

Syntactic Theory

Ahmed Abdulrazzak Aziz / PhD Candidate 2025

Bloomfield and early formal grammars

Neo- Bloomfieldians

1. Leonard Bloomfield:

Leonard Bloomfield (April 1, 1887 – April 18, 1949) was an **American** linguist, whose influence dominated the development of **structural linguistics** in America between the 1930s and the 1950s. His work helped establish linguistics as an independent scientific discipline. Avoiding cognitive processes and other non-observable processes, Bloomfield applied **behavioristic** principles to the field rejecting the view that the structure of language reflects the structure of thought.

2. The effect of behaviorism on Bloomfield:

One of the more important questions in modern linguistics historiography concerns the extent of Saussure's influence on Bloomfield and through him on American structuralism as a whole.

Bloomfield came from the Neogrammarian School of linguistics. He studied particular languages, their history and how words are generated. Both Bloomfield and Saussure studied language as a structure or with a scientific basis. The main difference is that Bloomfield studied linguistics diachronically: its historical and comparative development. Saussure studied language synchronically: he made the comparison between language and chess. There is no necessity to know the history moves; you could understand the system just by looking at the board at any single moment. This is the synchronic study of Language.

Another marked difference is that Bloomfield himself never suggested that it was

possible to describe the syntax and phonology of a language in total ignorance of the meaning of words and sentences. His view was incomplete, as he studied part of the system and not the whole. In contrast to this, Saussure studied Language as a system, including all aspects of it. He considered the system has three properties: Wholeness, since the system functions as a whole. Transformation, as the system is not static, but capable of change. Self-Regulation, this is related to the fact that new elements can be added to the system, but the basic structure of it cannot be changed.

The conception of Language was different for each of them. Bloomfield believed that Language is related to stimulus response acquired by habit formation. He claimed it is used to satisfy human's needs. On the other hand, Saussure considered language as a multitude of signs, where each sign links a phonic sound (the signifier) with an idea (the signified). The reason why they differed in this conception is because Saussure studied it from a mentalist conception. He considered both the signifier and signified mental entities and independent of any external object. Opposite to that, Bloomfield argued that linguistics needs to be more objective if it is to become a real scientific discipline. He believed that the main target of linguistic inquiry should be observable phenomena, rather than abstract cognitive processes. Therefore, Bloomfield rejected the classical view that the structure of language reflects the structure of thought.

Taking everything into consideration, both Saussure and Bloomfield had a significant impact on linguistics. Saussure is considered the founder of modern linguistic and cultural studies. He has influenced several fields such as philosophy, anthropology and semiology. He is the linguist who revolutionized the study of Linguistics, as he outlined his theory of language, in which he suggested the need to study language in a scientific way, rather than studying it in a cultural and historic context. Bloomfield, for his part, did more than anyone else to make linguistics autonomous and scientific. Although Bloomfield's particular methodology of descriptive linguistics was not widely accepted, his mechanistic

attitudes toward a precise science of linguistics, dealing only with observable phenomena, were most influential. His influence waned after the 1950s, when adherence to logical positivist doctrines lessened and there was a return to more mentalist attitudes.

3. Bloomfield's main contribution to linguistics:

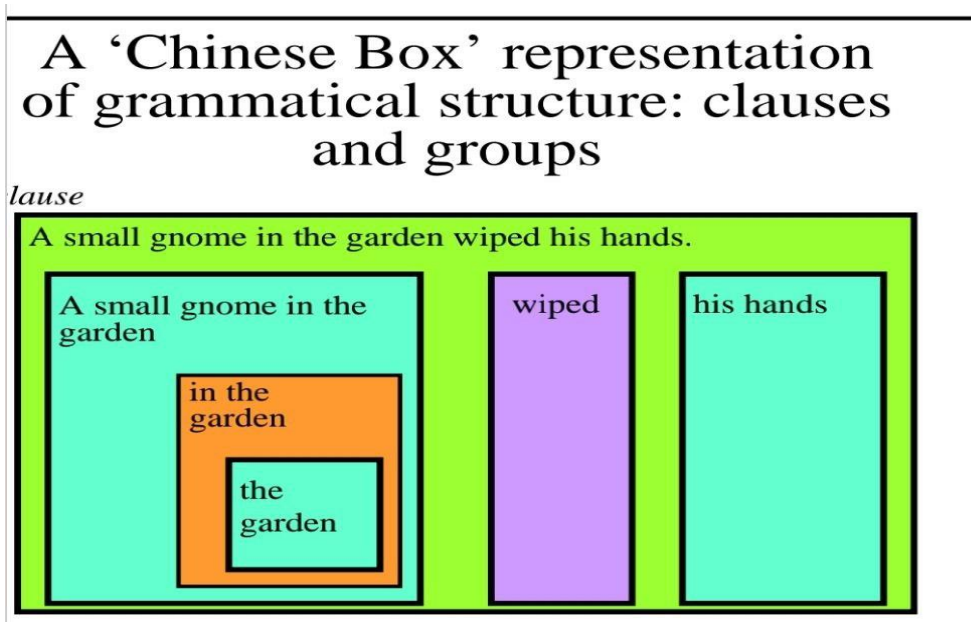
Before looking to the contributions of Bloomfield to linguistics let see his review on Saussure, he said " in detail, I should differ from de Saussure chiefly in basing my analysis on the sentence rather than the word. So, Bloomfield's definition of language: it was a set of sentences or utterances.

