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Language and Science.

Vilém Flusser.

It is difficult to doubt the fact that we speak sometimes about something, and not all the time about nothing. There are various reasons for this difficulty. For instance: if all talk were about nothing, how could we distinguish, as we do, between idle talk, (which is talk about nothing), and other types of talk? And also: if all talk were about nothing, how could we account for communication, (which is a transmission of something), and which is sometimes experienced in spite of the possibly profounder experience of non-communicability? Now for those who find it difficult to doubt it, there is the question: what is it we speak about? It is the ontological question. Only those who can sincerely accept the idleness of all talk and the total impossibility to communicate, can sincerely avoid the ontological question. This radical doubt of the mystic, which exceeds cartesian doubt in that it doubts doubt itself, is too difficult for me to hold to for more than fleeting moments. I cannot sincerely avoid the ontological question. And I believe neither can you, because, after all, you are listening to me.

It would be good, if the ontological question could be avoided. It is very inconvenient. It asks: "what do I talk about?" without really expecting an answer. It cannot accept any conceivable answer. Because any conceivable answer is a sentence. Even the answer: "you talk about this" accompanied by a gesture pointing with a finger. A sentence is an organisation of symbols. The gesture I mentioned is a symbol. Therefore any answer to my question ~~just~~ points to what I am talking about. But if I talk about something, so does anything I say. Therefore: if I distinguish between idle talk and talk about something, I must confess that my question: "what do I talk about" is an invitation to idle talk. But, on the other hand, if I make the distinction, I cannot avoid the question. This is very inconvenient.

What I just said could be put in another fashion. Any question, with the exception of the ontological question, is a quest for an explanation. An explanation explains the question away, and in this sense it is an answer. The answer shows what is wrong with the question. But there is nothing wrong with the ontological question. Therefore it cannot be explained away, it has no answer. In having no answer, the ontological question is not a true question. And in there being nothing wrong with it, it is the only true question. This is what is so inconvenient about it. It must be asked without expectation of an answer, because any answer would prove that it was a wrong question.

Why must it be asked, in spite of Kant? Because, if we refuse to get involved in the inconvenience of the question, we become victims, sooner or later, of a sort of insincere mysticism. We then accept, pragmatically, that only the wrong questions may be asked, namely those that admit of an answer. And that

Before everything is idle talk. I said that the insincere mysticism as a result of our refusal to ask the ontological question comes about sooner or later. It took, in fact, almost two hundred years from Kant till today to manifest itself socially. But now it does, viz. the beatniks. It does so in spite of all the ontologies that came after Kant, but under his shadow. It comes as a feeling that our discourse asks only wrong questions. And more especially so our scientific discourse.

The barbarian anti-intellectualism, (or insincere mysticism), which is the result of the refusal to ask the ontological question is a lurking danger both socially and individually. This is why we must ask the question. In other words; what cannot be talked about, must not be silenced. This is the purpose of philosophy, in contrast with all other disciplines. And it may be, paradoxically, that Wittgenstein would agree to this statement. This is the purpose of philosophy, and more especially of philosophy of science. It must therefore be more than just analysis of scientific propositions, although this is obviously one of its endeavors. It must also try to say what science is talking about, and not only, what science is saying. It must try to do the impossible, if it is to be philosophy.

If it were totally impossible to say what we are talking about, and what science is talking about, then of course philosophy could not exist and the consumers of LSD would be right. But it is impossible only in a very radical sense. It is obvious that Wittgenstein's proposition about the impossibility to speak the unspeakable is meant as a recommendation, and not as a statement of fact. As a statement of fact, it is either an empty tautology, or else false. It is false, because a lot can be said and understood about what cannot, strictly, be said. Taken as an imperative, Wittgenstein's statement is a prohibition of philosophy. Taken as an indicative, it is a philosophical statement, because it tries to say, (and succeeds in saying), what cannot be said. It is a tautology, and nonetheless it says something; it is a philosophical statement. It is, in fact, a model of philosophical statements, in its conflicting and bewildering implications.

A lot can be said about what science is talking about, and it can be understood although many of the sentences thus uttered can be shown, on logical analysis, to be either contradictions or empty. This is to be expected, and fully in order. Ontological statements must needs be logically unsound, because they are about the unspeakable, and therefore go on on the border of language. If strictly logical criteria are applied to them, they show, (as they should), that strictly speaking ontological statements are impossible. Nonetheless these statements can be understood, they carry information. This shows that other criteria, outside logic, must be applied to them. For instance; an extralogical concept of validity must be applied to them. Paradoxically this

...at some, if the application of logical criteria to non-ontological statements is to be valid. In philosophy of science, thus conceived, we are in the borderland between the speakable and the unspeakable which gives validity to everything spoken, without itself being so valid. Without it, the whole discourse of science hangs so to speak in thin air. Everything I am going to say is the result of an effort to prevent science hanging thus, and it is therefore committed to science. But for the same reason everything I am going to say is non-scientific, (if you prefer unscientific and prescientific).

