DAGFINN FØLLESDAL

PATRICK SUPPES' CONTRIBUTION TO THE PHILOSOPHY OF LANGUAGE

ABSTRACT. Patrick Suppes has been productive in a large number of areas, the study of language being only one of them. His work on language falls into four areas: Psychology of Language (particularly children's acquisition and use of language), Formal Linguistics, Language and Robots, and the Philosophy of Language. After a brief survey of Suppes' contributions to the first three areas, attention is focused on the fourth area, notably on Suppes' idea of congruence of meaning, which is a core idea in his Philosophy of Language. It is argued that the numerous congruence relations reflect the various regularities that enable us to establish, learn and use a language.

Since I first met Pat, in 1964, I have greatly appreciated him as a friend and colleague, and we have taught several courses together. However, I have to make a confession: although Pat has been such a good friend and colleague over so many years, I have never come around to reading more than a fraction of his work. This does not mean that I have read very little. I must make a new confession: not even Pat's bibliography have I read in full. I have, however, done some counting, and I have found that so far he has published more than 300 articles, written 20–30 books and edited a similar number of volumes. I am here not counting his numerous mathematics text books and popular works.

These articles and books fall within a variety of fields, and within each of them Pat has made important contributions. When Pat was appointed to Stanford in 1950, as a very young man, he came to the Philosophy Department. But he was very quickly also made a Professor of Statistics and of Education. However, when we look through his bibliography and curriculum vitae, a curious oddity about chronology emerges: in 1972 Pat won the Distinguished Scientific Contribution Award of the American Psychological Association. This award is given for the best research in psychology that year. However, at that time Pat was not a member of the Psychology Department, so the award went to the Philosophy Department. This may explain why the next year the...
Psychology Department finally came around to making him a member of their department.

In the present three volumes one can read a large number of papers about Pat’s work in various areas. However, even this is not enough to cover all the areas in which he has worked. I will touch very briefly in my contribution on one in which he is working very actively now, namely robots. When we look at Pat’s work within each of these many fields in which he has worked, and also when we survey his work as a whole, there are two things that strike one about Pat. One is his openness, he is always very eager to hear about new developments, to learn something new, and he is in fact particularly interested in perspectives different from his own. This is, of course, a good thing, but it can be overdone. One can become superficial and uncritical. Pat fortunately compensates for his openness with a second feature which is equally characteristic of him. As soon as he recognizes what is going on from that very different perspective, he starts asking: “What is the evidence?” This combination of enthusiastic openness and critical questions about evidence is typical of Pat.

I am going to discuss just one tiny part of what Pat has done, namely his work in the philosophy of language. Here we are in the fortunate situation that his book *Language for Humans and Robots* (Suppes, 1992) is just out. It collects some of Pat’s main papers on language. However, even that volume is, of course, not complete. As I write, it was published two months ago, but there already have been other papers appearing that came too late to be included in the volume. I will not be able to go into all areas covered in this volume, but I will begin by giving a brief survey of the main contributions that Pat has made to the study of language, and then focus on one of these areas where his contributions have been particularly pertinent to the philosophy of language. Of course there are other areas that are pertinent to philosophy as well, but this one is very close to the main tradition in the philosophy of language in our century.

Trying to survey Pat’s work on language, Pat himself has suggested in this book that his work may be divided into four areas, viz.: first the psychology of language, particularly children’s acquisition of language and children’s use of language. Secondly, there is work of a formal linguistic kind. Thirdly, there is work on language and robots. And fourthly, there is the area which I want to concentrate on, namely Pat’s ideas on congruence of meaning. The latter has been an important focus
of his work in the philosophy of language, on which he has published a large number of papers.

Before I discuss congruence of meaning I will survey briefly what Pat has been doing in these other fields. First his approach to children's language. Here one typical trait of Pat's approach is illustrated, his regard for empirical data. He has carried out some experiments with children, but most of Pat's work on children's languages consists in close analysis of actual verbal communication between children in non-experimental settings. Pat has found through these studies certain features of children's use of language from which both linguists and philosophers can learn a good deal. Particularly interesting from a philosophical point of view is that semantics seem to be much more important for acquisition of language than the syntactical features of language. This is well documented through these empirical studies.

