LEXICAL COHESION IN TEXT ANALYSIS

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1. Besides grammatical cohesion expressed by such means as tense sequence, reference, given new information structure, etc., there is also a condition on the well-formedness of a text from the lexical point of view—LEXICAL COHESION. In the sequence of sentences like (1)

(1) I heard footsteps. A man was coming.

cohesion relation holds between *footsteps* and any of the using-feet-as-the-main--source-of-motion verbs, as well as between *footsteps* and *man*. It wouldn't hold between *footsteps* and *crawl* in the same example although feet are also involved in crawling (as some of us have no doubt experienced), or between *footsteps* and *sing*. Likewise it wouldn't hold between *footsteps* and *car*.

Lexical cohesion ranges from a very simple case of repetition of the lexical item, as in (2)

(2) He arrived at 10:00. In London his arrival was a real sensation.

to cases in which lexical cohesion is not explicitly expressed, as in (3)

(3) He hit hard and felt excruciating pain in his hand.
where the cohesive items are *hit* and *hand*, no matter whether *hand* is Patient or Instrumental; to cases requiring fairly well developed deduction and/or "knowledge of the world", as in G. Lakoff's (1971) example

(4) Nixon was elected, but the blacks won't revolt.

The interpretation of (3) and (4) in terms of cohesion requires recognition of a number of presuppositions.

2. The term presupposition has been used in a variety of senses, most often without sufficient clarity (cf. Chomsky's (1972) statement "there are a

number of different kinds of presuppositions that have not been distinguished with sufficient clarity" (p. 112). Fillmore (1969) defines the presuppositions of a sentence as those conditions which must be satisfied before the sentence can be used to make an assertion, ask a question, give a command, express a feeling, etc. R. Gardner (1971) discusses a number of various senses in which the term has been used by Frege, Strawson and Sellars (see also Keenan (1971) for the discussion of logical and pragmatic presuppositions). Jens Allwood (1971) for the discussion of logical and pragmatic presuppositions). Jens Allwood (1975) distinguishes five different types of presuppositions:

1) the speaker's actual belief,
2) the listener's actual belief,
3) exhibited conventional presuppositions,
4) exhibited rational presuppositions,
5) exhibited natural presuppositions.

3) is further subdivided into

a) presuppositions tied to lexical items — LEXICAL PRESUPPOSITIONS;
b) presuppositions tied to conventional means for marking the information structure of a sentence, i.e. word order, intonation and duration, to mark topic and focus of a sentence — THEMATIC PRESUPPOSITIONS.

An example of lexical presupposition in (5)

(5) John hit Bill again.

is the word *again* which implies that John hit Bill before, at least once.

In spite of many attempts to clarify the concept, it still remains vague and more and more often called in question. Lightner (1976), in his review of Chomsky's paper (1972) says: "Chomsky simply ASSUMES that presuppositions, conditions on discourse, etc. are in the same domain of grammar. That this assumption is correct is not at all clear to me; [...] many of the statements about what one is entitled to assume, what is natural to assume, and so on, seem to be more sociological than linguistic". Quite recently Lycan and Boer criticized the concept of presupposition very strongly, questioning the very foundation of it.

3. In his book *Some aspects of text grammar*, van Dijk (1972) suggested that in addition to the deep structure postulated for sentences and information on relations between various text elements, the deep structure of a text will have to contain all presuppositions for all sentences in the text: "Since presuppositions are always represented as sentences, we may consider the set of presuppositions, followed by the sentence(s) presupposing them, to be part

of a text" (p. 103). "We assume that presuppositions are preceding sentences". This is also what Gleason (1968) seemed to have in mind when he wrote: "Sentences will never be fully described apart from the discourse in which they occur, and by which they are moulded" (p. 45—46). R. Lakoff (1971) wrote that "we need to incorporate the concepts of presuppositions and deductions in our grammar" (p. 148).

It would seem then, that if presuppositions take the form of sentences, deep structures of a text will contain a set of sentences, each of which will represent a minimal step in the "cause and consequence" (cohesion) continuity. In such a case the deep structure of a text would be equivalent to a full explication (description) of the discourse (of which the text would be only an incomplete written record). It would also mean that the deep structure would always be fully cohesive and would gradually lose (in many cases) its cohesiveness, working its way up to the surface. Thus the transfer from cohesion to coherence is a gradual one and cohesion can be viewed as a special case of coherence, as a full lexical explication of coherence.