Science can be defined, of course, in many ways and from many angles. For instance as a method by which man finds himself in opposition to his surroundings, and can, out of this opposition, observe, map, and change his surroundings. Or as a specific development of being, in which being knows itself in a specific way. And I can imagine a number of other such definitions. Such definitions are ontological definitions. They are the result of an existential, or historical, or other analysis of being. They do not ask, they beg the ontological question. But we can also define science from within, for instance thus: it is a discourse which employs certain symbols according to certain rules, and thus articulates certain propositions. Some of these propositions can be verified, and others can be applied. Now this is a type of definition which asks the ontological question, namely thus: what does "verify" and "apply" mean? Obviously this question has something to do with the symbols and rules of the scientific discourse. The fact that scientific propositions can be verified, (or falsified), and that they can be applied, (or not), has something to do with its symbols and rules, ^{and} means that science is talking about something. This distinguished science from empty talk which cannot be verified or applied. In other words the symbols must signify something, and the rules must represent something. It is relatively easy to show what the symbols signify and what the rules represent. It can be shown historically. The symbols signify words of certain occidental languages, and the rules represent grammatical rules of certain occidental languages. Science is a discourse which came about four hundred years ago as a refinement of Western European discourse. Now this kind of reply shifts, obviously, the ontological question. It has now become a double question. (1) what do western language words signify and their grammatical rules represent? and (2) what do I mean by "refinement" which is responsible for science? Let me tackle the first question first, and let me speak first of the rules.

Western languages belong to a group of languages whose discourse consists of words organized in sentences. They obey to two sets of rules, two levels of rules, namely thus: rules which govern the way a word comes into a sentence, and rules which govern the flow of the sentences. To the first level belong terms like "substantive", "verb", "declension", "conjunction" etc., and to the

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and terms like "subject", "predicate", "indicative", "conjunctive" etc. These are other types of language structure, for instance the isolating languages of the far east, and the agglutinative languages of Africa. They obey to other and different rules, and it is best if we do not apply terms like "word" and "sentence" to these foreign structures. Now in our type of language words signify objects or relationships between objects, and sentences mean relations between objects. There is a curious and difficult rapport between the signification of words and the meaning of sentences, which is the delight of linguists. The two levels overlap, so that single words may be considered sentences, and a sentence may be considered a word of a super-sentence. Nonetheless we have now formulated an ontological answer. Our type of language speaks about something that consists of objects in relation to each other. And this something is the reality we mean when we speak, even if our discourse is scientific.

However, scientific discourse is a refinement in the sense that it is a discourse which views simplicity of rules and economy of symbols. This is the reason why it flows much more quickly, why it is progressive. By simplification and economy it avoids flowing constantly around the same issues. It can be said that in scientific discourse the occidental languages have become rigorously themselves, so to speak self-conscious. But the big advantage of simplification and economy, (which is the progressiveness of discourse), carries a disadvantage. It means an impoverishment of the reality the discourse speaks about. The more science advances, the less objects it signifies, and the less relations between objects it means. And it is interesting to observe that the process of simplification goes on more quickly on the level of symbols than on the level of rules. Objects tend to disappear more quickly than relations. In the more developed sciences talk goes on increasingly about relations and decreasingly about objects. This tendency has created philosophical problems for those who search for reality more in objects than in relations. But this is a mistake, I believe, because both object and relation is within the hidden ontology of our type of language. Science, by its method of simplification and economy simply reveals this hidden ontology, and can be said to be about reality in this sense.

I have answered, I believe, what the symbols and rules of science are about, but not yet what is meant by verification and application. It is in answering this that one must overstep definitely the limits of language. If I verify a scientific statement, I compare it to the objects and relations it means, I "observe". And if I apply a scientific statement, I adjust the objects and relations it means to it, I "manufacture". Both observation and manufacture go on in what language means, and not, in what it says, in our case within the relation between objects. But I believe that in this context the problem is a

able to an answer.

Let us first ask, in attempting to give it, how the words and rules of our type of language came about, although this question is only apparently historical. Of course, you will not expect an historical answer, because the origin of our language is, necessarily, outside the scope of our historical knowledge. Necessarily, because our language is the vehicle of our knowledge. But there are at least two methods, by which I can speak about the origin of our language. Namely the method of comparing our language to other types of language, and my phenomenological reduction. The first method will attempt to show that the hidden ontology in our language, which reveals reality as a chain of objective relations is not the only possible ontology. The second method will attempt to show what is left if I suspend the hidden ontology of my language. Both methods show I believe an unutterable, amorphous and intellectually inaccessible substratum. Inaccessible, because it is wholly other from the intellect, which is an organization of symbols. And I can therefore say that the objects which our words signify, and the relations which our grammar represents, are aspects of that unutterable substratum. And the answer to the question what observation and manufacture mean is this: they mean the confrontation of our language with these aspects of the unutterable which the hidden ontology of our language reveals. Observation means that reality is truly such as revealed by our language. Manufacture means that reality can be made to agree even more with the hidden ontology of our language.

