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SEMANTICS AS AN ANALYSIS OF LANGUAGE-INDEPENDENT REALITY
(MIT mimeo, May 1969; EXCERPTS)

1) General Background

The relation of syntax and semantics and the question about their respective statuses is notoriously a moot point. In the current viz. standard version of the transformational theory, for instance, the possibility of autonomous semantic structures is ignored and the semantics of sentences is described by adding semantic information, in the form of dictionary entries, to syntactic structures, which have been postulated on supposedly independent grounds. [...] It is part of the purpose of this paper to show that if a semantic structure is constructed, it is not just a formal question whether one chooses the direction from syntax to semantics, or vice versa; more precisely, there is empirical evidence for taking semantics as the starting point, although this empirical side can be disregarded, and the whole issue can be **represented as** just a formal question. [...]

It seems that between the semantics proper viz. 'deep semantics' (which itself is not clearly understood) and the syntax proper viz. 'surface syntax' there is a no-man's-land, the raison d'être of which is purely methodological in nature, in that it consists of the derivations from the one end point to the other. That something is given 'purely methodologically' is not as such an objection against its being objectively given, provided the method itself has been established reasonably well; but here one cannot even talk about **the** method, considering that what we have is a multiplicity of methods (both inside and outside the transformational theory), which are mutually consistent or inconsistent in many partial and seemingly unsystematic ways. Most of the current transformational work on the syntax of English, including the fixation on the elusive notion of deep structure, is concentrated upon some specific features of this intermediary space, which is given on purely methodological grounds and in accordance with a remarkably multifarious method. The high degree of exactness and specialization characteristic of this work is in no proportion to the ill-understood and controversial nature of its subject matter nor to the divergence of the methods used, and because of this lack of correspondence between the method on the one hand, and what it is applied to, and under what circumstances, on the other, a lot of the notorious current transformational work on the syntax of English is, intuitively speaking, hardly interesting in any interesting sense.

Moreover, if it is true — as it seems to be — that all we got here is semantics on the one hand and syntax on the other, then the question which has so much excited transformationally-oriented psycholinguists, namely '**How can a child acquire abstract underlying structures?**' (Bever, Fodor & Weksel 1965; emphasis in the original), is to be replaced by a less exciting one, namely '**How could a child not acquire abstract underlying structures?**' (emphasis mine). This follows simply from replacing those structures by semantics viz. meaning, as well as from the two obvious facts that a child does not learn only the form but also the meaning of the language, and that meaning is in some sense more abstract than the form viz. the syntax. The number of transformationally-based psycholinguistic problems decreases further, when it is noted that transformations need have no psychological reality (cf. Fodor & Garrett 1967).

From what has been said above, it follows that it is not only because of the intrinsic interest of the enterprise, but also in order to achieve greater conceptual clarity that I will attempt to describe the semantics proper (and only contingently to establish its relation to the syntax proper). For this purpose, many concepts developed in different philosophies of language and in other philosophical domains as well prove to be indispensable. To give a simple example: If one

is to describe sentences expressing perceptions, one has to have some idea about what a perception is; and since one now has the choice between the home-made ideas of one's own and the more controlled ideas of perception theories, it would clearly be an instance of misconceived pride, to put it mildly, to cling to the former alternative. All this implies, by the way, no aprioristic propensity to the philosophical point of view. I would have resorted to geography or philanthropy, if it had turned out to be useful, but it did not. So it should be clear that if some 'philosophical' method appears to be necessary in linguistics, i.e. in the description of natural languages, then it is not the method but the term 'philosophical' which is out of place.

2) Why It Is Necessary to Take the Nonlinguistic Reality into Account

In linguistics it is customary to assume that it is not the semanticist's job to deal with the physical and/or social reality but only with meanings viz. 'language itself'. This is an obvious contradiction, because language admittedly functions in a symbolic way, and a symbol is a symbol only in virtue of what it refers to, which means that language is language only in virtue of the nonlinguistic reality. So what is meant by this general assumption must be, rather, first, that granted the referring function of language, it is nevertheless possible to separate language from reality, and second, that the referring function itself, real though it is, is without much interest and needs no elaborate description. It will be seen that both of these assumptions are false.

[...]

