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ON THE ALLEGED BOUNDARY BETWEEN SYNTAX AND SEMANTICS

If we adopt without modification the grammatical model of Chomsky (1965)[1], simplicity considerations demand that a deep-structure effectively identical to semantic representation be posited for a certain semantically complex verbal construction in English. Furthermore, a modification of the views presented in that book, the 'lexicalist hypothesis' discussed in Chomsky (1967), is incapable of handling this construction adequately under the alternative analysis which it provides quite readily. After demonstrating that arguments for a nonabstract deep-structure for this construction are invalid, I shall conclude that the existence of a level of deep-structure, intermediate between semantic representation and surface-structure, is questionable. Since the postulation of this level is a feature both of the theory of Chomsky (1965) and its lexicalist modification, their correctness will be challenged. My conclusions, then, will support the claim of McCawley (1968a) that this level does not exist, and that there is no reason, therefore, to distinguish between the notions 'syntactic rule' and 'semantic rule'.

Begin and *start*, two verbs denoting initiation of time-aspect, may occur with a simple noun-phrase as a surface direct-object:

(1) (a) The man began dinner.
(b) The man began the book.
(c) The man started the sermon.

Let us consider how these sentences are interpreted. (1a) may mean that the man began eating or cooking dinner, but not that he began smelling it or enjoying it. (1b) may be understood in various ways. The man could have begun reading, writing, or translating the book, setting it into type, or even eating it if he happens to be one who eats books. But (1b) cannot be understood to mean that the man began being amused or annoyed by the book, or that he began appreciating it, understanding it, or fearing it. (1c) may be understood to mean that the man started writing, composing, delivering, or reading the sermon, but not that he started listening to it, even though listening to a sermon is a far more common activity than any of the others

[1] A shortened version of this paper was presented at the Urbana meeting of the Linguistic Society of America on 25 July 1969, and has benefited from criticism by Bruce Fraser. The reader is referred to Newmeyer (1969) for a more elaborate discussion of the material presented here.

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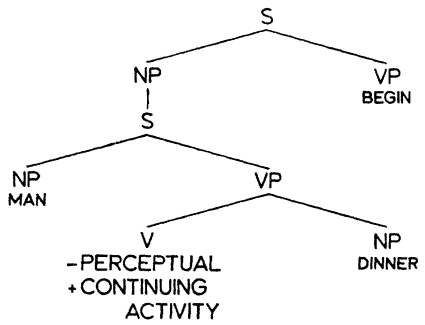
mentioned. In each case, the possible verbal reading is restricted semantically. It can only be one of nonperceptual continuing activity. No verb which is either perceptual or nondurative or stative may be understood in sentences with $\widehat{\text{NP}}\widehat{\text{begin}}\widehat{\text{NP}}$ surface-structures. This fact leads us to the conclusion that the semantic representation of (1a) must be structure (2) below, if we ignore tense and other nonpertinent details[2]:

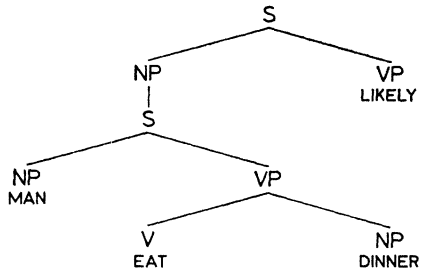
(2)



(2) expresses the fact that 'the man's activity with respect to dinner' functions as the subject propositional argument of *begin*; i.e. *begin* functions to denote the time-aspect of the entire proposition. Sentence (3) is understood analogously to (1a), and must have semantic representation (4):

(3) The man is likely to eat dinner.

(4)



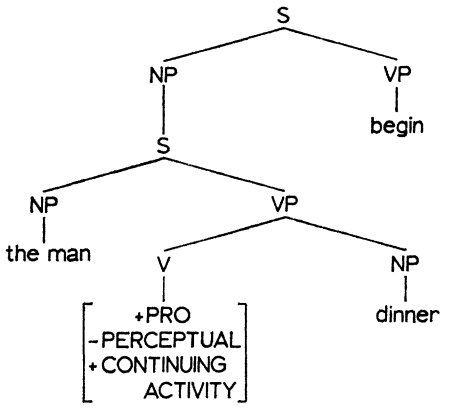
Phrase-markers (4) and (2) capture the semantic parallels between sentences (3) and (1a). In (4), the intransitive higher predicate is LIKELY, indicating