At first sight this does not seem to be a very happy result of our investigation. And not a very original one at that. It says that we only discover what we have unconsciously put there. And that our actions changing our surroundings are no more than a regrouping of a structure projected by our own thoughts. In other words it seems that we have fallen into the trap of a radical idealism. But a second glance shows that this is not so. The question that here arises is this: Who is the "we" in the sentence "we put the structure out there"? In other words who is responsible for the rules and words of our language? Now this is obviously not merely an historical question. New rules and new words come about constantly, even at present. We should be able to answer this question somehow. Let us try it.

It seems that new rules and new words come about in two ways. They either appear deliberately in some books, or they appear, spontaneously, in conversation. And both types of innovation prevail, if conversation in general agrees to accept it. But on closer examination it can be shown that the so called spontaneous innovation is really a deliberate one introduced by some unknown author. So it can be said that innovations of rules and words occur through a deliberate act, and prevails if it is accepted by general conversation. The question now is as follows: how does the author create new rules and words,

How does general conversation agree to accept them? If the foregoing analysis of language and science is at all correct, this question would be the fundamental question for a theory of knowledge.

Let me call the author of new grammar and new words "a poet". Let me define poetry as the act of creation of new grammar and words, i.e. creation of language. This use of the term is in some agreement with its ancient use of "poiesis", which is the putting here of something. Poetry increases the realm of language by new words, and changes its structure by new rules. Poetry therefore utters something which has not been uttered before, and utters something already uttered before in a new way. Poetry is original speaking. It is originality which is the mark of poetry. Originality, because it finds itself at the origin of language. This act of poetic creation goes on at the border of language, and is characterized by a specific climate. Let me call that climate a vibration, a sympathy with the unutterable. It may also be called "awe", as it is by existential writers. And it may also be called "intuition". The propositions of poetry are bathed in that climate, if they are original, true poetic propositions. And that is the truth of these propositions: they are in sympathetic vibrations with the so far unuttered. They are true statements, because they have this vibration. Language originates always in these true statements. They are what the logical analysts would call "observational statements". But, as I said, in this dubious realm between language and non language the term "truth" must have a not quite logical meaning.

These poetical statements come to bear on general conversation. There they are either absorbed or rejected. I think the theory of information can tell us a lot about why they are absorbed or rejected. If they are too original, if there is too much noise in them and too little redundancy, they are rejected for not being perceived by general conversation as having information. But they can be put in obedience and absorbed at a later stage of language development. And they are also rejected if the information they carry is in too great a disagreement with the program of general ~~conversational~~ conversation. Thus a consideration of poetry as both the constant amplification of language, and a constant reformulation of its structure, can show the negentropic character of language.

So we have arrived at a sort of empirical epistemology, namely thus: the verification of the propositions of scientific discourse is their comparison with poetical propositions by forgotten authors. It is these poetical propositions which we call "observational propositions". And the truth of these propositions is in their vibration with the unutterable. And we have arrived at this epistemology through introspection of the poetic act, which is a phenomenological method. I admit to the following difficulty: I may have shown that some observations are poetical intuition. I have not shown that all obser

ions are, poetical intuition, at least forgotten and completely absorbed poetical intuition. But I cannot see what else it could be, unless I get involved in sensations, nerve systems, and other terms projected out there by previous poetic intuitions.

I think I have now avoided the fall into idealism. The poet is not a creator "ex nihilo", but his propositions are the result of his vibration with the unuttered. This is how all statements come originally about, unless they are empty. And now I think we can speak about the difference in language structure. Our language is the result of forgotten poetry, of forgotten poetic propositions which came about in a specific vibration with the unutterable. We may call these propositions "myths", and we may say that our language is the result of myths of a specific nature. And we may say that the languages of different structure are the results of different myths from ours. These myths reveal different aspects of the amorphous substratum. Our myths reveal the aspect of objective relations. And science is that discourse which, by simplification and economy, makes this aspect ever more obvious. It is in fact a discourse about original mythical intuition, constantly renewed by poetic insight.

Now if you accept this argument, you will have to admit that science is not the only valid discourse about reality. It is valid only about reality as revealed by the specific myths that established our type of language. There are other types of revelation, and they are inbedded in languages foreign to ours. This speculation of mine goes on in Brazil, which is a place where we are in contact with other types of language. The African languages do not disclose a reality which is an objective relation. Therefore our categories of knowledge do not apply there. There is, of course, the possibility of translating, although it is burdened with problems. And this possibility makes, in a problematic way, the scientific discourse meaningful even in these foreign surroundings. But this goes equally the other way round. We too can learn, with effort to understand their methods of observing and manipulating what to them is reality. And this is, in the last analysis, the purpose of these considerations. To open up our model of reality, projected by our language, and permit other models to enter it, in order to enrich us.

The comparison between languages of different structures, the consideration of the problem of translation between them, and the phenomenological reduction of our own model, those are the methods of escaping the prison of our language. But this escapes the limit of my present argumentation. What I wanted to show you is how science appears to one, who, like me, is located at one geographical frontier of those languages which gave rise to science.