SOME THEORIES OF

LANGUAGE TYPOLOGY AND LANGUAGE CHANGE

by

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ABSTRACT

Introduction

This thesis considers various theories of language typology put forward over the years, with particular reference to the more recent typologies of word order and the evidence they might provide of how and why languages change. Language typology and change is again arousing much interest in linguistic circles, but our understanding of it is still in the beginning stages and much work remains to be done on language classification.

In Chapter I I consider nineteenth and early twentieth century classificatory systems, which, for the most part, take the word as their fundamental unit. Tracing the development of typologies from the earlier purely morphological systems of von Schlegel and von Humboldt to the later morphological-conceptual system of Sapir, I compare and contrast the major classificatory systems of the period and indicate their limitations.

In Chapter II I review the syntactic typologies proposed recently by Lehmann and Vennemann. As a result of the upsurge of interest in syntax, both systems take the
sentence as their fundamental unit and base their criteria on word order characteristics in consistent verb initial and verb final languages. I discuss the merits and inadequacies of both typologies and conclude that, as neither classificatory system appears to account for word order data satisfactorily, a further explanation must be sought. I suggest that perceptual strategies employed by speaker and listener can provide this explanation.

In Chapter III I review some major work on perceptual strategies and find that misinterpretation of theoretically grammatical structures results from three causes: erroneous segmentation, discontinuity, and multiple centre embeddings. I then try to show how implementation of these perceptual strategies may account for or further explain the word order characteristics of Lehmann's and Vennemann's syntactic typologies.

In Chapter IV I am concerned with how the syntactic typologies show evidence of diachronic word order change in language. I review several theories of word order change and comment on hypotheses regarding evidence of older word orders. I discuss the merits of each theory but try to point out where its claims can be questioned. I conclude that although many creditable
observations and ideas have been presented within the framework of the syntactic typologies many of the connected hypotheses are subject to controversy and will have to be much more rigorously tested before their validity can be accepted.
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CHAPTER I

LANGUAGE TYPOLOGIES BASED ON MORPHOLOGY

1.0 Despite the apparent diversity of the world's tongues, ever since the rise of the comparative method in the middle eighteenth century linguists have periodically made formal attempts to classify languages systematically. Language typology can be attempted at any level - phonological, morphological, syntactic, lexical, semantic, and even symbolic - and it is perhaps this linguistic complexity which accounts for the difficulty of the task and for the generally disappointing results achieved until recently.

Prior to 1971, when Winfred Lehmann proposed a structural principle of language based on the surface order of major sentence elements, typological linguists, especially those of the nineteenth century, concentrated almost entirely on the morphological or "word" (i.e. root + modifier) level of language, paying scant attention to the many other levels.

1.1 The first significant typology proposed was that of Friedrich von Schlegel (1808), in which were posited two classes of language: one modified the root morpheme by internal change or inflection; the other modified by affixation (to which was given a very broad definition, ranging from Root + bound
derivational morpheme to Root + Root structures). Von Schlegel's typology was subsequently modified by his brother, August, who added to it the dimensions of 'synthetic' and 'analytic'. For August von Schlegel, an analytic language used independent elements, such as articles, prepositions, pronouns, etc., to express particular concepts, whereas a synthetic language combined these concepts with the root to form a single word.

1.2 The morphological typology established by Wilhelm von Humboldt in 1840 was to be the most widely accepted for the next one hundred years. Rejecting von Schlegel's analytic and synthetic breakdown on the grounds that the dividing line between the two was insufficiently clear, von Humboldt expanded the inflectional-affixational classification by dividing languages into four classes:

a) those which are grammatically formless, i.e. which use isolated roots but no function-marking morphemes, e.g. Chinese

b) those which are completely flexional, i.e. which show grammatical and relational concepts by inner root modification, e.g. Hebrew

c) those which are agglutinative, a term which von Humboldt describes as "intended, but incomplete flexion, a more or less mechanical affixing, not a truly organic development ..."
d) those which are incorporating, i.e. which combine all sentence elements (subject, verb, object and their modifiers) into a single word, e.g. Nootka.

