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PRAGMATICS, PRESUPPOSITIONS AND CONTEXT
GRAMMARS *

O. Introduction

The aim of this paper is to bring a general discussion of the linguistic status of a pragmatic theory. It will be argued that much recent work on 'speech acts' takes the basic pragmatic categories for granted, without explicit introduction and definition within a consistent theoretical framework. A sketch for such a framework will be presented below. We will assume that a generative grammar should include a pragmatic component. A grammar which has this property will be called a *Context Grammar*. Within such a framework we will briefly discuss the relations between semantics and pragmatics, especially with respect to different conceptions of presupposition.

1. The Status of Pragmatics

1.1. In much classic and recent work on pragmatics, the status of a pragmatic theory is not clear. This is also one of the conclusions of the Jerusalem conference (Bar-Hillel, 1972) on pragmatics of natural language, and the confusion in the field has not been eliminated since. Of course, this situation is to be expected when we recognize how many disciplines are directly or indirectly engaged in the study of 'language in context', as we intuitively may characterize the domain of pragmatics.

In the writings of Morris (1938, 1947) pragmatics seem to have a rather different character from its syntactic and semantic co-components in a semiotic theory. Especially the psychological and sociological aspects of the study of language use(rs) are retained in his conception of pragmatics. Hardly any remarks are made on the abstract categories and structures to

* For fruitful discussions I am indebted to Dorothea Franck, who collaborated to present an earlier version of this paper at the Bielefeld symposium.

be specified by a pragmatic theory.¹ The same holds true for much recent work on pragmatics in psycho- and sociolinguistics, anthropology and ethnology.²

In the philosophical writings on ordinary language, usually taken as the source of the recent interest for pragmatics, some useful intuitive distinctions were made, such as performative-constative, illocutionary-perlocutionary, etc., but these have not been made explicit so that they remained vague and often overlapping (Austin, 1962).

The linguistic work on pragmatics was either close to sociology and anthropology or tried to integrate some global pragmatic notions into the current framework of syntactically or semantically based generative grammars, e. g. by introducing the device of 'hyper-sentences' (Ross, 1970; Sadock, 1970).

1.2. It cannot be denied that many interesting observations and proposals have been made on some aspects of pragmatics in these philosophical and linguistic writings. Especially in recent work on the happiness conditions for speech acts (e. g., Searle, 1969), on pragmatic meaning (Grice, 1970; Schiffer, 1972) and on some basic notions and empirical foundations (e. g., Wunderlich, 1973), there is a fruitful discussion of some central problems. In many respects, however, these attempts are often of a heuristic nature, the construction of a systematic set of hypotheses on pragmatic structures of natural language is still a desideratum, and no insight has been gained into the relations between pragmatic structures on the one hand and semantic and syntactic structures on the other hand. It seems clear that before we are able to discuss the actual use of pragmatic rules, we should first formulate them and have some idea about their form and methodological status.

On the other hand attempts are being made in philosophy, philosophi-

¹ For a discussion on the subdivision of general semiotics, see Lieb (1972). In fact, another general remark often issued in the Jerusalem congress was that the traditional distinction between syntax, semantics and pragmatics, each again with a 'theoretical' or 'pure' component and a 'descriptive' and / or 'applied' component, is all but clear. In our discussion below, we will in principle follow the (different) linguistic and logical distinctions between these components, although it must be said that the role of semantics in grammars is not very explicit.

² This branch of pragmatics would rather count as a descriptive or applied part of the theory, or even rank at the level of socio-psychological theories of language and communication. In our treatment below, we will restrict ourselves to a more limited, theoretical and abstract, part of pragmatics. For the socio-psychological approach, which is important for empirical support of abstract pragmatics, see e.g. Gumperz & Hymes (eds.) (1972) and Sudnow (ed.) (1972). See Maas & Wunderlich (1972) for a more linguistically based empirical approach.

cal logic and modal logic to capture some of the properties of context (Montague, 1968, 1972; Kamp, 1973), communication (Harrah, 1963, 1972) and language users (Apostel, 1972), such as 'action', 'intention', 'knowledge and belief', 'message', 'pragmatic indices', etc.³ We will in general follow this more abstract line of research because it at least promises an explicit basis for further discussion. Nevertheless, it must be kept in mind that in this initial stage of research empirical observations of actual verbal interaction and of specific grammatical phenomena relating with pragmatic structures are very important for the construction of the abstract theoretical framework which must account for them. In fact, many of the formal approaches just mentioned formulate hypotheses which are not specific for natural language communication but have a more general application.

1.3. Thus, it is necessary, firstly, to investigate briefly which types of grammar may reasonably be allowed by a theory of natural language, and which links should be established between such grammars and a sound theory of pragmatics.

Secondly, in order to be able to provide a serious basis for a 'pragmatic grammar', we must try to give an independent specification of the main categories of pragmatics.

Finally, it must be shown how pragmatic structures thus specified are to be related with other structures characterized by the grammar.

2. Context Grammars

2.1. The aims and scope of generative grammars cannot be determined *a priori*. Their descriptive and explanatory goals are set by a developing

The logical approaches to pragmatics are relatively new. An early attempt was made by Martin (1959). The relevant logical properties of communication in general have been systematically discussed in Harrah's (1963) monograph. A central contribution, of both philosophical and logical interest, to the theory of pragmatics and to a theory of social interaction in general is Lewis' *Convention* (1968). Our further use of term 'convention' will roughly be based on the defining properties of natural language conventions as formulated by Lewis.

Important recent work at the borderline of logic and linguistics is the pragmatic approach made by Kummer (1972, 1973), to whom we feel highly indebted.

Much work directly relevant for pragmatics has been done in the domain of non-standard logics of different types, e.g. modal logic, tense logic (Rescher & Urquhart, 1971; Kamp, 1973), event and action logics, epistemic and doxastic logics, and deontic logic (for referents see notes below). It is our aim to provide a theoretical framework of pragmatics in which these 'contextual logics' have their natural place. In this respect our attempt parallels Apostel (1972).

theory of grammar, which is part of a general theory of natural language.

We will not here discuss the form of current grammars. It may roughly be said that generative grammars are restricted to a recursive characterization of some abstract structures 'underlying' idealized utterances of given natural languages. More specifically they provide structural descriptions of all and only the *sentences* of that language, at several levels, viz. morphonological, syntactic and semantic.⁴ More recently it has been claimed that grammars should also provide structural descriptions of well-formed sequences of sentences, viz. of *texts*, of natural language (van Dijk, 1972; Petfi & Rieser, 1973). Although it is not yet exactly known which additional categories, rules and constraints grammars should have in order to meet this last requirement, we will provisionally assume here that any adequate grammar should at least specify the abstract linguistic structures of sentences and texts.

We will further assume that the rule system thus constructed has an idealized empirical correlate in the cognitive system of language users, i.e. somehow provides a model of their linguistic competence (Chomsky, 1965).

