

Ambiguity Tests and How to Fail Them*

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Abstract

A number of tests used by linguists to distinguish ambiguity from lack of specification are described and illustrated, with brief critical commentary. The tests appeal to semantic, syntactic, and pragmatic principles. Special attention is given to tests using transformations whose applicability depends upon identity of sense; these tests can help to decide the status of examples for which other tests give no evidence. But there is a class of cases where the identity tests predict ambiguity, even though common sense (and tests not involving identity of sense) says that these cases involve special uses of sentences, not meaning proper, and other tests for ambiguity agree. These cases are characterized, and their anomalous behavior is explained on the grounds that they require suspension of the sincerity principle of conversation (that one means what one says).

1. Background.

The notion of ambiguity plays a fundamental role in syntactic argumentation. Indeed, much recent discussion turns on whether particular examples are or are not ambiguous, and if they are, in what way. The existence of a rule of neg-Transportation depends ultimately on whether sentences like

(1) I don't think she's bald.

are ambiguous (between a reading like that of It's not the case that I think she's bald and one like that of I think she's not bald) and the treatment of sentence types and speech acts involves a decision about how many readings examples like

(2) Why don't you ask her for help?

have (question and suggestion, in this case). The cases can be listed for pages: phrasal conjunction, tough Movement, Psych Movement, sloppy identity, referential opacity, and so on. In each case, the question is how many underlying (or semantic) representations

should be assigned to a particular example; if there are two or more, then transformational rules neutralizing these underlying distinctions must be posited.

The choice is between ambiguity, several underlying syntactic (or semantic) representations¹ for (1) and (2) and similar examples,² and a single representation corresponding to different states of affairs.³ This second situation has been called generality (Quine 1960:125-32), vagueness (G. Lakoff 1970) and indefiniteness of reference (Weinreich 1966:412), though neutrality, unmarkedness, and lack of specification would be equally good terms. The sentence

(3) My sister is the Ruritania Secretary of State.

is unspecified⁴ (general, indefinite, unmarked, vague, neutral) with respect to whether my sister is older or younger than I am, whether she acceded to her post recently or some time ago, whether the post is hers by birth or by merit, whether it has an indefinite tenure or will cease at some specific future time, whether she is right-handed or left-handed, and so on.

On the other hand, examples like

- (4) They saw her duck.⁵
 (5) He cooked her goose.

are clearly ambiguous; they must be assigned two quite different semantic structures. Many other examples are not at all clear on first inspection. For these, linguists have developed a collection of tests that separate the clear cases of ambiguity from the clear cases of lack of specification, and so can be extended, tentatively at least, to the problematic examples. Like all grammatical tests (those for constituency, category membership, and the like), these fail to apply in some situations, and they sometimes give unclear answers. Nevertheless, their range of applicability is wide enough to make it worthwhile for us to give a list of the tests in common use by syntacticians.

Our aim here⁶ is primarily descriptive of current practice, rather than prescriptive, although we have taken some care to examine lines of argumentation critically. It should be noted that grammatical tests in general, and ambiguity tests in particular, reflect the theory within which they are framed, so that we often find it appropriate to discuss the rationale behind particular tests (see especially sections 1.2.1, 1.2.2, and 1.3.3). Moreover, since the tests are not theory-neutral, they can be seen as giving insight into the central assumptions of the theories used by generative grammarians; occasionally, as in section 1.3.3, we consider meta-theoretical issues arising from the connection between theory and test, though such issues are not our main concern here.

1.2. Semantic tests.⁷

It will not do, of course, to argue that a sentence is ambiguous by characterizing the difference between two understandings.⁸

Sentence (3), for instance, isn't many-ways ambiguous just because we can perceive many distinct classes of contexts in which it would be appropriate, or because we can indicate many understandings by paraphrases. A difference in understanding is a necessary, but not a sufficient, condition for ambiguity.

Nevertheless, philosophers perennially argue for ambiguities on the basis of a difference in understanding alone, and even linguists are not immune. Thus, Zwicky 1969 maintains that

- (6) Melvin became as tall as any of his cousins.
- (7) Melvin became taller than the average Ohioan.
- (8) Melvin became the tallest linguist in America.

have two semantic representations each, one 'in which Melvin changes, one in which other circumstances change so that Melvin's relative height changes' (293)--but without any support beyond the articulation of this difference in understanding.

In certain circumstances, however, some evidence as to ambiguity or the lack of it can be obtained from observations about semantics. The following subsections treat three such cases.

1.2.1. Appeals to semantic differentiae.

Sentences--like (3)--that are unspecified with respect to some distinction have otherwise quite similar understandings, so that the distinction in question must be the sort of thing that languages could plausibly fail to specify. Consequently, the burden of proof falls on anyone who insists that sentences like (4) and (5) are unspecified rather than ambiguous. Take (4). The distinction between the two understandings is that between two understandings of the object phrase her duck--a certain sort of bird belonging to a woman and a certain kind of action performed by a woman. First, we know of no language in which there is a regular, formal indication of just the difference between the understandings of (4). This argues either that we have either a lack of specification or an unsystematic ambiguity. But, second, the two understandings of (4) have little in common, so that a lack of specification is implausible.

The first argument refers to the plausibility of systematic ambiguity: if a distinction in understanding is a systematic ambiguity in some language, then that distinction is potentially realizable by a formal mark in some other language;⁹ conversely, a distinction not formally realizable is either a systematic lack of specification or an unsystematic ambiguity. If languages don't formally mark the distinction between some sort of bird belonging to a woman and some sort of action performed by a woman, then this difference of understanding in any particular language (like English) is either a systematic, that is general, failure to specify the difference between sorts of birds belonging to a woman and actions performed by a woman, or else it is an (unsystematic) ambiguity.

The second argument refers to the plausibility of lack of specification: if some distinction in understanding is systematically unspecified in language, then it must be a simple distinction.¹⁰ This argument is customarily used in a negative form, as above:

distant and complex semantic differentiae point to ambiguity rather than lack of specification.¹¹

Note that from the facts that a particular semantic differentia is simple and that it is formally marked in some language, we can conclude nothing about the status of this distinction for any particular example in any language; both lack of specification and systematic ambiguity are consistent with these facts. For instance, from the facts (a) that the older sister/younger sister understandings of (3) differ minimally, and (b) that there are languages that mark this difference formally (by different suffixes, or by a series of different lexical items, say), the strongest conclusion that can be drawn is that it is not implausible that the difference in understanding is an ambiguity; but these facts are consistent with both lack of specification and ambiguity. The fact that age differences, sex differences, specificity in noun phrases, inclusivity in plural pronouns, factivity in complement clauses, and so on are formally marked in some languages tells us nothing about the status of particular examples in English; we are not entitled to dismiss a claim of ambiguity out of hand, but the plausibility of the differentiae doesn't choose between ambiguity and lack of specification.

This caveat about appeals to differentiae holds even within a language. Thanks to the fact that English distinguishes a set of lexical items that are masculine (man, boy, king, etc.) from corresponding items that are feminine (woman, girl, queen, etc.) and the fact that English pronominal reference systematically distinguishes between masculine and feminine, the differentia masculine/feminine plays a part in the semantic system of English. But from this we can conclude nothing about the status of lexical items like person, actor, chairman, secretary, dog, or goose, all of which can be understood as either masculine or feminine; the existence of a systematic distinction elsewhere in English says only that a claim of ambiguity for such items is not implausible, but it doesn't tell us whether any one of them is or is not ambiguous.

It will be useful here to give some terms for two familiar types of distinction in understanding: polar opposites and privative opposites. Two understandings U_1 and U_2 are polar opposites with respect to some semantic feature F if they are identical except that U_1 can be represented as having $+F$ where U_2 has $-F$, or the reverse.¹² Mother and father have understandings that are polar opposites with respect to a gender feature. U_1 and U_2 are privative opposites¹³ with respect to F if U_1 can be represented as being identical to U_2 except that U_1 includes some specification for F which is lacking in U_2 . Parent and mother have understandings that are privative opposites with respect to a gender feature; so do the technical term dog 'male canine' and the ordinary-language term dog 'canine'.

