Jaakko Hintikka in the *Library of Living Philosophers*: A Dialogue

An evening discussion between professors Jaakko Hintikka (Boston University) and Simo Knuuttila (Academy of Finland) on September 2, 2007, at the Helsinki conference:

Knuuttila: Ladies and gentlemen. Thank you for inviting us to this event and for this opportunity to discuss the latest volume of the Library of Living Philosophers, which was published last spring. The title of the volume is "The Philosophy of Jaakko Hintikka". Probably most people here know this series, which was founded in 1939 by P. A. Schilpp. The idea of the volumes is to invite some prominent philosophers to describe their lives and ideas and then ask other philosophers to write and comment on topics which the first author has written about. Then the philosopher to whom the book is dedicated answers and discusses these other people's papers about his or her philosophy. These volumes gradually became a very popular series which most philosophical libraries wanted to have. It was considered such a good idea, giving rise to one of the most prestigious series in philosophy. It is also considered as a kind of philosophical honor for the philosopher to be chosen to be among these living philosophers. The books always have the same structure; first, an intellectual autobiography, pretty extensive, then the papers on the basic author's philosophy and, last, the papers are answered separately. So there is a kind of discussion going on. The book on Jaakko Hintikka's philosophy consists of almost 1000 pages. It is also available as a paperback. Now, I have prepared some questions. There is pretty famous American TV series which you might have seen where a person interviews famous movie stars about their training and how they became actors and so on; then they go to their most important movies, their Oscar movies, etc. I am going to ask philosophical questions which are discussed in this volume. I have chosen some general topics which very much figure in this book and which, I think, are kind of key areas in Jaakko Hintikka's philosophy. Now, first question – this is actually taken from the TV series: How did you become a philosopher?

[Laughter]

Hintikka: Actually that is a very good question for this particular audience, which is connected very much to the persons I will be discussing. My first philosophical inspiration was the typical one at the time in Finland. It came from Eino Kaila's writings when I was still in the high school. This was my original philosophical inspiration. And then, the second part of the question is how I became a profes-

sional philosopher, and that has to do with, not Eino Kaila whom I only later came to know personally, but von Wright. He was the Swedish language professor of philosophy at the University of Helsinki. I began to listen to his lectures. Since he was lecturing in Swedish, he had a few students only. Only some three or four, and very soon his lectures became almost like seminar discussions. He got this audience involved in his own thinking, which was a marvelous experience. So that is how I came to involved in active philosophical philosophizing and not just being interested in philosophy. And I was very lucky, soon I had my first original idea and that came from von Wright's lectures. It was about the distributive normal forms that he had been using. So I got involved in active philosophical, in this case logical research.

Knuuttila: This was also your dissertation topic?

Hintikka: Oh yes, but it took me a long time. My philosophical and logical training was still going on and I had to work everything out myself, so it took a long time. But I was able to, yes, I was able to use this work as my dissertation topic.

Knuuttila: It could not have taken very long because you were extremely young when you published it in 1953 –

Hintikka: I was very young when I got the idea.

Knuuttila: OK. But then after the dissertation you were also in the USA and the United Kingdom?

Hintikka: Well, actually already before finishing it. It was very shortly after the war and I was very lucky. I think these were the first years when anybody could go from Europe to United States to study. And I received what was called a one-year exchange scholarship, to study in United States, when I was still an undergraduate in 1948–49. That was the first time, and then I kept visiting United States and studying and working there in other ways. If you want to hear about the later stages of my becoming professional, one crucial stage in my career was the good luck of being elected to Harvard's Society of Fellows for 3 years, which is of course a marvelous opportunity of not only doing research but coming to know and becoming a member of the philosophical community in United States and even in England. During my 3 years as a fellow (1956–59) I was also able to visit Oxford for a term and come to be involved in discussions there.

Knuuttila: Was the book *Knowledge and Belief* connected with your stay in Harvard?

Hintikka: That is where I did most of the work for it. The book was published a

couple of years after I got back from there.

Knuuttila: Let's go forward to some topics in this Library of Living Philosophers volume. One interesting feature of the book is that many papers are related to some central issues in the philosophy of the last century, such as early analytic philosophy, the Vienna Circle and Wittgenstein's philosophy, Frege, neo-Fregeans, Husserl and phenomenology, and so on. Let's speak a little about these. You make some critical points on the weaknesses in these traditions but also see some systematic ideas which make some of them interesting and valuable philosophical contributions. Perhaps we could first discuss the analytic tradition, the Vienna Circle and logical positivism. What is the condition on which we would all be logical positivists nowadays?

