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The Picture Theory of Meaning: A Rehabilitation

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Editorial note by Thomas Place: this paper prepared for the IUC Conference on Epistemology held in Bled from 31st May to June 5th 1999 is probably UTP's last public presentation. October the 19th 1999, two and half months before his death, UTP writes in an email

Apart from one loose end, I am satisfied that my 'The picture theory of meaning: a rehabilitation' as presented at the Bled Epistemology Conference earlier this year is a definitive statement of a theory I have struggled to formulate correctly in a number of publications over the year.

In the months after the conference UTP revised the paper. The last version, that is reproduced here, dates from December the 5th, 1999. The section Depicted Situations as Intentional Objects was clearly not finished. I have put back in paragraphs from the Bled paper to get a running text. Apparently UTP wanted to improve or replace these paragraphs, but how is unknown.

In this version the last two sections of the original Bled presentation are left out. UTP's intention was to expand these sections into a separate publication. But he didn't get the time to even start this new project. I reentered these two sections in the present version from the paper prepared for Bled. These sections stand for the loose end mentioned in the quote above. This is what UTP had to say about this loose end in the same email

The one loose end is the application of Frege's (1879; 1891) function and argument analysis of sentences to the phenomenon whereby active-passive and donor-recipient transformations can be used to move each argument in turn into the all important subject position in the sentence thereby changing the perspective from [which] the situation is viewed without altering the nature of the situation or its semantic specification in any way. I first drew attention to this phenomenon in my '[Skinner's Verbal Behavior IV - How to improve Part IV, Skinner's account of syntax](#)' (1983), elaborated in my '[Behavioral contingency semantics and the correspondence theory of truth](#)' (1992) and used as argument against the existence of abstract objects in '[Metaphysics as the empirical investigation of the interface between language and reality](#)' (1996). What has set the cat among the pigeons was reading Edward Kako's 'Elements of syntax in the system's of three language trained animals' (1999). From this it emerges not only that the imperative sentences used by Herman and his co-workers (Herman 1987; 1989; Herman, Richards & Wolz 1984; Herman, Kucja & Holder 1988) to control the behavior of dolphins and by Schusterman and his colleagues (Schusterman & Krieger 1984; Schusterman & Gisiner 1988) to control the behavior of sea lions conform to what Kako calls "argument structure", but that his source for this concept is not Frege, but a tradition within Chomskian linguistics which appears to have originated from Jackendoff's (1983) *Semantics and Cognition*. This means that what I had previously thought of as a straightforward application of the picture theory of meaning has now become an issue in the theory of language, its evolution and the relation between syntactics, semantics and pragmatics on which I part company with Chomsky's linguistics. Not only does it demonstrate the impossibility of separating a philosophical approach to language and meaning from linguistic theory, it converts what I had construed as simply an illustration of the picture theory of meaning into a powerful argument against Chomsky's doctrine of the independence of grammar both from semantics and, though it never even rates a mention, from pragmatics.

Abstract

I argue the case for a rehabilitation of the "picture theory" of the meaning of sentences expounded by Wittgenstein (1921/1971) in the Tractatus, but abandoned by him in moving from his earlier to his later philosophy. This rehabilitation requires the replacement of 'facts' as the objects which sentences depict by 'situations' (Barwise and Perry 1983) and the recognition that the situation depicted by a sentence is an

"intentional object" (Brentano 1871/1995). It also implies a different view of the way his sense (Sinn)/reference (Bedeutung) distinction should be applied to the meaning of sentences from that maintained by Frege (1892/1960) himself. Such a theory opens the door to a thorough-going empiricist theory of the acquisition of both concepts and sentence structure.

The Picture Theory of Meaning

My aim in this paper is to argue the case for rehabilitating a theory of meaning which fell out of favour some sixty years ago when Ludwig Wittgenstein who had expounded it in his *Tractatus-Logico-Philosophicus* (Wittgenstein 1921/1971) abandoned it as part of the process whereby he moved from his earlier to his later philosophy. The picture theory of meaning holds that sentences depict what Wittgenstein called "facts" and I call, following Barwise and Perry (1983) "situations", a term which covers both events whereby things change and states of affairs whereby they remain the same. There are two reasons for wanting to rehabilitate such a theory, both of which are connected with an attempt to rehabilitate two other intellectual standpoints which have fallen out of favour, though in this case much more recently, (a) the philosophical methodology known as conceptual analysis as practised by Wittgenstein in his later period and by his successors, the philosophers of ordinary language, and (b) the behaviourist approach to linguistics represented by the work of Leonard Bloomfield (1933) and B. F. Skinner (1957).