1.3 Von Humboldt's typology was subsequently reaffirmed by August Pott and August Schleicher, although the latter reduced the four classes to three by regarding 'incorporating' languages as more extreme members of the agglutinative class; Schleicher also reintroduced von Schlegel's terms of 'synthetic' and 'analytic' to denote the various degrees of fusion between affix and root. Schleicher's tripartite classification thus included:

a) monosyllabic languages, i.e. those composed solely of 'meaning' words and no functional or derivational morphemes

b) agglutinative languages, i.e. those which add functional and derivational morphemes to the root. According to the degree of fusion between affix and root, the language may be either analytic or synthetic

c) inflectional languages, i.e. those which allow alteration to the root form to show modification. This third class may also be either analytic or synthetic.

1.4 Still operating at the word level, Franz Bopp (1833) suggested a typology based on the formation of the word root and its capacity for compounding. Although Bopp carefully avoids
mention of the terms 'inflectional' and 'agglutinative', his three part division in essence covers the same phenomena:

a) monosyllabic roots incapable of modification and compounding (i.e. isolating)

b) roots capable of modification and/or compounding, by which means the majority of their grammatical concepts are expressed (i.e. agglutinative and inflectional)

c) disyllabic roots based on three essential consonants through which all word meaning is carried and which may be modified through compounding or inner modification, e.g. Semitic (i.e. special inflectional).

Bopp's typology was later supported and enlarged upon by Max Müller (1880), who provided a revised version of von Humboldt's 'formless', 'agglutinative' and 'inflectional' concepts to classify the ways in which Bopp's roots could undergo modification.

In 1860, Heymann Steinthal put forward a classification based on word relationships. Whereas his predecessors had devoted their attentions almost entirely inward from the word, Steinthal rather refreshingly concerns himself with sentential relationships between words. A language which expresses grammatical function by word order alone or by changeable (i.e. agreement) suffixes is, in Steinthal's terminology, a 'form' language. Any language not
relying upon word order or variable affixes to express sentential function is considered by Steinthal to be 'formless'. Although such a language might perhaps be one which shows grammatical function by unchangeable affixes, such as pure subject and object markers, this is not specified, leaving the 'formless' definition manifestly unclear. Ural-Altaic languages are classified 'formless' because their suffixes, being separate entities, do not show relationships between words; polysynthetic languages are also considered formless because they contain only one word per sentence. The two examples of formless languages appear to have little in common save their lack of clarity. Steinthal also classifies languages according to their tendency toward 'collocating' or 'derivative' constructions, with invariable words appearing only in collocating constructions (i.e. they can only be placed next to one another) and varying words appearing in derivative structures (i.e. morphemes can combine to alter each other). Thus Chinese is classified as a 'form collocating' language as it signifies sentential relationships by word order and juxtaposes invariable words. Sanskrit is classified as a 'form derivative' language as it contains variable suffixes which mark sentential function and derivative suffixes which modify the root word.

Although the divisions of his classification are nebulous and subjective, making his typology almost impossible to apply, Steinthal must be credited with realizing the importance of the total utterance and, in so doing, moving beyond the hitherto
unbreached confines of the single word. Commenting on the nineteenth century predilection for the limited morphological viewpoint, Mauthner (1923) writes:

"... the valuation [of languages] according to whether their inflections are more or less transparent is as foolish as if one judged the merit of European armies according to the greater or lesser visibility of their trouser seams."

Also debating the merits of morphologically based typologies, Hodge (1970) comments that the morphological characteristics of language may merely reflect the stage of development of a language within the hypothesized linguistic cycle (from analytic through agglutinative and inflectional back to analytic) and may not indicate basic dichotomies of language (the linguistic cycle is discussed more fully in 4.2.0 of this thesis). In effect, Hodge suggests that morphological classificatory systems are not evidence of the fundamental patterns of language.