Hintikka: Well, I have my own take of the overall situation. When I read philosophical discussions, particularly in the United States, very often I got the impression that the author is thinking that we are now finally getting rid of the bad influence of the logical positivism, slowly overcoming it. I think this is a wrong historical perspective. What we are experiencing at this time is not the end of logical positivism or logical empiricism. This is the tail end of the reaction in the analytic tradition to logical positivism. Now we are seeing the end of the influence of people like Quine, Popper, Kuhn. It is being realized fully that their ideas are no longer leading to any further insights. I indicate briefly my reasons for saying this. I have written about Quine's presuppositions in his thinking. If I am halfway correct, the assumptions that he is making will not lead to any successful research program and no further development in the philosophy of language. I think that Quine's ideas of philosophy and language have not had any real applications to real linguistics. Nor have his ideas about philosophy and logic had any influence on the development of real logic. So I think this influence is justifiably coming to end. What about other critics? Well, I think that Popper, whom I knew personally, was extremely intelligent, quick and a really sharp thinker. But also I think his problem was, exaggerating perhaps, that on every topic he took up, he immediately had one extremely good idea and then he spent the rest of his life defending, not developing the idea but defending it and proclaiming that he was the only thinker in the history of the world to have put it forward. And that is why it is so easy to give labels of his views. You know how to list them, you have the third world, you have falsification, you have information, you have propensity and so on. I mean, that exhausts Popper's contribution. You cannot do that to Wittgenstein or to Kant that way. Or take Kuhn. He was an important figure, not only in history of science and sociology of science but also in philosophy. But if you look at his purely philosophical ideas, they do not really go methodologically far beyond the old-fashioned models. I have argued by means of specific examples that Kuhn could have improved his own work in history of science, I mean, in his own field, if he had taken a greater account of the logical and epistemological issues in science. To take one example, since I want

to be concrete here. Kuhn's most significant contribution as a historian of science was probably his work on the early history of the idea of quantum. He presented it in a very interesting way and documented how Planck, although he is usually thought of as the originator of the notion of quantum, never based any work on that notion, did not make any use of it. And this is interesting, because it took Einstein to start using the idea of quantum as a tool of actual physical explanations. Well, what is the explanation of this strange phenomenon? If you look at the history of the notion of induction and take induction in the old, pre-Humean sense, you can see that you can perfectly understand historically, methodologically why Planck did what he did. This is not a criticism on Kuhn, of course, but it shows he could have put his own discoveries in the extremely interesting philosophical and historical perspective. And I can give other examples. So I do not think this Second Wave is really the wave of the future any longer.

Knuuttila: You have written and edited works on Carnap. What do you think about Carnap's development from the Vienna Circle to his later philosophy?

Hintikka: Take his later ideas about semantics, which look very much contrary to what was said and perhaps also thought in the Vienna Circle in the early 30's. The big change is that Carnap gave up the idea of purely syntactical approach, a peculiarity of the Vienna Circle, involving the impossibility of semantics and a preference of purely syntactical approach. This was a dogma for Wittgenstein and his *Tractatus* as he says himself in his letter to Schlick in August 7, 1932. This was the view of Quine, as of pretty much everybody else in the Vienna Circle. Yet in some ways for Carnap it was always a much less important restriction. It was not really an integral part of his core ideas at any time. If you look at the *Logical Syntax of Language*, there is a lot of what we would call semantics there. So the move to an explicitly semantic approach was in a way a smaller step for Carnap than it would have been, for instance, for Quine. I mean that it would have been a complete change in Quine's view, for Carnap it was a much smaller step.

Knuuttila: You have also written lots about Wittgenstein's view of language and the absence or inaccessibility of semantics in Wittgenstein. How do you think this is related to Carnap?

Hintikka: Carnap in the early 30's adopted what he called a formal mode of speech which means wanting to do everything on a syntactical level. But as I said, this was more of a kind of choice of one approach than others. It was not based on a deep belief on the impossibility of doing semantics discursively, scientifically. Initially, in the early 30's, the basic philosophical differences of the questions Wittgenstein and Vienna Circle were asking were very small, even though their style of thinking and their style of expressing themselves were worlds apart. There is a proof of this which I have written about. The proof comes directly from Wittgenstein.