Conceptual Analysis

Conceptual analysis as a philosophical methodology and behaviourism in linguistics both fell out of favour during the 1960s, but for different reasons. Conceptual analysis fell out of favour amongst philosophers primarily because it offered no ongoing programme of philosophical research commensurate with the lofty status within the intellectual firmament to which philosophers have traditionally aspired. Once the conceptual confusions which underlie the traditional problems of philosophy had been disentangled, nothing was left for the philosopher to do other than engage in a programme of sophisticated lexicography conducted for its own sake, with no pretence that it was telling us anything except about the rules or conventions governing the construction of intelligible sentences in natural language.

On the other hand, if the picture theory of meaning is true, it becomes possible to argue that by using conceptual analysis to study the conventions of sentence construction in natural language, we can throw

light, both in general on the relation (or intentional pseudo-relation, to be more precise) between what is said on the one hand and what it depicts or describes on the other, and more specifically on what really underlies some of the more puzzling aspects of the things we say about the world in which we find ourselves. In other words, the picture theory of the meaning of sentences allows us to use conceptual analysis as a way into the traditional problems of metaphysics, such as ontology, the fundamental kinds or categories of things whose existence is presupposed by the way we talk, and cosmology, the nature of the relations (and intentional pseudo-relations) that are presupposed by our talk about causes and their effects.

Behaviourism

Behaviourism fell out of favour as an approach in linguistics as a result of Chomsky's (1959) devastating review of B. F. Skinner's (1957) book *Verbal Behavior*. Chomsky showed that a theory such as Skinner's fails to recognise that it is the sentence, rather than the word, which is the functional unit of language, and that sentences, *in so far as they communicate new information to the listener*, are seldom repeated word for word, but are constructed anew on each occasion of utterance. By identifying the sentence and its structure as the problem above all others that a theory of language must address and by showing that existing behaviourist theories do not begin to address this problem and do not appear to have the conceptual resources needed to do so, Chomsky succeeded in gaining acceptance for the view which he outlines in his 1965 book *Aspects of the Theory of Syntax* that the human ability to construct and construe syntactically well-formed sentences presupposes the existence of an innate language acquisition device (LAD).

But once it is accepted that the functional unit of language is the sentence and a picture theory of the meaning of sentences is grafted onto a behaviourist theory, sentence structure can be seen as imposed, not by an innate acquisition device in the brain, but by the structure of the environmental situations which a successful sentence depicts. Since it treats sentence structure as an autonomous system imposed by the innate structure of the human mental apparatus and since there is nothing but an inbuilt "lexicon" in the brain to connect words to things they stand for, this is a possibility that Chomsky's theory cannot envisage.

Linguistic Behaviourism as the Theoretical Foundation for Conceptual Analysis

The observation that the picture theory of meaning can be invoked both to justify drawing metaphysical conclusions from the evidence of conceptual analysis and to provide a behaviourist linguistics with an explanation of sentence structure, suggests that the relation between conceptual analysis and a behaviourist linguistics is more intimate than we might otherwise have supposed. It suggests that *linguistic behaviourism*, as I have called it (Place 1996b), which incorporates the picture theory can provide the foundation in linguistic theory which conceptual analysis has hitherto conspicuously lacked. That at least is the hypothesis I shall pursue in what follows.

Facts *versus* Situations

Before proceeding to an exposition of linguistic behaviourism conceived as a foundation for conceptual analysis, something needs to be said about how the version of the picture theory of meaning which underpins both, differs from the version presented by Wittgenstein in the *Tractatus*. As we have seen, according to Wittgenstein sentences depict facts. This formulation is unsatisfactory for a number of reasons. One reason is that the term 'fact' is systematically ambiguous as between a statement whose truth is beyond question and the state of affairs (or event) whose existence makes a statement true, if it is true. Thus we can understand the sentence "It is a fact that London is north of New York" as meaning either 'The statement "London is north of New York" is true' or as 'There exists a state of affairs such that the statement "London is north of New York" is true'. Clearly it is the latter interpretation that is needed for the picture theory of meaning. The former is needed to make sense of what sociologists mean when they speak of facts being "socially constructed".