We then have the work in the second group, work of a more formal kind relating to logic and linguistics. Here one of Pat's main contributions has been to build up an alternative to the use of quantifiers and variables. In fact, Pat has shown, and many would agree with him, that quantificational structure, which has been a cornerstone of modern logic since Frege, is not very suitable for capturing some of the natural constructions in ordinary language. Pat has indicated how one can build variable-free semantics. This relates to work that has been done by Tarski and other logicians earlier, but Pat has applied these ideas to natural languages and shown how his particular variable-free approach gives a very natural way of handling certain patterns in natural language.

Then we get to Pat's work on language and robots. Here Pat's contributions fall mainly in two areas within that major field. The first has to do with developing robots that are able to take verbal instructions. That is not so easy, because the language of action - we want the robots to perform certain actions - turns out to be relatively complicated. It requires some thought and ingenuity to find a good way of programming a computer so that it can respond to verbal commands. The second area of Pat's work on language for computers is even more challenging and interesting. Pat has written several papers on the problem of constructing robots that actually pick up language. This area of language acquisition by robots is an area in which Pat is now working actively.

Finally, there is the area that I mentioned at the beginning and which I wanted to come back to: Pat's work on sameness of meaning. Pat here approaches the old philosophical problem of sameness of meaning
in a new way. This is a basic problem in philosophy. Frege, in his unpublished writings, struggled for years trying to find identity criteria for meaning, that is, he wanted to determine under what conditions two expressions express the same meaning. This is still a challenge for his followers. Alonzo Church, in particular, has proposed several criteria of sameness of meaning, some of which have been found to lead to contradictions (Church, 1946, 1951, 1973, 1974). Before Frege, this problem was discussed by Bolzano, and we find glimpses of it even earlier. It is connected with the problem of how communication via language can be possible. Both Bolzano and Frege argued that we cannot communicate unless there are intersubjective meanings that can be brought across from one person to another. They both held that there is a realm of objective meanings that in a platonistic way are waiting to be grasped and expressed. We are supposed to be capable of grasping these meanings. In order to communicate what we grasp, we have to learn a language, so that we can express these meanings.

This is a view that many of us find unsatisfactory. It seems too mysterious. Pat, coming to the problem from an empirical point of view, would certainly want to look much more closely into how it happens that we acquire a language at all. The process does not seem to be much like the one envisaged by Frege. On this point Pat is close to my teacher Quine, who also has been very critical towards that view; in fact, there are many similarities between Pat and Quine when it comes to dealing with this problem. I concur with both of them on this point, and in what follows I will be siding with them rather than coming up with criticism against their view. Yet their view is certainly still a minority view. If you look at the work that is being done in the philosophy of language, you will find that there is a majority who, for some reason or other, take a Fregean kind of view fairly much for granted. They start out from a semantic system where all these items are given, propositions and concepts and so on, and no serious question is raised concerning what they are and how we get at them.

Pat, in line with his pluralism that I mentioned in my introduction, argues that the whole traditional way of looking at sameness of meaning is wrong. Maybe there is not one notion of meaning that we are out to capture. Maybe we should start with an open mind and ask whether there might not be, for different purposes, quite different notions that we would be interested in capturing. Pat proposes that we should compare what we are after in this area with what one is after in geometry where
one talks about congruence between geometrical figures. In geometry we have an early idea in Euclid, who held that figures are congruent if they have the same shape and the same size. This idea was followed up by Hilbert and we now have a rather sharp definition of what is meant by 'congruence'. We can strengthen or weaken the notion of 'congruence' in various directions. Euclid does not do this, but Pat points out that we could add, for example, orientation as a factor, and say that in order to be congruent two figures have to have the same orientation. We do not find such a notion in Euclid because his geometry has no preferred direction – the notion of a horizontal line is, for example, foreign to Euclid's geometry.

