# ON ARGUING ABOUT SEMANTICS

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Recently several proposals have been made concerning
the form and nature of deep structure, and the relation
between it and semantic representation. I would like to
examine some aspects of one of the most radical of these:
namely, McCawley's proposal that the relevant underlying
structure for grammatical description is in fact semantic
representation. It seems to me that McCawley is correct
in claiming, with Lakoff, Ross, and others that there is
no autonomous level of deep structure intervening between
semantic representation and surface structure. However,
it seems likely that for those who reject this view and
accept the position outlined by Chomsky[1] in recent papers,
many rules long considered to be syntactic transformations
will come to have the status of "semantic interpretation
rules", and deep structure will turn out to be considerably
less deep than has been supposed in much of the literature.
If so, then the two opposing theories may eventually
evolve into notational variants of each other. In any
case, McCawley's model is a useful and important one, with
considerable theoretical import, regardless of whether one
considers it a model of syntax or of semantics. It is as
a framework and a model for research in semantics that I
wish to discuss it in this paper, with particular attention
to the way it treats the semantic representation of lexical

items.

McCawley argues (McCawley 1967, 1969) that semantic
representation must be in the form of tree-like structures
which are highly abstract and complex configurations of
semantic terms and referential indices. These semantic
trees are "operated upon" by rules in the same manner
that transformations can be said to operate on syntactic
structures—permuting, copying, and deleting elements of
the tree. The resulting constituents are then replaced by
lexical items. The constituents for which lexical items
are inserted need not have been constituents at the deepest
level of semantic representation. For example, McCawley
has analyzed _kill_ as the derived constituent CAUSE(BECOME
(NOT(ALIVE))), created by a rule of "predicate-raising" as
in the following derivation.

(1)

(2)

(3)

(4)

CAUSE BECOME NOT ALIVE

(5)

CAUSE BECOME NOT ALIVE

<u>kill</u>
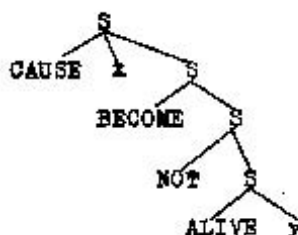
But the rule of predicate-raising is optional. Whether or not it is chosen at each of the points where it is applicable determines the ultimate derived structure into which lexical items are inserted. This accounts for paraphrase relationships among such sentences as (6) through (9).

    (6)   John killed Harry.

    (7)   John caused Harry to die.

    (8)   John caused Harry to cease to be alive.

    (9)   John caused Harry to come to be not alive.

Rules like predicate-raising which are pre-lexical (i.e. which apply before lexical items are inserted) can in principle have no exceptions, since true exceptions are lexical in nature. Therefore rules like this may produce derived constituents for which there is no lexical entry. For instance, predicate-raising would produce from what underlies "cause to cease to be obnoxious" the derived constituent (10), for which there is no entry in the English lexicon (e.g. *<u>deobnoxify</u> or some such entity).

    (10)

CAUSE BECOME NOT OBNOXIOUS

Similarly, non-existent items like *<u>aggress</u> would presumably be treated as cases of accidental holes in the

lexicon, rather than as absolute exceptions to certain
rules, as in Lakoff (1965).

McCawley's semantic representation is in some ways
only a much deeper "deep structure"--a representation of
the logical structure underlying utterances. It has inter-
esting consequences, both in its implications about the
nature of language, and in indirectly raising some questions
about the difficulties inherent in the study of semantics.
Its implications about the nature of language are of two
sorts--the ultimate nature of semantic representation,
and more specific consequences of the details of his model.
What, after all, is the nature of semantic representation?
If the representation of meaning in terms of structures of
discrete elements is correct, does this reflect conceptual
or cognitive structure, or is semantic representation a
purely linguistic object? What is the relationship between
semantically primitive terms and the mechanisms of cogni-
tion and perception? If a term is semantically primitive,
does that mean it is cognitively primitive? The answers
to questions like these are a long way off.

The implications of specific details of McCawley's
model are slightly more concrete. For example, take the
claim that lexical items can only be inserted to replace
constituents. What can be a constituent at the point of
lexical insertion is limited by the constituent structure
of the original semantic representation, by the rules
which operate to create derived constituents, and by

constraints on the operation of rules, both of the type
described by Ross (1967), and of a type I have suggested
may be necessary (Morgan 1968). Thus the constraint (due
to Ross, loc. cit.) which permits (11) while preventing (12):

> (11)   John saw Mary laying a wreath at the
>   grave of the unknown what?