But even if we insist that the term 'fact' is to be understood for the purposes of the theory only in the latter sense, it is still much too restrictive to give us an adequate theory of the meaning of sentences. For it is clear that there are many sentences which do not depict facts, even when facts are understood as states of affairs whose existence makes the sentence true. Imperatives, interrogatives, counterfactual statements, negations if true and assertions if false, do not depict facts in this sense. Yet it seems natural to say that all such sentences depict something. But what? One suggestion which has already been adumbrated is to replace the term 'fact' by Barwise and Perry's (1983) term '*situation*' where a situation is either a *state of*

affairs whereby the properties of an object or the relations between one or more objects remain constant over a period of time, or an *event* whereby the properties or the relations between two or more objects change either continuously over a period of time, as in the case of *process* or *activity*, or at an unextended moment of time, an *instantaneous event* as when a state is displaced by the start of a process or a process stops and is replaced by a state.

The Advantages of Describing the Counterparts of Sentences as Situations rather than Facts

Introducing the concept of a situation allows us to say that an imperative depicts the situation which the speaker wants the listener to bring about, that an interrogative depicts the situation whose depiction is incomplete and which the speaker wants the listener to complete, that a counterfactual depicts a situation that didn't in fact exist, but would have existed, if things had been different from the way they were, that a negation, if true, depicts a situation which does not exist and which, if it did, would render the negation false, in the same way that the non-existence of the situation depicted renders an assertion false.

What this shows us is that, even in the case of a true assertion, where the situation depicted corresponds to one that actually exists at the time and place specified in the sentence, the situation depicted is not an actually existing situation. What is depicted by the sentence is a *possible* situation, something that may or may not correspond to what actually exists. An *actual* situation *corresponding* to that depicted by the sentence will exist, in the case of an imperative, if and only if the imperative is complied with, in the case of an assertion, if and only if it is true, and in the case of a negation, if and only if it is false. Above all, this way of construing what is depicted by sentences has the great advantage of avoiding the need to postulate 'negative facts' in order to allow for true negations and counterfactuals on a picture theory.

Frege's Distinction between Sense (*Sinn*) and Reference (*Bedeutung*)

On the other hand, what it shows is that in endorsing Barwise and Perry's (1983) concept of a Situation, the Picture Theory of Meaning is totally incompatible with the other half of the position they adopt in *Situations and Attitudes*, the so-called "relational" theory of meaning.

In his account of linguistic meaning, Frege (1892/1960) draws a distinction between meaning as

Sense (*Sinn*) and meaning as Reference (*Bedeutung*). Sense, as Frege presents it, is a dispositional concept. It is a property of a linguistic expression whereby it points the listener/reader in the direction where, if it has one, its referent is to be found. On a thorough-going *intensional* theory of meaning, such as that endorsed by the picture theory, every meaningful linguistic expression has a Sense. Only some have a referent also. The referent of a linguistic expression is an actually existing object, event or state of affairs to which the expression is being used to refer. It follows from this that the relation between an expression and its referent, unlike that between an expression and its sense, is a genuine relation, both of whose terms are actually existing entities. The "relation" between an expression and its sense is *not* a genuine relation. As Brentano puts it in an appendix prepared for the 1911 Edition of *The Classification of Mental Phenomena*:

So the only thing which is required by mental reference is the person thinking. The terminus of the so-called relation does not need to exist in reality at all. For this reason, one could doubt whether we really are dealing with something relational here, and not, rather, with something somewhat similar to something relational in a certain respect, which might, therefore, better be called 'quasi-relational' (*Relativliches*). (Brentano, 1911/1995, p. 272)

That is because in this case one of its terms, its sense, is, like the objects toward which every disposition, whether mental or physical, is directed, what Brentano (1871/1995) calls an "intentional object".

Depicted Situations as Intentional Objects

According to Elizabeth Anscombe (1965) an intention to do something, and, as it turns out (Burnheim c. 1967; Martin and Pfeifer 1986; Place 1996a; Place 1999a; Place 1999c), whatever is true of an intention here is true of any unmanifested disposition, whether mental or physical, is characterised by three "salient" things:

First, not any true description of what you do describes it as the action you intended: only under certain of its descriptions will it be intentional. ('Do you mean to be using that pen?' - 'Why, what about this pen?' - 'It's Smith's pen.' - 'Oh Lord, no!'). Second, the descriptions under which you intend what you do can be vague, indeterminate. (You mean to put the book down on the table all right, and you do so, but you do not mean to put it down anywhere in particular on the table - though you do put it down somewhere in particular.) Third, descriptions under which you intend to do what you do may not come true, as when you make a slip of the tongue or pen. You act, but your intended act does not happen. (Anscombe, 1965, p. 159)

Two pages later, she introduces a fourth salient thing, though without apparently acknowledging that that is what she is doing:

I can think of a man without thinking of a man of any particular height; I cannot hit a man without hitting a man of some particular height, because there is no such thing as a man of no particular height. (Anscombe, 1965, p. 161)

This too has its counterpart in the case of a physical disposition. I cannot break a glass without breaking it from a particular cause and in a particular way. Yet its brittleness is a liability to break

from no particular cause and in no particular way.