The other assumption which was supposed to support the disregard of the nonlinguistic reality, namely that the referring function of language is without much intrinsic interest, is easily refuted. A problem which has always been central to philosophy can hardly be quite trivial, and the problem about what there is in the world (e.g. whether things or qualities or facts or all three) is notoriously the fundamental one in philosophy. On the other hand, linguists cannot simply take over what philosophers have to say on this matter because philosophers — and natural scientists to a still larger extent — often arrive at world views or ontologies which have no relevance whatsoever for the study of natural languages, although they may be shown to be correct in their own right (cf. the ontology of Wittgenstein's *Tractatus* on the one hand, and the ontology of modern physics, on the other). More generally, natural languages are from the philosophical point of view something more or less contingent, and consequently they contain several implicit conceptions or theories which may be — and actually are — thought to be philosophically unacceptable. But unless one makes explicit the at least relative independence of philosophy from natural language, an unconscious revision of the semantics of natural language can easily result, because one is likely to interpret that ontology, or more generally that way of thinking one happens to consider correct, as the ontology and the way of thinking embodied in natural language. This criticism implies, positively speaking, that there exists as objectively given an ontology and a way of thinking which is characteristic of natural languages and which it is the task of linguistic semantics to discover and to describe; and because this way of thinking is objectively given, it can be described either correctly or incorrectly, although as compared with other ways of thinking, it may possibly be shown to be (relatively) incorrect (cf. Sellars 1963). On the other hand, because the facts involved are far from obvious, a distinction between the description and an (unwanted) revision of the semantics of natural languages is often hard to make.

3) Starting from the Simplest Case: Perception

By now, it has been established that it is necessary to account systematically for the

nonlinguistic reality the language refers to. The most natural way of doing things is to begin from the beginning, i.e. from the simplest case, and the simplest case where one comes to use language in reference to reality is obviously the perception situation. Before describing the language in which perceptions are expressed, one has however to explain what the global term 'perception' in fact implies.

In the so-called sense-datum theory the primitive elements in every perception are maximally simple 'sense-data', the status of which can be defined by the following inference: if under certain circumstances a red thing looks black, then there is something which **is** black, namely a black sense-datum. The normal perceptual qualities are supposedly constructed out of sense-data in some nontemporal way which, however, has never been made explicit. From what has been said, it is already clear that the sense-datum theory is of little use for the study of the perception theory implicit in natural languages. Fortunately, it has been more or less unequivocally superseded by what has been called 'theory of appearing', the implications of which for natural languages are immediately obvious. In the theory of appearing the aprioristic distinction between a small amount of 'basic' perceptual qualities and the 'derivative' perceptual qualities is done away with. And second, the number of theoretical entities is kept down by stipulating that what is perceived e.g. in the above red-thing situation is the red thing itself, which only **appears** black (cf. Firth 1965). The advantages of the theory of appearing over the sense-datum theory are, however, to a certain extent only terminological. In the former theory as well, there must be someone who is appeared to, and consequently the problem about the existence of unperceived things and qualities remains unsolved (cf. Chisholm 1965); furthermore, the construction of publicly perceived things out of subjectively perceived appearances still entails a logical leap.

Now, to achieve a more satisfactory solution, and one which is at the same time consonant with the analysis implicitly performed by natural languages, it is good to remember that the perceptual experience can never be non-conceptualized; or if it can, by definition it cannot be talked about (cf. Brody & Oppenheim 1966). Consequently, instead of going directly to the object or result of perception, it seems advisable first to consider the conceptual framework which is presupposed by the inherent nature of the objects or results of perception. Perception takes place in a spatio-temporal world of one temporal and three spatial dimensions the constituency of which presupposes — and is made possible by — the notion of **thing**. (Strawson 1959 has shown why the notion of thing is the most convenient among several possible candidates.) So inside the theory of perception the thing seems to be a primitive concept, and the existence of things is axiomatic. The differences between things are conceptualized as being their differing qualities; the similarity of things is guaranteed by their similar qualities; and the identity of a thing with itself is guaranteed by its qualities which have remained (more or less) identical through a certain lapse of time. Apart from certain sounds and smells, the notions of quality and thing thus presuppose each other, and therefore also the existence of qualities must be taken as axiomatic. Because perception is perception of things (with the same proviso as above), and because things are **represented by** their qualities, it could be said that depending on the perceiver, different qualities **take on the thinglikeness** necessarily present in perception. Some qualities are more likely to take on the thinglikeness than others — and the so-called sortal predicates are here among the most likely candidates — but because there is no a priori boundary beyond which qualities cannot or could not represent things, and because below this (nonexistent) boundary qualities anyway constitute a continuous scale, I will in principle treat all qualities on the same footing. The assumption that only quality-words formally definable as nouns can represent things is futile, because which quality-words are nouns or adjectives or verbs (or are approximately definable as belonging into one of these classes) is a largely idiosyncratic feature of individual languages. Moreover, even inside a single language one and the same thing

can be referred to by several nouns, and there is no way of telling which noun ought to be considered as **the** name of the thing (cf. Brown 1958a); this is an empirical argument against the theory of sortal predicates.