2.2. Following some recent intuitive suggestions,⁵ we will further assume that language users have the rule-governed ability to 'adequately' use utterances of their languages in all possible communicative situations, and that this ability is part of their linguistic competence. On the 'model of competence' view of grammar, this hypothesis implies that an empirically adequate grammar must formulate the rules, categories and other constraints abstractly reconstructing these abilities.

However, even when we assume that such a hypothesis can be consistently formulated and that some empirical warrants can be provided to sustain it, it is not yet clear which abstract objects a grammar thus extended should describe. If indeed it should represent the ability to 'use' certain utterances adequately in a given situation, it may be expected to characterize all possible situations and match these with all possible utter-

⁴ This is roughly the Chomskyan paradigm, in which most linguistic work of the last 15 years has been accomplished. For the aims and forms of such grammars, cf. Chomsky (1965, 1970), Bach (1964), Kimball (1972). We do not *here* distinguish the direction of 'generative semantics' (represented by Postal, McCawley, Lakoff, a. o.) which remains essentially in the same paradigm.

A rather new approach to grammars comes from recent work in intensional logic, and has been elaborated especially by Montague (1970a, 1973). See Rodman (ed.) (1972) and the contributions in Hintikka, Moravcsik & Suppes (1973).

⁵ For early references on the notion 'communicative competence', see the socio-linguistic literature, e.g. Labov (1970), Hymes (1968, 1972), although similar concepts may be traced in work of ordinary language philosophers.

ances. It is obvious that such a strong claim can be seriously advocated only when we put heavy restrictions on the notion 'possible situation'. That is to say, we must at least have some idea which situations or properties of situations are linguistically relevant and, for that matter, which of these properties should be accounted for in the grammar.

2.3. In order to come closer to a formulation of a serious answer to these questions, we will introduce the abstract notion of *context*. Intuitively, a context is the linguistically relevant set of characteristics of a communicative situation, the latter being the state of affairs in which communicative events <in' natural language take place. Thus, a context must have exactly those properties which are sufficient and necessary for the formulation of the conditions and rules for the adequate use of utterances. More specifically, a context may be characterized simply by a set of 'happiness conditions' for utterances in natural language.^o We will say that a given utterance is *happy* or *adequate* with respect to a given context. Conversely, a context will be said to be *appropriate*, or not, for a given utterance. These notions are all scalar: an utterance is more or less happy, a context more or less appropriate. It is clear that the notions intuitively introduced here need explication in a theoretical framework.

The notion of context seems rather static when it is merely used to refer to a state of affairs. We therefore additionally introduce the term *communicative event*, which we provisionally take as a specific diange relation over contexts. A communicative event is said to be *successful* if a given context changes into a specific new context.

A context grammar is required to describe the structure of all appropriate contexts, relative to well-formed utterances, and to specify under which conditions a change from context into context is successful. Since happiness conditions do not merely depend on the structure of appropriate contexts, but also on the properties of utterances, context grammars include a component for sentences and text characterization. Rather generally speaking, indeed, we may say that conditions for morphological, syntactic and semantic well-formedness are a subset of the set of happiness conditions. Below, however, we will restrict the notion of happiness condition to the structure of pragmatic contexts. The status of logical or referential (truth-) conditions will be discussed separately.

2.4. Furthermore, context grammars must specify how given pragmatic structures, i.e. contexts, impose constraints upon the structure of utterances. More specifically, assuming that the abstract structures underlying utterances are characterized by semantically based text grammars, a context grammar must formulate the rules mapping pragmatic structures into

^o For the notion of 'happiness condition' and related concepts, see e.g. Austin (1962), Searle (1969), and work done in their footsteps.

semantic structures, i.e. contexts into texts. Let us try to make these very general requirements on context grammars more precise by systematically constructing the notion of context.

2.5. It should be stressed that the usual competence-performance distinction, although not wholly unproblematic from a psychological point of view, is respected here. Utterances which are formally speaking happy with respect to their contexts, may not be actually *acceptable* in concrete communicative situations, and conversely.

Of course this rises the more general problem of the empirical basis of a grammar which we cannot discuss here. It must be kept in mind, however, that serious theory construction cannot be based on ad hoc data and on features of contexts which are only psychologically and sociologically relevant. In principle we take the view that native speakers have intuitive insight into the pragmatic rule-system of their language, so that we may test the hypothetical conditions and rules of the context grammar on actual judgements about the appropriateness of contexts and the happiness of utterances. We are also aware of the fact that pragmatic rules, perhaps even more than syntactic, morphological and semantic rules, may be different depending on class and group conventions in verbal and social interaction 'within' the 'same' language group. However, these differences should perhaps rather be characterized by specific constraints upon utterance structures than by specific context structures, which might very well be general if not universal: the underlying structures of questions, insults, etc., but not their manifestation in the utterance, seem to be independent of dialect or even language differences. Of course this hypothesis needs empirical investigation.⁷

3. Pragmatic Structures

3.1. One of the basic intuitive properties of verbal interaction is undoubtedly the establishment of a special kind of social interaction in which a 'speaker', by way of producing an 'utterance' tries to 'change the mind and/or the actions' of a 'hearer'. Let us try to reconstruct this property in a more or less systematic way.

3.2. Although notions such as 'communicative event' or 'communicative interaction' should be defined in a more general theory of communication, let us briefly recall their major properties, in order to be able to specify

⁷ Preliminary empirical work in this direction has been done by anthropologists and socio-linguists. Cf. the contributions in Gumperz & Hymes (eds.) (1972).

which specifically linguistic and grammatical aspects should be distinguished.

An *event* may most simply be characterized as an ordered n-tuple of state of affairs, $\langle s_1, s_2, \dots, s_n \rangle$, where the ordering is defined by a change-relation over states. This relation is a linear function of time (intervals or moments). *Simple events* are defined for $n=2$, complex events for $n>2$, where s_1 in each case is the 'initial state', s_n the 'final state', and s_i ($i(n)$) an 'Intermediary state' of the event.

A *state* will be taken to be roughly defined as an ordered set of objects and their properties. The change relation relating such states is defined by deletion, addition, or permutation of one or more objects, properties or relations.⁸

Communicative events are complex events with specific characteristics. Elements of their states are at least *communicating systems*, c_1, c_2, \dots and *messages*, m_1, m_2, \dots . Over these elements we define specific relations. E.g., ordered pairs $\langle c_i, m_i \rangle$ are elements of the *production* relation, and pairs $\langle m_i, c_i \rangle$ elements of the *perception* (or *interpretation*) relations. In ideal and normal cases we take m_i on c_i and $C_i = C_i$. A further requirement is that each element $\langle c_i, m_i \rangle, \langle m_i, c_i \rangle$ is a member of the cause-relation, i.e. $\langle c_i, m_i \rangle$ must be a *sufficient condition* for $\langle m_i, c_i \rangle$.

Messages are strings of conventional symbols ordered by conventional rules, i.e. rules and symbols which are part of each communicating system of specific sets of communicating systems: the communicating group, such that identical types of symbols and messages cause equivalent conventional perception types (interpretations) in each communicating system in equivalent states of affairs. This characterization of symbols and messages is very rough, but we will not go here into the details of the philosophy of semiotics.⁹

3.3. Communicative events of/in/with natural language have further properties. The communicating systems involved are human beings or *persons*. We shall therefore designate such systems with the term *P-systems*. We use this abstract term in our reconstruction procedure in order to emphasize that we do not here speak of 'real human beings', but merely of sets of properties of human beings which are relevant for communication in natural language.