> (12)   *What did John see Mary laying a wreath at
>   the grave of the unknown?

may be what makes impossible a verb _sneep_ with a meaning
such that (14) is a paraphrase of (13).

> (13)   John saw Mary laying a wreath at the
>   grave of the unknown hippie.

> (14)   *John sneeped Mary laying a wreath at the
>   grave of the unknown.

Therefore, given the set of universal pre-lexical rules,
the set of universal semantic primitives, and the set of
universal constraints on the operation of rules, these to-
gether define the universal set of possible lexical items
in their semantic aspect; that is, they rule out as impos-
sible in any language an infinite class of a priori possible
"meanings"[2] a lexical item could have. Furthermore, this
model predicts that there may be systematic differences in
lexical inventory among languages. Insofar as two languages
differ in pre-lexical rules, semantic primitives, or con-
straints on rule operation, these differences should be re-
flected systematically in the lexicon, since such differences
would cause the two languages to differ in their range of
possible derived constituents.

The point which raises difficult questions about methods of research in semantics is the claim that otherwise unanalyzable items like <u>kill</u> have analyzable internal semantic structure. Presumably the claim is that they have internal structure which is somehow <u>psychologically real</u>. Any theory of semantics which does not claim some sort of psychological reality for its constructs is sterile, little more than a game of how-language-would-work-if-I-had-designed-it. Given, then, that the constructs of a theory must have some kind of psychological reality, what kind of psychological reality can the semantic representation of a lexical item have? (Caveat: I am about to set up what I claim are straw men).

First there is the possibility that using a word is a conscious intellectual process of merely putting a name on a concept that may or may not have its own structure. This possibility is easily dismissed. Studies like those of Fillmore (1968, 69) offer abundant evidence that knowledge of the meaning of a word is knowledge that we have very little conscious awareness of; the difference between <u>accuse</u> and <u>criticize</u>, for example. This knowledge is more akin to the sort of subtle, unconscious knowledge one has of rules of syntax. As an illustration of this type of knowledge, consider time machines.[3]

Suppose I climb in my time machine and travel back in time to five years ago. When the machine stops, I, still sitting in my time machine see me (an earlier version)

reading a book. Call the earlier version of me "old me"
and the token of me sitting in the time machine "new me".
In this situation, what are the rules for reflexivization?
For example, take the sentence

      (15) I slapped myself.

If new me, sitting in my time machine, slaps new me, I
(new me) can report it by "I slapped myself." Similarly,
if new me observes old me slapping old me, I (new me) can
report it by "I slapped myself." If new me reaches out from
the time machine and slaps his younger counterpart, I can
report it by "I slapped myself." But if old me reaches
into the time machine and slaps new me, I cannot report it
by "I slapped myself." On the other hand, consider

      (16) I was slapped by myself.

The applications of this sentence are precisely the com-
plement of those of the active version. It can be used to
describe the one case the active version can't be used
for, but not to describe the other three; in fact it is
somewhat ungrammatical with those readings. The small
group of people I have asked agree with these judgements.
Whether or not all speakers agree is no doubt relevant, but
it does not alter the conclusion I want to draw. The impor-
tant thing is that each of the speakers involved was able
to make clear judgements on these sentences, in spite of
the fact that the situations the sentences are used to de-
scribe are such that no speaker would encounter them or
anything like them in the process of language acquisition.

In fact, it's probably safe to say that none of my informants was ever required to make this type of judgement before. The question is, then, how were they able to make relatively quick and clear-cut judgements? For that matter, how were they able to make any judgement at all? I have no answer to these questions. But one conclusion is unavoidable. Some aspects of linguistic knowledge are totally unconscious abilities of tremendous subtleness and complexity. And knowledge of the meaning of lexical items is in many cases this kind of knowledge.

Still, perhaps this knowledge of the meaning of a word is holistic, with no psychologically real structure at all. Take the word banana, for instance. What is the semantic representation of this word? What am I asserting when I say, "Harry is holding a banana" or "I like bananas"? Am I asserting the same thing I assert when I say "Harry is holding a physical object which is inanimate, non-human, fruit, long and thin in shape, shouldn't be kept in the refrigerator..." and so on? There doesn't seem to be a paraphrase which is both uniquely a paraphrase of banana, and finite in length. Banana seems to be the name of a concept with very fuzzy edges. As an illustration of this, consider the following sequence of events, and imagine that at each step I utter the sentence "This is a banana." First I take a banana, peel it, cut it in pieces, throw it on the floor, stomp on it, stir it with a stick, add purple

dye, spray it with enamel, and set it on fire. At what point does the sentence "This is a banana" become inappropriate? Answers to this question vary considerably from person to person, and many people are unable to make any clear-cut judgement at all. If all words have this kind of "meaning", then the investigation of them is a task for psychologists, not linguists.