[2] Capital letters indicate bundles of semantic features to which phonological information has not been supplied. The fact that *dinner* and *man* are themselves semantically complex does not affect my arguments. It will be noted that I am assuming that the constituent-structure tree (i.e. phrase-marker) is the correct device for characterizing the semantic representations of sentences. This contradicts Katz and Fodor (1963), where a less structurally elaborate level of semantic representation is proposed. However, recent work by McCawley, particularly (1968b), indicates that semantic representation must be more complex than was previously supposed. However, I am not adopting his proposal that at this level English be verb-initial, since its correctness or incorrectness is irrelevant to the arguments in this paper.

that the aspectual element is one of probability, rather than time-initiation. Also, the two-place predicate of the embedded proposition is specified more fully in (4) than in (2), since the verb *eat* actually appears in sentence (3).

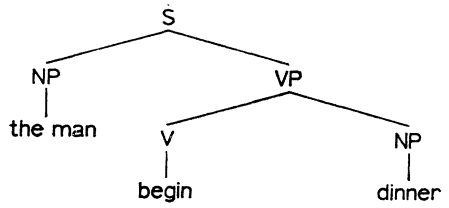
Let us now consider what the deep-structure of (1a) would be in the framework of Chomsky (1965) and in its lexicalist modification. In Chomsky (1965) it was proposed that selectional restrictions be defined at the level of deep-structure. If this is to be the case, then (1a) must have deep-structure (5):

(5)



(5) allows the fact to be captured that the possible surface objects of *begin* are the sum total of the possible objects of the nonperceptual continuing-activity verbs. Thus, (5) tells us that any verb of this type which selects *dinner* as its object may be understood in sentence (1a). A transformational rule would be necessary to delete the pro-verb in the lower sentence. These selectional facts would be impossible to capture adequately if the deep-structure were represented by phrase-marker (6), for example:

(6)



This is because there are no independent selections between *begin* and its surface object. There are only selections between *begin* and the proposition which can occur in the sentence below it and between continuing-activity verbs and their objects. Given deep-structure (5), we need no extra statements to account for the possible surface objects of *begin* and the understood verbal interpretation.

Since the publication of Chomsky (1965), however, Jackendoff (1966) and McCawley (1968a) have argued convincingly that selectional restrictions are semantic and cannot be defined at any intermediate level of structure, such as syntactic deep-structure. Since this is the case, deep-structure (5), with its pro-verb of continuing-activity, is no longer motivated. The lexicalist hypothesis, a further development of the theory of Chomsky (1965), does not entail that selectional restrictions be defined at deep-structure. A distinguishing characteristic of the lexicalist hypothesis is that it does not allow instances of what, borrowing a term from phonology, might be termed 'absolute neutralization' in syntax. That is, it excludes the possibility of a designated token of a lexical category being introduced in the base, only to be deleted obligatorily, regardless of its environment, by the application of a syntactic transformation. This condition excludes pro-verbs representing semantic classes, such as were posited in deep-structure (5).[3] The natural lexicalist deep-structure for (1a), then, is phrase-marker (6). (6) as a deep-structure for (1a) is reinforced by the syntactic parallels between sentences (1a–c) and (7a–c), where a simple subject-verb-object deep-structure is well-accepted:

(7) (a) The man ate dinner.
(b) The man read the book.
(c) The man delivered the sermon.

I shall now demonstrate that if (6) actually does underlie (1a), the grammar will be forced to state at least one rule both in the syntactic component and in the semantic component. Therefore, the lexicalist hypothesis cannot be correct. We shall see that only a deep-structure for (1a) which is effectively identical to its semantic representation can obviate this difficulty, and therefore the theory of Chomsky (1965), which posits the existence of a level of deep-structure, receives no support from the data under consideration.[4]

Let us consider the interpretive rules which would be needed to map deep-structure (6) onto semantic representation (2). First of all, there would have to be a rule which inserted the sense of nonperceptual continuing-activity into the verb-phrase. Let us call this the rule of 'Sense-Insertion'. Secondly, there would have to be a rule which lowered the subject of the sentence – *the man* – to create a proposition which could be paraphrased 'the man performed some activity in relation to dinner'. ***Begin*** would remain as the predicate of this proposition. Let us call this interpretive rule 'Subject-

[3] The condition is adopted implicitly in Chomsky (1967) and in various unpublished papers written within the lexicalist framework.