What is immediately given in perception are some subjectively perceived qualities. As was mentioned before, it is not possible logically to derive the existence of (objectively given) things from subjective qualities. Instead, the conception of axiomatically given things, which exist also when unperceived, clearly implies that the things are objectively given. It is now logically possible to derive the subjective qualities from axiomatically given things plus the specific circumstances surrounding a given act of perception. It follows that although subjective qualities are immediately given in one sense, they are nevertheless derivative in another, more fundamental sense. The subjective perceptions of one person, which can be called his own, entail the existence of subjective perceptions of other persons, which cannot be called his own; so the objectively given thing-world is also intersubjective. Normally qualities are not perceived in isolation but together with some other qualities, and these bundles of qualities can be called appearances (of things). Public qualities, public appearances, and public things (not to be confused with axiomatically given things) are theoretically ill-founded but practically well-established constructions out of and abstractions from subjective qualities. This shift from subjective qualities, appearances, and things to their public counterparts is conceived of in a roughly similar way both in the modern English perception theory and in the phenomenology (cf. Firth 1965 and Gurwitsch 1967).

The above conceptual framework as such is of course not logically necessary, because the nature of perception itself is logically contingent; but given the existence of factual perception, this framework does seem to be logically necessary.

The exact nature of perception is problematic. I prefer to consider it as a mental process or act and, consequently, to separate the act of perceiving from the content of perceiving. This way of looking at it seems natural to me, and moreover makes it possible to treat perception on an equal footing with other mental acts (cf. Sect. 9). The act-view has its supporters and its opponents, and the latter are today probably the majority, but the alternatives they offer are conceptually far from clear.

4) The Concept of Meaning

Before we start investigating how language is used in the assumedly simplest case of its use, i.e. in the perception situation, we must somewhat clarify the notion of language itself.

[...] Language is supposedly learned in situations where the correspondence between language and reality obtains i.e. where the statements made are true, and all other uses of language can be considered as extensions from this basic use. For instance, the performative uses, where sentences are not true or false but felicitous or infelicitous (cf. Austin 1965), presuppose the referential use of language.

When the correspondence obtains, there are two physical occurrences, i.e. an utterance and a state of affairs, which structurally match each other. [...]

What is given in a perception situation where language is used is an utterance, i.e. a sample from the expression plane of language (henceforth referred to as 'syntax') on the one hand, and the perception viz. the reality 'behind' it, on the other. These two can be investigated either separately or together, and in the latter case semantics comes about. The customary question is now whether it is necessary to postulate an additional level of meanings viz. intensions between syntax and reality. In cases where syntax actually refers to some physical state of affairs, however remote in space and/or in time, the whole question seems merely terminological. The correlation between sentence parts and components of reality must in any

event be stated, and the latter must eventually be analyzed further. This whole explication process and its concrete outcome may at will be conceived of either as merely establishing the correlation between syntax and reality (in which case we get extensionalism) or as constituting an additional level between syntax and reality (in which case we get intensionalism).

There are, however, other cases which seem clearly to support the postulation of a special intensional level, namely cases where the sentences are false and consequently denote nothing. (I disregard as linguistically implausible the opinion that sentences denote their truth-values.) A subclass of false sentences is constituted by sentences which contain expressions with no denotations (e.g. 'Pegasus', 'golden mountain'). According to normal linguistic intuition, sentences containing non-denoting expressions are sometimes false and sometimes anomalous, so that Russell's method of definite descriptions, which analyzes the sentences of this kind uniformly as being false, is not linguistically adequate. More precisely, in these cases the falsity does not lie in the sentence but in its presuppositions; [...]

The status that has been ascribed to meanings of sentences is essentially methodological, because these have been identified with the descriptions or definitions of the states of affairs which the sentences refer to or purport to refer to. [...] It seems quite possible, however, to assume for the meanings, in addition, an existence of a more direct nature, although this point is not crucial to the discussion. In other words, identifying meanings with some kinds of mental entities (e.g. images or acts of understanding) has long been decried, but recently the so-called cognitive psychology has been pleading for the usefulness of this allegedly old-fashioned conception (cf. Ausubel 1965). [...]

There is a partial analogy between perceptual qualities and meanings insofar as one can distinguish between subjective and objective qualities, on the one hand, and between subjective and objective meanings, on the other. When one uses language in a perception situation, one perceives subjective qualities, but generally one intends to talk about states of affairs consisting of public things and their qualities; this fact can be verbalized by saying that a perceptual sentence **refers to** public things but **expresses** subjective qualities, or that it refers to a state of affairs and expresses a perception. Now the difference between qualities and meanings lies in the fact that although sentences have both subjective and objective meanings (the latter to be identified with the descriptions or definitions of the states of affairs referred to), they refer to neither. Instead, they refer either to states of affairs or to nothing; and they can be said to **express** their subjective **and** objective meanings. In Section 6, objective meanings will be further divided into meanings influenced by syntactic idiosyncrasies of individual languages (= 'surface semantics') and meanings common to all languages (= 'deep semantics').