But there are cases of lexical items whose meanings have more clear-cut edges. _Kill_, for instance cannot be used unless several conditions are satisfied. The sentence "X killed Y" is not appropriate to describe an event unless Y was alive previous to the event, Y ceased to be alive in the event, and X bears some causal relationship to the event--the same conditions which determine the applicability of "X caused Y to die" and other paraphrases. Then it is a priori possible that words like _kill_ are merely abbreviations for strings of words, a sort of shorthand way of communicating. But this is not the case. We can show this with the aid of some observations made by Rudolph de Rijk. He proposes that "cease to know" is an accurate paraphrase of _forget_ on the following grounds. First of all, "cease to know" is an intuitively quite plausible description of the meaning of _forget_--it is intuitively obvious that one can forget only those things that one can know, and to forget something, one must first know it. Further, "cease to know" and _forget_ have the same presuppositions, namely that the speaker presupposes

that their complement is true, as is shown in the following
sentences:

    (17) Harry has ceased to know that Shakespeare
          wrote <u>Hamlet</u>.

    (18) Harry has forgotten that Shakespeare wrote
          <u>Hamlet</u>.

    (19) *Harry has ceased to know that Marlowe wrote
          <u>Hamlet</u>, but Shakespeare really wrote it.

    (20) *Harry has forgotten that Marlowe wrote <u>Ham-
          let</u>, but Shakespeare really wrote it.

    (21) *I have ceased to know that tomorrow is my
          birthday.

    (22) *I have forgotten that tomorrow is my
          birthday.

Moreover, any complement that "cease to know" can have can

also be used with <u>forget</u>:

    (23) Harry ceased to know ⎰ his teacher's name.
                       how to swim.
                       why birds sing.
                       what time it was.
                       that yesterday was his
                        wife's birthday.
                       Swahili.

    (24) Harry forgot ⎰ his teacher's name.
                    how to swim.
                    why birds sing.
                    what time it was.
                    that yesterday was his wife's
                    birthday.
                    Swahili.

And if a given complement is pragmatically strange for

"cease to know", it is equally strange for <u>forget</u>:

    (25) My brother has ceased to know how to lay eggs.

    (26) My brother has forgotten how to lay eggs.

So far this strongly suggests that <u>forget</u> and "cease to

know" have the same semantic representation--<u>forget</u> might

just as well be an abbreviation for the three words "cease

to know" (de Rijk did not, I should mention, propose this;

it is my own straw man). However, it won't work. For, as
de Rijk points out, there are cases where _forget_ is not
equivalent to "cease to know". For instance, suppose I
have some friends in Chicago. Then, if they all suddenly
move to Australia, I can say, "I have ceased to know where
to turn for help in Chicago." But I cannot say, with the
same meaning, "I have forgotten where to turn for help in
Chicago." The problem here is that "cease to know" is am-
biguous. It can mean either that I have undergone some
mental change in relation to what it is that I knew, or
that the thing I knew has changed. But _forget_ has only
the former meaning.

Thus, if at some point I know who my brother's favorite
movie star is, but later this information disappears from
my mind, I can say with equal appropriateness (27) or (28).

> (27) I have ceased to know who my brother's
>   favorite movie star is.

> (28) I have forgotten who my brother's favorite
>   movie star is.

On the other hand, if my fickle brother changes his mind,
but I don't know who his new favorite is, I can properly
say (27), but not (28).

Also, words like _patricide_ provide evidence against
the "abbreviation" hypothesis. _Patricide_ is a paraphrase
of the phrase beginning _kill_ and ending _father_ in each of
the following pairs of sentences.

> (29a) Harry decided against patricide.
> (29b) Harry decided against killing his father.

(30a) Mary decided against patricide.
(30b) Mary decided against killing her father.

(31a) I decided against patricide.
(31b) I decided against killing my father.

(32a) All the boys decided against patricide.
(32b) All the boys decided against killing their
fathers.

Obviously, the meaning of patricide cannot be stated in
terms of a string of words. Nor is "killing one's father"
an accurate representation, as can be seen by substituting
it for patricide in each sentence. It should be clear,
then, that paraphrase relationships must be accounted for
in terms much more abstract than equivalence relations
between strings of words.