Note that polar opposites are contradictory, while one privative opposite (the more specific understanding) implies the other (the more general understanding). As we shall see in later sections, the logic of privative opposites makes it difficult to distinguish ambiguity from lack of specification whenever a privative opposition is in question.

1.2.2. Contradiction.

One way of detecting an ambiguity between privative opposites uses the fact that one semantic representation is more specific than the other. As a result, it should be possible to assert the general while denying the specific, without contradiction. To see this, compare

(9) That's a dog.

which our intuitions (and all standard dictionaries) would suggest is ambiguous, with

(10) That's a lion.

where we have no such intuitions (nor do dictionaries). Asserting the general while denying the specific gives us, respectively:

(11) That's a dog, but it isn't a dog.¹⁴

(12) ?That's a lion, but it isn't a lion.¹⁵

or, in a simple sentence:

(13) That dog isn't a dog.

(14) ?That lion isn't a lion.

Observe that (11) and (13) are not contradictions, while (12) and (14) are; additional information brings this out:

(15) That dog isn't a dog; it's a bitch.

(16) ?That lion isn't a lion; it's a lioness.

Example (15) can be understood as asserting that some animal is a canine but not a male canine, in fact that it is female. This possibility depends on dog having two semantic representations. (16), on the other hand, is a contradiction, which indicates that there is no way to assert one understanding of (10) and deny another. Even supplying the specific difference in understanding, as in (16), will not help. It is not, of course, necessary to give the appearance of paradox, as in (11)-(16), to test for ambiguity by investigating contradiction. It is sufficient to assert the general understanding and supply material that implies the denial of the specific understanding, as in

(17) That isn't a dog; it's a bitch.

(18) ?That isn't a lion; it's a lioness.

or

(19) That's a bitch, not a dog.

(20) ?That's a lioness, not a lion.

1.2.3. Inconstancy under substitution.

Other things being equal, synonyms, near-synonyms, and (in general) semantically related lexical items have similar privileges of occurrence. In English, must and have to, chrysanthemum and flower, bull and cow can be expected to occur in pretty much the same linguistic environments. If there is an environment in which only one of a pair can occur, and if this difference in distribution can't be attributed either to such meaning differences as are present in the items or to simple exceptionality, then we should suspect that the environment includes an idiom involving one of the items. This test can be used to support arguments from implausible differentiae (as in section 1.2.1). Thus, we expect that (5) is ambiguous rather than unspecified, since the distinction between the preparation for eating of a fowl belonging to a woman, and the irretrievable undoing or ruining of a woman is not the sort of thing languages fail to specify. Also, substituting bake for its hypernym cook, or swan for goose, eliminates one of the two understandings of (5)--

- (21) He baked her goose.
- (22) He cooked her swan.

--and this inconstancy of (5) under substitution supports the argument from implausible differentiae by pointing to an idiom in (5) involving the words cook and goose.¹⁶

Similar arguments from inconstancy of substitution are given by Sadock 1972 in support of the claims that all of the following are ambiguous rather than unspecified:¹⁷

- (23) That was a great idea.
- (24) You bet it's cold.
- (25) Why don't you feed the emu?
- (26) What was the name of Paul Revere's horse?

Sadock also gives the reverse argument, that constancy of understanding under substitution indicates lack of specification rather than ambiguity, with reference to

- (27) That was a brilliant idea.

(understood either literally or sarcastically), in contrast to (23) (with great understood either like excellent or important). However, the appeal to constancy of substitution is valid only insofar as we are not prepared to countenance systematic ambiguities in the lexicon. There are three alternatives: (a) each positive evaluative adjective (brilliant, smart, clever, good, intelligent, neat, enlightening, etc.) has two semantic representations associated with it, but these representations are related by a 'lexical implication rule'--a case where 'the existence of one lexical item implies the existence of another' (McCawley 1968:130); (b) there is a transformational relation between sentences with one understanding of (27) and those with the other understanding (like the transformational

relation that has been asserted between the inchoative and causative understandings of verbs like cool, melt, burn, freeze, etc., as in G. Lakoff 1970a:32-43); or (c) there are double semantic representations for the entire class of positive evaluative adjectives, without any statement at all in our grammatical description of English about the relationship between the two classes of semantic representations. For (27), a transformational relation is unlikely, since there is no independent motivation for it, and simply to posit double semantic representations leaves a generalization uncaptured by any principle of grammar. Consequently, a lexical implication rule (if we are willing to admit such rules) would be the only way to save the position that (27) and similar examples are ambiguous rather than unspecified.

Note that if there is other evidence indicating that (27) is unspecified rather than ambiguous, an argument from constancy of substitution is good supporting evidence. Standing alone, however, constancy of substitution merely makes a claim of lack of specification plausible.

1.3. Syntactic tests.

A number of types of tests for ambiguity use syntactic evidence. The assumption here is that, other things being equal, sentences with two distinct syntactic structures also have two distinct semantic structures.¹⁶

1.3.1. Intersection of patterns.

A syntactic test closely related to inconstancy under substitution uses the fact that ambiguous sentences often exhibit two different structures, each of which is visible in unambiguous examples.¹⁹ This test has been discussed by Hockett 1954 and is emphasized by Kooij 1971. To argue that (4) is ambiguous rather than vague, we adduce unambiguous²⁰ sentences like

(28) They saw her {sparrow
turkey}.

(29) They saw her {wander}
orate

(30) They saw {him}
us} duck.

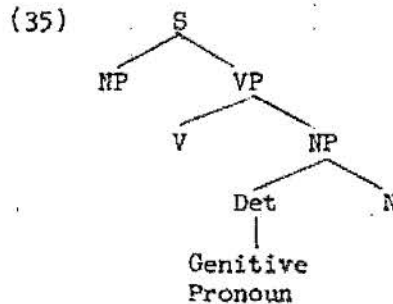
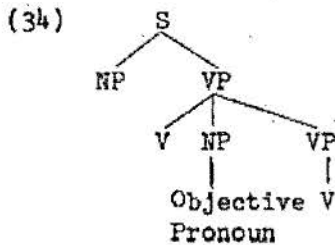
(31) They saw {his}
our} duck.

(32) They saw her duck down into the cellar.

(33) They saw her huge duck.

Examples (28) and (29) suggest that duck belongs to two different syntactic classes, N and V, while (30) and (31) suggest that her belongs to two different syntactic classes, Objective Pronoun and Genitive Pronoun. These differences in category are also illustrated in (32) and (33), which can be used to argue that her duck in one understanding of (4) is an NP, in the other an NP (her) followed by a VP (duck). Taken together, these observations suggest that (4) represents two different surface syntactic patterns, which happen

(by accident) to intersect:



The claim that two understandings represent different patterns can sometimes be supported by sentences in which both patterns occur as parallel constructions. If these sentences are grammatical, and not semantically redundant, they give evidence that the constructions are indeed different. This is the major line of argument²¹ Chomsky 1965:101 gives for the ambiguity of

(36) He decided on the boat.

He notes that the two constructions realized in (36)--NP V+Particle NP and NP VP Preposition+NP--can occur together:

(37) He decided on the boat on the boat.

1.3.2. Special distribution.

A test that will not work generally is that of adding material to sentences to force one understanding. It won't do to claim that

(38) She wore a sweater.

is ambiguous between understandings including 'colored sweater' and 'white sweater' on the grounds that it is 'disambiguated' by the addition of the modifier colored or white. If (38) is merely unspecified, the added material will supply the necessary semantic content, and if (38) is ambiguous, the added material will select the necessary semantic content. That is, the extra elements fail to distinguish between ambiguous and unspecified examples.