5) How to Describe Perceptual Sentences

It has been assumed here that in perception situations language refers to states of affairs consisting of public things represented by public qualities which in turn are constructed out of subjective qualities. (The role of the axiomatically given things is to guarantee the general meaningfulness of this construction procedure although it cannot guarantee its success in every particular case; that is, it sometimes happens that the supposed public things — though not the subjective perceptual qualities — turn out to be fictitious or hallucinatory.) This overall conception implies that **perception is independent of language**, and that language merely expresses perception and, at the same time, refers to the public reality 'behind' perception. In the philosophy of perception, in fact, it has apparently always been taken as self-evident that perception is independent of language; on the other hand, it obviously does not make sense to say that (perceptual) language is independent of perception. (To be sure, perception is dependent on language in the following secondary sense: perception can be analyzed and, consequently, known

only with the aid of a metalanguage that confronts perception with the object language and reflects on the ability of the latter to express the former; but for perception to function, it need not be known for what it is.) Now, it is well known that the Sapir-Whorf hypothesis defends the view that language in turn determines perception. The psycholinguistic work carried out in this context seems, however, to offer mainly negative evidence for the Sapir-Whorf hypothesis (cf. Brown 1958b and Schaff 1964) Consequently, I will adopt the point of view that perception is in fac independent of language. This assumption will prove to be crucial to the semantic theory presented here.

The predicate calculus has been the standard means of explicating the meanings of sentences referring to physical states of affairs. For instance, the sentence *This soldier is smoking*, which expresses an immediate perception, would be formulated as *s(a) & sm(a)*. Against this use of predicate calculus it can be objected that without explicit provisos the subject of these sentences, i.e. *(a)*, suggests the unfortunate notion of unknown or bare substratum. [...] The new way of expressing the meaning of the sentence *This soldier is smoking* is, rather obviously, *sm(s)*. This formulation implies that there occur actualizations of the two qualities 'soldier' and 'smoker'/'to smoke', and that it is the former quality which takes on the thinglikeness inherent in perception. (Thus, 'quality' and 'actualization' replace the terms 'universal' and 'particular'.) The expression *s(sm)*, corresponding to the sentence *This smoker is a soldier*, says in turn that there occur actualizations of the same qualities as before, only this time it is the quality 'smoker'/'to smoke' which takes on the thinglikeness. It can now be clearly seen that single (subjective) perceptions and states of affairs consisting of public things cannot be construed as two entirely distinct levels: granted that public things are assumed to be objectively given, they can nevertheless be perceived and conceived in different ways. — In the sentence *s(sm)* the constituents *s* and *(sm)* are called 'predicate' and 'predicate-as-subject' (or simply 'subject'), respectively, and in the sentence *sm(s)* it is the other way around..

The above terminology suggests the equality of two qualities referring to one and the same thing and, by the same token, the interchangeability from subject position to predicate position, and vice versa, of the two predicate referring to these qualities. (Roughly similar views about the superficiality of the distinction between subject and predicate have been presented by Ramsey 1931.) Now it is customary to claim that the status of subject is basically different from that of predicate. This claim it analytically true of predicate calculus, but it does not seem to apply to natural languages. It has been said e.g. that the subject **refers to** something whereas the predicate **characterizes** something (cf. Strawson 1959). It is obvious, however, that in the sentences *This soldier is smoking* and *This smoker is a soldier* the subjects **both** refer to (i.e. take on the thinglikeness) **and** characterize. On the other hand, the predicates 'characterize' by 'referring to' qualities. It has further been said that subject and predicate are basically different, because if the subject fails to denote, the sentence is anomalous, whereas if the predicate fails to denote the sentence is only false This argument seems to be based on a misunderstanding of what is presupposed by the sentence; cf. the following examples:

I) This soldier is smoking. — a) No, he is not a soldier, he is a cop.
— b) No, he is just breathing into cold air.
II) This smoker is a soldier. — b') No, he does not smoke, he is just breathing into cold air
— a') No, he is a cop.