Definitions of the basic units of language offered by Bloomfield attracted the attention of later linguists. Bloomfield maintained that all linguistic structure could be determined by the application of analytic procedures (the discovery procedures).

The basic notions of Bloomfield' theory are:

1. **utterance:** he used this term as one central element of his theory. Utterances produced by acts of speech. By making an act of speech, one makes an utterance.
2. **Speech community:** It is a group of people who interact by means of speech and the totality of utterances that can be made in speech community is the language of that speech-community. This is necessary if we want to distinguish one language from another. This concept is central importance for Bloomfield's theory. As simple examples, we can think of the group of speakers of English and the group of speakers of French.
3. **Form:** it is too important concept. Linguistic forms are different kinds of units of language, like morphemes or words. We can say that form is a recurrent vocal feature which has meaning. So, form is any meaningful unit whether it is small or complex and the meaning of linguistic form is a linguistic meaning.

4. **Morpheme:** is a minimum and recurrent form which cannot in turn be analyzed into smaller. e .g English morphemes 'ness, -good, or ing".
5. **Minimal pairs:** it is the most important procedure that is used to discover the phonological system of the un-known languages. E.g pen, ten, men.
6. **Free and bound forms:** free form can stand alone with a specific meaning, for example, car- eat- date. Bound morpheme, cannot stand alone with meaning like "ness'. This notion is deeply related to "chines box" model or "Russian doll" which is used to discover the morphemes as well as their types (free, bound, derivational, inflectional).



7. **Word:** defines it as a minimum which means the smallest bit of speech that can occur in isolation. A word is thus a form which may be uttered alone (with meaning) but cannot be analyzed into parts that may (all of them) be uttered alone (with meaning). It is important to note that the emphasis lies on what can be uttered "alone" are words. We can think of any free form word, like 'eat', 'car', etc.
8. **Phrases:** are used in grammar to distinguish the sub structural parts of sentences. Today, it is standard to distinguish between noun-phrase like

'the boy' or verbal phrase like 'eats', amongst other types of phrases. phrases can stand alone like words.

9. **Syntactic constructions:** the term construction is central in the syntactic theory of Bloomfield. The number of constructions in a language is a small sub-multiple of the number of forms. Each of the order units in a construction is a position. Each position in a construction can be filled only by certain forms. Syntactic constructions, then, are constructions in which none of the immediate constituents is a bound form.
10. **Sentence:** Bloomfield defines a sentence as an independent linguistic form, not included by virtue of any grammatical construction in any large linguistic form. He speaks about the maximum construction which is a sentence by saying that there is no construction which can be bigger than a sentence. Also, he refers to it as independent linguistic form.
11. **Phoneme:** for Bloomfield, it is the smallest element of language (Palmer, 1984:100). The number of different phonemes in a language is a small sub-multiple of the number of forms. Every form is made up wholly of phonemes. Phonemes are related to linguistic forms and to the morphemes.

Bloomfield also introduced the concept of morpheme alternants created by:

(1) phonetic modification (sell-sold, not selled) (2) zero features (deer- both singular and plural) (3) suppletion (ox-oxen, instead of oxes).

Bloomfield developed rich theories of both morphology and syntax, much of which was carried over into generative grammar.

In morphology, he talks about the theory of morphophonemic. For example, the past tense morpheme which had three phonological shapes /t/ , /d/ and /id/ as in liked, loved, and hated. This kind is called by Bloomfield " phonetic alternant" because they can be described in terms of "phonetic modification".