There was a very angry quarrel in the summer of 1932 which began when Wittgenstein received a kind of offprint from Carnap. He read it and flew into an absolute rage. Well, what was the problem? Is Carnap misunderstanding, distorting Wittgenstein's views? No, Carnap is borrowing from them, almost plagiarizing. It is a long story and I do not want to go into details. But that controversy is a very convincing proof of the basic similarity of Wittgenstein's ideas with those of the Vienna Circle, not only his early ideas but at least some of his middle period ideas and questions. Schlick tried to manage as a peacemaker. He reported Wittgenstein's objections to Carnap. I can see Carnap shrugging his shoulders, saying that he has never heard Wittgenstein explaining these things and that there is nothing in the *Tractatus* about them. Poor Schlick, I think on his own, reported this to Wittgenstein who got even angrier and said that Carnap was likewise using ideas from the *Tractatus* without mentioning their source. He lists half a dozen ideas that he claims Carnap got from *Tractatus*. Now everything Wittgenstein said about his own ideas is not always the last and final historical truth. But that at least shows that there was a great deal similarity. Wittgenstein, of course, drifted apart, away from the Vienna Circle. But I think this has less to do with the basic difference in their problems. It has more to do with how Wittgenstein developed his own ideas independently of anybody else.

Knuuttila: How do you see Wittgenstein's development in more general terms, especially its earlier phase? You have been pretty interested in this.

Hintikka: In order to understand Wittgenstein, you have to be aware of his ways of thinking and also ways of relating to different people. Wittgenstein at one time listed ten thinkers that he says influenced him. It is a very strange list, for in the case of about 5 or 6 of them you cannot find any traces of any philosophical influence whatsoever in his writings, I claim. Well, even if there is something, that is minimal. And the list omits two thinkers whose views Wittgenstein took over much more than perhaps anybody else's. G. E. Moore and Ernst Mach are not even mentioned by Wittgenstein. I think the reason is that when Wittgenstein spoke of influences or wrote about influences, he meant people who started him to think, who inspired him or made him think about something maybe in terms of objections or problems. Whereas he was not interested in highlighting ideas that he took to be obvious or commonplace, even though I do not think all of them were so obvious. I think Mach was one of these suppressed influences. However, there also was a curious personal idiosyncrasy. For whatever reason, maybe I can understand it but I do not think I can explain it, Wittgenstein despised Mach. He thought Mach was hopelessly simple-minded and vulgar in his thinking. He wrote to Russell that reading Mach makes him sick. But if you take for instance the views Wittgenstein expresses at the end of *Tractatus* on philosophy of science, there is a great deal of common ground with Mach there. Mach was one of the major figures in the intellectual life in Vienna and perhaps elsewhere too. That is why even Lenin wrote a

book against him. Lenin was not interested in philosophy but he was counteracting Mach's general intellectual influence. And what was the controversy between Boltzmann and Mach all about? It is whether our symbolic system, our language, influences our total structure of knowledge. The same problem comes even little bit less clearly around in Hertz. Now, of course, Mach denied any influence there. Scientists acknowledge the economic description of our experiences. Boltzmann raised the question about precisely that influence. And we know that Wittgenstein admired Boltzmann greatly. But if you look at his *Tractatus*, logical truths are there said to be tautologies. He thought that our language does not contribute at all to the structure of knowledge. This was Mach's answer. I suspect greatly that Wittgenstein would have said something like "oh yes, that is true, I've disagreed with Boltzmann but Mach was so stupid that he did not even see the real problem". That is why Wittgenstein never calls his own philosophy in the *Tractatus* phenomenological. It would have associated him in public consciousness with Mach's. Even though there was a verbal agreement, he did not want to be associated with Mach in any way. Only when he gave up this early phenomenological approach, in 1929, did he begin to refer to Mach because now he could criticize him. I am not claiming that there is any direct influence but, for instance, if you look at Mach's views on the self, on the ego, there are very striking similarities with Wittgenstein's comments in the *Tractatus* on solipsism.