Anyway, in such a case rules would have to be formulated that would tell us which sentences of the set could or would have to surface to form a text, and which would remain as presuppositions. Thus for the deep structure of a text T

(6) $T_{deep} = S_1 - S_2 - S_3 - S_4 - S_5 - S_6 - S_7 - S_8 - S_9$

we could have a rule saying that if the sequence T satisfies certain conditions then

(7) $S_1 - S_2 - S_3 - S_4 - S_6 - S_5 - S_7 - S_8 - S_9 \Rightarrow S_1 - S_5 - S_9$

in which case S_2, S_3, S_4 are taken as presuppositions to S_5, and S_6, S_7, S_8 as presuppositions to S_9.

4. In 1971 G. Lakoff suggested that the following presuppositions account for cohesion of (4)

(8) a) Nixon is a Republican.
b) If a Republican is elected, the social welfare programs will be cut.
c) If social welfare programs are cut, the poor will suffer.
d) Blacks are poor.
e) Blacks are discriminated against.
f) Blacks form a substantial part of the population.
g) One would expect that poor, suffering people who are discriminated against and who form a substantial proportion of the population would revolt.

For any two sentences we would like to find those elements that they have in common and that make them cohesive. However, the above presuppositions not only do not exhaust all possible presuppositions, but do not explicitly link the two sentences. The question one asks upon hearing (4) is "Why?" (if one does not understand, of course), and the same question is asked when one is given presupposition b), for example.

In view of what was said in 3. it seems necessary to extend Lakoff's presuppositional component to something close to Table I (although the description is given in the form of features, they can be put into sentences quite easily, to satisfy van Dijk's postulate).

Two problems arise here:

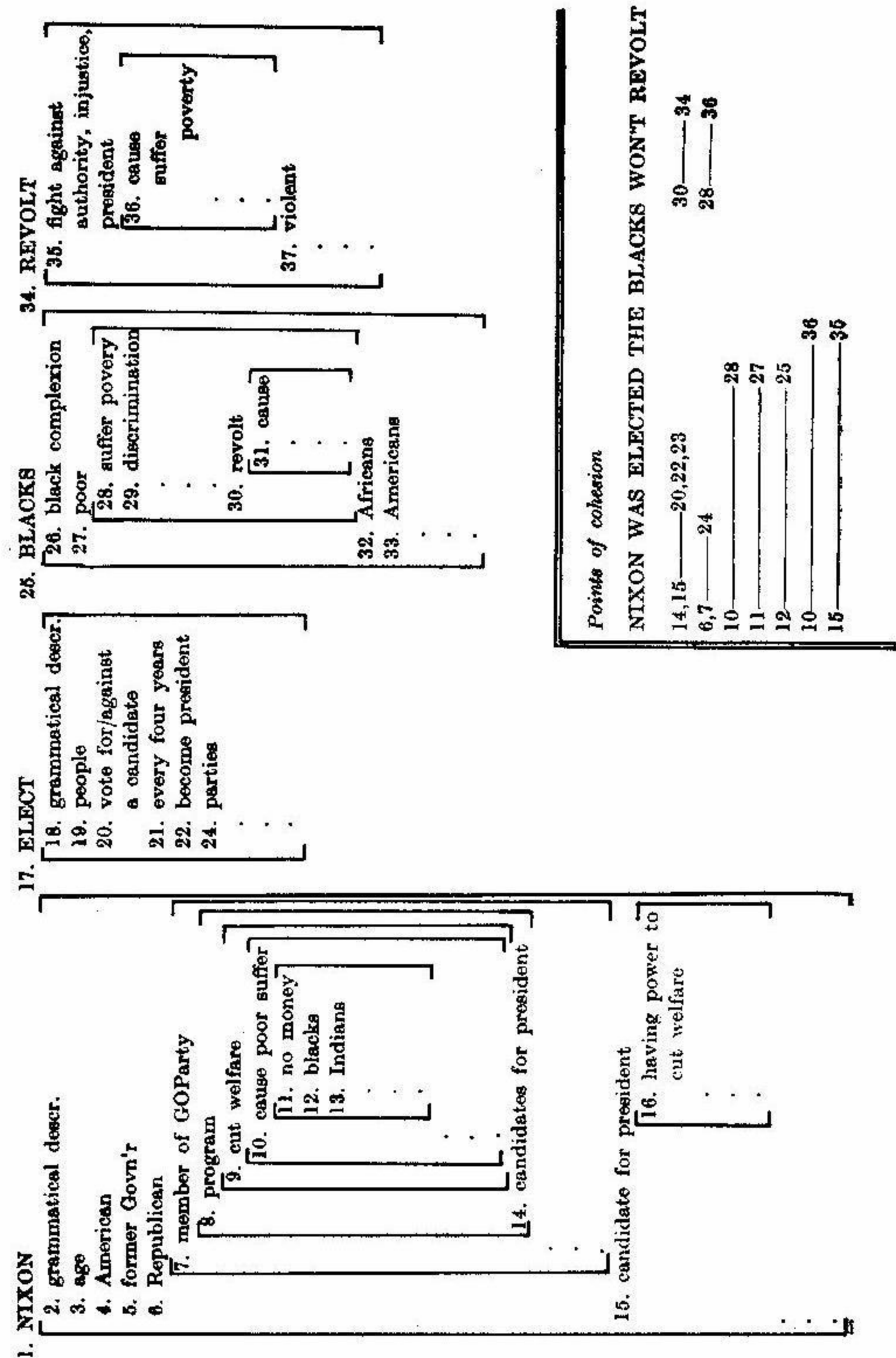a) infiniteness of referential features and consequently of the deep structure,