Despite its inapplicability in general, the appeal to added material ('cooccurrence restrictions') is quite common in the literature. For instance, Sadock 1972 supports his claim that (24) is ambiguous rather than unspecified by saying that 'it occurs unambiguously in contexts which exclude one or the other meaning' (333), citing

(39) You bet it's cold but you didn't say it was.

(40) You bet it's cold, so why didn't you wager it.

* But if (24) is unspecified with respect to whether it's an expression of the speaker's agreement with a statement of the addressee's or a

report of a wager, the added material in (39) and (40) would simply supply enough information to exclude one of these understandings; and if (24) is ambiguous (as indicated by other tests), the added material selects one semantic representation in each example. The added material tells us nothing about the status of (24).

However, in especially fortunate circumstances--when the distribution of the added material is restricted in ways that are not explicable on semantic grounds alone--this test can give real evidence.

For example, there is a well-known double understanding displayed by nominals such as

(41) the shooting of the hunters

Here hunters can be understood either as agent or patient. Notice that on either understanding the phrase describes an occurrence and can therefore appropriately take point-time adverbials. Example

(42) the shooting of the hunters last week

still has both understandings. Furthermore, on either understanding, prenominal modifiers are permitted:

(43) the illegal shooting of the hunters

But prenominal modifiers related to point-time adverbials succeed in eliminating one understanding of such phrases;

(44) last week's shooting of the hunters

has only the understanding where hunters is the direct object of shooting. Therefore, since the agentive understanding of (44) is not ruled out on semantic grounds--that is, it is not contradictory--some structural difference must be imputed to the source of (41) on the agentive understanding and its source on the patient understanding, so that the grammar can correctly associate the genitive time adverbial with one of these and not the other.²²

It is characteristic of good special distribution arguments that they use arbitrary features of the syntax of a language. The restriction on genitive time adverbials appears to be an idiosyncrasy of English. The same is true of the distribution of postnominal else as reviewed in Zwicky (to appear) and various phenomena surveyed in Sadock 1972--the obligatory absence of that in (24), the location of stress in (24) and (25), postposed please in (26), and expletive the heck etc. inside wh-phrases in (26). It is not necessary to have an explanation for the special distributions of these items; we need only be satisfied that the distributions don't follow entirely from what the items mean. However, since the arbitrary aspect of special distribution arguments is essential, there will often fail to be pertinent items to detect real ambiguities in a language. The existence of an item whose distribution is in part arbitrary and in part dependent upon the presence of a particular element of semantic representation is a happy accident.

1.3.3. Transformational potential.

The previous two types of syntactic tests can be used by linguists of many persuasions. These lines of argumentation would be acceptable to traditional grammarians, structuralists, and transformationalists alike. However, they have quite restricted domains. Intersection-of-pattern arguments can detect only those ambiguities that are manifested in surface syntactic differences-- immediate constituent division and membership in syntactic categories. Special distribution arguments can detect ambiguities with no surface syntactic reflexes, but only in a few lucky cases. There are more sensitive--and more theory-bound--tests, which can be extended to some of the many problematic examples not amenable to the other tests. These widely used tests call upon transformational operations to detect ambiguities.

The argument goes as follows: if the semantic representations for certain sentences lack specification of some piece of meaning, then the applicability of transformations to them cannot possibly depend on whether or not this piece of meaning is present. If a sentence is unspecified with respect to some distinction, this lack of specification must be preserved by every transformational operation. But if a sentence is ambiguous, then it is possible for a transformation to apply in some, but not all, of the cases, so that the effect of the transformation is to eliminate one or more understandings of the sentence.

For instance, no transformation applied to structures containing the structure of (3) affects the multiple understandings of (3):

- (45) Is my sister the Ruritanian Secretary of State?
- (46) What my sister is is the Ruritanian Secretary of State.
- (47) My sister is the Ruritanian Secretary of State, isn't she?
- (48) My sister, (who is) the Ruritanian Secretary of State, is a turophile.
- (49) I knew my sister to be the Ruritanian Secretary of State.

are all consistent with my sister's being younger or older than I am, with her having acceded to the post recently or long ago, and so on. On the other hand, the understandings of (4) are affected by some transformations:

- (50) Her duck was seen by them.
- (51) It was her duck that they saw.
- (52) Her duck, which they saw, had a bright green head.

have only one of the two understandings of (4). This indicates that (4) is ambiguous, while (3) is unspecified.

An argument from transformational potential requires an independently motivated transformation, of course, just as a special distribution argument requires an element whose distribution is not

completely predictable from its meaning. It would not do to claim that

(53) Susan and Matilda talked.

is ambiguous between a sentential conjunction understanding and a phrasal conjunction understanding on the grounds that the rule of Conjunct Movement eliminates one understanding. It is true that

(54) Susan talked with Matilda.

has only one of the understandings of (53). But it is the very relationship between (53) and (54) that motivates the rule of Conjunct Movement in the first place. Unless there is independent evidence for Conjunct Movement, it cannot be used to argue for the ambiguity of (53).²³

The structure of arguments from transformational potential is, in fact, even more complex. Consider a familiar sort of example:

(55) We expected that the psychosemanticist would
examine George.

(56) We expected the psychosemanticist to examine George.

The question is whether (55) is ambiguous as to who is the object of our expectations, the psychosemanticist or George, or whether it is unspecified. Sentence (55) has both understandings, sentence (56) only the former. We can conclude from these observations that

if (i) Raising doesn't 'change meaning',

and if (ii) the applicability of Raising depends only upon its input structures, or at least upon some set of syntactic structures or semantic representations,

and if (iii) there is independent evidence for the transformational rule of Raising,

then either (iv) (55) has two syntactic structures, and Raising applies to only one of them,

or (v) (55) and (56) have somewhat different syntactic structures, being related as privative opposites, and Raising applies only to the structure of (56).

Let us take these clauses one by one.

First, if some transformations can 'change meaning', then it is possible that Raising is such a transformation. It might be that applying Raising to (55) 'changes the focus' and yields (56). Unless we can argue on independent grounds that Raising is not a meaning-changing transformation, the difference in understanding between (55) and (56) sheds no light on the ambiguity issue. In

theories that prohibit meaning-changing transformations, the understandings of (55) and (56) must bear on this issue, subject to the following qualification.

Second, if the applicability of some transformations depends upon material not in semantic or syntactic structures--if, for instance, the applicability of some transformations depends upon purely pragmatic considerations--then it is possible that Raising is such a transformation. It might be that the applicability of Raising to (55) depends upon who the speaker of (55) has in mind. Unless we can argue on independent grounds that Raising is not dependent on pragmatic considerations, the difference in understanding between (55) and (56) sheds no light on the ambiguity issue. In theories that prohibit pragmatically conditioned transformations, the understandings of (55) and (56) must bear on this issue, subject to the previous qualification.

It follows that in relatively unconstrained syntactic theories--those allowing meaning-changing transformations or pragmatically conditioned transformations--it is very difficult, if not impossible, to apply ambiguity tests using transformational potential. In fact, theories permitting pragmatically conditioned transformations also make difficult the tests from intersection of patterns and special distribution, since in such theories pragmatic considerations might have influences at any level of grammar. Since we are treating normal argumentation, in which transformational potential is taken to be significant, we continue this discussion by assuming a constrained syntactic theory.

Third, it must be established on independent grounds that there is a rule of Raising. If there is no evidence for Raising, or if arguments for Raising are based entirely upon the relation in understanding between (55) and (56), then facts involving Raising don't lead to any clear result about the ambiguity of (55).

If all the preceding conditions are satisfied, we are still entitled only to one of two conclusions: either that (55) is ambiguous by virtue of having two distinct syntactic structures, or that (55) has a somewhat simpler syntactic structure than (56), the difference in structure being the element that conditions Raising for (56). For if Raising can't be demonstrated to map the structure of (55) into the structure of (56), or if the only evidence that Raising performs this mapping comes from the relation between (55) and (56), then (again) facts involving Raising don't lead to any clear result about the ambiguity of (55). We can posit different structures for (55) and (56), parallel to current analyses of interrogatives, negatives, imperatives, passives, and the like.