These puzzling features begin to make sense when we see that intentionality in the sense defined by them is, as I have argued in 'Intentionality as the mark of the dispositional' (Place 1996a), the mark, not of the mental, but of the dispositional. In the present case, since the disposition in question is a mental disposition, the disposition on the part of any competent interpreter of the sentence to recognise the case or cases to which it applies, those (e.g. Mumford 1999) who are reluctant to accept that the concept has application to physical dispositions can keep their prejudice intact, provided they are prepared to accept that it is the dispositional character of understanding a sentence that gives it its intentional character.

The most thorough demonstration of the dispositional character of the state of understanding something is Wittgenstein's (1953) lengthy discussion in *Philosophical Investigations* I, Sections 138-214. The same point is made much more succinctly by Ryle (1949 pp. 170-1) when he remarks that

Even if you claimed that you had experienced a flash or click of comprehension and had actually done so, you would still withdraw your other claim to have understood the argument, if you found that you could not paraphrase it, illustrate, expand or recast it; and you would allow someone else to have understood it who could meet all examination-questions about it, but reported no click of comprehension. (Ryle 1949, pp. 170-171)

Indeed it is Ryle's account rather than Wittgenstein's that brings out the intentionality of the dispositional or the dispositionality of the intentional whichever way round you prefer to put it. He points out that when we characterise a disposition, we do so, not in terms of what exists now, but in terms of what *would* exist in the future, if any time, so long as the disposition prevails, certain conditions are fulfilled. Once we appreciate that Brentano's intentional object is a linguistic fiction used to characterise the range of manifestations distinctive of a particular disposition, the otherwise mysterious features of such objects begins to fall into place. The inexistence of the intentional object reflects the fact that so long as a disposition remains unmanifested its manifestations do not yet exist and may never do so. The directedness of the property bearer towards the intentional object reflects the fact that although, as many have insisted, that cannot be all there is to it, a disposition, so long as it remains unmanifested is a matter, not so much of what exists now, as of what would exist in the future if certain conditions were to be fulfilled. The vagueness or indeterminacy of the intentional object reflects the fact that although, once it is manifested, the manifestation is entirely determinate, so long as no manifestation has taken place or there is a possibility of manifestations still to

come, the precise form those manifestations will take when they come to exist, if they do, is indeterminate. The pseudo-relation that exists between the property bearer and the intentional object by virtue of the latter's inexistence reflects the fact that until it is manifested, no such actual relation exists between the disposition and its manifestation. Moreover, as C. B. Martin (1996 pp. 135-6) has argued, every manifestation of a disposition involves an active causal interaction between two or more dispositional property-bearing entities whose reciprocally related dispositional properties are simultaneously manifested in the manifestation. Thus, to use Martin's example, the event whereby a quantity of salt dissolves in a body of water simultaneously manifests both the solubility of the salt and the dissolving power of the water. Before they interact, the disposition partners, as they become at the point of manifestation, are simply unrelated dispositions of discrete entities, properties which exist as nothing more than a potentiality for what may or may not exist in the future. That is the essence of Brentano's intentional pseudo-relation.

Semantic Pseudo-Relations and a Genuine Semantic Relation

In the semantic relation as construed on the picture theory of the meaning of sentences there are two of these intentional pseudo-relations, the pseudo-relation of *isomorphism* that holds, in every case where a sentence is intelligible, between the sentence and the situation it depicts, and the pseudo-relation of *correspondence* that holds, in certain cases only, between the situation depicted and a situation that actually exists, has existed or will exist somewhere in the universe. The cases where the correspondence pseudo-relation holds are ones in which an imperative has been complied with, an assertion is true or a negation is false. In such cases there is a *genuine semantic relation* between the sentence on the one hand and the actually existing situation corresponding to that depicted on the other. But that genuine semantic relation which figures so conspicuously in extensional theories of meaning is wholly parasitic on the existence of the two semantic pseudo-relations, that between the sentence and what it depicts and that between what the sentence depicts and what actually exists when and where the sentence says it does or says it doesn't.