In the Ia) case the subject fails to denote (or denotes faultily), and the sentence is false, not anomalous; in the Ib) case the predicate fails to denote (or denotes faultily), and again the sentence is false, not anomalous. In the IIb') and IIa') cases the subject and the predicate are interchanged, but nothing happens. What is presupposed here is neither of the qualities which the

terms occurring either as the subject or as the predicate refer to, and consequently if one of these does not apply to the state of affairs in question, i.e. if it fails to denote, the resulting sentence is only false. What **is** presupposed, instead, is the thinglikeness inherent in perception. A perception without thinglikeness is a contradiction; therefore, if in an alleged perception situation no thing is present, then of course the sentence purporting to refer to such a situation is anomalous **as a whole**. On the other hand, it is obviously possible to talk about things given in a certain perception situation with terms so inappropriate that the resulting sentence is anomalous, but — once again — there is no difference between subject and predicate: when a smoking soldier is 'referred to' as a pancake and 'characterized' as being smoking, the sentence is anomalous; and when he is 'referred to' as a soldier and 'characterized' as being a soldier, the sentence is again anomalous.

From what has just been said, it follows that qualities, on the one hand, and corresponding predicates, on the other, are equal in principle. It has been admitted above, however, that certain qualities tend to take on the thinglikeness, which means that certain predicates — including the sortal ones — tend to occur as subjects. The limiting case are the proper names, which are here considered as qualities restricted to one thing each and which in practice occur exclusively as subjects. [...]

The case of two-place predicates, which refer to relations between two separate things, is essentially different from that of one-place predicates, which refer to qualities of separate things and eventually — i.e. when take on the thinglikeness — to these things themselves. Consequently, when a relation takes on the thinglikeness, this procedure is always derivative. Although e.g. *Mary's torturer* contains only two constituents, it refers to two things and to their relation; and therefore this expression must be expanded into an abstract form like *t(someone, m)*. [...]

Furthermore, it often happens that a state of affairs involves several things, but with a variable degree of relevance and consequently of explicitness (as far as the linguistic expression is concerned). E.g. buying implies the buyer and the bought, and to a lesser degree the one from whom the thing is bought and the money involved. The predicate 'father' implies clearly a child, but also the wife. Every predicate referring to an action-like quality implies, with a considerable variation in relevance, the place and the instrument of action. [...]

Relatively speaking, only very few among the qualities and relations which are allowed by the human perceptual apparatus are referred to by single words. On the other hand, there is a lot of words (e.g. *the war* and *the strike*) which do not refer to any single qualities or relations, but to complex states of affairs the structure of which is expressible only by several sentences. It is possible for the whole complex state of affairs referred to by *the strike*, however, to be immediately perceived e.g. in a situation referred to by *The strike has begun*. ("There is no a priori limit to perception's complexity", as Russell has put it.)

6) Deep Semantics and Surface Semantics

The actual form, i.e. syntax, of a sentence of a natural language often suggests a meaning which, on a closer inspection, turns out to be inadequate. E.g. the things and the relations between them have obviously not the same conceptual status, but the things are nevertheless referred to by the same kind of expressions as are the relations. In an ideal (but in practice impossible) language relations (between things) should be expressed by relations (between expressions) (cf. Griffin 1964). In the next-to-ideal language this basic inadequacy ought to be — and is — made part of the definition of relation-expressions. Similarly words denoting absence (like *nothing* and *hole*) are modelled in their form and in their use after words denoting presence (cf. Ryle 1951, Leisi 1953). In this context we have to mention also the very real notions

that verbs refer only to actions and nouns refer only to things (cf. Brown 1958b), as well as the cases where formal differences or similarities are in an unjustified way thought to entail meaning differences or similarities (however this is established in particular instances).

The meaning concept suggested by formal differences and similarities which are felt not to correspond to what is the case can be called 'surface semantics', as distinguished from the meaning concept corresponding to what is felt to be the case. It is necessary to emphasize the intuitive nature of the distinction between deep and surface semantics. In other words, although many cases (like those enumerated above) are relatively clear, there are more difficult ones, witness the perennial philosophical question as to whether it is justifiable to talk separately about mind and body, or whether this separation should be abolished in 'deep semantics'. More generally, practically all philosophical questions can be reinterpreted as being questions as to whether sentences are actually saying what they seem to be saying, or not. on the other hand, it is not clear whether philosophical problems **should** be reinterpreted in this way, because their relevance of the study of natural language is — intuitively speaking, once again — often rather restricted.

I any event, I have adopted here the view that the deep semantics of a perceptual sentence is identical with the analysis of the perception expressed by the sentence. Because perception is independent of language, the deep semantics of a perceptual sentence is connected to, but not influenced by, the syntax. Surface syntax (of perceptual sentences) is the result of syntactic influence (whatever its particular nature) on deep semantics (of perceptual sentences). Surface semantics has hardly ever been treated systematically, but rather in an unintentional and piecemeal fashion (but cf. the earlier references to Ryle 1951 and Leisi 1953); e.g. the contributions by the defenders of linguistic relativism, i.e. of the Sapir & Whorf hypothesis, may most profitably be seen as dealing with phenomena of surface semantics. It is true that from a theoretical point of view the interest of surface semantics is rather secondary, but since it is an objective fact, it must be accounted for in one way or another.

