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"Co-occurrence and Transformation in Linguistic Structure." By Z. S. Harris.

Language 33 (1957): 283-340.

Reviewed by David Thomas

This article is an explanation of Harris' latest views on syntactic analysis, developed evidently in consultation with Chomsky. Harris sets forth two ideas in the article, co-occurrence and transformation, but neither of them seems to be dependent on the other.

Harris seems to feel that the difficulties in separating semantic from structural limitations in the determination of word classes in the usual way are almost insuperable, but his principle of co-occurrence is designed to overcome that. In a certain frame there is a limit to the words which can naturally be found in that frame; these are the co-occurrences of that frame. No further attempt is made to ascertain whether the words excluded are excluded for semantic or for grammatical reasons. But by comparing the co-occurrence lists of many frames it will be found that some tend to overlap to a very high degree, while others have very little overlap. Thus 'The boy ()' and The man () might have 95% overlap in their co-occurrences, while The boy () and The chicken saw () would have practically no overlap in their co-occurrences. So syntactic classes would then be set up on the basis of high vs. low degrees of similarity of co-occurrences. When in doubt, extend the co-occurrence sampling by another 50 or 100 words to see whether it raises or lowers the co-occurrence similarity percentage. Even though a word may have heavy semantic restrictions, its percentage will tend to rise if it is in the right syntactic class.

The principle of transformation is a process approach to syntactic analysis. Harris believes that language is originally learned in a

process manner, and that a process description is the only way to adequately describe syntax. Native speakers of a language will often make new syntactic formations which they have never heard before but which seem perfectly natural to them because they follow normal processes. Harris' theory is that in every language there is a small number of kernel sentence types and a limited number of principles whereby these sentences can be transformed or combined to make more complex sentence types.

I feel that Harris is on the right track, though I question some of the morphological principles he uses in his analysis of English. Item-and-arrangement descriptions have been the goal of most American descriptivists, and it has the seeming advantage of rigor and objectivity, but it is not flexible and may be somewhat superficial with regard to capturing the real genius of the language. Shell's Cashibo analysis (IJAL 23:179-218 (1957)) is a good extreme example of the ponderousness of a thorough item-arrangement description. A process description of the type Harris proposes would seem to me to be more manipulatable, besides predicting permissible innovations. I believe this method also holds great potential for the learning and teaching of foreign languages. I am doing a little experimenting with the teaching of English grammar by transformations, and I believe it will be a great help. Harris' analysis of kernels and transformations in English is admittedly sketchy, but with further refinement it should be a useful tool.

Harris uses four main processes in his analysis of English transformations: the use of 'pro-morphemes' (pronouns, relatives, etc.), zero allomorphs (practically every morpheme has a zero allomorph that can be used optionally in certain constructions), inversions of word

order, and the nominalization of complex units in the formation of larger constructions.

There are three main types of transformations in English: transformation of independent sentences into other independent sentences, into dependent sentences, and into complex nouns.

There are four S - S transformations:

- 1) Passive. NVN - N was V by N. 'The man saw the book' - 'The book was seen by the man.'
- 2) Introducers. NVN - There V N N (or) It is N V N. 'There saw a man the book.' 'It is a man who saw the book.'
- 3) Alternative order. a) Inversion of object. NVN - N N V. 'The book the man saw.' b) Verb complement before or after object. 'He threw open the door.' - 'He threw the door open.'
- 4) Apposition. (This is a combination rather than a simple transformation.) The second noun may be before or after the main one. 'He, an inveterate libertarian, opposed the measure.'

There are three S - S₂ transformations:

- 1) Sequence markers added. - and, but, then, when, however, before, etc. 'When the man saw the book,' '..... and the man saw the book.'
- 2) Pro-morphemes substituted. '..., who saw the book,.....'
- 3) Zero recurrence of words (understood words). 'The man (saw.the.book) and I saw the book.' 'The man saw the book and (he.saw) the paper.'

There are thirteen major S - N transformations:

- 1) NvVN - N's Ving of N.(or) The Ving of N by N. 'The man's seeing of the book.' 'The seeing of the book by the man.'
- 2) NvV - Ving N. 'The seeing man'

- 3) NvV - Ving of N. 'The seeing of the man'.
- 4) NvVN - N Ving N. 'The man seeing the book'
- 5) NvVN - For N to V N. 'For the man to see the book'
- 6) NvVN - N to V N. 'A man to read the book'
- 7) NvVN - N₂ to V. 'A book to see'
- 8) NvVN - N V N. (Only with certain main verbs) '(We let) him see the book.'
- 8a) NvVN - N (that) N V N. (With certain main verbs). '(We requested) that he read the book.'
- 9) NvVN - (that) N vV N. (With certain main verbs). '(We know) that the man saw the book.'
- 10) NvVN - intonation change & N vV N. (Direct quotation) '(We said,)'
"The man saw the book."
- 11) NvbeN - N N. 'The book was a novel.' - '(They called) the book a novel.'
- 12) NvbeA - A N. 'The storm was distant.' - 'The distant storm'
- 13) NvhaveN - N's N. 'The man has a book' - 'The man's book'

There are seven major kernel sentence types:

- 1) N v V - The sun rose.
- 2) N v V P N (for prepositional phrases that have restricted co-occurrence with particular verbs). 'I went to bed.'
- 3) N v V N. 'The man saw the book.'
- 4) N is N. 'The book is a novel.'
- 5) N is A. 'The book was big.'
- 6) N is P N. 'The book was in the house.'
- 7) N is D. 'The meeting was at last.'

In the light of S-N.13. above, we should perhaps add another:

- 8) N have N. 'The man has a book.'

Like most work by Harris, this article is original, well thought out, and thorough. The article as a whole seems to be a major milestone in syntactic theory.