One more straw man. It is still possible that there
is no psychologically real internal structure to the meaning
of lexical items—rather, that knowledge of meaning is
actually in the form of a characterization of the infinite
set of situations under which it is appropriate to use the
item in question, and paraphrase relationships are accounted
for by coinciding or overlapping characterizations of this
sort. There would be no internal structure to lexical
items in a model like this; in fact, it's not clear that
the notion would make any sense in such a model. But I
think there is some evidence that at least some lexical
items do in fact have psychologically real internal struc-
ture. This evidence resides in certain types of ambiguity.
One of these types, to my knowledge first pointed out by
Robert Binnick, is in sentences involving transitive verbs
like to jail, as in (33) and (34).

(33) The Sheriff of Nottingham jailed Robin Hood
in Reading.

(34) The Sheriff of Nottingham jailed Robin Hood
for four years.

Each of these sentences has two readings. In (33), the
first reading is the syntactically predicted one where the
scope of "in Reading" is the remainder of the sentence--in
other words, an event occurred in Reading in which the
Sheriff jailed Robin Hood. But the sentence has another
reading, which as far as I can see can be described only
in terms of the adverbial phrase having as its semantic
scope a portion of semantic structure internal to the verb
jail; that is, the reading which is paraphrased by (33')

(33') The Sheriff of Nottingham caused Robin
Hood to be in jail in Reading.

in which the scope of "in Reading" is "be in jail". Simi-
larly, (34) has the (somewhat strange) reading that the
Sheriff jailed Robin Hood, and it took him four years to
complete the act. But it also has a more natural reading,
paraphrased by (34')

(34') The Sheriff of Nottingham caused Robin Hood
to be in jail for four years.

where the scope of "for four years" is "be in jail".

A similar phenomenon occurs with ambiguity in scope
of words like again. For instance,

(35) John knocked Harry down again.

is ambiguous, in that it can be used to mean either that
John, having knocked Harry down before, did it again; or
that Harry was down for some other reason (he fell, or he

was sleeping, for example) and when he got up, John knocked
him down, so that he came to be down again. The ambiguity
here is quite naturally accounted for by saying that the
scope of _again_ can be either the construction "knock down"
or merely "down". Here again, the same sort of ambiguity
can be found below the level of lexical item, as in (36).

(36) Bill arrived at 3:00 and left again at 4:00.
This sentence can mean either that Bill had left once before
and did so again at 4:00, or only that Bill, having been
elsewhere before 3:00, came to be elsewhere again at 4:00,
with the scope of _again_ internal to the verb _left_.

Another phenomenon of sub-lexical scope occurs in con-
nection with quantifiers like _almost_ and _nearly_. A sentence
like (37) is ambiguous in the scope of _almost_.

(37) I almost drank all my milk.
It can be either the entire verb phrase "drank all my
milk" or the noun phrase "all my milk" as paraphrased in (38):

(38) I drank almost all my milk.
The solution which suggests itself is that the quantifier
can appear in either position in semantic representation,
with corresponding difference in meaning, and an optional
rule moves it to a higher place in the tree, creating the
ambiguity.

This also applies at the sub-lexical level. The sentence

(39) I almost killed John.
has several readings due to ambiguity in the scope of
almost, at least one of which involves the scope of _almost_
being internal to _kill_; i.e., the reading paraphrased by

(40) I caused John to become almost dead.

The full range of readings becomes more apparent in the
pseudo-cleft construction:

      (41) What I almost did was kill John.
      (42) What I did was almost kill John.
      (43) What I did to John was almost kill him.

The solution that was suggested earlier can be quite
naturally extended to account for the sub-lexical reading
if one accepts the hypothesis that kill has internal
semantic predicates.

    Furthermore, there is evidence that, in relation to
certain constraints, these predicates behave like structures,
rather than like an unordered bundle of features. There
are constraints on rules which move quantifiers--one is
that they can't be moved over not. For example, the almost
in (44) cannot be moved up as it can in the non-negative

      (44) I didn't drink almost all my milk.

version; this sentence cannot be transformed into (45).

      (45) I almost didn't drink all my milk.

Similarly, while (46) has a reading equivalent to (47)

      (46) John almost spent all his money.
      (47) John spent almost all his money.

the sentence (48) does not have the reading of (49)

      (48) John almost didn't spend all his money.
      (49) John didn't spend almost all his money.

since this would involve raising almost up over not.