Above, deep semantics was claimed to be the result of an analysis. Doing something does not entail that one knows how to analyze — or even that one knows — what one is doing. As a consequence, one can use sentences without knowing what their deep semantics is. Granted that the transformational theory uses the word *to know* (or the expression *to know intuitively*) in a way different from any of its normal uses, it still does not make sense to say that a speaker intuitively knows the deep semantics (approximately: 'deep structures' combined with 'semantic interpretations') of sentences, i.e. that he in this moment intuitively knows all (correct) results of semantic research on his language which will ever be achieved. [...]

The relations of deep and surface semantics to syntax can be described by saying that syntax expresses deep semantic indirectly and surface syntax directly. After the deep semantic of a sentence has been discovered, it must be expressed, e.g. by means of the artificial syntax preliminarily sketched above in connection with the sentence *This soldier is smoking*; to complete the description of the deep semantics of this sentence, the predicates involved must be analyzed (cf. Sect. 7) and the perceptual character of the sentence (including things like time index and definiteness vs. non-definiteness) must be expressed (cf. Sect. 8). Because this artificial syntax has been invented purposely to express deep semantics, it expresses the latter in the direct way in which the syntax of natural language expresses surface semantics. [...]

Deep semantics is supposedly universal. Now it is true that there is no one-to-one correspondence between different languages as far as word meanings, subsentential forms, and sentence constructions are concerned, but it is assumed here that what can be said in one language by means of one word or one sentence can be said in other languages at least by means of ten words or ten sentences. The former use of language may be called 'direct', the latter 'derivative'; the former brings out the surface-semantical differences between languages, and the

latter brings out the deep-semantical identity of languages. At least theoretically, and as long as no optimal universal system has been agreed upon, one could take any language as the point of departure or as the common norm, and equate other languages with it by means of their derivative uses. The (deep-semantical) sentence meanings have been equated here with semantical descriptions, but I do not see why they could not be equated with traditional 'propositions' as well. The danger of systematic untranslatability, which Quine (1960) uses as an argument against the universality of propositions and against the notion of proposition as such, is logically possible but practically impossible.

7) Componential Analysis as the Way of Describing Predicates

What is perceived are states of affairs, not things and qualities as such. Things and qualities are given axiomatically (i.e. not any particular things or qualities, but things and qualities in general), and apparently states of affairs too must be said to be given axiomatically. States of affairs and things namely presuppose each other, just as the notions of whole and part do (although what is basic from the perceptual point of view, is the whole). States of affairs consist of things represented by qualities and related or not to other things (cf. Sect. 3). Thus states of affairs can be analyzed into qualities and relations, but these are nevertheless perceived with the same immediacy as are states of affairs, just as the whole and its (dominant) parts are perceived with the same immediacy. The analysis of states of affairs is independent of language, and the qualities and relations as such are thus nonlinguistic (cf. Sect. 5). When they are referred to by predicates, they are brought into relation with language. Referred to or not, they remain outside of language, but their descriptions become part of language, i.e. they become the meanings of the predicates in question. Meanings of predicates, put together according to the perception to be expressed, make up the meanings of sentences.

From the perceptual point of view, qualities and relations like 'soldier', 'collapse', and 'hit' are immediately given viz. irreducible, but when analyzed, they can be seen to overlap with other qualities and relations in various ways. According to what qualities and relations share or do not share with other qualities and relations, they can be dissected into so-called meaning components (= 'semantic markers' of the transformational theory). The components are themselves predicates, perceptual or not, except that as components, they are put inside quotes or italicized, and considered as theoretical terms.

The componential analysis (hinted at by Hjelmslev, implied by the German word-field theories, elaborated on in French lexicology) has long been a standard means of description in anthropological linguistics (cf. Bendix 1966). Its wider theoretical implications are, however, still rather unclear. There are cases which are treated both in accordance with componential analysis and in some other ways: e.g. the activity and the causativity of verbs have been described componentially, but in recent developments of transformational syntax they are being described with the aid of 'higher sentences'. Moreover, the very nature of analysis can be conceived in different ways. Russell (1940) has e.g. given an analysis of 'give' in purely physical or perceptual terms, whereas Bendix (1966) has made the same thing in the more interpretative terms of causing someone to have something; [...].

In the context of transformational theory Katz, Postal, and Bierwisch have claimed that the meaning components are innate. Given the present lack of knowledge, the matter does not seem to be worth arguing (as has been pointed out by many quite critical reviews of Katz 1966). [...]