Arguments for ambiguity then depend very much on arguments for the form of transformational rules. Well-established rules like wh-Question Movement provide an excellent basis for transformational potential arguments. Rules like Passive and Raising are less useful, because the examples we are most interested in are just those that are crucial in deciding the form of the rules.

A few words on arguing for lack of specification by means of transformational potential: such arguments are *ex silentio*;

to claim that a particular example is unspecified, on the basis of transformational potential, is only to claim that we know of no transformations that eliminate one of the understandings of the example (as in the discussion of (3) earlier in this section). Arguing in this way is suggestive, though not (of course) decisive.

We now turn to an especially interesting subclass of transformational potential tests.

1.3.4. Identity tests.

These use certain rules that refer to identity of constituents--pronominalization and deletion rules requiring identity of sense (rather than identity of reference). The utility of Conjunction Reduction for this purpose has been recognized in generative grammar since Syntactic Structures, where this rule was used to determine the boundaries and the category of a constituent (Chomsky 1957:35-6). Roughly, to be eligible for reduction, two conjoined clauses must be of the forms $X - A - Y$ and $X - B - Y$, where A and B are constituents of the same type. This condition on A and B can be used to support arguments distinguishing ambiguity and lack of specification, as in the case of (4). If (4) is ambiguous, then her duck in one understanding is not of the same type as her duck in the other; one is an NP composed of Det plus N, the other is composed of the two constituents NP and VP (recall (34) and (35)). The sentence

(57) They saw her swallow.

has the same two understandings. It follows that Conjunction Reduction should be possible only when (4) and (57) have matching understandings;

(58) They saw her duck and (her) swallow.

should have two understandings, not four--which is correct. The two non-matching, or crossed, understandings, are excluded by the condition that A and B be of the same type.

With respect to the material X and Y which must be identical, Conjunction Reduction provides an even more stringent test. If

(59) Morton tossed down his lunch.

were unspecified, rather than ambiguous, as to whether Morton bolted his lunch or threw it to the ground, then the parallel example

(60) Oliver tossed down his lunch.

would also be unspecified, and the reduced sentence

(61) Morton and Oliver tossed down their lunches.

would have four understandings, not two, because the identity condition on Conjunction Reduction can't require identity of elements that aren't part of syntactic structure. But (61) lacks the crossed

understandings (except as a joke), and we conclude that (59) is ambiguous. To support our intuition that (61) lacks the crossed understandings, we can add contextual information so as to favor different understandings in the two predicates:

(62) ?Morton, as always a greedy eater, and Oliver,
who continued to refuse food on principle,
tossed down their lunches.

Contrast the long-standing versus recent understandings of (3), which are paralleled in

(63) My sister is a prominent composer.

but which are not eliminated by the identity condition on Conjunction Reduction:

(64) My sister is the Ruritanian Secretary of State
and a prominent composer.

has all four understandings, as we can see by appending contextual information forcing different understandings in the two predicates:

(65) My sister is the Ruritanian Secretary of State,
and has been for years, and a prominent composer,
thanks to her Concerto for Bassoon and Tympani
that was published last week.

If (64) lacked the crossed understandings, (65) would be anomalous.

Other deletion-upon-identity transformations give the same results. The sentences

(66) She called Jane a cab.
(67) He called Jane a dog-cart.

each have two understandings, and the result of Gapping--

(68) She called Jane a cab, and he a dog-cart.

--still has only two (again excluding obvious jokes). Similarly, VP Deletion, as in

(69) I wouldn't call her a cab, but George might.

excludes the crossed understandings.

G. Lakoff 1970b has increased the stock of rule tests by reference to identity transformations that yield pro-forms, in particular a rule that gives so, as in

(70) I called her a cab, and so did George.

to which we may add the rule that gives do so as a pro-form for activity VPs--

(71) I called her a cab, but George wouldn't do so.

and some rule or rules generating the same (thing)--

- (72) Margaret abhors Melvin's cooking, and the same (thing) goes for Selma and Sherman.
 (73) Yesterday my best friend was denounced as a Bloomfieldian counterrevolutionary, and today the same (thing) happened to me.
 (74) This morning my sister sold her self-portrait, and this afternoon I did the same (thing).

It is important to note that the identity tests support the other tests, in the sense that they never predict lack of specification when other tests predict ambiguity. In certain instances the identity tests seem more stringent than other tests; these are treated in section 2.3 and the appendix. We continue our discussion of the identity tests in section 2.1 below.

1.4. Pragmatic tests.

A limitation on the use of the identity tests for ambiguity arises from the possibility that some crossed understandings are excluded by virtue of pragmatic, rather than semantic, considerations. Let us consider an example in some detail.

Heinämaa's recent treatment of before clauses like the one in

(75) John shut up before Harry got mad at him.

tries 'to show that the context determines which one--the before-clause or its negation--is understood to be a valid inference' (Heinämaa 1972:140), without taking a stand on whether the two understandings of (75) are distinct in semantic representation. An identity test seems to indicate ambiguity:

(76) John shut up before Harry got mad at him, and so did Chuck.

doesn't allow the crossed understandings (in which Harry didn't get mad at John but did at Chuck, or the reverse). However, as Richmond Thomason has pointed out to us, it might be the case that there is only one before in semantic structure, and that this before is usable in two different classes of contexts, being roughly paraphrasable by and then in one class of contexts, by and so...not in the other. Thomason also points out that there is a testable difference between the pragmatic account and the semantic one: in the pragmatic account, the crossed understandings should be absent in the unreduced sentences.²⁴ The question is then whether sentences like

(77) Mary shut up before Bill left, and Jane shut up before Harry got angry; Bill left, and Harry didn't get angry.

are anomalous or not. Our own judgment in this case is that (77) is no more anomalous than sentences like

- (78) Julia declined a cocktail, and then Iris declined an irregular verb.
 (79) Stan croaked [like a frog], and then Ollie croaked [died].²⁵

which have two homophones, differently understood, in close proximity. Presumably the difficulty in obtaining the crossed understandings in such cases has to do with psychological set and not with differences in contextual conditions; this view is supported by the fact that the anomaly of examples like (78) and (79) can be alleviated by supplying a previous discourse favoring the crossed understandings, e.g., for (79):

- (80) Stan has often amused us with his imitations of animals. Unfortunately, Ollie had both a weak heart and a violent fear of frogs and toads. Stan croaked, and then Ollie croaked.

The same is true of (77):

- (81) Bill announced that he was about to leave, and Harry said that he'd be furious if Jane didn't shut up. Mary shut up before Bill left, and Jane shut up before Harry got angry; Bill left, and Harry didn't get angry.

We cannot conclude that there are no cases for which a pragmatic account of non-crossing is correct--only that (76) seems to require a semantic account.

One way in which pragmatic considerations certainly do eliminate crossed understandings is in the application of transformations requiring identity of reference, as Conjunction Reduction does for definite NPs. Both (3) and (63) can be understood as referring to a younger sister or an older sister; the reduced conjunction (64) does not allow an understanding in which a younger sister is the Ruritanian Secretary of State and an older sister a prominent composer, or the reverse. Non-crossing here follows from the fact that Conjunction Reduction requires identity of reference for the two occurrences of my sister. The pragmatic reflex of this requirement is that the two occurrences of my sister must be understood as referring to the same person in every context in which (64) is appropriate; consequently, the two occurrences cannot have different properties.