We could also weaken the criterion for congruence. We could say that shape is all that matters, but not size. And in affine geometry all triangles are congruent. They can be mapped onto one another. It does not matter what size the angles are or how big the triangles are, etc. As the reader probably knows, Felix Klein in 1872, at the age of 23, proposed the Erlanger program where he suggested that in geometry we should concentrate on two related notions, that of transformation, and that of the features that remain invariant under a given transformation. These are, then, the congruent ones. This opens up a new and interesting field of research. We study all kinds of transformations and the congruence relations they give rise to. We can have very weak such relations, even weaker than the ones we find in geometry; we could have just a one-to-one mapping which preserves identity and nothing else. Just as we have a spectrum of possibilities in geometry, Pat has proposed that we could explore a similar spectrum of mappings and invariances when we study language. For some purposes, some of these mappings might be good candidates for meaning. For other purposes other mappings might be better candidates.

Now I will say a little bit about the multitude of features that Pat investigates. One kind of congruence that he discusses is congruence between equally probable utterances. We now look not at sentences but at utterances. That is the individual use of a particular sentence in a certain context. In a given context two utterances might be equally probable. A person might say, to use Pat's example, 'It will rain tomorrow', and also, 'There will be gusty winds in the afternoon'. From an intuitive point of view we do not think that they mean the same but there might be purposes for which we might want to treat them in the
same way. And they would be similar in that they might be regarded as equally probable by the person who utters them.

Next we have the notion of extensional congruence, which is simply the familiar notion of extensional equivalence: two utterances are extensionally congruent if they are both true, or if they are both false. So we have two main groups of utterances under that congruence relation, the true ones and the false ones. Then we have intensional congruence, which can be defined in various ways. If we assume standard classical logic, we could say that two utterances are intensionally congruent if they are logically equivalent according to standard classical logic. Here we could obviously have variants. We could use intuitionistic logic or some other nonclassical logics, and say that utterances are intensionally congruent if they can be proved equivalent through those means.

Pat also discusses a notion that lies between the latter two and which he calls $M$-congruence: two utterances are $M$-congruent if they are congruent with respect to a fixed class $M$ of models closed under isomorphism. $M$ may, for example, be the set of models in which the laws of Euclidean geometry, or arithmetic, or of classical physics, hold. In this way we can develop a large number of different equivalence notions, different notions of congruence. As we all known, especially some variant of intensional congruence has been regarded by many as a good candidate for sameness of meaning. Frege, in his unpublished writings, discussed various criteria for sameness of meaning, and this is one that he explored. There is a problem with it that Carnap, in particular, was worried about, namely that all logically true sentences come out equivalent, and likewise all the logically false ones. This led Carnap to introduce his notion of intensional isomorphism. This may be in classical writings the one notion that comes closest to what Pat suggests, but of course it comes close only to one of Pat's notions. There is a whole spectrum of different notions that Pat spreads out for us. One of Pat's key points is that it is useful to be open to all these different kinds of notions, and not get stuck with just one of them.

However, Pat also goes into some other notions, particularly connected with propositional attitudes. There are puzzles connected with belief that we can throw some light on by these notions. Pat introduces a notion of belief congruence, saying that two utterances will be belief congruent for a person if we can substitute the one for the other in all belief statements of that person, *salva veritate*. 
This is reminiscent of an idea of Benson Mates (Mates, 1950). Mates proposed as a condition of adequacy for definitions of 'synonymy' that two expressions are synonymous in a language $L$ if and only if they may be interchanged in each sentence of $L$ without altering the truth value of that sentences. This might seem a good proposal. However, the criterion does not enable us to tell which expressions are synonymous, and Mates does not claim that it does. The problem is that if the criterion is going to work, then, as Mates points out, the sentences in one's language would have to include sentences involving necessity, belief and so on, and one would wonder under what conditions those sentences are true, and under what conditions they are false. This is the observation that Quine makes in 'Two Dogmas' (Quine, 1951); that attempts to define or elucidate synonymy tend to move in circles: in order to define synonymy one appeals to analyticity, necessity or belief, and in order to define these notions one makes use of synonymy again.