[4] I am using the locution 'effectively identical to its semantic representation' because I am ignoring intentionally rules of lexical insertion relating lexical items to their meanings. However, questions of lexical insertion are irrelevant to this discussion of the derivation of (1a).

Lowering'. Figure (8) below schematizes these operations, irrelevant details aside:

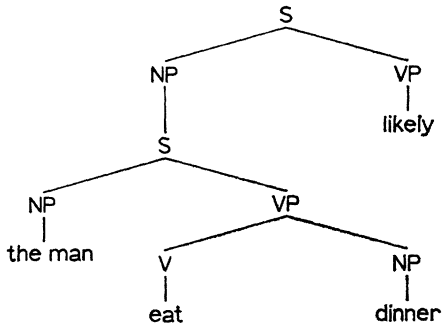
(8)

[NP [S MAN VERB DINNER]] [VP BEGIN]	semantic
↑Subject-Lowering	representation
[NP the man] [VP began (to verb) dinner]	
↑Sense-Insertion	
[NP the man] [VP began dinner]	deep-structure
↓no operations	
[NP the man] [VP began dinner]	surface-structure

As should be readily apparent, no syntactic transformations are necessary to derive (1a) from (6). Two interpretive semantic rules suffice to relate semantic representation (2) and the surface-structure of (1a).

The derivation of (3) is quite different, however. Rosenbaum (1967) has argued that deep-structure (9) must underlie (3)[5]:

(9)



Notice that (9) is essentially identical to semantic representation (4). No special interpretive rules are necessary to map (9) onto (4). However, (9) is not the surface-structure of *the man is likely to eat dinner*. The rule of Subject-Raising is needed to move the lower subject, *the man*, into the next-higher sentence, and bring the intransitive higher predicate, *likely*, and the lower verb-phrase, *eat dinner*, under the domination of one verb-phrase node.[6] (Various other transformations, such as Complementizer-Placement, apply as well, but they are irrelevant to our discussion.) Subject-Raising is the paradigm case of a syntactic transformation, and is well motivated for many

[5] Again, ignoring irrelevant details.

[6] Subject-Raising is the current reformulation of the rule of It-Replacement of Lakoff (1966), itself a reformulation of the rule of Pronoun-Replacement of Rosenbaum (1967).

reasons.[7] (10) below schematizes the derivation of sentence (3):

	$[_{NP}\ [_{S}$ MAN EAT DINNER$]]\ [_{VP}$LIKELY$]$	semantic representation
	↑no operations	
(10)	$[_{NP}\ [_{S}$ the man eat dinner$]]\ [_{VP}$ likely$]$	deep-structure
	↓Subject-Raising	
	$[_{NP}$ the man$]\ [_{VP}$ is likely to eat dinner$]$	surface-structure

Upon comparing the derivation of (1a) with that of (3), it is evident that they hold one feature in common; namely, the rule which in conjunction with the former sentence we called 'Subject-Lowering' and which in conjunction with the latter sentence we called 'Subject-Raising'. Aside from the difference in orientation caused by the illusion of a direction of mapping, they are *identical* rules. Yet the assumption that (6) is the deep-structure of (1a) forces one to state this rule – which, from now on, I shall refer to only as 'Subject-Raising' – in the semantic component as well as in the syntactic. It is obviously undesirable for a single rule to be present in identical form in two components. However, a nonabstract underlying structure for (1a) gives one no alternative but to state one rule in two places in the grammar. Only a deep-structure which is effectively identical to the semantic representation can alleviate this difficulty; the rule of Subject-Raising would then need to be stated only once in the grammar.

There is a possible objection to my argument which a person wishing to save the lexicalist deep-structure (6) might raise. He could deny that (2) is the semantic representation of (1a), and hence Subject-Raising would never apply in the course of its derivation. If this is the case, then the argument for an abstract deep-structure seems to fall apart. Although I feel that the semantic parallels between sentences like (1a–c) and those like (3) are sufficient to justify analogous semantic representations, I shall show below that even if Subject-Raising does *not* apply to (1a), an abstract deep-structure is still motivated.