Frege and the Reference of Sentences

For this genuine semantic relation I use Frege's (1892/1960) term "reference" (*Bedeutung*). This however, is

not how Frege himself used the term in this connection. For him the reference of a sentence is its truth value, its truth, if it's true, its falsity, if it's false. I reject this view for two reasons. Firstly it seems entirely inconsistent with his original and, in my view, much more valuable use of the term in connection with the distinction he draws between the sense (*Sinn*) and reference (*Bedeutung*) of a singular term. The *sense* of a singular term is a dispositional property which it has by virtue of the conventions of the language whose effect is to put a competent listener in the position to identify the particular actually existing individual to which the term refers when it occurs in a particular context, its *reference*. It should be obvious that we have a much better parallel to this distinction in the case of the sentence, if the sense of the sentence is taken to be the situation the sentence depicts and if its reference is the actually existing situation which comes about when an imperative is complied with or which exists when an assertion is true or a negation is false, than if we suppose that the reference of the sentence is its truth value and that its sense is that which, when combined with the existence of some actual situation, determines that truth value.

The second reason for rejecting Frege's account here is that it implies the existence of truth and falsity as abstract objects. In Place (1996c) I give my reasons for thinking that abstract objects are linguistic fictions resulting from the practice of nominalising (making a noun of) parts of speech whose natural occurrence is in some other part. In the case we are considering the adjectives 'true' and 'false' are nominalised so as to form the nouns 'truth' and 'falsity' which are then taken to be the names of abstract objects. Frege's doctrine forces this interpretation upon us because, whatever else it is, his concept of reference (*Bedeutung*) is a genuine relation between a linguistic item on the one hand and an actually existing object to which the linguistic item draws a listener's attention on the other. Hence, if the reference of a sentence is its truth value, its truth or falsity, as the case may be, must be such an object. But since truth and falsity are evidently not actually existing objects in the concrete sense of that word, they must be abstract objects. For Frege, who in any case believed that mathematics requires us to postulate the existence of numbers considered abstract objects to which numerals refer, that conclusion was entirely acceptable. To someone like myself who rejects abstract objects, it is unacceptable.

Dispositional and Relational Meaning

Frege's distinction between sense and reference is the most recent in a line of similar distinctions stretching back to that drawn by the logicians of the Port Royal (Arnauld and Nicole 1664) between the "comprehension" of a general term and its "extension". As explained by Kneale and Kneale (1962, p. 318)

the comprehension of a general term. . . is the set of attributes which it implies . . . The extension of a term, on the other hand, is the set of things to which it is applicable.

In his *System of Logic* John Stuart Mill (1848) drew a similar distinction between the *connotation* of a word or expression and what it *denotes*. He accuses nominalists such as Hobbes of ignoring this distinction when they proceed "as if there were no difference between a proper and a general name, except that the first denotes only one individual and the last a greater number."

Finally in his *Lectures on Logic* Sir William Hamilton (1860) revived the Port Royal distinction; but instead of speaking, as they had done, of the "comprehension" of a general term, Hamilton introduced the term "intension" thus yielding the intension-extension contrast with which we are familiar today.

In all these distinctions, comprehension-extension, connotation-denotation, intension-extension, and sense-reference, the first element stands for the dispositional intentional pseudo-relation aspect of meaning. The second stands for the actually existing objects, properties and relations which stand in the genuine relation of falling under a linguistic expression by virtue of its having that dispositional property. In other words comprehension/intension determines extension, connotation determines denotation, and sense determines reference.

Over the years, but in recent years in particular, distinctions of this kind which, as we have seen, are fundamental to the version of the picture theory presented here have proved unpopular with many philosophers, especially those for whom logic is the measure of all things philosophical. The reason for this is that contemporary formal logic is extensional as, indeed, any logic that is going to yield determinate proofs must be. Consequently, if you believe, as many if not most logicians and philosophers do, that logic as represented by formal systems such as the first order predicate logic is the foundation of language, you will tend to favour what Barwise and Perry (1983) have called a "relation theory of meaning" in which the meaning of a sentence is the relation (genuine) between the sentence and the situation token or situation-type to which

it refers. Such a theory leaves no room for the dispositional intentional pseudo-relation element in meaning represented by terms such as comprehension, connotation, intension and sense. It cannot accommodate a picture theory of the meaning of sentences such as that presented here.

An Objection to the Relation Theory of Meaning and the Problem of Universals

The objection to the relation theory of meaning so defined is that it provides no explanation or, at least, no explanation that makes any kind of psychological sense of how terms come to stand for objects in this way and, perhaps more important, no explanation of how tokens become tokens of a type or, to put it another way, how individuals become members of a class. The only explanation that is offered of how terms come to stand for objects is that given by Kripke (1971/1981) when he suggests that objects, types as well as tokens, are assigned names in a ceremony analogous to that of infant baptism in the Christian tradition, a ceremony for which, needless to say, there is no historical record. The only explanation that is offered of how tokens become grouped into types is to invoke a mysterious process whereby tokens/individuals fall under types/universals construed as eternally existing abstract objects.