We might wonder – and this is the first point of mine that might seem critical – we might wonder whether Pat falls into this trap, whether he is defining synonymy, according to that particular alternative – belief congruence, in a circular way. I think that Pat is actually avoiding the trap because Pat, unlike so many others who have worked in this field, does not think that any of his congruence relations enables us to sort the meaning aspect from the factual aspect. The various notions of congruence group together utterances that for some purpose are to be treated in the same way. Pat seems to agree with Quine that the whole attempt to draw a line between meaning on the one hand, and theory on the other, is arbitrary. There does not seem to be any basis for thinking that there is such a line to be drawn. For Pat, as for Quine, each speaker of a language will speak his or her idiolect. This is what one should expect if there is no line to be drawn between meaning and theory, but this ubiquity of idiolects has been rejected by many, e.g., by Kripke, who in 'A Puzzle about Belief' (Kripke, 1976) repeatedly contrasts defining with factual beliefs (for example on p. 245).

Attempts to define synonymy and analyticity have as a main aim the drawing of such a line without question-begging assumptions. I find that for the purposes Pat has in mind, there is no question-begging in his procedure. He just proposes a number of ways of trying to connect notions of sameness of meaning with some other notions, and depending on how one connects it with other notions, one will get quite different notions of sameness of meaning.
Pat also suggests that we could develop a theory of coherent beliefs. In his book he begins to develop such a theory. To get started, he assumes that a person’s beliefs are coherent. And this raises problems: what does it mean for a person’s beliefs to be coherent? It means that there should be no obvious inconsistencies in that person’s set of beliefs: no straight contradictions, and no inconsistencies that can very easily be spotted. Pat does not go into details about how we are going to delimit that notion of coherence. He suggests that we can make simple inferences, but not complicated ones (p. 38). There is here a tie between Pat’s work and Jaakko Hintikka’s work in Knowledge and Belief (Hintikka, 1964), where Hintikka, discussing similar problems, develops a notion of surface tautology. Hintikka has followed this work up later, trying to delimit, in a certain way, what kind of inference we can make use of and what inferences we should not make use of.

As Pat and Hintikka both point out, we certainly do not want to require closure under logical consequence. That would be a way of requiring perfect rationality in the theoretical realm. There is no person ever who has known all the logical consequences of his or her views. I think that Pat’s and Hintikka’s approaches actually supplement one another quite nicely.

Pat goes on and discusses some further notions of congruence. One is orthographical congruence, where we require a mapping of expressions onto one another, letter by letter. This is of course a very strong congruence relation. It is in a way pretty trivial, but as Pat points out, what is interesting about it, is that we can consider different ways in which we establish the congruence. This then leads Pat on to the idea of processing as being an important key to what congruence relations we would be particularly interested in.

There is a further source of observation that we could bring in, Pat notes, namely the responses of people have to utterances. We could, for example, look at response time. We could say that a person, say John, responds more quickly in judging the truth of one sentence than in judging the truth of another, or that he responds in exactly the same time, when we ask him, for example, “Do you believe that Newton was a bachelor?” and “Do you believe that Newton was an unmarried man?” Pat proposes that one congruence relation, that he calls latency congruence, would be one where we group together those utterances which have the same response time plus/minus a certain narrow margin,
for example, he suggests, ten milliseconds. They would all be said to have the same response time.

This, of course, would group together sentences that do not have much to do with one another. They just have the same response time. But if we combine this and belief congruence, then we could get something that might be a little more interesting, because the similarity in response time would indicate that maybe the processing might be similar in complexity, and the belief congruence tells us that the person believes both utterances. And not only that, but the expressions can be substituted for one another, in all belief contexts of that person. Pat then suggests that we could go on further along these lines and look at other features of the responses as well, and thereby get a refinement of the responses, and thereby, perhaps, get a better clue to the actual processing that is taking place through empirical studies of these various aspects of response. For example, we could study the strength of belief and generally what Pat calls a whole profile of assent. That is simply a program to look at all the features of these responses that could give us certain clues to the way in which things are being processed.