    In the same way, (37) has the reading of (50)

      (50) I caused John to come to be almost not alive.

but it does not have the reading of (51):

(51) I caused John to come to be not almost alive.

The hypothesis that lexical items have internal seman-
tic structure would account in a natural way for these phe-
nomena. And as McCawley has observed, such structure is
remarkably similar to the sort of structure that has tra-
ditionally been used to describe syntax. But if lexical
items do have such structure, how do we go about finding
out for a given item whether it has structure, and if so,
what structure? Much of the work being done on the repre-
sentation of lexical items is being done by brute force of
intuition. Other fruitful work can be and is being done
in refining paraphrases of lexical items, and in exploring
the limits of applicability of the item, thereby more
nearly approaching an understanding of what structures and
elements must be involved in the semantic representation
of the item, and whether the limits of its use are sharp
or fuzzy.

Thus, it is not sufficient to say that decapitate
means "cut off the head of" and consider the question
closed. Since knowledge of meaning is in fact unconscious
and very subtle, it will take some rather outlandish research
methods and a lot of imagination to approach it. For in-
stance, if John has two heads, and Harry cuts off one of
them, can one properly say "Harry decapitated John"? For
me, no. This suggests that a better paraphrase for decapi-
tate is "cause to come to have no head". But then if
John's behavior ultimately causes him to be beheaded, can

one say "John's behavior decapitated him"? If one dissolves
John's head in acid, has one decapitated him? This type
of probing, outlandish as it may seem, is an indispensible
tool for exploring both the particulars of meaning, and
where the speaker's ability to make clear judgements ends.
And it will most likely produce some surprising results,
just as the consideration of time machines in connection
with reflexivization does.

But there are problems with a semantic theory like
McCawley's that may make progress difficult. First of all,
since semantic structure is in terms of abstract semantic
predicates, we may find abstract elements which do not have
any clear one-to-one correspondents in natural language.
Know, for example, has associated with it the speaker's pre-
supposition that its complement is true. When this is fac-
tored out, what is left? Is know think plus presupposition?
It's hard to tell, since it's difficult to talk about it.
When we appear to have reached the limit of analyzability
of the meaning of an item, how will we know that we have
reached semantic primitives, rather than merely having
reached a point beyond which we have no way to talk about
what is there?

Furthermore, there are some indications that the pre-
sent system of representation may be inadequate. The
questions of adequacy arise in connection with the repre-
sentation of presupposition. It seems fairly clear that
presuppositions should be represented in terms of trees;

their content seems to be structured the same way the con-
tent of assertions is. The question is how the relation
between a sentence and its associated presuppositions should
be represented. Many kinds of presuppositions "act like"
previously uttered sentences. For example, the presupposi-
tion in (52)

(52) The chair you're sitting on is green.

is precisely what is conjoined to the left in (53).

(53) You're sitting on a chair$_1$, and the chair$_1$
you're sitting on is green.

The presupposition that determines the definite article is
not, on the other hand, made explicit in the order of

(54) The chair you're sitting on is green, and
you're sitting on a chair$_1$.

which is in fact anomalous in some way.

Similarly, presuppositions affect stress exactly as
do previous utterances and/or previous parts of the same
sentence. Thus,

(55) How does it féel to be a beautiful girl?

is a felicitous question only when its utterer believes his
addressee is a beautiful girl, whereas

(56) How does it feel to be a beautiful gírl?

may be asked felicitously under just about any circumstances
The stresses here are not contrastive; the difference
between the two sentences doesn't reflect a contrast with
any opposed concept. On the contrary, the stress on _feel_
in (55) appears to be placed there by the same rule which
seems to move stress leftwards one constituent from

stressed elements which are second occurrences; this is
what is responsible for the fact that pronouns, and anaphoric
expressions in general, lack stress.

Again, consider the difference between (57) and (58):

(57) I'm going outside to see what's háppening
     in the world.
(58) I'm going outside to see what's happening
     in the wórld.

These sentences have a common presupposition, namely, "I am
here." The difference between them seems to lie in the re-
lation between "here" and "in the world"--one has the pre-
supposition that "here" and "in the world" refer to the
same place, the other that they refer to different places.
There is a generalization to be captured here. The effects
of presupposition can be described by rules which are inde-
pendently necessary to describe the effects of actual pre-
vious utterance, or even left-conjoined clauses of the
same sentence. But to describe both with the same set of
rules, it is necessary to represent presuppositions as
trees to the left of the sentences they are associated with.