A message in natural language will be called an *utterance* or *natural message*, where symbols and rules are those of a given natural language. Again it must be underlined that the theory merely speaks about *utterance*

⁸ For a more comprehensive account of the logical structure of 'events' and event descriptions, cf. e.g. Davidson (1967a).

⁹ For a formal characterization of 'messages' in general, see recent work by Harrah (e.g. Harrah, 1972).

types not about *utterance tokens*." The problem is how to construct the relation between utterance types and the abstract constructs like sentences or *texts* specified by current generative grammars. It may be said, simply, that these two entities are equivalent, though defined at different theoretical levels, viz. at the pragmatic and the syntactico-semantic levels respectively. Nevertheless, we might have a notion of utterance type having a many-one relation with a text, when we recognize that the 'same' morphological string may be pronounced in different 'ways', each of which representing an utterance type, i.e. some equivalence class over phonetic strings. Similar remarks may be made for interpretation classes of these utterance types of one text, so that we may speak of 'pragmatically ambiguous' texts. We will leave this unexplored domain of the systematic relations between texts and utterances with these few indications.

P-systems which are members of the production relation will, as usual, be called *speakers*, and members of the perception/interpretation relation will be called *hearers*, terms which will also be used for producers and receivers in written or printed forms of communication channels.

As all systems, P-systems will be described by a set of states and state changes. P-systems have *internal* and *external states*, roughly corresponding with a mind-(external) body distinction, such that bodily states have the property such that they are perceivable by other P-systems. We do not here enter the eternal debate about the identity-hypotheses of the mind-body problem, if any. We introduce internal and external states for theoretical reasons as theoretical terms, although we do not deny their empirical foundation, at least in our intuitive conceptions and distinctions of our 'world'.

Another characteristic of communication processes in natural language is that production and perception events are members of the class of *actions*. Actions are, thus, changes in the external states of P-systems, but have still other defining properties. Only those P-external changes are actions which are caused by P-internal changes, viz. by *mental acts*. More specifically, we will require that actions must be caused by acts of *intention*. This reputedly complex philosophical notion cannot be systematically discussed here, but may be defined as a function from internal states to external states." The intention relation, indeed, is binary: we can

¹⁰ In this version we omitted a more general discussion on the theoretical status of the notion of 'utterance', e.g. in relation to such notions as 'expression/inscription', 'discourse/textu', etc., and the whole problem on the relations between types and tokens in semiotic theory. See Kasher (1972) for a fruitful initial discussion.

¹¹ The literature on 'actions' is rapidly growing in many disciplines. Philosophical discussion is given in Binkley, Bronaugh & Marras (eds.) (1971), Care & Landesman (eds.) (1968) and White (ed.) (1968). For a logical approach see above all the work of Davidson (1967a) and von Wright (1963, 1967). We omit reference to the large sociological literature on actions.

not merely 'intend' but intend-to-do-something. A change of external state, thus, is not an action when it does not belong to this specific function: stumbling in general is not an action but a simple bodily event. Speaking and listening qualify as actions because they result from internal acts of intention to speak and to listen. It might be argued that a distinction should be made here between conscious and unconscious (or subconscious) acts of intention, another problem which we must leave undiscussed.

Natural communication processes may now be generally characterized in the following way:

- (i) an internal state s_i of a P-system P_i of a context C . changes into s_{i+1}
- (ii) the event described by (i) causes a change in the external state s_i of P_i into s_{i+1} (uttering) and in the initial state of the context (addition of an utterance u_i).
- (iii) the event described by (ii) causes a change in the external state s_k of P_j , where $P_j \neq P_i$, into s_{k+1} (perception).
- (iv) the event described by (iii) causes a change in the internal state s_i of P_i into s_{i+1} (interpretation).

Communicative events having these properties are said to be successful if the final internal state of P_i is member of some type of equivalence relation with the internal state of P_j , i.e. if the interpretation of the communicative action and the utterance by the hearer somehow corresponds with the intentions of P_i with respect to actions or acts of P . This is still rather unprecise as long as we have no clearer picture of P-internal systems.

3.4. In the multiplicity of possible internal states and acts we will tentatively distinguish three main types, and assume that these are sufficient and necessary for a characterization of pragmatic structures:

- (i) epistemic-doxastic (know, believe, understand, ...)
- (ii) boulomaic (want, wish, intend, desire, hope, ...)
- (iii) evaluative (prefer, find, like, ...).

We will assume that each class is a system or a system of sub-systems. States or changes in one system, however, may presuppose or entail changes in other systems: it seems reasonable, for example, to postulate that all mental states/acts are 'accessible' for epistemic acts: if we believe something we generally know that we believe it, if we prefer something (over something) we know this preference of ours, although this knowledge may be implicit.

In our theory we will, as usual, represent internal P-systems as *system-descriptions*. Each P-internal state is thus defined by a set of *pro positions*, and an internal act by a change in this set. At this level of abstraction we

will also assume that each internal system has a set of *rules* systematically relating the propositions (actual and possible) of an internal system. Interpreted in this way, internal systems may be constructed as *logics* of some kind.

In fact, current systems of modal logic reconstruct these systems, mostly in an idealized way, i.e. with no a priori or psychological limits on the complexity of the derivational relations between their propositions.¹² A similar methodological line of thought underlies the construction of generative grammars, 'modelling' our intuitive internal grammar representing linguistic competence. The actual constraints on the derivation rules of these systems, rules which are part of the epistemic system *K*, must be provided by cognitive psychology, or else the logics must take a probabilistic inductive nature.

3.5. It might be argued that a recursive enumeration of all possible pragmatic contexts should be given exclusively in terms of P-internal systems. This hypothesis is based on the assumption that all relevant properties of communicative events are relevant only in so *far* as they are 'internalized' by speakers and hearers. E.g., the fact that *p* is 'objectively' the case, or that *a* exists, etc., is relevant only when speakers/hearers know, believe, want, hope, prefer, etc. *p* to be the case or *a* to exist. Furthermore, it must be stressed that the definition of internal states, especially of intention, implies that only those internal states are relevant which have some relation with actions, in particular with the uttering of an utterance with certain properties: 'private' internal states are not relevant in social processes of communication.

These assumptions seem to imply that the logical semantics or theory of reference of a natural language is 'embedded' in pragmatics, since the set of possible worlds in which sentences of utterances are satisfiable is part of or function of (compatible with) P-internal systems. P-independent truth conditions are irrelevant in the semantics of natural language. We shall come back to these relations between semantics and pragmatics below.

3.6. The set of general or universal pragmatic conditions for the well-formedness of contexts may now be expressed in terms of the *contextual logics*" mentioned above, e.g.:

¹² The literature on epistemic, doxastic and boulomaic logics has been partially accounted for in Hintikka (1962) and Rescher (1968). See Hintikka (1971) for a semantic approach to such logics. For application in linguistics and pragmatics, see Kummer (1973).