The early twentieth century showed little improvement in the breadth of typological vision, for it was not until 1921 that Edward Sapir again broke with the style of traditional morphological typologies by introducing a classification which, although still basically oriented to word structure, introduced a further dimension covering sentential relationships. Sapir's typology considered the interaction of three linguistic dimensions: the manner of relationship of grammatical concepts, the technical processes by which the concepts are joined, and the degree to which a language will combine concepts into a single word.
Sapir specifies four ways of expressing grammatical concepts:

I basic concrete concepts, i.e. those which consist of an unmodified concept, e.g. fight

II derivational concepts, i.e. those which add to or change the root word, but which are independent of the rest of the sentence, e.g. fight + er

III concrete relational concepts, i.e. those which affect or are affected by elements outside the word, e.g. fighter + s (where the plural marker demands a plural verb agreement), le + s rue + s etroit + e + s (where both article and adjective are marked for agreement with the noun)

IV pure relational concepts, i.e. those which carry no concrete meaning, but which merely operate to indicate the sentential function of a concrete concept, e.g. an agent marker or object marker.

The above classifications combine to produce four language types:

A simple pure relational (I and IV)
B complex pure relational (I, II and IV)
C simple mixed relational (I, III and IV)
D complex mixed relational (I, II, III and IV).
In considering grammatical processes, or the technical method of combining elements, Sapir makes three divisions:

a) isolating, where the word contains a single unadulterated root

b) affixing, where root modification is practised through affixation

c) symbolic, where root modification is practised through, for example, internal vowel or consonant change, reduplication, or stress/pitch change (i.e. a phonological change).

Sapir further subdivides his 'affixing' category according to the degree of fusion existing between the root and its affix. The degree of fusion is evaluated on the transparency of the affix and also, less clearly, on the psychological perception of the affix as a separate meaning entity.

The third major stratum of Sapir's typology deals with the conceptual elaborateness of a word, i.e. the extent to which concrete concepts are combined into a single word. This last classification is measured on a quantitative scale, with languages being marked for the degree of conceptual elaboration of their average word rather than for a plus or minus membership of a specific limited class. The elaboration scale ranges from analytic (having little or no combination of concepts within a single word,
e.g. English) through synthetic (having a higher degree of conceptual combination, but still operating under restraints, e.g. Latin, Sanskrit) to polysynthetic (having an extremely elaborate system of concept combination, e.g. Nootka, Algonquian).

Breaking with the purely traditional linear typological approaches, Sapir's infinitely more complex approach provides a three dimensional matrix on which languages can be mapped, and thus offers a much broader overview of the qualities of any one language. Although his typology provides for no less than 2,870 different language types (thus allowing a separate type for almost every known language), Sapir comments that "certain linguistic types are more stable and frequently represented than others that are just as possible from a theoretical standpoint," and notes that languages which fall into the same classification in his typology often show other similarities not covered in the classificatory system, thus suggesting that languages do indeed fall into a limited number of natural groupings, some aspects of which his scheme of classification has successfully captured. Sapir's system does not go far enough, however, in that it does not capture the 'other similarities' existing across language, and although Sapir has set up several distinctive features of typology, it appears that he has not located all of them, nor has he defined their redundancies or implications. However, Sapir wisely entertains no delusions about the problems facing typologists, commenting:
"classifications, neat constructions of the speculative mind, are slippery things. They have to be tested at every possible opportunity ..."

Because he feels the understanding of language to be only in its infancy, he continues:

"It is of less importance to put language in a neat pigeonhole than to have evolved a flexible method which enables us to place it, from two or three independent standpoints, relatively to another language. But we are too ill-informed as yet of the structural spirit of great numbers of languages to have the right to frame a description that is other than flexible and experimental."

For these reasons, Sapir justifies the inclusion of three levels within his classificatory system, although he admits that not all will give equal insight into the underlying form or characteristics of language:

"A purely technical classification [such] as the current one into 'isolating' 'agglutinative' and 'inflective,' cannot claim to have great value as an entering wedge into the discovery of the intuitional forms of language. I do not know whether the suggested classification into four conceptual groups is likely to drive deeper or not. My own feeling is that it does ..."