The problem of universals is not an issue that is addressed within traditional behaviourism. It is however, central to what I have called (Place 1996b) "linguistic behaviorism", the form of behaviourism that incorporates the picture theory of the meaning of sentences. On this view there are universals; but since there are no abstract objects, universals cannot be abstract objects. But if they are not abstract objects, what are they? The only answer that suggests itself is that universals are concepts, the shared classificatory dispositions of individual human beings and other complex free-moving living organisms. Universals in other words are the creation of our own classificatory behaviour and that of other organisms who need to classify the situations they encounter in order to select an appropriate response, particular in those problematic cases where the organism has no ready-made behavioural strategy which immediately suggests itself.

At first sight, this *conceptualist* theory of universals, as it is called, seems alarmingly subjectivist. For if it is we who carve up the universe into different kinds or categories of thing, what grounds have we for thinking that our particular conceptual scheme is the right one, the one which "carves nature at its joints"? Since we can never think of things in any other way, does it not condemn us, as Kant argued it does, to never

knowing whether our conceptual scheme corresponds to things “as they are in themselves”? In my view, the only thing that can save us from this sceptical nightmare and give us the assurance that our conceptual scheme does indeed "carve nature at its joints" is the observation that free-moving living organisms (animals) have been in the business of conceptualising the prominent features of their stimulus environment for a very long time indeed. Their survival has depended on it.

But there is no need to conclude from this that it is only in so far as our conceptual scheme is embedded in our genetic constitution that we can rely on natural selection to ensure that our concepts correspond to the way things "are in themselves". Although, with the well nigh universal repudiation of behaviourism, such things have been erased from the collective memory of most of us, it has been known for more than a century (Thorndike 1898) that Darwin's principle of variation and natural selection applies to the process whereby animals learn to respond appropriately in a problem situation, just as it does to the process of genetic evolution. What succeeds is retained. What fails is discarded.

Given that learning is subject to natural selection in the same way as is genetic constitution, there is no *epistemological* reason to insist with Fodor (1975) not only that our conceptual scheme is entirely innate, but that it is something the human species has inherited from its primate and, no doubt, pre-primate mammalian ancestors. That our conceptual scheme is rooted in inherited predispositions rather than being entirely impressed by learning on a *tabula rasa* as proposed by Locke is to be expected on grounds of biological economy. Natural selection operating on our genetic constitution would have been less than efficient, if it did not give our conceptual apparatus at least a nudge in the right direction. But to deny the obvious fact that most of our concepts are acquired by learning, partly through linguistic communication with others, but partly also through our own individual experience of what is involved, is little short of crazy.

Moreover, there is good reason to think that the process whereby conceptual boundaries are subject to constant revision in order to accommodate each new experience as it is encountered is not something that applies only in the case of language-using humans. Thanks to the work of Humphrey (1974) and Cowey and Stoerig (1995), we now know that the phenomenon of "blindsight" (Weiskrantz 1986) in which individuals who have suffered lesions of the striate cortex lose all conscious experience in the affected part of the visual

field applies to monkeys in exactly the same way as it does to humans. What this evidence shows, as I have argued recently (Place 1999b; 2000), is that what the patient loses when deprived of conscious experience in a particular sensory modality (vision in this case) is the "evidence" (Broadbent 1971) needed in order to categorize or conceptualize a sensory input which is problematic, either because it is unexpected or because it is motivationally significant relative to the organism's current or perennial motivational concerns.

When confronted with a problematic input, one for which it has no ready-made habitual response, the organism's ability to select a response which will secure its survival and/or that of its offspring will depend crucially on its ability to classify or categorise the input correctly. Get it wrong and you're dead. Get it right and at least you've a fighting chance. For if the concepts we acquire whether we acquire them through our genes or through a process of learning, or, as seems most likely, through a combination of genetic predisposition and learning, it is evident that the process of natural selection, whether it operates phylogenetically on our genetic make-up or ontogenetically on our learned patterns of classificatory behaviour, will ensure that the concepts we form are not only instantiated, but serve to mark off situations in which one set of what Skinner (1969) calls "contingencies" (antecedent-behaviour-consequence relations) apply from those where different contingencies in this sense apply. What this means is that, apart from differences in the richness of conceptual differentiation due to differences in significance of a particular contingency or set of contingencies either for the particular species, for the particular social group (Whorf 1940) or for the particular individual, the uniformities in the causal relations operating in the environment will constrain all concept-forming living organisms who view it, as we do, from the same point on the molar-molecular scale to set their conceptual boundaries at the same points.