¹⁹ The term 'contextual logic' is borrowed from Hans Kamp (1973). I do not know of earlier uses of this term in the literature, although it seems equivalent with e.g. Montague's conception of pragmatic logics, viz. logics having reference points as speaker, time/place of utterance in their semantic model. We take such contextual logics to be related to 'text logics' (see van Dijk,

- (1) Speaker knows/assumes that Hearer exists.
 - (2) Speaker knows/assumes that Hearer knows language/grammar L_i .
 - (3) Speaker knows/assumes that Hearer knows/assumes a set of propositions (to be true) about the communication situation (initial state of affairs) in question, e.g. based on conventionally controlled observational data and the inferences from these propositions.
- etc.*

We will no further specify these general conditions on natural communication. In part they are rather trivial or derivable from each other: the speaker must know/assume that he exists, must wish and intend to utter an utterance, must wish and intend to change the internal state of the hearer with this utterance, etc."

For a characterization of the specific properties of particular types of contexts it should be investigated whether the three classes of internal states introduced above are necessary and sufficient.

Recall that the conditions do not merely define different 'speech acts', but whole 'communicative events', including 'hearing acts'. Finally, it must be stressed that a recursive description of possible contexts yields an infinite number of context descriptions, of which only few have a conventional lexical name, such as 'question', 'request', 'command', 'advice', 'promise', etc. Furthermore, it is important to assume that the conditions do not pertain to actual or intended events or actions resulting from, i.e. caused by, the communicative event as such, which is marked by a final state change in the mind of the speaker (interpretation) *directly* caused by the utterance.

In order to test our assumptions, let us briefly take a concrete example of a familiar type of context, viz. the *advice-context*, and formulate some relevant, though not exhaustive, conditions for it.¹⁵

- (i) S assumes that H will do a in situation s (based on the inductively constructed K-proposition: in all situations of type S , H behaves like a).
- (ii) S assumes/knows that a is not good for H.
- (iii) S assumes/knows that there is an action b such that b is better for H than a (in some cases additionally: and knows/assumes that H prefers b to a).

1973b), much in the same way as context grammars are related with text grammars. More particularly, we assume the logics to specify the abstract underlying structures, viz. the semantic and pragmatic structures in the grammar.

¹⁴ See e.g. the 'preparatory conditions' formulated by Searle (1969) and the conversational principles and maxims given by Grice (1970).

¹⁵ For a more detailed but informal discussion of the structure of advice context, see van Dijk (1973c).

- (iv) S wants H to know that S finds *b* better than *a* for H.
- (y) H assumes that S has sufficient reasons to assume that *b* is better for H than *a* (in fact, this condition follows from the more general definition of knowledge or assumption).
- (vi) S assumes that H can do *b*
- (vii) S assumes that H will not by himself do *b* (does not intend *b*)
- (viii) the recursivity condition: S and H know/believe (to know/believe ...) the (complex) propositions expressed by condition (i) — (vii).

We see that the expressions used in these conditions only manifest the theoretical predicates characterizing the P-internal sets introduced above. However, there are a certain number of properties of advices which do not seem to be adequately captured by these conditions. Firstly, the advice is generally embedded in a social situation such that the speaker-adviser has some type of *authority* for issuing the advice. This may simply be an authority within a certain field of knowledge or experience (politics, dancing, wine-gastronomics, etc.) and need not imply differences in social status, although, e.g., a teacher will generally advise his pupils, and seldom conversely, which is due to the fact that especially in his role of teacher his 'authority-field' over his pupils is conventionally larger than those of his pupils (although, of course, it may not be factually so). Is this notion of dominance or authority, also playing in commands, requests, etc. merely a social characteristic or a more specific pragmatic feature of the context? From our intuitive explanation of this condition we may simply rephrase it as the (mutual) knowledge of speaker and hearer that speaker knows better than hearer, in a given situation, which action of hearer is better for hearer. The advice is also appropriate in cases where there is so to speak 'equal authority', e.g. among friends, on certain types of actions of hearer. In that case, however, speaker will generally specify -- e.g. as a reminder — — the negative effects of doing *a* instead of *b* for H, a kind of knowledge which H may have only implicitly (at that moment). Thus condition (ii) must be made more precise by adding 'or consequences of *a*'.

Secondly, we seem to deal also with *deontic aspects* in case of advices: we may, at least in certain contexts, require that speaker finds that hearer 'ought' to do *b* instead of *a*, from which the hearer might infer at least that *b* is permitted. Of course, we might introduce a fourth class of deontic internal states, but these do not seem to be primitive like the others: if I ought to do *p*, there must be another P-system or some other system (e.g. a system of generally known norms) that wants me to do *p*. Hence obligations/permissions are simply knowledge/belief about wants/wishes of other instances with respect to my actions."¹⁶

¹⁶ This does not imply that deontic logics should not be elaborated independently,

When we vary the conditions as has been given for advice-contexts we may obtain other types of contexts related with this genuine advices, but for which there are no conventional names (in English). Thus putting

(iii') S knows that *a* is better for 1-1 than *b*
 or (iii'') S knows that *b* is not better for H than *a*

instead of (iii) we characterize <misleading advices'. And by omitting (vi) we have a type of 'impossible advices'.

Of course, we may not freely manipulate the conditions in question. First of all, they must at least be *consistent* following the rules of the respective contextual logics. Thus 'S wants *p*' is inconsistent with 'S knows that *p* (is the case)' only if follows from 'x wants *p*' that not-*p* is true, i.e. when x knows that not-*p*.

3.7. The conditions defining possible pragmatic structures have often been cast in the form of pragmatic or *conversational postulates*, e.g. ASK (*a*, *b*, *p*) = KNOW (*a*, *p*), etc. which are equivalent with the conditions given above. However, the status in pragmatic theory of such predicates as ASK or REQUEST, is not clear; they are lexical units used to denote frequent contexts, not pragmatically basic predicates like 'know' or 'want'."

3.8. The immediate tasks at the level of pragmatics which we have now roughly discussed do not seem genuinely linguistic in the traditional sense, but rather a task of appropriate contextual logics and their semantics. More directly linguistically relevant are the different constraints upon the structure of 'uttered texts' resulting from the underlying pragmatic structures. It is clear, however, that a grammar may only formulate constraints from one level upon another if it specifies both levels. In order, then, to demonstrate the relevance of an underlying pragmatic structure, let us briefly discuss the relations between texts and contexts.

4. Texts and Contexts

4.1. The constraints which make utterances adequate in given contexts do not seem easy to formulate in a systematic way. Of course, interrogative sentence structures often appear in question-contexts, and imperatives in command-contexts, but this is not always the case. The converse is not true either. This well-known fact shows that form of sentences or texts

although they have interesting structural resemblances with epistemic logics. Cf. von Wright (1963, 1971) and the contributions in Hilpinen (ed.) (1971).