Later linguists used the term " allomorph". so, language structure consists of two levels phonemes and morpheme. i.e. language is morpho- phonemic.

In syntax, Bloomfield added the most important fact which is the theory of constituent structure, including the fundamental aspects of x bar theory. He defines syntax as the study that composed entirely of free forms. Central structure. Simply, it means to divide the sentence into its constituent elements, without knowing, to begin with, what those elements. It might be the principles of IC analysis. To summarized, IC is a formal representation of grammatical structure of a sentence in a term of its individual constituents

It is a matter of fact, that Bloomfield doesn't care about semantic field such as phonology and morphology. In fact, he excluded semantics or the study of meaning.

4.Behaviorism

Bloomfield starting point was not so much his observation of language events as his belief in the scientific nature of his subject. He defined the meaning of a linguistic form as “a situation in which a speaker utters it and the response it calls forth in the hearer” .

Bloomfield(1933:22-7) states his view with the account of “Jack and Jill” . Jill is hungry, sees an apple and with the use of language gets Jack to fetch it for her. If she had been alone (or if she had not been human) she would have first received a STIMULUS (S) which would have produced a REACTION (R). She would have made a move to get the apple. This can be diagrammed as:

S-----R

Since Jack was with her , the stimulus produced not the reaction R , but a linguistic reaction, that of speaking to Jack, which we may symbolize by (r).

The sound wave resulting from this in turn created a stimulus for Jack, a linguistic stimulus (s) , which results in his non-linguistic reaction R of getting the apple.

S-----r ----- s-----R

Meaning, according to Bloomfield, consists in the relation between speech (which is shown by r.....s) and the practical events (S) and (R) that precede and follow it.

One important point for the theory is that the stimulus and the reaction are physical events. For Jill it is a matter of light waves striking her eyes. Jack's action is no less physical. For Bloomfield, human behavior is controlled by the same physical wholly deterministic. He contrasts his **mechanistic** theory with the “**mentalistic** theories” that posit non-physical processes such as thoughts, feelings, images, and concepts. He argued that the speech and the practical events depend upon “predisposing factors” which consist of the “entire life history of the speaker and hearer”. He argued that “there is no reason at all to argue that scientific definitions are linguistically more accurate than non-scientific ones. The main arguments are: 1. Language behavior can be accounted for in a way that is in principle no different from the behavior of rats in laboratory conditions. 2. The behavior can be explained in terms of observable events without reference to the internal structure of the organism.

5-The Neo-Bloomfieldian:

The great achievement of the post-Bloomfieldians was to develop often pro- grammatic remarks in Bloomfield's work into a coherent framework of grammatical analysis. To the extent that the key analytical assumptions of this framework survive in generative approaches and their offshoots, contemporary formal approaches fall squarely within the post- Bloomfieldian tradition. They include: Bernard Bloch, Zellig Harris, Archibald Hill, Charles Hockett, Eugene Nida, Kenneth Pike, Henry Smith, George Trager and Rulon Wells.

The post-Bloomfieldians established the now-familiar practice of factoring linguistic descriptions into a series of 'levels' in which simple units at one level are made up of combinations of units from the next level down. This 'Russian doll' organization, in which clauses are composed of phrases, phrases of words, words of morphemes, and morphemes of phonemes, departs significantly from the conception outlined in Bloomfield 1933. Bloomfield had interpreted the relation between a meaning-bearing morpheme and its constituent non-meaning-bearing phonemes as a model for the organization of linguistic 'signs' in general.

There was an attempt by the Neo- Bloomfieldian and their successors to separate the study of syntax from the study of meaning. The items were (in theory) identified and classified solely on the basis of their distribution within the corpus. Bloomfield and his followers were interested in the forms of linguistic items and in their distributional arrangement. Meaning, according to Bloomfield, was not observable using rigid methods of analysis, and it was therefore the weak point in language study. For American structuralists, the ultimate goal of linguistics was the perfection of **the discovery procedure**, a set of principles, which would give them a fool proof way to discover the linguistic units of an unwritten language. Their goal was explicitly to 'discover' a grammar by performing a set of operations on a corpus of data. Each successive