2. Identity tests for ambiguity.

2.1. Introductory remarks.

In the recent literature (following G. Lakoff 1970b) identity tests have been much used to decide cases for which other tests for

ambiguity are inapplicable or unclear.^{26, 27} Thus Lawler 1972:250 argues from identity tests that

(82) Ken drives a truck.

is ambiguous, not vague, between a habitual and an occupational reading, while Green 1972:92 argues that

(83) Miranda hammered a coathanger.

is vague, not ambiguous, with respect to whether the resultant state is flatness or straightness.

There are still other cases where the identity tests bear on the truth of some unobvious claims. For instance, Dahl 1972 maintains that sentences like

(84) Bill loves his wife, and so does Harry.

are not ambiguous between an understanding in which Harry loves his own wife and one in which he loves Bill's wife (as all other writers on the subject have assumed). However, the position that (84) is unspecified is not verified by identity tests:

(85) Bill loves his wife, and so does Harry, and the same thing goes for Sam and Mike.

has several understandings, but not one in which Harry loves Bill's wife while Sam and Mike each love their own, nor one in which Bill and Harry each love their own wives while Mike loves Sam's. These crossed understandings should be possible if (84) were unspecified.

There are other cases where application of identity tests yields no significant results. Lakoff and Peters 1969 analyze both

(86) John and Martha left.

(87) John and Martha are married.

as ambiguous between sentential conjunction and phrasal conjunction, the latter corresponding to sentences like

(88) John left (together) with Martha.

(89) John is married to Martha.

respectively. David Dowty, Larry Martin, and Carlota Smith have suggested to us that identity tests indicate that (86) is unspecified and (87) ambiguous:

(90) John and Martha left, and so did Dick and Pat.

(91) John and Martha are married, and so are Dick and Pat.

According to them, (90) allows the crossed understandings, (91) does not.

But it seems to us that the crossed understandings are available for (91) as well, since anyone who is married is married to someone. Similarly, it is not surprising that (90) can have crossed understandings, since anyone who has left together with someone has left, and the fact that someone has left does not exclude the possibility that he left together with someone. We are dealing here with privative oppositions, so that no matter what the linguistic state of affairs, by applying identity tests we will always conclude that

we are dealing with a lack of specification; the existence of the less specific understanding guarantees that we will get all possible understandings.

The same is true of other cases of privative oppositions. Consider the sentence

(92) I saw a dog, and so did Harold.

as a relevant datum bearing on the putative ambiguity of

(93) I saw a dog.

Now (92) is to be derived by an identity-of-sense transformation from

(94) I saw a dog, and Harold saw a dog.

which has four understandings in which the phrase a dog is understood to be nonspecific:²⁸

(95) I saw <u>a dog</u> , and Harold saw <u>a dog</u> .	UNDERSTANDING #
+MALE +MALE	1
+MALE no gender indicated	2
no gender indicated +MALE	3
no gender indicated no gender indicated	4

The identity-of-sense condition on so should eliminate understandings 2 and 3. But how can we tell? Even if we have strong intuitions about what (92) and (94) say, how could we elucidate these intuitions to someone who doesn't share them, or is puzzled about them? No appeal to contexts will help, because every context in which the crossed understandings (2 and 3) are appropriate is also a context in which the parallel understanding 4 is appropriate. Therefore, we can't test the possible understandings of (92)--or (94), for that matter--by supplying a context that forces one of the crossed understandings, as we did in the discussion of (61)-(62) and (75)-(76); if we eliminate the parallel understandings, we also eliminate the crossed understandings.

Yet another example involves verbs that may be understood factively, but are not necessarily so understood (Kiparsky and Kiparsky 1970:163). If someone hypothesizes that a sentence like

(96) The police reported that the culprit had fled.

has a factive understanding and an understanding with no commitment as to factivity, we cannot use identity tests to support or to attack the hypothesis; the factive understanding implies the other.

In fact, ambiguities involving privative opposites will be extremely difficult to argue for with any syntactic test. Intersection-of-pattern arguments will be very hard to come by, since we will need not only a diagnostic element with a distribution that is syntactically constrained in part, but also one constrained semantically to occur only with items having the more general understanding; a restriction to occurrence with the more specific understanding would not be detectable, since any sentence with the more specific understanding

is consistent with the more general understanding. Thus, in the case of dog we would need an element constrained to occur only with nouns whose gender is not indicated (person, lion, friend, neighbor, and the like) and nouns with one semantic representation in which gender is not indicated (dog, goose, duck, and so on), and constrained syntactically in addition. Much the same is true for transformational potential tests other than those using identity of sense: we would need a transformation whose applicability depended upon the occurrence of the more general understanding, hence which applied only to structures that lacked indication of the value of some semantic feature. It isn't clear that there are any such transformations, or even that these are any diagnostic elements with the required sort of distributional restriction.

In contrast, a very promising area for the application of identity tests is that of illocutions and perlocutions. For the purposes of the following discussion, we will use the term illocution to refer to those speech-act types that are distinguished in the semantic representations of a particular language. It follows that one of the ways in which languages can differ is in their sets of illocutions, and this seems to be so. For any particular language, our task is to decide what its illocutions are and how they are realized in terms of linguistic form. Some illocutions will have forms unique to them, like the English reduced sentences that are unambiguously suggestions:²⁹

- (97) Why not move to Chicago?
- (98) How about giving yourself a treat?

Much more commonly, however, the surface forms of different illocutions will coincide in part, and we are confronted with the problem of deciding which sentences are illocutionarily ambiguous and in what ways. This problem is made more difficult by the fact that a given sentence will have many different understandings, as far as its possible uses are concerned, but that only some of these require representation in semantic structure. Those uses which do not require representation we term perlocutions.³⁰ We now turn to an examination of the properties of perlocutions with respect to identity tests.

2.2. The unexceptional perlocutions.

We wouldn't expect identity tests to be sensitive to perlocutions, since these effects (or the intention of the speaker to accomplish them) are not part of the semantic representations of sentences. In most cases this expectation is fulfilled. Suppose, for example, that the assertion that Bill dated Martha would surprise an addressee in some circumstances. Then in these circumstances, the same addressee would be surprised by any of the following sentences:

- (99) Bill dated Martha and so did Harry.
- (100) Harry dated Martha and so did Bill.
- (101) Bill and Harry dated Martha.
- (102) Harry and Bill dated Martha.

- (103) Bill dated Martha and Harry Cynthia.
 (104) Harry dated Cynthia and Bill Martha.

Notice in particular that the surprisingness of the assertion that Bill dated Martha is entirely independent of whether or not the other conjunct is surprising. That is, the crossed understandings are available regardless of what reduction rules have applied. Observe also that a speaker might intend either one, or both, or neither of the underlying conjuncts in the sentences above to be surprising, so that the crossed understandings having to do with the speaker's intentions are available as well.

Many other typical perlocutions share this behavior. Thus, either of the conjuncts in (99)-(104) can be intended to mislead and could succeed in misleading. In a suitable context any conjunct in (99)-(104) could amaze, please, offend, or hurt the addressee, make the speaker seem petty, forthright or ridiculous. In all of these cases the reduction tests give believable results: sentences are not many-ways ambiguous as to perlocutionary intent or effect; they are unspecified.

2.3. The exceptional perlocutions.

In isolation, any strong assertion is open to both a literal and a sarcastic understanding; the stronger the assertion, the more plausible the sarcasm. Thus

- (105) Grobman is a real genius.

can be used to convey something on the order of

- (106) Grobman is a complete idiot.

Now consider the following sentences:

- (107) Grobman is a real genius, and so is Chomsky.
 (108) Grobman and Chomsky are real geniuses.
 (109) Grobman is a real genius and Verhalt an absolute prince.
 (110) Grobman and Verhalt are a genius and a prince, respectively.