8) How to Extend Sentences beyond Perception and how to Describe Them

The perceptual language, as it has been described up to now, can without any formal alterations be used to refer to any single physical state of affairs which ever/never occurred or will occur, i.e. it can be used to express any imaginable perception. (For instance, being a winged horse would be a perceptual quality **if** there were winged horses.) With slight formal alterations, perceptual sentences can be changed into general statements (i.e. 'all' or 'some' statements), they can be negated, and they can be combined with each other. In all these uses, it is implicitly assumed that sentences, whether negated and/or combined or not, are invariably true, and what is asserted is their truth. But when the possibility is taken into account that of two combined sentences, whether negated or not, either one or both can be false, then what is asserted is that it is true that one or both of them is/are true or false, according to a certain canon. As a result of the truth or falsity of the component sentences, the whole sentences generated in accordance with the canon are e.g. disjunctions or implications. — Taken together, all the above-mentioned uses constitute, roughly, the extensional or physicalistic language of Russell & Whitehead's *Principia Mathematica*. Because this language leaves the human factor out of account, it is unexplained in the sense that it contains no indication about how the statements have come to be made.

In the perceptual language of Section 5, every state of affairs was perceived, but this fact itself was not expressed in the language. Similarly, sentences referring to the past or to the future have not come from nothing, but they are results of, e.g. **remembering** and **inferring**, but once again, this fact itself is not expressed in the extensional language. Moreover, negation, disjunction, implication, and general sentences too are not simply given, but are rather results of some **mental processes** or acts (cf. Russell 1940). And these, of course, are not expressed in the language either.

An account of mental acts is thus needed already in the semantic description of the extensional or physicalistic language. But still more obviously, a detailed description of mental acts turns out to be necessary, because natural languages are not physicalistic in character and contain explicit equivalents of many mental acts presupposed by the physicalistic language.

Now, it is true that the notion of mental act has its difficulties. When e.g. the sentence *A soldier is smoking* is uttered in a perception situation, it represents the content of a unique perceptual act (and refers to a physical state of affairs). When the sentence *I see that a soldier is smoking* is uttered, it represents in turn the content of a mental act of the next higher level. In other words, when one becomes aware of a mental act, it automatically becomes the content of another, supposedly higher mental act, namely the act of getting aware of it, and ceases to be an act. Consequently, acts can never be observed as being acts.

I am willing to accept this conclusion and yet to postulate mental acts as entities fo which there is no direct evidence but a lot of indirect evidence and which are moreover needed as hypothetical entities in the gradual construction of language (cf. Sect. 9). There exists of course the theoretical possibility of an infinite regress of mental acts, but language does not make use of it; and in practice it is possible to fix, amidst all this infinity, a rather precise (and low) limit up to which it is reasonable to go in the semantic description. To describe the mental acts implicit in the sentence *Last summer in Finland I saw a very nice sunset*, it is reasonable to account for the mental acts explicitly expressed in the new sentence *I **know** that this is so because I **remember** that I **saw** it*, i.e. perceiving, remembering, and knowing (or being aware). But after this, one would only repeat instances of the last act (i.e. *I know that ... I know that I remember that I saw it*), and this generally indicates the place where to stop. [...]

It is to be noted moreover that here acts of (e.g.) remembering and intending are on an equal footing with acts of (e.g.) combining and abstracting, and it should be considered as an idiosyncracy of natural languages (although a very significant one) that they mostly do not have explicit expressions like *I abstract that*... as they have expressions like *I remember that ...*

The next question is how to express mental acts and their contents. Because most words

for mental acts create opaque contexts, this question is practically identical with formulating an intensional logic, which could account for the non-interchangeability in opaque contexts of different expressions having the same denotation. I do not really care whether or not the linguistic-semantic description of mental acts can be construed as an organic extension of extensional logic, because the part that mental acts play in the semantics of natural languages is so crucial tha it must be described, in any event, in one way or another. If this description can be made consonant with pre-existing modes of formalization, only the better. The following is a modification of a formalization which has been proposed by Bergmann (1959) and which purports to extend the extensional logic by a minimum of new devices.

When a perception is expressed, the sentence refers to a physical state of affairs. When the awareness of a perception is expressed, the sentence refers to a mental state of affairs which is located 'inside' the perceiver. This makes clear the possible difference in truth-values of the two types of sentence. The perceptual sentence *A soldier is smoking* has been made possible by a perceptual act, but it does not assert the occurrence of the act or of its content; instead, it asserts the occurrence of a public or physical state of affairs 'behind' the (subjective) perception. On the other hand, the sentence *He sees that a soldier is smoking* (itself made possible by a higher mental act) asserts the occurrence of the perceptual act and of its content. Consequently, it may be true even if the sentence *A soldier is smoking* turns out to be false, for instance if the smoking soldier turns out to be a hallucination. [...]