Though this environmentally-imposed conceptual uniformity predates the evolution of language by several millions of years, it is clear that without it the evolution of linguistic communication would have been impossible. That is not to say that conceptual boundaries are hardwired into the brain in the manner assumed by Fodor's (1975) "language of thought" hypothesis. Conceptual boundaries, even if they are initially delineated by genetic predisposition, are demonstrably subject to refinement by subsequent learning. Such conceptual uniformities as are observed are to be explained as much by uniformities in the principles of learning, the

contingencies of reinforcement, and the values placed on the different consequences involved, as by an innate conceptual framework. Needless to say, linguistic communication brings with it many new conceptual distinctions which are inconceivable without it. Moreover, as the legend of the Tower of Babel suggests, it is the conceptual innovation required by the human propensity to adapt to a new environment by inventing a new technology to deal with it that is the source of the conceptual changes that have resulted in the emergence of new mutually unintelligible natural languages from the same parent stock. Nevertheless, underlying all this there is a common pre-linguistic conceptual heritage which makes it all possible, and which allows every human with necessary mental resilience, given exposure to the way language is used in the conduct [of] everyday human affairs, to learn another natural language however, far removed from his or her own.

Argument Structure and the Picture Theory of Meaning [see also the editorial note at the beginning]

But it is not just our conceptual scheme that is imposed on our language by environmental contingencies. So, if the picture theory of the meaning of sentences is true, is sentence structure. As Frege (1879/1960; 1891/1960) has taught us, a simple sentence consists of a polyadic predicate, function or verb phrase and as many arguments or noun phrases as are demanded by the predicate. On the picture theory the polyadic predicate or verb phrase depicts, in the case of a monadic or one-place predicate, a property and, in the case of a polyadic predicate, a relation. The argument(s) depict, in the case of a monadic predicate, the property-bearer and, in the case of a polyadic predicate, the entities between which the relation holds or is to hold. An entity for this purpose is what Aristotle calls a "substance", a space-time worm which is extended and bounded in three dimensions of space and one of time, a living organism, an inanimate object, such as a human artefact, a place or simply a direction. The nature of the entity depicted by an argument is determined by the nature of the property or relation depicted by the predicate. A typical sentence showing this structure is Horne and Lowe's (1996 p.212) example of the child's sentence:

'daddy push car'

The way in which the structure of this sentence

Argument (agent) → Predicate (action) → Argument (manipulandum)

is constrained by the nature of the as yet non-existent situation it depicts should be clear.

Such "proto-language" sentences, as Bickerton (1990) calls them, though they consist entirely of lexical words without any syntactic operators have nevertheless a syntactic structure, a structure which is determined solely by the order in which the words occur. It turns out, moreover, that, apart from an almost universal preference for placing the subject term in the first position, the position of the other component words and the noun and verb phrases which replace them as sentences become more complex is a matter of arbitrary linguistic convention which can and does vary from language to language. All that matters is that there should be consistency in this respect within a particular natural language. That this is so has been dramatically demonstrated by Louis Herman.

In a recent paper entitled 'Elements of syntax in the systems of three language-trained animals', Edward Kako (1999) describes Herman's work as follows:

In the early 1980's, Louis Herman and his colleagues set out to teach an artificial language to two young female bottle-nosed dolphins (*Tursiops truncatus*), Akekamai (Ake) and Phoenix. Ake was taught [to respond to] a gesture-based language, with signs given by the trainer standing in her tank; Phoenix was taught an acoustic language, with synthesized click-like words transmitted from an underground speaker." (Kako, *op. cit.* p. 5)

What is particularly interesting for our present purpose is that the two dolphins were taught to respond to sentences with a different word order:

For Phoenix, the syntax of these [relational] commands was OBJECT₁ + RELATION + OBJECT₂ [in other words the English/French word order], while for Ake it was OBJECT₁ + OBJECT₂ + RELATION [in other words the Latin/German word order]. (Kako, *op. cit.* p. 5)