¹⁷ Cf., among other work, Gordon & Lakoff (1971).

does not as such make utterances count as manifestations of a given 'speech act'. Similarly, the exact semantic representation of texts cannot, of course, be predicted by underlying pragmatic structures of the context. Not even such seemingly clear-cut examples like deictic expressions, such as *I, you, here, now*, etc., necessarily refer to 'points of reference' in the pragmatic context. We therefore probably should distinguish between obligatory and optional mapping rules between pragmatic and syntactico-semantic structures.

Taking at first some examples from the set of constraints on lexico-semantic structures of texts, e. g. in the advice-contexts briefly discussed above, a first general but optional possibility is the selection of *lexical names* for speech acts or communicative events. Thus, *I advise you p* might be a general framework of the structures of uttered texts in advice-contexts, often accompanied by the deictic adverb *hereby*. This fact has been one of the reasons for the current pragmatic hyper-sentences hypotheses. However, in many cases such hyper-sentences should be obligatorily deleted. E.g. in curse-contexts we may not have *I (hereby) curse you p*, nor may we say *I (hereby) (try to) persuade you p* in persuasion-contexts. In other contexts this 'verbalization' of the pragmatic intention is possible though not very grammatical: *I (hereby) ask you whether you will come tomorrow* is a queer text in normal ask-contexts, whereas the use of the verb *to order* in command-contexts is regular. It should be investigated whether these differences are systematically explainable and whether they are general or language specific.

A more interesting type of constraints is a general consistency between contextual conditions and the semantic representation or logical form of the uttered sentences / texts. Thus the condition that advices pertain to actions of the hearer seems to imply the use of action predicates. Thus, *You are very nice to me* cannot regularly count as an advice, nor can *The U.S. is still bombing Cambodia* which contains an action verb but not as a predicate for the hearer. Of course, the utterance of state or event descriptions may count as an advice in case some form of general or particular implication is presupposed. Thus *John will also come to the party* may count as an advice for a hearer to come or not to come to that party if both speaker and hearer know the implication: 'If John comes to a party, then H will prefer (not) to come to that party', such that the utterance of a further premiss asserting a fact, may lead, by modus ponens, to a conclusion implicitly functioning as the advice. The fact that advices pertain only to future actions of the hearer implies that past tenses are excluded in texts uttered in advice-contexts: *I advise you to come yesterday*. Such constraints may be used as an important heuristic test criterion for the relevance of certain pragmatic conditions, because such sentences are regularly considered to be less grammatical or even non-sensical or contradictory: e.g. *I advise you to consult a psychiatrist, because you will have no profit at all from it*, would be odd in most cases. Thus, *You better go on breathing* may not regularly figure in advice contexts because we

expect that any hearer (being able to hear the utterance) will breathe anyway. Finally, the evaluative character of advices may determine the lexical choice of adjectives and adverbs like *good*, *better*, *rather*, etc. Another way to express advices is a counterfactual substitution of speaker and hearer: *If I were you, I would p*, whereby the speaker as it were gives a warrant for his assumption that doing some action *b* is better than not-doing *b* or doing *a*.

Although the lexico-semantic properties of advice-utterances have not been exhaustively described, we have at least some idea of how underlying pragmatic structures control the formation of semantic representations.

To take another example: *Do I have an headache?* cannot in general figure in a question-context, which requires that speaker does not know. if / whether *p* (is the case) and assumes that hearer might know *p*, because this would entail that the speaker assumes to have less accessibility to his own feelings than the hearer: which is false in our actual world, if not in all possible worlds (in a semantics of epistemic logic).

4.2. In the preceding paragraph we have given some concrete examples of pragmatic constraints on lexico-semantic structures and their referential interpretation. The question is how we get such constraints in an explicit and systematic way, e.g. by some form of rules. Current generative grammars do not seem to have a form in which such constraints can be handled without postulating a formal language generating semantic representations as logical forms. In that case we might formulate the pragmatic conditions in the same language, such that the (ordered) set of pragmatic conditions belongs to the set of premisses from which an ordered set of logical forms of sequences of sentences (texts) must be 'dependen', e.g. by criteria of consistency. A way to get such notions explicit would be a model theory formulating interpretations for both sets, such that there is partial intensional or / and extensional identity or equivalence. Thus / as an expression in a text and *Speaker* as an expression in a pragmatic language would often have the same extension. Similarly, the extension of the verb / predicate *to go* in the text *You'd better go to the police* must be part of the extension of the expression *action* in the pragmatic language, *you go* in the extension *action of hearer*, and the whole proposition satisfiable only in those worlds compatible with time indices greater than the state of affairs in which the speaker utters his advice; only if these conditions are fulfilled the sentence may figure in an advice context, i.e. is adequate in its context. Such criteria can be formulated in any serious logical grammar with an explicit semantics, e.g. a Montague-type of grammar.

It is possible that pragmatic constraints are not restricted to the logical forms of sentences. Intuitively, we know that we may make a request with several sentences in a coherent text; the same holds true for commands, assertions, etc. In this case the constraints operate globally for ordered sets of logical forms, not for each individual logical form: we may have asser-

tions in request-utterances, and questions in assertion-contexts, etc. e.g. */t is so cold in here. Please shut the window*, may be interpreted as manifesting one request, in which the assertion-part somehow seems 'pragmatically subordinated' and functions as a motivation for the request. This fact, viz. that pragmatic constraints may operate globally, seems to be an argument in favour of text grammars specifying also global 'macro-structures'."

This observation is not incompatible with a more 'dynamic' model of text description in which each sentence or clause receives, linearly, its own interpretation: Such a description is necessary in order to account for the fact that preceding sentences permanently construct or reconstruct the worlds in which following sentences are satisfiable. Thus any sentence may contribute to a change of the context — most notably in the expansion of the knowledge-set of the hearer — which in turn pragmatically constrains the possible logical forms and interpretation of following sentences. We will come back to this phenomenon below when we discuss presuppositions.¹⁸

Notice that any grammatical hyper-sentence hypothesis assuming only one hyper-sentence for complex sentences, would not be able to account for sentences or rather texts like: *You look so pale. Are you ill?*, without adopting a macro-structural framework in which sequences of sentences may undergo global (trans-derivational) constraints.

We will not here give further examples of pragmatic constraints on text structure. Although most of them seem to be restricted to the semantic level, there are also syntactic and morphophonological constraints. Although there has not yet been given a systematic description of them, examples are well-known from the (socio-) linguistic literature. Instead we will continue our argument with a more general discussion about the relations between pragmatics and semantics in a grammatical theory.

5. Semantics and Pragmatics

5.1. The introduction of a pragmatic component into a generative grammar of natural language requires a serious discussion about its relation-

¹⁸ The notion of 'macro-structure', intuitively known in literary theory and the theory of narrative, seems to be relevant also in linguistics, e.g. *for* an explicit definition of textual coherence and a consistent operation of transderivational constraints over sequences of sentences. Independent reasons for the grammatical relevance of such macro-structures are coming from recent psycholinguistic work. For discussion and reference, see van Dijk (1973a).