In a later chapter, Sapir concludes that of his three dimensions of language (see p.6), the conceptual level is the most fundamental. This hypothesis is to some extent a forerunner of the language structure suggested by some of the recent transformational-generative linguists, who conceived three language levels, of which the semantic component is the deepest and thus the most basic. Langacker's model provides an example:
Despite the omission of any word order classification, on an overall basis Sapir's three dimensional classificatory system gives far more insight into the character of languages than do any suggested by his predecessors or, perhaps, by his successors. The fact that his typology can be used on a synchronic or diachronic level (see 4.1 below) also marks Sapir's work as the most perceptive yet. If such insights into the "fundamental form intuitions" of language continue to be made, then some day "we shall be able to read from them the great underlying ground plans [of language]" and Sapir's prophecy will be realized.

In his paper "A Quantitative Approach to the Morphological Typology of Language" (1954), Joseph Greenberg, basically following
Sapir's typological system, develops a numerically based procedure for comparing language forms. In place of Sapir's intuitive approach, Greenberg defines each feature in terms of a unit ratio of two to one. The system operates on a one hundred word stretch of text, with the results being expressed through ten numerical indices:

i) degree of synthesis, indicated by the ratio of morphemes to the word (e.g. *laugh* + *ed* = 2/1). This index corresponds to Sapir's analytic/synthetic/polysynthetic scale.

ii) index of agglutination, indicated by the ratio of agglutinative constructions to the number of morpheme junctures (e.g. *laugh* + *ter* = 1/1). This index corresponds to Sapir's isolating/agglutinative/symbolic division.

iii) presence or absence of derivational and concrete relational concepts
   a) compositional index, indicated by the number of roots per word (e.g. *drugstore* = 2/1)
   b) derivational index, indicated by the number of derivational morphemes per word (e.g. *farm* + *er* = 1/1)
c) gross inflectional index, indicated by the number of inflectional morphemes per word (e.g. farmer + s = 1/1)

This corresponds to Sapir's division into basic concrete through pure relational concepts.

iv) index of order of subordinate elements in relation to root
   a) prefixal index, indicated by the number of prefixes per word (e.g. pre + empt = 1/1)
   b) suffixal index, indicated by the number of suffixes per word (e.g. mat(t) + ed = 1/1)

v) index showing devices used to relate words to each other
   a) isolational index, indicated by relationship through word order, i.e. containing no inflectional morphemes per related unit
   b) pure inflectional index, indicated by relationship through purely function-marking morphemes
   c) concordial index, indicated by relationship through a morpheme combining both function-marking and extra-word agreement.

These ten indices again allow for an infinite variety of possible combinations, but Greenberg, like Sapir, is less interested in
assigning languages to a specific class or type than he is in indicating their various trends. He criticizes previous typologies for assigning languages to one specific category, thus failing to show their other tendencies. For example, a language in which agglutinative constructions outnumber non-agglutinative by 60:40 will be classified 'agglutinative' with no indication of its non-agglutinative characteristics. It will, therefore, be considered the same type as a 99:1 agglutinative language, and a different type from a 40:60 agglutinative:non-agglutinative language, with which it would actually seem to have a much closer tie. Greenberg's more complex breakdown allows all of what he considers the most important tendencies of language to be indicated.

Greenberg's classification has, however, itself been criticized on the grounds that the tendencies indicated after applying the ten indices to one one-hundred word stretch of a particular language might differ when the system is applied to another stretch in the same language, thus altering the rank ordering of languages for specific indices. For example, in English a formal style and a colloquial style would undoubtedly yield very different results due to the former's use of synthetic compounds of classical derivation. Householder comments that Greenberg's typology contains no provision for the syntactic characteristics of language, e.g. presence or absence of tense,
aspect, number, case systems, ergative systems and major constituent order (SOV, SVO, VSO, etc.), and suggests that indices for certain of these could be added to Greenberg's predominantly morphological typology. As noted above, the same criticism is, of course, equally applicable to Sapir's typology.