operation was to be one step farther removed from the corpus. For the structuralists who followed Bloomfield the theory of meaning is grounded in reactions to stimuli model. But the account of meaning elsewhere is quite neutral, precisely because Bloomfield acknowledges that, in practice, one could only proceed by existing methods pushed even further the attempt to develop methods of linguistic analysis that were not based on meaning. So, one of the most characteristic features of "Neo-Bloomfieldian" American structuralism, then, was its almost complete neglect of semantics. Post-Bloomfieldian analyses of syntax were not quite as far along at the point that the descriptivist paradigm was superseded by the generative school. But the relatively sketchy remarks about syntax in Bloomfield (1933) had been developed into procedures of immediate constituent (IC) analysis in studies such as Wells, 1947. These techniques, in turn, formed the basis for the model of phrase structure analysis formalized in Chomsky, 1956. However, it is important to bear in mind that the goal of Chomsky's formalization was to establish the inadequacy of phrase structure analysis. This goal was achieved in part by defining phrase structure grammars in such a way as to exclude the discontinuous constituents recognized in Wells (1947) and in nearly all subsequent models of IC analysis. This might not matter quite so much if Chomsky (1957) did not criticize phrase structure analysis precisely on the grounds that "discontinuous elements cannot be handled readily within the phrase structure grammar." Like Harris (1957), Chomsky (1957) introduced transformational relations between constituent structures to overcome the putative limitations of single structures. Transformations in Harris's sense expressed static implicational relations over patterns in a corpus: e.g., that a sufficiently large corpus containing a passive would contain a corresponding active. Chomsky (1957) proposed a more dynamic interpretation on which transformations were interpreted as applying to one structure to "derive" another. Although part-whole analysis can, in principle, proceed in either a top-down or bottom-up fashion, the post-

Bloomfieldian techniques were meant to be applied over successively larger domains, from phonemes, through morphemes, to phrases, and onto discourses. At each level a distributional analysis would define the units and classes in terms of which the analysis of the next level would be defined. The desire to obtain effective mechanical procedures of analysis led to the exclusion of considerations of meaning and to strictures against mixing levels. It is for these methodological concerns that the post Bloomfieldians are best known in the modern era. Yet it is only fair to mention a number of points in their defense. The first point is that the descriptivist framework grew out of a fieldwork tradition in which the search for discovery procedures was meant to address practical as well as theoretical problems. While this search may have proved unsuccessful, at least in the terms that the descriptivists framed the task, much the same can be said for the more modest task of formulating evaluation procedures to choose between extensionally equivalent generative grammars (Chomsky, 1957). The reduction of grammatical analysis to distributional analysis is also not entirely confined to the descriptivist tradition. In any model that rejects traditional definitions such as ‘a noun is the name of a person, place or thing,’ it is not clear on what basis, other than form or distribution, word classes are defined. On the predominantly agglutinative view of word structure adopted in IA accounts—whether descriptivist or generative—form classes are merely a type of morphological distribution class. So any approach that rejects notional definitions of categories is implicitly distributional. Considerations of this sort do not justify all of the assumptions and practices of the post-Bloomfieldians. However, they do reinforce the essential continuity between the descriptivist and generative paradigms (which is traced in more detail in Matthews, 1993) as well as offer a useful corrective to the popular view of the post-Bloomfieldians as methodological eccentrics.

6- Weaknesses of structural grammar

-Structuralism ignores explanatory adequacy, meaning, linguistic universals, native speaker's intuition and his competence of generating infinite number of sentences from a finite set of items

-Structuralism analysis the data of a given corpus by means of inductive methods, and formulates a grammar based on discovery procedures of data.

-To structuralists, grammar is a catalogue of elements classified of with restrictions enumerated, and relations made physically manifested. Language is not merely an inventory, or catalogue of items, as structuralists imagined.

-It is interested in data more for the sake of data than in capturing the creative power that generates an infinite set of sentences. Total corpus cannot be captured or verified.

-Structuralists failed to capture all ambiguities and relations.

- It does not account for the degree of grammaticality and acceptability, nor does it stop the generation of ungrammatical sentences.

-Grammar is not predictive and explicit; it does not explain inter-relatedness of sentences. Grammar should not merely be a record of data

-It does not include the idea of creativity. It should establish the general and innate properties of the language based on intrinsic properties of human mind. Linguistics is a sub-class of cognitive psychology. In fact, language is both nature and nurture.

-Descriptive grammar is just one aspect of generative grammar. Structuralism fails to speak anything about nature of language and fails to establish a relationship between sound and meaning.

-A grammar should also account for deep structures. It should give such rules that generate deep and surface structures.

-It should give a factually accurate formulation of rules. It should give such rules that discover the inter-relatedness of sentences.