There are still further features of language use that Pat wants to go into. Again this illustrates his pluralism. He thinks that philosophers and linguists have focused too much on just some particular feature, and this has often led them to think that this is the one notion that we are after. Pat argues that prosodic features of many different kinds have to get into the picture, for example the emphasis “I love you” as opposed to “I love you”. There are very many such prosodic features, which might give rise to various congruence relations. Pat lists several of them, and of course one could keep on listing if one just looks upon nuances in language use that make a difference, such as the duration of a sound, rhythm, or intensity. One could add here: tone. Norwegian, for example, is a tonal language, where a difference in tone can make a radical semantic difference. The same is the case in Chinese and some African languages. There would also be other verbal and nonverbal cues to the purposes of the person who is talking, and the opinions that that person might have. All of these features come in as a kind of background context that might be important for other responses. So what Pat really wants to do, is to construct a large number of congruence relations that take into account this wide variety of factors that can be observed, and see whether some of them might be useful for some purposes and others for others. There is no natural stopping place, and not one concept of
meaning, but many. Looking upon all of these congruence relations together, we might get a much better clue to many of the problems that have been bothering philosophers of language.

The congruence relations I have talked about so far are relations having to do with utterance of expressions as wholes. Pat also develops in other articles congruence relations for structures, where we look not just at the final results, but on the tree structure through which these are being generated. One can try to map these trees on to one another, and put certain restrictions on the mapping, and thereby again get different congruence classes depending upon what restrictions we have. There are many more points that Pat goes into in connection with translation. There is one point, however, which I should definitely bring up, since it is important for many issues in the philosophy of language. It has to do with the discussion concerning the primacy of literal meaning.

In order to communicate, it has been argued, there has to be some expressions that have a certain meaning regardless of what the speaker might want to communicate. On the other hand, there are philosophers like Grice, with whom Pat sides, who say that the speaker’s intention is very important for understanding the communicative situation. Many critics have argued that Grice’s view is like the Humpty Dumpty view on meaning. We all agree with Alice that we cannot make words mean what we want them to mean. On the other hand, as Pat observes, if we think about how a language gets started, it is very hard to uphold the literal meaning view. Probably, when language got started, people did make some tentative attempts to get other people to do things they wanted them to do, and maybe to gradually communicate this to them. And through those intentions that they had, and the actions they carried out in order to communicate them, they might gradually succeed in getting this across in certain ways, and those ways of achieving this might then gradually become entrenched. There might be a kind of sedimentation that started to take place, and in our language, as it is now, clearly the sedimentation that we have in literal meaning does play a very important role. Our ability to communicate with the aid of a well-established language clearly depends a lot on literal meaning.

However, and this is something that Pat emphasizes, there is a creative aspect of language even now, when we are using an established language. Even now we have to assume an interplay between speakers’ intention and literal meaning in order to account for what is going on. However, there is one argument of Pat’s for this that I would like to
take issue with. I have to try to be critical at some point, and this is one of the few points where I find something to criticize. This is Pat’s argument against Biro, who has challenged Grice. What Pat objects to is Biro’s claim that he will not make any hypothesis about the speaker’s intention. According to Biro, when we hear something, listen to what is being said, we can find out what is meant, and thereby understand what was to be communicated without bringing in the speaker’s intention.

Pat objects to this that if we just hear a stream of sounds, pressure in the ear, distributed in certain ways, we have no basis for noticing the relevant features of what goes on. We know that are no observations without theory, and clearly, therefore, to understand what another person is trying to communicate, we need some hypothesis about that person’s intentions. Otherwise we would not get started. Pat says that Biro’s claim to manage without hypotheses is an appealing positivistic line, viz. that the data relevant to a theory or hypothesis must be known independently of the hypothesis. This is a major flaw that he finds in Biro, that Biro seems to be unfamiliar with the philosophy of science, that the data are known only through use of hypothesis.

However, if one looks more closely at what Biro says, then Biro does not say that we manage without hypotheses. What Biro says is that some of these hypotheses are hypotheses about literal meaning, but that none of them are hypotheses about the speaker’s intention. So I think the difference here comes down to the fact that Biro thinks that in order to grasp what is happening in this stream of sounds, we would need hypotheses about the language being spoken and the phonetic laws of the language, the literal meaning of that language, etc., but we do not need in addition hypotheses about the speaker’s intention. So I think that Pat here is unjust to Biro in saying that Biro thinks that we can do completely without hypotheses. I think the issue is really: can we manage with just those hypotheses that Biro accepts, or do we need some about speaker’s meaning as well?