Knuuttila: Wittgenstein thought that philosophers should somehow stop being philosophers now that most problems are solved. He did not encourage his students to become philosophers, but doing something more useful with their lives. Would Carnap think that philosophy is somehow useless in the long run, in the future? Or was it a common ideal in logical empiricism that they were, so to say, liberating philosophy from the wrong problems, misguided philosophical questions, and what philosophy was really needed for was a kind of methodology of correct thinking in the future?

Hintikka: I have not looked at the different answers. But I think there are some things one can say here. There are several quite different things going on. On one hand, the Vienna Circle attacked metaphysics and earlier philosophy in clarifying philosophy. They also wanted to solve the foundational problems of sciences. It looks somewhat like Wittgenstein. But Wittgenstein's attitude to explanations about his philosophy being purely descriptive, leaving everything as it is, therapeutic and all that, that is due to the particular dilemma that he was in. This is connected with Wittgenstein's views on the inexpressible at the end of the *Tractatus*. Wittgenstein was a member of a larger tradition, a very common way of thinking, according to which semantics is merely a way of looking at language. One part of this unorganized tradition was that semantics of a language cannot be expressed in the same language. Or if you absolutize it, we cannot speak discursively about semantics of language at all. But now, what is *Tractatus* all about? It is about the

relations of language to reality and language and thinking to reality, that is semantics. So Wittgenstein had to explain to himself what he was doing. And that is how he was led first of all to explanations about his own way of looking and his own thinking. This was based on, perhaps, his own attitude. He was not interested in science. Well, this should not be a sort of great stumbling block in reading Wittgenstein. Wittgenstein thought that his semantical views are inexpressible, but we need to see ourselves. This does not make his theory of the inexpressible a great dilemma at all. There are perhaps further things to be said but basically this is the story.

Knuuttila: When did you get your idea about the definability of truth? Was it somehow related to your interest in Wittgenstein's view on semantics or the other way round?

Hintikka: There was an earlier discussion on the technical level, there is Tarski's famous theorem of the indefinability of truth for a language in the same language. This discussion has been going on intensively. I think there are two things. What happened was a simply a result in the formal semantics. This is perhaps not the order of what happened in my thinking, but basically I realized the reason of Tarski's impossibility or why Tarski was able to prove that. Originally, I was very much puzzled by this impossibility. I knew that Tarski was right for the language he was considering. But if we look at the Gödel numbering method and all that, it seems that it should be extremely easy to define, turn Tarski's own T scheme into a truth predicate. If you are given a sentence, its Gödel number can be trivially calculated from that, so why cannot you turn the same process around and say that the truth predicate applies to this Gödel number and then, so to speak, calculate back and say, "if and only if the original sentence holds." Why is this impossible? That is an effective procedure! The answer is that in so doing you create dependency relations between the variables in a sentence that destroy the equivalence. When you see this, you realize that, then if you liberate the language by allowing the expressibility of different kinds of dependency relations and independence relations, then such a truth predicate is trivially possible. Thus, the first impression of easy definability turns out to be true. So, purely technically, it suddenly became obvious to me that in the whole issue there is no reason to believe in any sort of interesting impossibility. This is combined with the fact that the reason why truth is inexpressible in the languages that Tarski was dealing with, is that those languages are too strong. You could create a Liar Paradox in them. And therefore, since it was earlier believed that because natural language is even stronger than these languages, we cannot use – Tarski believed this himself – the notion of truth in our natural language, because it is even stronger than this language. This is not the right explanation. The problem was that that Tarski's languages were too weak. So there is no reason left to think that we cannot use the concept of truth in our colloquial language, to use Tarski's term. There are still some problems and

questions, but there is no reason to think that this is not possible, it can be done, I mean, you can give truth definitions way beyond first order languages. I once tried to express this by saying that "true" is no longer a four-letter word.

Knuuttila: At the same time as these things, you also developed this so-called independence friendly logic. It is considered really very important and a big event in the history of logic and discussed in many papers in the volume. I think that many people have difficulty in understanding why it is called independence friendly. You would yourself say in your autobiography that you are not quite happy with independence-friendliness terminology.