The second conjunct in (107) and (108) has been chosen so that the sarcastic understanding is far-fetched. The result is that the first conjunct cannot be understood sarcastically either. In (109) and (110), where we have no special prejudices which could influence the understanding, the conjuncts may be literal or sarcastic. But both must be literal or both sarcastic; the crossed understandings do not exist. According to the identity tests, then, we must adjudge the difference between a literal and a sarcastic understanding as an ambiguity. This result is tantamount to the problematic claim that the noun genius (and all similar lexical items) is ambiguous between an understanding 'exceptionally intelligent individual' and an understanding 'exceptionally stupid individual'; compare the

discussion of brilliant in section 1.2.3.

Let us consider metaphor next.

(111) Irving has jumped into a pit of alligators.

could be used to signify something on the order of the literal sense of

(112) Irving has embarked on a dangerous course of action.

Now with this metaphorical interpretation, notice that only a parallel metaphorical understanding is available for the second underlying conjunct in any of the following sentences:

(113) Irving has jumped into a pit of alligators and so has Gebhardt.

(114) Irving has jumped into a pit of alligators and Gebhardt has too.

(115) Irving and Gebhardt have jumped into a pit of alligators.

Thus the reduction test informs us that the metaphorical sense of the first conjunct is one pole of an ambiguity. But there is no obvious bound on the number of metaphorical uses of a given sentence, so the identity tests tells us that every potentially metaphorical sentence is infinitely ambiguous.³¹

Similarly, the following sentence cannot be taken as a non-literal insult followed by a serious assertion:

(116) Your father drives a semi and so does your brother Mark.

Nor is there any understanding of

(117) The Polish Academy of Sciences just announced the first successful appendix transplant and so did the Bulgarian Academy of Sciences.

in which the first conjunct is a joke while the second is a statement of fact.

(118) ?There are about a million students in my introductory class and about a half million people in Greater Winnipeg.

is likewise odd unless the first conjunct expresses a reasonable estimate of the size of the class. And finally,

(119) ?Alfred eats like a horse and so do zebras.

can only be taken as indicating that Alfred is a grazing animal or

something of the kind. These examples illustrate that insults, jokes, exaggerations, and similes work like metaphor in limiting the understanding of subsequent reduced conjuncts.

Several of these perlocutions share an additional behavior with respect to the identity tests, a behavior that makes it certain that the tests need revamping: if the first conjunct is understood literally, a second reduced conjunct may be understood nonliterally. That is, for several of these perlocutions, an identity test yields neither the straightforward result that the difference in understanding is an ambiguity (two understandings), nor that it is a lack of specification (four understandings). Instead, there are three understandings. To see that this is so, consider again example (116). This sentence can certainly be understood as a serious assertion of the beliefs or as a double insult. In the latter case it could be felicitously uttered when the speaker does not believe that either person in fact drives a semi. As has already been pointed out, (116) doesn't have an understanding in which the first conjunct is nonliteral but the second conjunct is literal. But if the speaker of (116) believes that the addressee's father does indeed drive a truck and that the addressee knows he believes this, he could well intend the second conjunct to be understood nonliterally as an insult. The first conjunct, the literal one, would serve to soften the addressee up for the blow of the second, nonliteral, conjunct.

One totally unacceptable interpretation of the fact that some reduced sentences have three understandings would involve the claim that the range of ambiguity of underlying clauses is partially dependent on whether they are first or second conjuncts. Such a conclusion could be accommodated in a generative grammar only by means of a novel sort of semantic well-formedness constraint.

2.4. An interpretation of the facts.

It is clear first of all that there is a property shared by all of the anomalous perlocutions which distinguishes them from the perlocutions that behave in the expected manner. The anomalous perlocutions involve a suspension of a fundamental principle of conversation: the sincerity principle (Grice's supermaxim of quality: 'Try to make your contribution one that is true'). Joking, irony, sarcasm, metaphor, simile, and nonliteral insults all involve the speaker's saying something he does not literally mean.³² Furthermore, the speaker wants the addressee to recognize that he is not speaking sincerely. In contrast, the unexceptional perlocutions either require no suspension of the sincerity principle (as in pleasing, shocking, offending, etc.) or else involve the speaker's concealment of a suspension (as in misleading, lying, some flattering, etc.).

The fact that the speaker wants the addressee to recognize his insincerity can help to explain why the anomalous perlocutions can be signalled nonlinguistically by winks, jabs in the ribs, and so on. There is also a tendency for these perlocutions to become partially conventionalized in the forms of the language--that is,

for them to become illocutions. Thus a dialect of American English which employs nasalization to indicate sarcasm has been reported.³³ Similarly, it is possible to mark an utterance as a joke by putting on a W. C. Fields or Groucho Marx accent. In English and Russian,³⁴ literal comparisons can be distinguished from similes.

- (120) He eats like a bear does.
 (121) On jest kak medved'.

can only be literal, whereas

- (122) He eats like a bear.
 (123) On jest medvedem.

can also be exaggerated similes. Of course when these intentions become codified, the original effect is weakened or lost. A joke is better if told with a straight face, and sarcasm is more biting if the pretense of seriousness is maintained. Hence there is also a tendency for differences between the literal and nonliteral intentions to disappear. Note that there is no form in English or Russian that signals that an utterance is to be taken as a nonliteral simile.

Now observe that the ways of understanding (103)-(105) are just those available for the unreduced sentence

- (124) Irving has jumped into a pit of alligators, and
 Gebhardt has jumped into a pit of alligators.

The same is true for examples involving the other exceptional perlocutions. In each case, the absence of one crossed reading is a pragmatic phenomenon, not a semantic one; recall the earlier discussion (section 1.4) of Thomason's suggestion. That is, identity tests for ambiguity are irrelevant for cases like (103)-(105). But why should the anomalous perlocutions--those involving the suspension of the sincerity condition and an intent on the part of the speaker that this suspension be recognized--fail to have one crossed understanding in examples like (124)?

A plausible line of explanation is the following. Once a conversational principle has been violated, the hearer has no way of telling when the rule will be back in force and tends to assume that the violation will continue for some time. Thus, the violation persists through some stretch of discourse. For certain conversational principles, those concerning politeness, for instance, the span of violation is considerable. Once a speaker has failed to 'keep his distance', he cannot easily resume a polite stance. Consequently, once he has asked a personal question, it is strange for him to use the formula if you don't mind my asking to introduce another personal question; he has already been presumptuous:

- (125) A. How much did that dress cost?
 B. Twenty dollars.
 A. ?If you don't mind my asking, where did you
 buy it?

Note that the same questions, but with the formula first, are in no way odd:

- (126) A. If you don't mind my asking, how much did that dress cost?
 B. Twenty dollars.
 A. Where did you buy it?

The same persistence effect explains why the unreduced example (124) lacks the crossed understanding metaphor-literal statement, and why

- (127) There are about a million people in San Antonio and there are about a million people in my introductory class.

lacks the crossed understanding hyperbole-literal statement, and why

- (128) ?There are about a million people in my introductory class and there are about a million people in San Antonio.

is odd.

The anomalous perlocutions, then, do not provide true exceptions to the identity tests for ambiguity; their properties seem to follow from their nature and from the pragmatic considerations sketched above.

Appendix. Intentionality and identity tests.

The problem of intentional versus nonintentional understandings of sentences like

- (129) John cut his arm with a knife.
- (130) John hit the wall.
- (131) Bruce stumbled coming down the stairs.

is considered by G. Lakoff 1970b, who argues for an ambiguity by applying the identity test with so;

- (132) John cut his arm with a knife and so did Harry.
- (133) John hit the wall and so did Harry.
- (134) Bruce stumbled coming down the stairs and so did Herb.

are said by Lakoff to lack both crossed understandings. He cites one language, Cupeño, that appears to distinguish intentional from nonintentional understandings by morphological means, thus offering the defense that the differentia between the understandings of (129)-(131) is not implausible (compare the discussion in section 1.2.1). Lakoff's conclusion has been disputed by Catlin and Catlin 1972.