I agree with Pat that there is no way of getting the whole enterprise started by just talking about literal meaning. However, I think we have to bring in both, not just hypotheses about the kind of activity that is going on when people are uttering words, but also hypotheses about literal meaning. I think we should look at literal meaning as the sedimentation that has been brought about by the members of the community, through past use of language. In the beginning I assume that the sedimentations were very meager. People just tried to get others to understand what
they wanted. However, gradually, through generations, our languages have become very highly developed, and when we learn a language nowadays, we learn a lot about literal meaning, about established features of the language, both phonetic, syntactic and semantic. However, we also need to make assumptions about what the speaker intends with his or her activity – but not which intention, or meaning, he has in his head and is seeking to express – and we have to make a lot of assumptions about the whole context in which this happens, about the speaker’s background, etc.

To conclude then, I think that the notion of literal meaning that we need, would be not one, but several variants of the kinds of congruence that Pat has been discussing. Growing up in a linguistic community, we start noticing certain regularities, certain congruence relations, that we use as a basis for extrapolations, for hypotheses about what goes on, what to expect and what to do.

This is what I regard as the main import of Pat’s theory of congruence of meaning: there is a large number of congruence relations that reflect the regularities that enable us to establish, learn and use language. A challenge and at the same time a guideline for further research is to study these processes in order to determine which congruence relations are important for the various aspects of these linguistic activities and what role they play.

Department of Philosophy,
Stanford University,
Stanford, CA 94305, U.S.A. and
Department of Philosophy,
University of Oslo,
P. b. 1024 Blindern,
0315 Oslo, Norway

REFERENCES


**COMMENTS BY PATRICK SUPPES**

Dagfinn has been my part-time colleague at Stanford for almost 30 years, and during that time we have taught a number of seminars together, especially on perception. In the seminars on perception we typically divide up the work, with Dagfinn talking about Husserl and phenomenology, and with me taking responsibility for talking about relevant experimental work by psychologists. I have finally begun to have a serious understanding of Husserl through Dagfinn’s diligent instruction. We often disagree, but I know of no one with whom I have discussed philosophy at great length, with whom it is easier to disagree in a completely congenial way.

Dagfinn has given a very sympathetic account of my theory of congruence of meaning. What I want to do is comment on certain points that he covers by amplifying either what he says or what I have said in the past. As he notes at the beginning, a view like mine is like Quine’s, very much in the minority among philosophers of language. Much further work will be needed to bring the ideas into the mainstream.

**Propositions and Synonymy.** The continued dedication of philosophers to the idea that a sentence or utterance expresses a proposition reminds me of the attitude towards geometry until the end of the eighteenth century. There was one unique Euclidean geometry, which according to Kant was not even a matter of experience but a primary basis of experience. In any case, the theorems of geometry were
those of only one geometry, the geometry of Euclid. In a similar vein, just as there was then only one way to think about two triangles being congruent – namely the Euclidean way – so there was just one way of thinking about two words being congruent in meaning.

It took a major effort to dislodge Euclidean geometry from its favored status. In spite of the skeptical views expressed repeatedly by Quine and often by others like Tarski, it is clear that a similar major effort will be required to dislodge the favored status of propositions and synonymy. On the other hand, there are reasons for thinking that the battle may not be so difficult. It is simply that the achievements that flow from thinking about propositions and the synonymy of words are not at all comparable to the glorious history of Euclidean geometry.

It is convenient to talk about the proposition expressed by a sentence, but it is really no more than that. Moreover, asked to explain what is that proposition, there is a notable lack of clarity and confusion. There is, of course, also this mistaken tradition in philosophy of wanting to talk about the logical form of sentences, as if that were a concept that had any deep significance. Certainly if there is a logical form, it is not that of first-order logic, nor of any other logic artificially created, but is the kind of form given by our mental processing. But even here, I would conjecture that that form will vary with person and culture. This likely variation takes me to my next comment.