7. IC analysis:

- It is the last stage of discovery procedures followed by Bloomfield. IC analysis deals with immediate Constituent analysis which is a method of sentence analysis. This method was first introduced by Leonardo Bloomfield, pioneer of American structuralism. IC analysis is a technique of analyzing constituents of a sentence. It can be segmented from a phrase, clause or sentence. The aim of immediate constituent analysis is to bring out the hierarchical structure in the composition of a complex sign.

- **immediate constituent analysis**, also called **Ic Analysis**, in [linguistics](#), a system of grammatical analysis that divides sentences into successive layers, or [constituents](#), until, in the final layer, each [constituent](#) consists of only a word or meaningful part of a word. (A constituent is any word or construction that enters into some larger construction.) In the sentence “The old man ran away,” the first division into immediate constituents would be between “the old man” and “ran away.” The immediate constituents of “the old man” are “the” and “old man.” At the next level “old man” is divided into “old” and “man.” The term was introduced by the United States linguist [Leonard Bloomfield](#) in 1933, though the [underlying](#) principle is common both to the traditional practice of parsing and to many modern systems of grammatical analysis.

7.1-Disadvantage of IC:

(A) Immediate constituent analysis has its limitations: It is not possible to analyze like such structures, as they do not form proper grammatical groups. For example, hence is a sentence: She is taller than her sister. In this sentence, the sequence –er than is not covered by IC analysis.

(B) IC analysis is not below the words: In IC analysis it is assumed that there will be no division into pieces smaller than words (morphemes) until all the words have been divided. If we cut ‘criminal lawyer’ into ‘criminal/lawyer’, it does not sound tenable in actual practice because ‘criminal lawyer’ generally

means a lawyer who deals with criminal cases. So unless we cut ‘criminal lawyer’ in the way like ‘criminal – lawyer’, the meaning does not come out clearly. But because IC analysis does not go below the level of words, we can not analyze the phrase ‘criminal lawyer’ in a meaningful way.

(C) Unbalanced Bracketing: IC analysis does not refer to our grammatical knowledge. So it does not take us very far and without the help of labeled bracketing we cannot point out the source of ambiguity in many sentences. The labeled bracketing can be used to differentiate the two possibilities in an example that is often against IC analysis. Flying planes can be dangerous. Here, in one case ‘flying’ is the head of the noun phrase while on the other hand is ‘planes’. This emphasizes that the fundamental defect of ICA is that the notion of heads does not play any role therein. ICA only gives a set of binary structural patterns, but not the association patterns composed of various binary patterns. ICA also fails in producing the multi-valence semantic relations. A new method is then posited which is named Direct Constituent Analysis which asserts the unique head of the word and the layer structure centered on the head of the word.

- *Presumptions about the grammatical status of the elements*

Although IC analysis is supposed to precede any attempt to identify and classify the ICs as subjects, objects, noun phrase, it is based on the tacit assumptions about the grammatical status of the elements. Ex: want to go. This sentence can be analyzed as:

want/to go

want to/go.

If we compare it with ‘want food’ then clearly the first analysis would be ‘want to/go’. But the answer was given was in favour of ‘want/to go’ because the possibility of ‘to go’ is easy where obviously ‘to go’ is a constituent.

Here such identification is grammatical because we accept an analysis which allows us to consider 'to go' as some kind of nominal element and favoring the comparison with 'want food', so that 'to go' is an expansion of 'food' because it is of the same grammatical type.

It fails to determine Lexical, constructional or derivational ambiguities.

- Lexical ambiguity arises from the same word having more than one meaning. Ex: bank can be:

- bank of the river.

- institution where we deposit money.

- Constructional ambiguity is due to the difference in layering.

Ex: The pen on the table that belongs to me.

Here the problem is that one gets confused whether it is the table or the pen that belongs to me.

- Derivational ambiguity arises from the same constituents functioning differently. Ex: the love of God.

It may mean God's love for someone or someone's love for God.

- Constructional and derivational ambiguity can together be called structural homonymy. IC analysis can disambiguate certain constructions.

Ex: A Russian history teacher can be:

- A Russian history/teacher – teacher who teaches Russian history

- A Russian/history teacher – the history teacher who is Russian

- Syntactic ambiguity may be defined as follows: a sentence is syntactically ambiguous if it has two (or more) meanings that cannot be ascribed to the semantic structure of the words of which it is made up. It is sometimes referred to in the literature as constructional homonymy. IC Analysis cannot account for constructional homonymy. Ex: John washed the car in the garage.