Consider the behavior of (1a), (3), and (7a) when they occur as the first sentence of a conjunction[8]:

(11) (a) The man began dinner at noon and the girl began at six.
(b) The man is likely to eat dinner at noon and the girl is likely to at six.
(c) The man ate dinner at noon and the girl ate at six.

Notice that (11c) is interpreted in a different way than (a) or (b) is. In (c),

[7] See the references under footnote 6 for discussion of this rule.
[8] Time adverbials are added for extra clarity.

in the second sentence of the conjunction, there is no implication that the girl ate *dinner* at six. She could have eaten lunch, an apple, or anything else which can occur as the object of the verb *eat*. (12) can follow (11c) without a semantic anomaly resulting:

(12) But the girl only had a light snack since she wasn't hungry.

This is easily explained if the verb *eat* in deep-structure can take a pronominal object noun-phrase, which can be deleted or realized as *something*. The implication in (11b) is quite different, however. 'The girl' in (11b) can only be understood to be likely to eat dinner. (11b) cannot be interpreted to mean that the girl is likely to eat a light snack, fly to the moon, or anything else. This is accounted for if (11b) undergoes the rule of Verb-Phrase-Deletion. The verb-phrase below *likely* can be deleted only if it is identical to the verb-phrase in the first half of the conjunct. This explains the unique interpretation of (11b), as opposed to the ambiguous interpretation of (11c). Note also that Verb-Phrase-Deletion is a syntactic rule – it must follow Complementizer-Placement, Subject-Raising, and various other rules of the syntactic component.[9]

Looking at (11a), we see that its interpretation is analogous to that of (11b) rather than to that of (11c). The only inference is that 'the girl began dinner'. 'The girl began a light snack, her job, a sermon, etc.' are not possible readings of the second sentence of the conjunction. Furthermore, the supplied verbal reading in the first sentence of the conjunction in (11a) must be the same as the supplied verbal reading in the second sentence. If we understand the man to have begun eating dinner in the first sentence, then we must understand the girl to have begun eating dinner in the second sentence. If we understand the man to have begun cooking dinner, then the girl must have begun cooking too. (11a) cannot be interpreted as 'the man began cooking dinner at noon and the girl began eating dinner at six'. We can account for this fact in the same way that we account for the single interpretation of (11b) – by positing that the sentence undergoes the rule of Verb-Phrase-Deletion. However, this is possible only if there is a verb-phrase below *begin* at the time the rule applies. And this, in turn, is possible only if the rule of Sense-Insertion, which we now must reformulate as the rule of 'Sense-Deletion', follows Verb-Phrase-Deletion. (By 'follows' I mean 'is closer to surface-structure than'.) (13) schematizes the order in which the rules have to apply to account for the interpretation of (11a), even assuming that (11a) never undergoes Subject-Raising:

[9] Evidence that Verb-Phrase-Deletion must be a syntactic rule is presented in Ross (1969).

(13)
$[_{NP}$ the man] $[_{VP}$ began $[_{VP}$ (to verb) dinner]] and
$[_{NP}$ the girl] $[_{VP}$ began $[_{VP}$ (to verb) dinner]]
↓Verb-Phrase-Deletion
$[_{NP}$ the man] $[_{VP}$ began $[_{VP}$ (to verb) dinner]] and
$[_{NP}$ the girl] $[_{VP}$ began]
↓Sense-Deletion
$[_{NP}$ the man] $[_{VP}$ began dinner] and $[_{NP}$ the girl] $[_{VP}$ began]

What can we conclude, then? First of all, the lexicalist condition on absolute neutralization must be invalid. If there is a level of deep-structure, a pro-verb with the semantic property of 'nonperceptual continuing-activity' must be introduced there in order for the rule of Verb-Phrase-Deletion to apply most generally. Yet this pro-verb must be deleted ultimately wherever it occurs. Secondly, the derivation of (1a) lends no support to the belief that there might be a level of deep-structure intermediate between semantic representation and surface-structure. Certainly, no example or set of examples can *disprove* the hypothesis that deep-structure exists. However, the derivation of (1a), where the deep-structure is found to be effectively identical to the semantic representation, even though the most obvious lexicalist analysis suggests otherwise, demands that we scrutinize very closely other analyses where deep-structures were proposed which differed markedly from semantic representation. I feel that after doing so, we shall find numerous other cases which suggest that the notion 'deep-structure' can be dispensed with.

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