b) description of the meaning of a lexical item by other lexical items. With a), a further question concerns the scope of the deep structure, i.e., whether deep structure should contain all referential features (an impossible solution, it seems), or only some of them, and if so which. With b) the question concerns description of lexical items by other lexical items which in turn must also be described in some way; a procedure which results in a vicious circle. Or should one use semantic primitives, and if so what are they?

If we accept the type of representation given in the Table, further questions have to be asked. On is whether there is any limit to the ability of deduction (number of presuppositions one can or has to go through to find the element linking two given sentences), i.e. the distance between cohesive elements in terms of degree (depth) of embedding, e.g., between feature 10 and 28 in the Table (can we have cohesion between, for example, feature 3 and feature 532?; if the answer is positive, then on what conditions; if negative then where is the limit?). Another question is whether we can have cohesion between two underlying features, or must one of the items used as a feature appear on the surface.

There is also the problem of a difference of presuppositions between the speaker and the listener. Every text has a certain thread of expectations. One result of the difference in presuppositions (change of the thread of expectations) can be exemplified by the following story:

(9) Husband to his wife returning at three on a winter morning:

a) H. Where have you been? What have you been doing?
b) W. Picking cherries.
c) H. Cherries?! In winter?!
d) W. I wasn't cold. I had my furcoat on.

where c) has a different presupposition than d) (c) — you can't pick cherries

34. REVOLT
35. fight against authority, injustice, president
36. cause suffer poverty
37. violent

25. BLACKS
26. black complexion
27. poor
28. suffer poverty
29. discrimination
30. revolt
31. cause
32. Africans
33. Americans

17. ELECT
18. grammatical descr.
19. people
20. vote for/against a candidate
21. every four years
22. become president
24. parties

1. NIXON
2. grammatical descr.
3. age
4. American
5. former Govn'r
6. Republican
7. member of GOParty
8. program
9. cut welfare
10. cause poor suffer
11. no money
12. blacks
13. Indians
14. candidates for president
15. candidate for president
16. having power to cut welfare

Points of cohesion

NIXON WAS ELECTED THE BLACKS WON'T REVOLT

14,15 —— 20,22,23
6,7 —— 24
            10 —— 28
            11 —— 27
            12 —— 25
            10 —— 36
            15 —— 35
                   30 —— 34
                   28 —— 36

in winter because they don't grow at that time of the year; d) — if you have
your furcoat on you are not cold in winter and you can (even) pick cherries).
Finally there is the knowledge of the world of the listener of this story that
makes him take the presupposition of c) rather seriously and of d) as a clever
dodge.

In view of what has been said so far one must ask whether it is at all
possible to generate texts in a way sentences are generated, as some linguists
seem to think. For the time being the answer is definitely NO.

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