model sets, which goes back to Hintikka 1955, pp. 11–55. A brief exposition of it is found in chapter 1 of Jaakko Hintikka, *Logic, Language-Games and Information*, Oxford: Clarendon Press, 1973. A textbook using the Beth-Hintikka techniques is Jeffrey 1967.

34. In other words, we can in this way understand better the role of questioning in education. See here my paper, "A Dialogical Method of Teaching," *Synthese* 51 (1982a): 39–59.

35. See my *Logic, Language-Games and Information*, Oxford: Clarendon Press, 1973; and "Surface Information vs. Depth Information," in Jaakko Hintikka 1969.

36. See my paper, "C. S. Peirce's 'First Real Discovery' and Its Contemporary Relevance," *The Monist* 63 (1980): 304–15, with references to Peirce.

37. Arthur Conan Doyle, "Silver Blaze", in Baring-Gould 1967, pp. 261–81; see here p. 277.

38. Plato, *Meno* 82–83.

39. Plato, *Meno* 81 e.

40. Plato, *Theaetetus* 190 a; cf. *Sophist* 263 e.

41. C. S. Peirce, *Collected Papers*, vol. 2, sec. 26.

42. *Ibid.*, vol. 6, sec. 338.

43. Peter Geach 1957, p. 75.