Argument Structure as the Deep Structure of All Sentences

Although its Fregean origins are seldom, if ever, mentioned, what is called "argument structure" has become increasingly recognised by linguists in recent years as the underlying "deep structure" of sentences in preference to a purely linear analysis such as Chomsky's (1957) phrase structure analysis. In this connection Kako cites Jackendoff (1987), Pinker (1989), Grimshaw (1990), Dowty (1991), Baker (1992), Stowell (1992), Levin (1993), Goldberg (1995), and van Hout (1996). The idea may be illustrated by Figure 1 which is taken from a paper of mine entitled 'Behavioral contingency semantics and the correspondence theory of truth' which appeared in 1992 in *Understanding Verbal Relations* edited by Hayes and Hayes. It takes as its starting point sentence which I picked more or less at random from Volume II of T. Whellan's (1859). The sentence reads:

Ascitel de Bulmer bought Marton of King Henry I

where Ascitel de Bulmer was a Norman nobleman who was Sheriff of York in the early 12th century and the Marton in question is Marton-in-the-Forest.

In preparing Figure 1 I have added to the three arguments in that sentence, *Ascitel de Bulmer*, *Marton* and *King Henry I*, three further unstated and speculative arguments giving (a) the date on which the transaction took place - *Whitsun 1107*, (b) the place where the transaction was effected - *York*, and (c) the price paid - *125s*. This gives us six arguments rotating around the function or predicate which appears as either *bought* or *sold* depending on whether the transaction is seen as solicited by Ascitel or as granted by the King. By substituting *bought* for *sold* and *vice versa*, and by performing an active-passive transformation, a number of linear sentences can be constructed all of which depict exactly the same situation, but which differ in that they each have a different argument in the subject position. The effect of this is to view the situation, the same situation, from a different perspective, the perspective of the entity whose name or description occupies the subject position.

That it is the underlying argument structure rather than any one of its particular linear

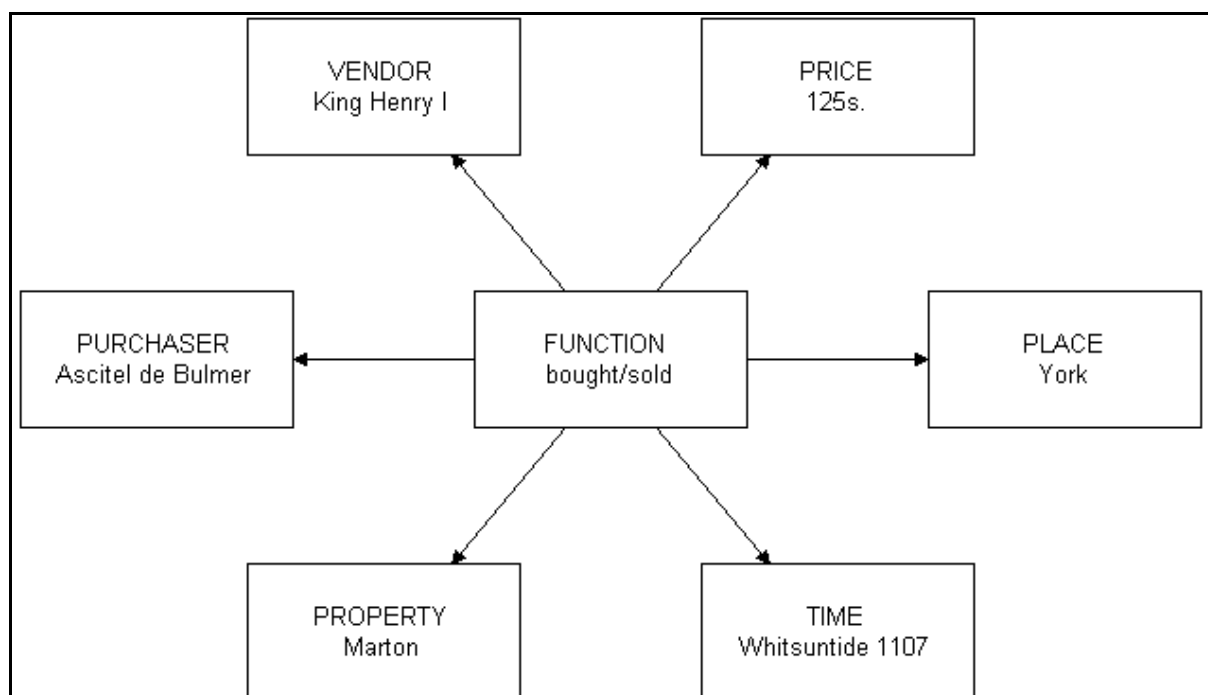


Figure 1

transformations which maps onto the structure of situation depicted is plain enough. That it is the structure of the situation, or rather of similar situations encountered in the past, which constrains the argument structure and determines its representation in language is at least a plausible hypothesis. I think it corresponds to the way things are.

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