**Primacy of Utterer’s Meaning.** I certainly agree with Dagfinn’s remark about the importance of sedimentation in language and the creation of a body of literal meaning. This literal meaning is to be found prominently in scientific and philosophical texts, careful classroom discussions, proper courtrooms well run by a learned judge, some corporate boardrooms, etc. Where literal meaning is not dominant is in the casual give-and-take of ordinary talk – sentences are left incomplete, words are muttered, but looks and gestures carry the day of communicating intention.

The emphasis on the word *primacy* simply means that (i) the claim is being made that it is these informal communications that came first and (ii) they probably dominate most of the spoken language, most of the time, anywhere in the world. This is a large claim and maybe it is too radical, but my own attempts even to transcribe what is thought to be the learned discussion of colleagues at conferences is testimony enough to the incoherence of the literal meaning taken word-by-word as
transcribed from spoken speech. The nuances, the gestures, the looks, the pointing, all play an essential part in understanding the meaning of even systematic speech not to mention our casual grunts and groans to one another.

I sometimes feel that philosophers take as the model of spoken language a philosopher reading a paper before an audience – note that I said reading. In other words, the written language is really in their hearts the primary language, and comes first in terms of importance and meaning, but clearly this is nonsense, and maybe I am exaggerating in attributing this view to many philosophers. In any case, the squawks and shouts of workers together, the meager verbal instruction given apprentices in most disciplines, richly supplemented by showing how things are done, the chaotic and foreshortened nature of what speech there is – all for these features are continual and natural. I claim that the observing of context and inference about intention are essential for the proper interpretation of meaning in the majority of actual speech use.

Differences from Geometry. Taking up the point I began with earlier, about how difficult it is to dislodge a received view, I want to point out another reason why the classical theory of meaning is less thoroughly entrenched than was Euclidean geometry. It is clear that the passage from the perceptual geometry of images to our working version of Euclidean geometry for the objects of experience, is itself a very complicated binocular construction. There is nothing the least bit simple about the way in which we move from retinal images, continually subject to eye and head movements, to the construction of physical objects. But this is a construction we learn to do marvelously well, and with almost uniform agreement we can describe what we see in essentially Euclidean terms.

In the case of language it is not at all the same kind of construction. Euclidean geometry is driven by the physical nature of our world to a very fine approximation. Our construction of language can be much more arbitrary and idiosyncratic. It is only philosophers who search for some uniformity like that of geometry. No doubt this is one of the reasons for the great appeal of a concept like that of logical form. But there is no reason that language need be the same across subject matters or across cultures. Even translating the tense systems of English into German or vice versa, two languages that are linguistically close, show how easy it is for languages to have different expressive features,
particularly among those most frequently used. Moreover, we tolerate very nicely that exactly the same word in a given language can be used in radically different ways even in systematic contexts. A good example is the use of the word *field* in mathematics and in agriculture, or the use of the word *energy* in classical mechanics and in art criticism.

I certainly do not deny that experience in general keeps us focused in the development of meaning, but we do not have anything like the concrete and sharp experience of geometry to force us to have uniform boundaries. Something like the concept of natural kinds is a very poor relative indeed compared to the wonderfully precise and developed concepts of Euclidean geometry.

We have, of course, come in geometry to find a wide range of uses for other than Euclidean concepts. It should be all that much easier in the case of language for there is no tradition represented by anything like the use for so long of a single geometry. Undoubtedly one reason for the search for the concept of synonymy or the concept of proposition is that ineluctable desire to have a rock-hard foundation for our intellectual discourse. But this is sadly mistaken. The only two disciplines that have ever really seriously sought such a foundation are mathematics and philosophy. It is now generally agreed in the case of mathematics that the main body of mathematics is much more secure than the foundations, paradoxical though that may seem. And the efforts of philosophers, contentious as they are, has never yielded anything like a firm agreement on foundations, and in my view never will. We are not, I hope, moving towards such agreement even at a slow pace, but are realizing how diverse and wonderful the many uses of language are, and with these many uses go a diverse collection of concepts of meaning.