9) The Construction of Language on the Basis of Mental Acts Which Are Language-Independent in a Relative but Precise Way

The project of separating semantics from syntax may seem impossible because semantics and syntax are known to be intertwined; similarly it may seem circular to talk about syntax expressing mental acts, since it is obvious that most mental acts would not exist without language and, thus, without syntax (cf. Schaff 1964). But the claim about the language-independence of mental acts must be understood in the following **relative** sense: mental acts are assumed to bring about, and to be independent of, their own expressions whereas they may well be based on expressions of **lower** levels of language. In other words, the construction of language begins — within the framework of this theory — with perception, which was supposed from the outset to be language-independent (cf. Sect. 5) and which, by the way, is itself just a cover term for several mental capacities, including at least induction and association. Perception brings about simple or **basic** sentences which express it, and the analysis of perception-as-expressed is the semantics of those sentences. The perceptual sentences in turn make possible, or at least reinforce, some **new** mental capacities or acts (like abstracting and inferring), which in turn bring about new, more **complex** specimens of syntax (and possibly alter the primary syntax: the basic sentences can thus forsake their connection with perception and be considered as abstractions), which in turn make possible or reinforce new mental acts; etc. It is as yet an open question how this gradual language-construction is carried out in detail, i.e. in which order the specific acts are introduced, and in which way, if any, they are recognized as being independent of lower-level expressions. The general reductionist claim is, in any event, that the semantic material which comes forth after the level of perception is restricted in amount, or exhaustively definable, and results from applying mental acts, ultimately, to the perceptual material. The semantics of a sentence is the analysis of both perceptual material and mental acts expressed by it. [...]

10) Implications for the Transformational Theory

The semantic theory which has been sketched here has some relevance to the current

controversy about generative syntax vs. generative semantics. If it is true — as has been assumed here — that perception should be conceived as being the **cause** of perceptual sentences (and similarly for other mental acts and their expressions), and that semantics is to be identified with the analysis of mental perceptual material and of mental acts applying to it, then **empirical reasons** require the direction from semantics to syntax.

If language is considered as a formal object in Chomsky's (1968) sense, then — to be sure — the particular direction does not matter. However, an empirical object may legitimately be considered as a formal object, only if one explicitly states in which respects, if in any, the formalization does injustice to empirical facts. Consider the following example. Suppose someone has formalized the nature of social mass movements in such a way that they can indifferently be considered as being caused either by leading personalities or by some kind of collective conscience (deducible e.g. from the living conditions). But suppose that — *per impossibile* — social psychology has conclusively proved that leading personalities are only secondary expressions of the (primary) collective conscience. In this case, **if** the mass movements are considered as formal objects, **then** the (causal) direction from personalities to collective conscience, or vice versa, is indifferent. But it would of course be **wrong** to consider them as formal objects, i.e. formal objects that do not distinguish between cause and effect. Analogously, I think that it is wrong to consider languages as formal objects which do not distinguish between the status of semantics and that of syntax. [...]

How this empty space [between syntax and semantics] should exactly be traversed, is a question which I do not find very interesting. Obviously many different ways are possible, — according to the latest estimates, there are at least seven different ways of generating the comparative sentences of English. Therefore a general characterization of some sort would be much more adequate than the highly specialized detail work which has come to characterize the current work on the transformational syntax of English. [...]

First, the notion of language implicit in the transformational theory resembles the physicalistic language of *Principia Mathematica* in that what matters are the sentences and their generation, not the mental reality which underlies these sentences, regardless of whether these are presented in their deep forms or in their surface forms. Some mental acts (e.g. intending and inferring) are relegated into the language performance, while others (e.g. perceiving and abstracting) are either ignored or treated, haphazardly, in connection with divers subsentential forms. Second, [...] as long as one and the same sentence type can equally well be generated in several different ways, we obviously have a vacuous or self-indulgent application of explicit and exact methods. To put it differently, the notion of (explicit) generation, taken too literally, has come to mean some kind of aprioristic value.

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Mimeographed paper, Massachusetts Institute of Technology, May 1969, 48 p.
[At the beginning of the original version of this paper I apologize for my non-vernacular English. Accordingly, a few infelicities of the style have been corrected in the version that is printed here. None of the corrections affects the content of the paper.]

A further developed version of this paper appeared as 'An epistemological approach to linguistic semantics' (*Ajatus: The Yearbook of the Philosophical Society of Finland*, 1970, pp. 96-142).