Hintikka: That was actually a bad terminological judgment. The reason I used the term was that in that kind of logic, that kind of language, you can express relations of independence that are not expressible in the ordinary old-fashioned first order languages. But it is not that there are deeper relations that also could not be now expressed. So it is both independence friendly and dependence friendly logic. The big mistake was to give it a special term for independence-friendly logic is in reality *the* logic, it is the true first order logic, while only liberated from the restrictions that were unfortunately put on that kind of language by the earlier logicians. It should be called simply the first order logic. That is what it is. Instead, we should give the old traditional first order logic a special name, maybe "dependence handicapped logic" or "independence challenged logic".

Knuuttila: OK, that's only name. Actually it is now called independence friendly logic in any case, so that you won't be able to stop the name any longer –

Hintikka: What I suggested once is calling it neo-classical or hyperclassical logic.

Knuuttila: Neo-classical may be nice. One more question about Wittgenstein. You are not happy with neo-Wittgensteinians. You are criticizing them in some of your answers and also in your autobiography. Why are you so critical of some philosophers who are doing Wittgensteinian philosophy, perhaps not the mainstream, but at least some Wittgensteinians?

Hintikka: First of all, the reason is that they are all wrong. I am not saying they are always wrong but often they are actually wrong and I can illustrate this by making some specific points. Unfortunately, I have to make them rather briefly. Let me take three different main lines of approaching Wittgenstein, interpreting Wittgenstein. First, I think one of them centers on the idea that for Wittgenstein language is in an everyday sense a social phenomenon. Well, in that sense language is a social phenomenon, but not for Wittgenstein in the specific sense that having a language should conceptually speaking presuppose a language community. Wittgenstein did not believe that. And the proof is that he says so. The proverbial

expression of a person without society, outside any linguistic community, is of course Robinson Crusoe. And Wittgenstein repeatedly says that Robinson could have a language. So that line of interpretation is off the mark. Well, what else? Take the Wittgenstein discussion of rules. What is his problem? He tells us in the *Blue Book*. To follow a rule is not just to act in accordance with it. In Wittgenstein's semantics, there cannot be any "action at distance". So how does the rule guide my action? Wittgenstein's problem is not following a rule but being guided by the rule. It is the same problem as how the blueprint of a machine determines the motions of the machine. And it has nothing to do with my knowing what the rule is. It has nothing to do with whether I know what the next step would be. It is not an epistemological problem. It is the problem about the mechanics of language, so to speak. This point I can illustrate with what Wittgenstein says about computers. Contemporary thinkers might ask, "Does a computer think?" Wittgenstein asks instead, "Does a computer *compute*?" So the whole line of interpreting the rule following discussion as a bunch of epistemological problems is completely off the mark. We already saw how to interpret the inexpressibility, which the so-called Neo-Wittgensteinians make so much about. I already referred to Wittgenstein's identification of his problem of inexpressibility with the general problem of the expressibility of semantics. It is maybe the real problem, and in Wittgenstein's negative view is very interesting and shared by many others. It is a very interesting philosophical view, historically and philosophically. It leads Wittgenstein into genuine, very interesting questions because then the question is "What are the basic semantic relations that we cannot express in language?" But it was not even an original question, in no sense original with Wittgenstein. In Russell's theory of acquaintance, when he used the theory of acquaintance as a basis of a language understanding, his theory came down to the idea that to understand a proposition, you had to have acquaintance with the ingredients of the proposition. But what about the objects of acquaintance? I have to have them before I understand anything. So you cannot say anything nontrivial about them, however they exist because that presupposes that you already have them, but then they exist automatically. You cannot define them because then you can say that they exist. So Wittgenstein simply takes this over from Russell. It is a very interesting view. But it does not by itself lead into any kind of unwritten philosophical truths the same way as for instance in Plato. Well, but as regards the New-Wittgensteinians, one objection is that their scholarship is simply unacceptably sloppy. James Conant has referred to the letter I mentioned claiming that it proves his point. Then he says that in this letter Wittgenstein claims that Carnap misunderstood him. If you read the letter, you find it a little terse, but if you see the context, the context of the controversy, and if I may make it a little bit more colourful than it is, you find that what Wittgenstein is saying, is that even poor stupid Carnap could not have misunderstood the *Tractatus* so badly as not to see that Wittgenstein's, theory is the same as Carnap's idea of the formal mode of speech. Hence Conant is making precisely the mistake that according to Wittgenstein even Carnap could not have

made. Perhaps I should not say this but I have somewhat uncharitable lines about the neo-Wittgensteinians. You may remember the Oscar Wilde's characterizations about the great British traditional foxhunt. Wilde's line is "the unspeakable pursuing the uneatable". Now I could say the New-Wittgensteinians are the unspeakable pursuing the unspeakable.