¹⁹ Such a 'dynamic' model of text structure has been notably advocated in the work of Kummer (1971). A recent logical discussion about the role of linguistic (con-)text upon the interpretation of sentences has been Isard (1973).

ships with the semantic component of the grammar, and in general about the aims and tasks of semantics and pragmatics. In recent discussions in linguistics and logic many aspects treated as 'pragmatic' are rather semantic in character, and conversely, if we can consistently demarcate the empirical domain of each of them.

Taking semantics, firstly, in its usual linguistic sense, a semantic theory is to explicate the 'meaning' of phrases, sentences and texts, e.g. in terms of semantic representations or in terms of semantic 'interpretation' of lexico-syntactic sentence structures.²⁰ Such a semantics is different from a semantics trying to account for the meanings assigned to expressions in individual communicative situations by speaker and hearer, if these assigned 'meanings' do not have some equivalence relation with the 'general' meanings of expressions in the language, but are based on ad hoc features of situations."

Secondly, a logical semantics recursively specifies the interpretations of terms and sentences in terms of extensions (individuals, truth values) in a model. As in linguistics, we here abstract from concrete interpretations in given situations, but merely specify the general rules of interpretation. In both cases, thus, meaning or interpretation (reference) is specified independently of speakers, hearers or other constant factors of communicative situations.

5.2. However, we may in principle enrich a logical semantics in such a way, as has been notably demonstrated by e.g. Montague and Lewis, that extensions are calculated with respect to specific individuals in the domain of the interpretation, e.g. speaker, time point, place point, etc., such that sentences have truth values 'with respect to' these points of reference in some model or model set Y^2 . In that case 'intensions' are ultimately translated into an extensional modeltheoretic language, whereas 'meanings' of expressions (sometimes considered to be equivalent with the intension

²² For current discussion of different positions in linguistic semantics, see Steinberg & Jakobovits (eds.) (1971).

²¹ This position seems to be advocated, at least in some respects, in Grice (1969, 1970) and Schiffer (1972). For extensive discussion of the conventional (i.e. pragmatic?) and communicative aspects of meaning, see Strawson (1971: Chaps. 8-11).

It must be noted that e.g. Rescher (1968) attempted to construct a notion of truth in the framework of an 'assertion logic', such that truth becomes equivalent with 'that which is asserted by everyone'.

²² Full *reference* to all work done in logical semantics, from Frege via Tarski, Carnap, to Kripke and others cannot be given here. Central in recent discussions is the work of Montague (1970, 1973), Lewis (1972), Davidson (1967b), and other contributions in Davidson & Harman (eds.) (1972). For the particular problems about reference and modalities, cf. Linsky (ed.) (1971). The classical discussions have been collected in Linsky (ed.) (1952).

of an expression) are treated as functions from expressions (terms, sentences) to extensions, or rather, from possible worlds to extensions.

Without giving the well-known details of such logical semantics, we might ask whether such a semantics differs from pragmatics, or whether a pragmatics of this type differs from a pragmatics as we understand it.

Appropriate level distinctions as should or can be made between the semantics and the pragmatics of a given formal or natural language, must be given in terms of the explananda and the explaining theoretical constructs.

Thus, a logical semantics with pragmatic points of reference is still a semantics when the task of semantics is specified as the formulation of truth or satisfaction conditions. That reference points co-determine these conditions is simply an empirically necessary refinement of the semantics.

In pragmatics, as we have argued in the preceding sections, we deal with happiness conditions of utterances with respect to contexts and with the appropriateness of contexts with respect to utterances. Just as the notion of 'speaker' may be represented as an unanalyzed term in semantics, the notion of truth (value) might be used as an unanalyzed term in a pragmatic description, much in the same way as the pragmatic notion of utterance is reconstructed as 'sentence' or 'text' at the syntactico-semantic level in a grammar. Nevertheless, there is some point in considering morphonological, syntactic and semantic well-formedness conditions — interpreted as 'correctness'-conditions — as a subset of happiness conditions of an utterance. The general pragmatic constraint operating here would be that the structure of the utterance / text should conform the rules of the grammar of some natural language as used by speaker and hearer. Due to the generality of this condition, pragmatics will usually abstract from it, and merely specify the particular happiness conditions for specific context types. Similarly, much of morphonology, syntax and meaning-semantics may be specified in abstraction from context features.

5.3. In one respect this rather clear theoretical and methodological distinction between the domains of semantics and pragmatics seems to be blurred, viz. in a theory of *reference*. It may be argued that 'referring' should be constructed as a speech act.²³ Since the notion of speech act is not very precise, it is difficult to countenance this view. Anyway, it cannot be a speech act at the same level as requests or advices, because in all communicative events (*in* any speech act) speakers refer to actual or non-actual individuals. Thus referring is a more general communicative act like 'expressing' or 'uttering', 'meaning', etc. The fact that some expression 'denotes' something-for-somebody seems to be adequately rendered by a semantics specifying extensions 'with respect' to speakers and hearers. That is, when a speaker 'refers to' a given object, viz. the object 'he has

²³ See e.g. Searle (1969) and Cohen (1970).

in mind', we construct this act as a complex function from a speaker to an expression to an extension of the expression in all worlds compatible with the internal intentional structure of the speaker at the time of utterance. Hence logical semantics precisely reconstructs the act of referring, independently of specific pragmatic conditions. However, again, when we take semantic conditions of meaning and reference as part of the happiness conditions of utterances we may say that the 'domain of reference' is included in the context, e.g. such that this domain is defined as a subset of the knowledge set of the speaker and the hearer. In order to distinguish these different types of 'context' we may speak of 'semantic context' and 'pragmatic context', respectively.

5.4. Another fallacy goes the other way round and tries to demonstrate that pragmatics can be reduced to semantics." One of the arguments used here is that we may study the meaning and truth conditions of performative verbs like *to ask*, *to command*, *to request*, *to advise*, etc. It has been said above that the description of sentences with such verbs is a useful heuristic tool for the formulation of pragmatic conditions. However, it is obvious that we cannot possibly identify the theoretical formulation of complex processes of communication with the conventional meanings of words in a language used to refer to some speech acts. First of all the theoretical predicates and conditions must have a general character, whereas the expressions used to refer to communicative acts may differ from language to language, due to numerous socio-cultural factors. It would be just as misleading to build theories in nuclear physics on the basis of the meaning or use of words like 'atom' or 'particle' in everyday language, although in grammar the situation is a bit different because language users, knowing, by hypothesis, the pragmatic rules of their language, have intuitive criteria for the rather precise 'application' of performative verbs. Nevertheless it would be impossible to insert a complete pragmatic theory into the lexicon, which would be the consequence of reducing pragmatics to semantics.

5.5. Finally, there is another problem where semantics and pragmatics seem to interpenetrate, viz. the interpretation of non-assertive utterances / sentences, for which traditional logic did not formulate 'truth conditions'. Thus for command-, question- or advice-expressions it seems difficult to say that they are either true or false, even when we may regularly calculate the extensions of their terms.