There are several difficulties in these discussions. First, there is some terminological confusion; the terms intentional (versus nonintentional or unintentional), volitional (versus nonvolitional), and purposive or purposeful (versus nonpurposive or accidental) have been used by one writer or another. But these words do not mean quite the same thing in English, and it is not clear which of them, if any, correctly describes the difference between the understandings of (129)-(131).

Second, it is hard to tell how the negative terms are to be understood: do they indicate polar oppositions or privative oppositions? Both Lakoff and the Catlins seem to take the former position, but without any argument on the point. Note that in the latter position the identity tests would be inapplicable, as we pointed out in section 2.1.

Third, it is not obvious that the differences in understanding exhibited by (129)-(131) are a matter of intention alone. Sentence (130), for example, might be claimed to exhibit two different understandings of the subject (John versus John's body), a difference in agentivity, a difference in the sense of hit, or a difference in deleted adverbials (with his fist versus with his body, or either of these versus no adverbial element in semantic structure). Sentence (130) might, in fact, have more than two readings in semantic structure. One possibility, based on analyses in Dowty 1972:ch. 5, is that (130) has three semantic representations³⁵--intentional agentive, nonintentional agentive, and nonagentive. In the intentional agentive understanding, John intends to hit the wall and accomplishes this; in the nonintentional agentive understanding, John intends to act, but doesn't necessarily intend to hit the wall; in the non-agentive understanding, John doesn't necessarily intend to act. Note

that the distinction between intentional and nonintentional agentives, as well as the distinction between agentives and nonagentives, is a privative rather than a polar opposition, so that identity tests will not be applicable.

Fourth, different speakers give somewhat different judgments on the ways in which sentences like (129)-(131) can be understood. Catlin and Catlin claim that the two understandings of (129), like those of (130) correspond to two quite different physical acts, 'John's nicking his arm while peeling potatoes versus gouging his arm to the bone' (507). Our own feeling is that the difference in the actions doesn't correlate at all with intentionality, that (129) has all four possible understandings.

Furthermore, on reductions with so, the Catlins disagree directly with Lakoff, who claims that (132) 'can involve two purposeful, or two accidental, cuttings. But (132) cannot mean that John accidentally nicked his arm (while slicing potatoes) and Harry purposefully slashed away at his, nor the reverse' (359). The Catlins say that in (132), Harry 'in a particularly violent episode of sleep-walking can have nonvolitionally...cut his arm with a knife, in a manner sufficiently similar to John's parallel intentional actions that the conjunction with so + And is perfectly acceptable' (507). The question is then whether sentences like

(135) ?John, intended to commit suicide, cut his arm
with a knife, and so did Harry, who accidentally
ran into a bread knife while sleepwalking.

are peculiar because they involve an internal self-contradiction. Our own acceptability judgment on (135) is that it merits at best a question mark. Lakoff should reject it, the Catlins accept it, given their respective positions on (132). Our opinion of the other crossed understanding is the same:

(136) ?John, accidentally running into a bread knife
while sleepwalking, cut his arm with a knife,
and so did Harry, who tried to commit suicide.

is quite peculiar.

Fifth, different identity tests give different results. Identity tests using deletion appear to be more stringent than those using so and do so, since the crossed understandings of

(137) John and Harry (both) cut their arms.
(138) John cut his arm, and Harry his leg.

are quite impossible for us.

Sixth, different examples have different properties. Example (129), for which both crossed understandings are peculiar, contrasts with (131). We agree with the Catlins that (134) may report a situation in which 'Bruce may have drunk too much to make his way down a flight of stairs without mishap. Herb wants to demonstrate

how clumsy Bruce looked coming down the stairs and repeats Bruce's performance, this time stumbling on purpose' (506). Thus,

- (139) Bruce, the drunken oaf, stumbled coming down the stairs, and so did Herb, who was cruelly making fun of Bruce.

isn't odd. But the other crossed understanding is much more difficult:

- (140) ?Bruce, illustrating how he portrayed a drunk on stage, stumbled coming down the stairs, and so did Herb, who was so interested in the demonstration that he wasn't looking where he was going.

is somewhat odd.

The difference between (129) and (131) can be accounted for if (as David Dowty has suggested to us) stumble on purpose is treated as a nonliteral phrase. If the meaning of stumble specifically involves lack of intention, then stumble on purpose ought to be a much odder phrase than cut on purpose, and using it should require some extension of the literal sense of stumble. Certainly it is odder. Its nonliteral character is indicated by the oddness of the unreduced sentence corresponding to (140):

- (141) ?Bruce, illustrating how he portrayed a drunk on stage, stumbled coming down the stairs, and Herb, who was so interested in the demonstration that he wasn't looking where he was going, stumbled coming down the stairs.

That is, saying stumble on purpose is a sort of temporary redefinition of stumble; this temporary redefinition shows the same properties as the other exceptional perlocutions discussed in section 2.3.

The difference between deletion rules and pro-formation rules is general and has a plausible explanation. Consider the exceptional perlocutions of section 2.3--hyperbole, for instance. The unreduced sentence

- (142) Astorville has about a million people in it,
and Penntown has about a million people in it.

can be understood as two literal statements, two exaggerations, or a literal statement followed by an exaggeration. A pro-formation rule applied to (142) yields a surface sentence with two VPs and having the same three understandings as (142):

- (143) Astorville has about a million people in it,
and so does Penntown.

A deletion rule applied to (143), however, yields a surface sentence with only one VP:

- (144) Astorville and Penntown (each) have about a million people in them.

To obtain the crossed understandings, a hearer must perceive a single occurrence of the VP have about a million people in it as both literal and nonliteral, which is, of course, difficult. This perceptual difficulty occurs in (137) and (138) as well.

The difference between speakers is harder to account for. Perhaps different speakers have somewhat different sets of semantic interpretations; such variation has been attested for other constructions in English. However, this difficulty is overshadowed by the problem of determining exactly what the readings of (129) and (130) are for any particular speaker. If the suggestion above is correct for (130), there are more interpretations than Lakoff and the Catlins give, and identity tests will shed no light on the subject. In any event, the discussion by Lakoff and the Catlins is quite inconclusive, and new sources of syntactic evidence are needed to decide the issues.

Footnotes

*This is a considerable revision and expansion of 'Failing the Ambiguity Test', read before the Linguistic Society of America at Ann Arbor, Michigan, in August 1973. During 1972 and 1973 versions of parts of this paper were presented to several audiences at the Ohio State University, the University of Chicago, the University of Edinburgh, and the Linguistic Institutes (at the University of North Carolina, Chapel Hill, and the University of Michigan). We thank our auditors for their comments and criticisms. We thank especially David Dowty, Orvokki Heinämäki, Christopher Longuet-Higgins, John Lyons, G. K. Pullum, David Stampe, Richmond Thomason, and Robert Wall for their comments on earlier versions. Our work was supported in part by the John Simon Guggenheim Memorial Foundation and in part by a National Science Foundation grant to the Mathematical Social Sciences Board.

1. Most of what follows applies equally to underlying (or deep) syntactic representation and to semantic representation. Consequently, the discussion below uses only one term, semantic representation (also known as semantic structure, (semantic) interpretation, (semantic) reading, semantic description, logical representation, logical form, logical structure, sense and meaning by various writers). When a distinction might be important, there is brief discussion in a note.

2. The term ambiguity is used here only in this sense. For a survey of the variety of applications of the terms ambiguity and vagueness, see Binnick 1970.

3. For the distinction, compare the discussion of ambiguity in Katz 1972:59-63, in response to Weinreich.

4. The following discussion uses the term unspecified throughout.

5. This useful example is due to Dennis Stampe, with the collaboration of Thomas Patton.

6. Sections 1.2.1, 1.2.3, 1.3, and 2.1 are based upon section 2 of Zwicky (to appear).

7. To argue for a difference in semantic representations is also to argue for a difference in underlying syntactic representations, in some (but not all) theories of grammar. If it is possible for a single underlying syntactic representation to correspond to two or more semantic representations, by virtue of rules relating the former to the latter, then an argument for a difference in semantic representations will not necessarily count as an argument for a difference in underlying syntactic representations. There might, for instance, be a rule saying that every underlying syntactic representation of type X corresponds to semantic representations of types X' and X''. In theories that countenance such interpretive rules, only syntactic tests are truly decisive.