Knuuttila: Philosophers are pretty good at finding jokes about each others, even in ancient times. You are now also not on very friendly terms with Kripke's theory of names, meaning and reference. On the other hand, you were one among the main figures developing the new modal semantics and modal logic and the so-called possible worlds semantics, even though you did not like this name for it. But then you wrote several papers in which you wanted to distance yourself from Kripke's version of the possible world semantics. What was the big difference between Kripke's approach and yours in this context?

Hintikka: This question is very good because it enables me to make one point which is extremely important. I think the problem with Kripke is that he never internalized the idea of possible worlds in the sense of alternative realities, because this idea implies that you can only know the particular world you are in. And therefore all these semantical relations are subject to the same restriction. So, for instance, in Kripke's theory of naming by dubbing, dubbing is an event in our world. It does not carry to any other world, any other scenario. If you move Kripke to another world, neither he nor anyone else would then have known about the dubbing. The objective counterpart of this is that the relations of ordinary reference do not determine relations of identification. Kripke saw one very important thing, that we have in our language semantic relations that do not relate or reduce to precisely descriptive terms. And what they are, are precisely what are needed to carry the identification relations from one world to another. So, in our actual semantics, we have to have two systems, we have the reference system that works descriptively, we have the identification system that works in some other way. It is largely independent of the reference system. For instance quantifiers rely on the identification system, not on the reference system. Here the philosophical logic, philosophical logicians and philosophers, epistemologists, missed the tremendous opportunity, because this difference between the two systems plays a major role in the human information processing in the central nervous system. It is implemented by two different neural systems. The different manifestations of the damage to one system or to the other one are absolutely striking. This is a major aspect in neuroscience. I first became aware of that a long time ago when I was talking to a neuroscientist and she wanted to explain their problematic to me. She described this difference between two kinds of visual systems. After ten minutes I said, you are preaching to the converted, this is a special case of my theory of two modes of identification. This neuroscientist did not believe me at first. One of her objections was that how can it be, your distinction is merely logical, semantical, ours is a real distinction

in the central nervous system. It is not even merely functional. There are two different centers in the brain implementing the two systems. That is fine, I said, then I will be the first philosopher since Descartes proving his theories by anatomical evidence. Well, but this agreement is absolutely striking. There is a major opportunity here for philosophers to make an actual contribution to the methodology, to the foundations of an important science. So I think Kripke simply failed to see this, this difference among other things. This is missing from his semantics.

Knuuttila: Game-theoretical semantics was something you were developing in interesting works in the 80's. Some philosophers were nervous of this because they had just learned the new modal semantics, and it was not so easy. Some were disappointed that now one had to learn game-theoretical semantics, which was also applied to linguistics. It was a demanding task for philosophers who are often not all that eager to learn new things. After game-theoretical semantics, they should then start to read independence friendly logic and so on; you have kept them busy. But the game-theoretical semantics was also related to your views of the logic of questions and answers, which seems to be a pretty important part of your philosophy in general. You have written and continue to write and think about this. Do you think this topic is making progress in contemporary philosophy, or is there something preventing it?

Hintikka: The basic idea of game-theoretical semantics is very simple. I think this is also Wittgenstein's idea although he dealt with it in another way. The basic question here is, What do the semantical relations between language and reality consist in? Are they somehow intentional relations here or causal relations? I think the Wittgensteinian answer is the right one. They consist in certain rule governed human activities. The term "language game" was for Wittgenstein simply a word for these activities. What I did was to take Wittgenstein more literally than he intended himself and said, What happens if I apply some of the simplest basic ideas of mathematical game theory to these games? As it turns out, this is extremely useful way of dealing with semantics. I do not think that there are any limitations here. This has led to all sorts of developments even beyond what has been published about independence friendly logic or anything like that. There are further developments in the works, very important. However, I think the story is somewhat different with the questions and answers. There the right way of looking at the logic is rather epistemic logic whose semantics goes back to the possible world semantics. But I think the situation can be described very easily. What is going on, is simply the oldest approach to epistemology in the Western philosophy, the Socratic method of questioning. It has played tremendous role in the history of philosophy. Plato was so impressed he made the questioning games the cornerstone of his philosophic training in academy, Aristotle made it the universal way of finding out all the basic truths of science. It is even more important in Aristotle than people have realized anyway. Simo and his students have done pioneering work on the