Moreover, it may be necessary to have some presuppo-
sitions tucked away inside trees, rather than having all
presuppositions associated with the sentence as a whole.
For instance, as I noted above, the verb know must somehow
have specified in its lexical entry that there is associated
with it the speaker's presupposition that its complement
is true. The same is true of several other verbs: regret,
annoy and so forth, as in (59) through (62).

(59) I regret that I live in Chicago.
(60) I don't regret that I live in Chicago.
(61) It annoys me that Daley is so paranoid.
(62) It doesn't annoy me that Daley is so paranoid.

And the construction usually called "counterfactual conditional" as in (63)

(63) If John were here, he'd help.

involves the presupposition that the condition is not true--in this case, that John is not here. Now what happens with counterfactual conditionals containing verbs like know and regret, as in

(64) If John were here, I'd know it.
(65) If he had done that, he'd regret having done it.

If presuppositions are stated merely as a list associated with the entire sentence, these two sentences each have a pair of contradictory presuppositions.

There are also verbs with negative presupposition, like pretend, whose complement is presupposed by the speaker to be false. Thus (66) and (67) are anomalous if uttered by me.

(66) I'm pretending to be me.
(67) I'm pretending to be a human being.

But I can quite properly say

(68) I'm pretending to be Greta Garbo pretending to be me.
(69) I'm pretending to be Snoopy pretending to be a human being.

What is involved here seems to be related to the notion "world-creating verb" proposed by Lakoff (1968) to account for certain phenomena of reference and pronominalization.

It appears that presuppositions are defined locally, relative to the scope of world-creating verbs, rather than associated with a sentence as a whole. Semantic trees begin to look more and more bizarre.

The difficulties of the type of analysis involved in a theory with pre-lexical syntax are obvious, especially since there is lacking a well-justified criterion for what constitutes evidence for and against a given analysis. Researchers in this area are in the position of physicists trying to discover sub-atomic particles solely by inference from the behavior of other entities. Unfortunately, in semantics, one is never sure whether the "other entities" are trustworthy.

FOOTNOTES

[1] See, for example, Chomsky (1968, 1969). Similar viewpoints are argued in various papers by Ray Jackendoff and Joseph Emonds.

[2] I do not mean to imply by this term that words have meaning in isolation. By the "meaning" of a lexical item I mean the specification of the elements and structures it contributes to the meaning of sentences in which it occurs.

[3] If memory serves, I owe the time machine question to James D. McCawley.

REFERENCES

Binnick, Robert. 1968. "On the Nature of the 'Lexical Item'."
Papers from the Fourth Regional Meeting, Chicago
Linguistic Society, ed. by Bill J. Darden, Charles-
James N. Bailey, and Alice Davison, 1-13. Chicago,
Department of Linguistics, University of Chicago.

Chomsky, Noam. 1968. "Remarks on Nominalization." Readings
in English Transformational Grammar, ed. by R.
Jacobs and P. Rosenbaum. Blaisdell (in press).

_____. 1969. "Deep Structure, Surface Structure, and
Semantic Interpretation." MIT.

de Rijk, Rudolph. 1968. "A Note on Pre-lexical Predicate-
raising; or How to Refute Generative Semantics
in the Event That It Can Be Refuted." Dittoed, MIT.

Fillmore, Charles J. 1968. "Types of Lexical Information."
Working Papers in Linguistics No. 2, 65-103.
Computer and Information Science Research Center,
Ohio State University.

_____. 1969. "The Lexicology of Guilt." Paper pre-
sented at the Southeastern Conference on Linguis-
tics, March, 1969.

Lakoff, George. 1965. On the Nature of Syntactic Irregular-
ity. Indiana University dissertation.

_____. 1968. "Counterparts, or the Problem of Reference
in Transformational Grammar." Paper presented at
the summer meeting of the Linguistic Society of
America, July, 1968.

McCawley, James D. 1967. "Meaning and the Description of
Languages." Kotoba no uchū, vol. 2, nos. 9(10-18),
10(38-48), and 11(51-57).

_____. 1968. "Lexical Insertion in a Transformational
Grammar without Deep Structure." Papers from the
Fourth Regional Meeting, CLS, 71-80.

_____. 1969. "Semantic Representation." Paper presented
to the Symposium on Cognitive Studies and Artifi-
cial Intelligence Research, March, 1969.

Morgan, Jerry L. 1968. "On the Notion 'Possible Lexical
Item'." Paper presented at the winter meeting of
the Linguistic Society of America, December 1968.

Ross, John R. 1967. Constraints on Variables in Syntax.
MIT dissertation.