8. From here on the count noun understanding as a neutral term to cover both those elements of 'meaning' (in a broad sense) that get coded in semantic representations and those that do not. Each understanding corresponds to a class of contexts in which a linguistic expression is appropriate-- though, of course, a class of contexts might correspond to several understandings, as in examples like Someone is renting the house (courtesy of Jerry Morgan).

9. The assumption referred to here is the substance principle, discussed in Zwicky 1971.

10. There is more to be said here. A particular systematic lack of specification might involve the product of several distinctions, of course (right-handed younger sister vs. left-handed older sister in (3), for instance). Also, the reference to 'simple' distinctions presumes at least a rough classification, on the part of linguists, of the universe of meaning distinctions.

11. Plausibility of lack of specification is treated by Richman 1959 as the sole (and rather unsatisfactory) criterion of ambiguity:

The dispute over [a general term] T's ambiguity arises presumably because that T denotes can be divided into two (or more) classes, α and β , with defining characteristics ϕ and ψ respectively. The question of the ambiguity of T turns on the question of whether or not α and β are sub-classes of a larger class, or of whether ϕ and ψ have some characteristic in common. The obvious answer that α and β are sub-sets of $\alpha\vee\beta$, or that ϕ and ψ share the characteristic ' $\phi\vee\psi$ ' is not intuitively satisfactory. The question is this, are ϕ and ψ sufficiently alike (in some unspecifiable way)? If they are, T is unambiguous; if not, not. (91f.)

12. For ease of exposition here, we make the simplifying assumption that understandings can be compared by means of binary semantic features.

13. 'Privative Oppositionen sind solche, bei denen das eine Oppositionsglied durch das Vorhandensein, das andere durch das Nichtvorhandensein eines Merkmales gekennzeichnet sind' (Trubetzkoy 1958:67).

14. Some speakers will have difficulty in accepting (11), because of the repetition of the word dog with two different meanings. Compare the discussion of psychological set in section 1.4.

15. The question mark (here and throughout this paper) indicates an anomaly other than ungrammaticality, in particular internal contradiction or inappropriateness.

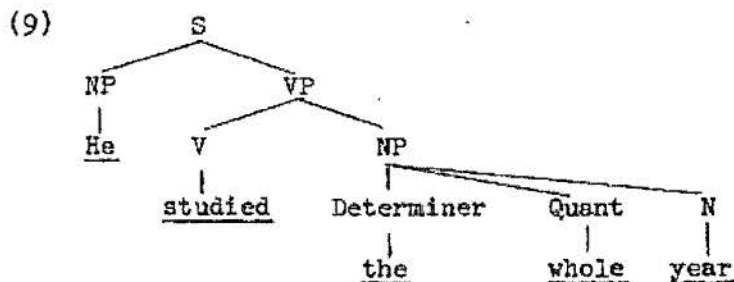
16. Implausible differentiae and inconstancy of substitution are the methods used by Alston 1971:38-42 to distinguish different senses of run. Alston's treatment includes a nice discussion of the way in which these arguments depend upon a systematic development of the semantics of a language, and of how they can nevertheless be used (provisionally) in the absence of a fully developed semantics.

17. Thus, That was an excellent idea has only one of the understandings of (23), You wagered it's cold only one of the understandings of (24), and How come you don't feed the emu? only one of the understandings of (25). The ambiguity of (26) is supported by reference to other sentences with interrogative form, some of which have paraphrases lacking one of the understandings of (26) (true question vs. 'requestion'): Is it raining (please)?, Do you suppose it's raining (*please)?

18. Compare Leech 1970:269--

Many ambiguities will manifest themselves in separate deep grammar representations for the same formal item. The question of what ambiguities should be distinguished in deep grammar is largely a question of the "economics" of the total language description...All we assert by means of [our definition of ambiguity as the 'condition of one formal item satisfying more than one semantic description' (29)] is that they have to be distinguished in semantics.

19. Weinreich 1966: 404 remarks that The typical examples of syntactic ambiguity are of a 'bifocal' kind, e.g. The statistician studies the whole year or He left his car with his girl friend. That is to say, if an insufficiently delicate subcategorization, as in (9), were to be brought to a degree of



delicacy at which the ambiguity were to be exhibited, two interconnected revisions would have to be made: Verbs would have to be divided into transitive and intransitive, and NPs would correspondingly have to

be divided into objects, dominated by VP, are adverb-like Temporals. The great rarity of unifocal ambiguities in grammar--even in languages with very poor morphology...--is itself an interesting comment on the design of language. However, unifocal syntactic ambiguities do exist, as do bifocal semantic ones.¹⁸

Footnote 18 cites She threw a ball and He arranged the music.

20. Unambiguous in the relevant respect. (28) is still ambiguous, since it can be used to report habitual acts of sawing birds, and (37) can also describe the (rather unlikely) escorting of a duck into a cellar.

21. He also gives an argument from transformational potential (section 1.3.3), based on the fact that the phrase on the boat can be preposed only on one understanding of (36).

22. It may well turn out that the facts surrounding the distribution of prenominal genitive adverbials deserve a transformational account. The restriction may turn out to be one on a rule of grammar which produces the genitives from adverbial source structures. But from the point of view of methodology--which is the main concern of this paper--simply the distribution of these adverbials relative to understandings can be used in sound arguments for the existence of syntactic ambiguity, without commitment to any specific analysis of the relevant phenomena.

23. The discussion of phrasal conjunction in Lakoff and Peters 1969 uses Conjoint Movement in just this way.

24. A similar point is made by Dieterich 1973.

25. This sentence must be read with full stress on the second occurrence of croaked. Destressing repeated occurrences of a lexical item is itself an identity-of-sense transformation.

26. We discuss Lakoff's cases and the response to them by Catlin and Catlin 1972 in an appendix; the phenomena are much more complex than would appear from this exchange.

27. An interesting question which will not be pursued here is why identity tests work as well as they do in distinguishing ambiguity. There is no obvious reason why at least some reductions could not take place blindly and subsequent to the falling together of two source structures. In such cases, the tests would fail to reveal genuine ambiguities.

28. For ease of exposition we disregard the specific understandings of (92)-(94).

29. These examples are to be read without contrastive or emphatic stress. The main stress in (97) falls on Chicago, in (98) on treat. With stress on not and about, respectively, the examples are both ambiguous between suggestion and question.

30. We adopt this terminology as the simplest for our purposes here. In Sadock ms., following L. J. Cohen and others, perlocution is used as a general term encompassing illocutions.

31. There is a way out of this trap. It could be claimed that the ambiguity the identity test leads us to postulate between a literal and a metaphorical intent does not involve the specific

interpretation of the metaphor in question but only the fact that the sentence is to be taken metaphorically. That is, one might claim that one of the literal senses of example (111) is accurately captured by a paraphrase such as Metaphorically speaking, Irving has jumped into a pit of alligators.

32. Compare Austin 1961:45--

When we make an assertion such as 'There is a goldfinch in the garden' or 'He is angry', there is a sense in which we imply that we are sure of it or know it ('But I took it you knew', said reproachfully), though what we imply, in a similar sense and more strictly, is only that we believe it.

Searle 1969:57 treats sincerity as one of the 'normal input and output conditions' on utterances.

33. By R. Lakoff in oral presentations.

34. For English see Morgan 1972. The Russian examples were pointed out to us by William Daniels.

35. Dowty's arguments do not carry over directly to (130), since they concern the understandings of accomplishment verbs with by-phrases.

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