It may mean that (a) the car was washed by John in the garage or (b) the car in the garage was washed by John.

Discontinuity

IC-analysis cannot assign a natural - marker to sentences containing discontinuous constituents. That is, sometimes IC analysis cannot divide a construction into two because elements that belong together are separated in the sequence (i.e. discontinuous). Ex: Is John coming?

Here 'is' is nearer to coming than to John. It is obvious that the ICs of this sentence is not 'is' and 'John coming', but rather 'is...coming' and 'John'. There is no non-ad-hoc way of representing this diagrammatically.

Of course, we can always carry on the IC analysis by merely permitting discontinuity, but this does surely make less plausible the very assumption on which IC analysis is based – that language is essentially a one-dimensional linear string that can be chopped up into decreasing segments. It must be recalled that IC analysis depends on expansion, the substitution of sequences by single morphemes but discontinuous sentences are not sequences.

The problem of embedding

IC Analysis cannot account for sentences involving embedding.

Ex: The boy who won the prize is my cousin.

The problem of conjoining

IC Analysis cannot handle conjoining. Ex: I will go and meet him.

The problem of unstated elements

IC analysis fails to show elements that are unstated in a sentence.

Ex: hit the ball

The element 'you' is missing here. There is no way of showing this in the IC analysis.

The problem of the relationship between sentence types

IC analysis fails to show the relationship between sentence types such as active and passive, affirmative and negative, statement and question. Ex: Kapil hit a six. A six was hit by Kapil.

Here one is active and the other is passive, the relation which is not visible in IC analysis.

The problem of overlapping ICs

Many a time, overlapping ICs also cause a problem.

Ex: He has no interest in, or taste for, music.

The sentence means to convey that he has no interest in music, he has no taste for music. The word 'no' applies to both interest and taste. It is not possible to show this in the IC analysis.

The problem of structural similarity and different grammatical relations.

Some sentences are structurally similar but semantically different. Ex: John is easy to please. John is eager to please.

Such sentences cannot be explained by IC analysis unless they are broken up into simple pairs of sentences. In this case, we may have the following groups.

(It) is easy. Someone pleases John.

John is eager. He wants to please.

The process and the result of IC analysis can, however, vary greatly based upon whether one chooses the constituency relation of phrase structure grammars (= constituency grammars) or the dependency relation of dependency grammars as the underlying principle that organizes constituents into hierarchical structures. An important aspect of IC-analysis in phrase structure grammars is that each word is a constituent by definition. The process is, however, much different in dependency grammars, since many individual words do not end up as constituents in dependency grammars.

7-2-Advantages of IC:

-Identification of the layers of relationship in a construction.

IC analysis helps to graphically display the layers or units in a sentence and how the units are hierarchically organized to form the sentence. It discovers the layers of relationship in a construction. English syntax is based on this ability of structures to function within larger structures, which are, in turn, serving other functions in still larger, more complex structures (sentences).

Fixity of word order

In IC analysis the word order is not disturbed in any way. This advantage is best demonstrated by sorting the relationship found in the following sentences which are composed of the same words but which are different in word order:

The boy played marbles on his knees.

The boy on his knees played marbles.

On his knees, the boy played marbles.

These sentences may be said to be stylistically different. In the first, the prepositional phrase 'on his knees' modifies the verb phrase; in the second, it modifies the noun phrase; in the third, it modifies all the rest of the sentence. Yet in the word order within the structure 'on his knees' does not change.

To account for ambiguities and distinguish them

A famous example old men and women can be paraphrased in two ways; it is either old men and women of all ages or old men and women. The principle of expansion here allows us two interpretations. Either old men is an expansion of a single morpheme (e.g. men or boy) or 'men and women' is an expansion of a single morpheme (e.g. people or men).

old (men and women)

(old men) and women

References

1. Blevin J. P. (2006): Post-Bloomfieldians. Cambridge, Cambridge University Press.
2. Palmer, F. (1981): Semantics, Cambridge: Cambridge University Press.
3. Matthews, P. H.(1996,) Grammatical theory: from Bloomfield to Chomsky. Cambridge, Cambridge University Press.
4. Ganzhelyuk, P.(2015): "American Structuralism" Prezi. com.
5. Cristal, D. (2008): A Dictionary of Linguistics and Phonetics, USA.
6. Aitchison, J.(1987) : Linguistics.
7. Schiffrin, D.(1994): Approaches to Discourse. Cambridge . Blackwell Publishers.