Several approaches to this problem may be distinguished. A quasi-se-

" This view can be traced in much work in linguistics and logic dealing with pragmatics. Searle (1969) advocates similar ideas. Lakoff (as far as we know not in print) seems also to share the idea that pragmatics can be reduced to semantics. See von Kutschera (1973).

semantic approach gives truth conditions for such types of utterances / sentences in terms of their 'fulfilment'. That is, a command is true if it is executed, a question when it is answered, etc.²⁵ Similar interpretations would be given for assertive sentence with future tenses, like **John will come tomorrow, which** are (now, today) true if in fact John will come tomorrow, i.e. if **John comes (today)** is true tomorrow, or in other terms: is true (at the day of utterance) in all worlds of today compatible with all worlds of tomorrow in which **John comes is** true. A more pragmatic approach would be to assign merely the property of appropriateness to such utterances, e.g. with the pragmatic conditions formulated above. Since, however, conversely, assertive sentences may be appropriate or not, it seems difficult to explain why not to assign some type of truth value or 'satisfaction value' to non-assertive sentences. A seemingly unified treatment of the problem would be provided in the framework of a hyper-sentence hypothesis. Here a command is true just in case it is true that the speaker commands something, a request just in case the speaker requests something, etc., i.e. when this sort of self-description is satisfied, and false in situations where this condition does not hold, e.g. when the speaker says **I promise you to come** without thereby promising, i.e. intending not to come. Notice, however, that in such a treatment — even when the hyper-sentence hypothesis would be correct — assertive sentences would be true by definition (when the speaker does not lie) independent of the usual truth conditions.²⁶ The converse *seems* to hold: an assertion is a type of communicative act with its own appropriateness conditions, e.g. belief of the truth of the sentence expressed.

We here touch at the heart of the matter: we either treat 'truth' as a semantic or as a pragmatic terco, or both. Pragmatically, we might explicate the notion of truth as a predicate of utterances of which the propositions / statements are part of the belief- or knowledge-sets of a group of P-systems. However, the criterion for membership of a proposition in the K-set is precisely its 'truth'. Generally it might be said that transformation (expansion) of K-sets is based on three conventionally established 'test criteria':

- (i) direct or indirect perception
- (ii) communication in some language
- (iii) deductive or inductive reasoning

That is, we know a sentence (to be true) like **John arrived today** either

²⁵ The semantics of commands, questions, etc. has generally been avoided in logic. In Rescher (1966) we find some useful remarks. See also Davidson (1971b). Cf. Hull — Keenan (1972) for a recent attempt to give explicit semantics for questions.

²⁶ For discussion see Lewis (1972).

because we were witness of his arrival, because somebody told us this or because we infer from some other facts that John must have arrived today. The degree of 'firmness' of the knowledge may vary from one domain to another: in daily conversation we will more easily say that something is true than in a scientific context. The reliability of the three test criteria also varies from culture to culture and from time to time and are measured by generally accepted standards or norms. The socio-cultural basis of epistemology and epistemic logic may no further detain us here, but it should be stressed that the closely related concepts of knowledge and truth are based on social conventions and hence might range in the field of a pragmatic theory.

Taking 'truth' as a pure semantical concept we construct it as a predicate for some type of relation between an expression, or perhaps between the 'meaning' or 'intension' of that expression and some state of affairs (world). This relation may intuitively be called a 'correspondence' or 'representation' relation, sentences entering the relation being true, sentences not entering the relation being false (or perhaps neither true nor false).²⁷ In fact sentences might be said to have 'states of affairs' or events, in a world, as their extensions, not truth values. In that case the extension for sentences is comparable with the extension of terms and predicates. The syntactical form of the sentence would correspondingly contain an existential quantifier binding state or event variables.²⁸ This consequence matches our intuition that a sentence, indeed, picks out some individuals and facts out of (a) world(s). Truth values of sentences thus are accounted for in terms of membership of a state or event in the set of states or events 'existing' in some world.

Thus the semantic component merely gives the recursive rules relating semantic representations (or logical forms of some formal language symbolizing them) with individuals and sets in worlds. Now, the differentiation between assertions, requests, questions, commands, etc. is given in pragmatic terms. Thus in an assertion the speaker wants the hearer to know / believe that the relation between propositions of his uttered sentence / text and some state of affairs exists. In questions the speaker wants to know from the hearer whether this relation exists or for which individuals of the domain this relation exists. In requests, commands, advices, etc. the speaker wants the hearer to act such that the relation is established.

²² The correspondence-theory of truth has recently received attention from Davidson (1971a). Strawson (1971) argues that 'correspondence'-relations are not specific enough to account for (linguistic and logical) concepts of truth. Recently, Rescher (1973) has advocated the 'coherence' theory of truth.

²⁸ Quantification over events, states, etc. has been systematically introduced in the logical description of natural language especially in Bartsch (1972) and Bartsch & Vennemann (1972), and goes back, at least in some form to Reichenbach (1947). See Davidson (1967a) for a critical discussion of Reichenbach and for other proposals.

The propositional attitudes, thus, are qualifications of this correspondence relation or a characterization of the type of worlds compatible with this attitude such that the relation is satisfied in such worlds. Hence 'truth value' is not a property of 'assertive' sentences or propositions lacking in other types of sentences, but some correspondence relation established, asked or required to exist in acts of communication.

Of course, there are numerous logical, philosophical (epistemological) and linguistic problems left to be solved in this domain, but the few remarks made above suffice for our argument in which we tried to delimit the empirical fields of semantics and pragmatics.

Let us finally briefly treat one concrete logico-linguistic problem in terms of the provisional framework sketched above, viz. presupposition.

6. Presuppositions in Text Grammars and Context Grammars

6.1. There are reasons to believe that at least some of the problems which have arisen in the recent debate on presuppositions may be accounted for in terms of context grammars which contain a text-grammatical component." More specifically, it might be argued that, historically, the notion of presupposition was introduced in philosophy, logic and linguistics in order to account for certain properties of texts and contexts which could not be solved *in* terms of traditional sentence grammars alone.

The usual definitions of presupposition, taken as a relation between sentences or propositions (with their interpretations), either belong to semantics or to pragmatics. In the first case it is given in terms of logical consequence or necessitation relations. In the second case it is based on conditions for the appropriate use of uttered sentences.

6.2. Accordingly, we will make a distinction between semantic and pragmatic presuppositions, of sentences and of utterances respectively. The interesting phenomenon relating these two types of presuppositions is that some pragmatic presuppositions of the context may have the same constraints upon the form of sentences as semantic presuppositions in the text.

²⁹ From the large literature on 'presupposition' we must restrict ourselves to mention only some main treatments. The original philosophical approach — after the different discussions about related concepts as definite descriptions, by Frege, Russell, a.o. — was formulated by Strawson (1952). The logical notion of presupposition has been construed in terms of a necessitation relation by van Fraassen (1971). The logical approach to natural language presupposition was especially elaborated by Keenan (1969, 1972). For general surveys, see Garner (1971) and Franck (1973). See Petöfi & Franck (eds.) (1973) for a general reader.