important role of the questioning games in medieval philosophy. Gadamer has made what he called logic of questions and answers a kingpin of his hermeneutical approach. Thus questioning has been repeatedly emphasized very strongly, but it has never been fully systematized. There was never a really close theory about this, contrary to the expectation that surely the possibilities of this marvelous idea should have been exhausted long ago. What is the reason? The reason is that the logic of questions and answers was not really a logic. It was simply bunch of suggestive ideas. The basic concepts in that really give us a real logic of questions and answers have been adequately defined only very recently. So for the first time we have a way of really seeing what is involved in the Socratic method. Collingwood, for instance, talks a lot about presuppositions of questions. Yes, but what are they? How do you define the presuppositions of questions, or even the question-answer relation explain. What precisely is this relation? What is it for an utterance of a proposition to be answer to a given question in the sense of a full or conclusive answer? Now we have answered those questions. I think this opens tremendous possibilities of further development. I tried to do something myself and any day now there will be a book of essays on epistemology starting from these ideas coming out by Cambridge University Press. In this way, for instance the problem of induction is put to a new light, for instance, take experimental induction. The scientist varies the control variable and sees how the observed changes accordingly. And if it is a good method of measurement, he ends up with beautiful curve on a graph paper. Is this an answer to the question to how the one variable depends on the other? It is not fully, it contributes to an answer, but it is not a conclusive one before you know what mathematical function is represented by that curve. So the problem of experimental induction has two components. It is, so to speak, filling the curve of observed value more and more fully. There are techniques of curve fitting and so on, but it also involves the question, the problem of finding out what curve we are getting mathematically. And there are inevitably two components in actual work, sometimes one of these component problems is easier to solve than the other one. Sometimes you realize very quickly what the curve is like. Then the problem becomes simply estimating the parameters. But in some cases the physicist cannot tell what mathematical function he has uncovered, because mathematicians have not studied the function yet. So he so to speak goes to the mathematics department and tells the mathematicians to study these curves. This is actually one of the main ways in which mathematics has developed. Physicists have taken them the problems that involve new functions that they had not studied before. So now you can see this whole problematic in perspective. Then you see this is simply what follows from the logic of questions and answers. It inevitably leads to the trivialization of the difference between these two components of the task of induction.

Knuuttila: Thank you, those are very interesting ideas. Let's ask if people who are present would like to ask some questions. We do not have much time.

Stadler: I have one question relating to your answers during this fascinating talk: What do you see as the task of philosophy, the relation of philosophy and science? I understand that you are not really an admirer of Quine but he sometimes mentions that philosophy of science is enough philosophy. What would be your response?

Hintikka: I have two different answers. I think philosophy comprises a huge collection of different kinds of things. I am not ruling out anything. But I think this query is very closely related to our symposium. Sometimes I think that philosophy and the foundations of science are likely to play a crucial role in philosophy, without thereby excluding anything. Perhaps I can make this point by asking: Why did the influence of the Vienna Circle slowly come to an end? You can also point to all sorts of historical reasons, for instance that the Vienna Circle members had to emigrate and so on. But if we take simply the intellectual question and if I may oversimplify, caricature the situation, we can ask: What did the Vienna Circle people promise to do in the philosophy of science? They promised to solve all the problems in the foundations of mathematics and in the foundations of science by means of logical syntax of language or more generally by logical, semantical means. Did they? No. But, indulging in counterfactual speculation suppose that the Vienna Circle had carried out Hilbert's program and solved all the interpretational problems of quantum mechanics, what would have happened? I am tempted to say, we would all be logical positivists. Let me say one more thing. It is very important. Now, did they fail because they used too much logic? No, they used too little logic. So, I think, without putting philosophy or science on a pedestal in any way, that it may be very crucial that philosophers do not miss opportunities of solving these foundational problems of science. They are not the be-all, end-all of philosophy but they may be the test cases of what philosophy and what different methods can do.

Knuuttila: We opened this discussion with the question of what should have happened in the Vienna Circle to make us all logical positivists. Now you have answered this. Thank you very much for the great number of interesting philosophical ideas, as always, when you give lectures or discuss questions.