6.3. Somewhat simplifying our definition, a presupposition at the level of text structure can be characterized in terms of logical forms of sentences and sequences of sentences. Using the term *sentoid* to denote elementary or complex S-structures in a derivation (i.e. any part of a tree originating from an S-node) we will say that a presupposition of a sentence S_i is any 'sentence' (or rather 'sentoid' or 'proposition' manifested by such a sentence) S_j , such that

- (i) S_j is embedded in S_i (or, in case of indirect presupposition, in a sentoid of S_i ; see below).
- (u) S_j is equivalent with some sentence S_k preceding S_i in the (semantic representation of) the text or with a logical or lexical consequence of S_k .

Take for example the following sentences:

- (1) The man I met yesterday is the Prime Minister.
- (2) Do you know whether John arrives at five or at six o'clock?
- (3) Please give me the knife lying on the table in the kitchen.

In texts where we may have these complex sentences we may for example have the following preceding sentences:

- (4) Yesterday I met a man in Amsterdam.
- (5) Peter told me that John arrives today.
- (6) Mary left a knife on the kitchen table.

The sentences (or rather sentoids or propositions of them) in (4)-(6) have an equivalent relation with the sentoids in (1)-(3). The presuppositions of (1)-(3) are precisely those sentoids which they have in common with the preceding sentences and their logical or lexical consequences. Presupposition, thus, is a simple coherence condition for grammatical texts, comparable with the coherence conditions determining the identity of individuals / terms manifested by definite articles, pronouns, etc.

From the addition in condition (i) we see that presupposed sentences may be complex, i.e. contain themselves presupposed sentoids, which may accordingly be called 'indirect presuppositions' of the whole sentence. This textual treatment of presupposition first of all accounts for the intuitive idea that a presupposed sentence or proposition represents some unit of information which is already 'given', in this case by preceding sentences in the text.³⁰ Further it seems to solve the well-known problems

³⁰ For a first 'textual' characterization of presupposition — after an occasional remark by Keenan (1969; 2) — cf. van Dijk (1972, Chap. 2) and the critical discussion by Fretheim (1973). An extensive discussion of presupposition and consequence in text grammar has been recently given by Petőfi & Rieser (1973).

with the logical definition of presupposition as the consequence of p and $\text{not-}p$ leading, by modus tollens, to contradictions. That is, since the presupposed sentence has already been asserted (to be true) as a sort of premiss we may not further assume its falsity. The fact that a presupposed sentence also follows from the negation of the presupposing sentence can be explained from the fact that any sentential modification, thus also the addition of a possibility operator, etc., of a sentence, leaving embedded sentoids intact, does not change the presuppositions of the sentence. In our treatment, thus, presuppositions may directly be 'read' from an explicit logical representation of the sentence.³¹

Apparent counter-examples against this proposal are those sentoids introduced as object complements of non-factive predicates, like *pretend*, *think*, etc. However, such sentoids will not be derived in the text grammar from preceding sentoids but from sentoids following the sentoid with this sort of verbs.³² Thus *John knows that Peter is ill* is derived from *Peter is ill. John knows that* (where *that* in the semantic representation is a bound variable or a constant representing the intensional object which is the preceding proposition or, equivalently, the state of affairs denoted by the preceding proposition). *John says that Peter is ill*, on the contrary, will be derived from something like *John says something: Peter is ill*. This precisely captures the fact that propositions of non-factive predicates 'depend' on these predicates, i.e. they may be true only in those worlds compatible with a world in which the predicate is satisfied. In the first example the illness of Peter does not depend on John's knowledge of this state of affairs.

We will not here discuss some other aspects of semantic or logical presuppositions, but there are reasons to believe that they may be accounted for in this framework. It must be noticed, however, that our remarks pertain to formal text structures and their logical forms. There are many specific stylistic reasons not to follow the general rules. We may for example introduce 'new' propositional information in embedded sentoids often

³¹ A similar approach is made in Bartsch (1972) and Bartsch & Vennemann (1972), where presupposed elements, e.g. in the definition of definite descriptions and iota operators, are part of a 'presupposition pool' of a given sentence, indicated in the formal representation by special brackets. No explicit semantics for such brackets has, however, been provided, although we might provisionally formulate the following: terms in such brackets must have non-empty extensions whereas sentences within brackets must be true, in a given (set of) world(s), and thus determine the interpretation of the whole sentence.

³² Such a 'linear' approach to presupposition can be found also in Geach (1973), and in Ebert (1973) who also discusses the general distinction between semantic/logical and pragmatic presuppositions.

N. B. After this article was written, a number of papers contributed to the Texas conference on the subject, was devoted to pragmatics and presuppositions. See Thomason (1973), Karttunen (1973) and also Stalnaker (1973).

considered to be presuppositions (by the negation test, for example) but according to our condition (ii) these would not qualify as presuppositions. We might call them quasi-presuppositions.

6.4. It may happen that the example sentences given above occur in initial position of a text or are the only sentence of a text, or do not have the equivalence relation with previous sentoids. Texts with such a structure are well-formed only with respect to a specific structure of their context. The presuppositions of such sentences will therefore be called pragmatic, because they are a subset of the context conditions. More specifically, such presuppositions have an equivalence relation with propositions being member of the knowledge or belief sets of speaker and hearer. They may have entered these sets by the criteria given above: by perception, communication (previous utterances) or reasoning (induction, deduction). The interesting generalization relating semantic and pragmatic presuppositions, indeed, is the fact that preceding sentences in a text are also members of the K-sets of speakers and hearers when the presupposing sentence is uttered. That is, all semantic presuppositions of the text automatically become pragmatic presuppositions of the context.³³ It is precisely in this way that the linear production of a text permanently changes the context in such that the following sentences are satisfiable only in those worlds compatible with the world in which the presupposed sentences are true. The total set of propositions of 'previous knowledge' or 'retrieved information' necessary to derive correctly or to produce adequately a given sentence is thus a 'presupposition base' for this sentence. The fact that presupposed sentences are repeated as embedded sentoids, as we saw, is for reasons of textual coherence or for text-context coherence requiring permanent re-identification of individuals.

Other notions of pragmatic presuppositions have been used in the literature. In particular the usual pragmatic conditions are often called 'presupposed'. However, these are not presuppositions of the sentence/text or of the utterance but well-formedness conditions for the whole context ('speech act'). A question-context does not 'presuppose' that the speaker does not know *p*, but this is a necessary component of question contexts. Since we cannot negate speech acts, there is no test criterion either to qualify such propositions as presuppositions.

6.5. From this brief discussion of presuppositions we see that text-context grammars offer a framework rich enough to account in a systematic way for certain important phenomena. Similar treatments may be given for definitivization of noun phrases, relativization, pronouns and other pro-

³³ For a discussion of this hypothesis, see Stalnaker (1972). See also van Dijk (1974).

elements, topic and comment, etc., which are all based on identity relations between elements in texts and contexts.

It must be stressed, however, that both at the level of text structure and at the level of pragmatic context structure our knowledge is still very poor. The remarks in this paper were intended to formulate a framework for a provisional program in which interesting linguistic and logical problems may be adequately treated, which hitherto remained outside the scope of the grammar or were treated in a non-systematic manner.

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