Concentrating almost entirely on the morphological aspects of language, classificatory systems up to and including that of Greenberg consistently excluded syntactic information from their considerations. That a syntactic classification based on word order had not so far been attempted seems surprising in retrospect, and yet perhaps not, for prior to 1957 when there occurred an increased upsurge of interest in syntax consequent to Noam Chomsky's writings, the complexities of word order had been little comprehended by linguists and had, as a result, been severely neglected. "The inability to find explanations for syntactic phenomena seemed to Hermann Hirt the reason for lack of interest in syntactic studies in his day." Chomsky's theories, however, opened the door to a greater understanding of language structure, since when enormous strides have been made in linguistics, especially in the field of syntax. It is not surprising that this reawakened interest in syntax eventually caused a break through the traditional morphological limits of language typology.
A good typology should, in Greenberg's words, "involve characteristics of fundamental importance in language." In recent years characteristics of fundamental importance in syntax have taken precedence over those in morphology. Work in syntax has usually taken the sentence as its domain and it is perhaps as a consequence of this that recent work on typology has been based on characteristics of the sentence, in particular on characteristics of word order.

The typologies considered below account neither for all known orderings across language nor for alternate syntactic orderings within specific languages. They account for only the unmarked orders across language and for the order within the basic sentences of these languages. Keenan believes that "we design our language in a certain way unless there is a specified reason not to." Some deviations from the unmarked order state can be explained in terms of the evolution from one language type to another (see Chapter IV); others can result from historical or areal contamination or even from the universal law of entropy, which demands the degeneration of any orderly state through disorder to subsequent reorder and which, applying to society and super-nova alike, does not exclude language from its
domain. Within a specific language, longer and more complex structures built upon basic sentences may demand reordering of the typological features manifest in the basic sentence in order to conform to primary perceptual strategies operating within that language. The following typological classifications, therefore, are based on the unmarked order within simple sentences.

2.1.0 In 1966, Joseph Greenberg, working with a corpus of thirty languages, observed certain common word order characteristics from which he subsequently extracted his now famous 'universals'. Although Greenberg himself did not formulate his observations into a syntactic typology, his work has provided the base for other linguists to enlarge on and expand into classificatory systems.

The first major syntactic classificatory system of language to be put forward was that of Winfred Lehmann who, in 1971, published "A Structural Principle of Language and its Implications", in which the suggestion is made that languages should be classified according to their ordering of various sentence elements. "There is scarcely a more fundamental relationship in language than that between verbs and their objects," writes Lehmann, who considers these two elements to be the most important of the sentence. According to Lehmann, the subject of a sentence is by no means of the same importance as are the verb and object in making syntactic classifications.
He comments:

"Including them [subjects] among the primary elements, as in the attempts to classify SVO and VSO languages as major types in the same way as VO and OV languages, has been a source of trouble for typologists as well as for linguistic theorists in general. Other evidence in favour of excluding subjects from the basic phrase-structure rules has been given in many recent grammatical studies. Typological study accordingly supports this point of view by illustrating that the S in SVO formulae is far less significant than are the categories represented by V and O."

Working with data from several language families and using the word order characteristics observed by Greenberg and the subsequently posited universals, Lehmann classifies languages into two groups, Verb + Object (VO) and Object + Verb (OV). Noting that in a consistent OV language nominal modifiers precede their head noun and verbal qualifiers follow the verb, but in a consistent VO language the opposite orders occur, Lehmann posits a structural principle of language, stating that because of the strong bond he considers exists between the verb and the object of a sentence, all modifiers and qualifiers tend to appear on the open end of the V-O unit. This "Principle of Opposite Side" is formally expressed as:

$$Qf V ((N_{obj})Mod)# \implies \begin{cases} Qf V ((N_{obj})Mod)# \\ (Mod(N_{obj}))' V : Qf# \end{cases}$$

A list of the nominal modifiers and verbal qualifiers which Lehmann considers of classificatory significance follows:
Other criteria noted by Greenberg and Lehmann to be characteristic of the two orders are:

<table>
<thead>
<tr>
<th>Nominal Modifiers</th>
<th>VO Order</th>
<th>OV Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noun + Adjective</td>
<td>Adjective + Noun</td>
<td></td>
</tr>
<tr>
<td>Noun + Genitive</td>
<td>Genitive + Noun</td>
<td></td>
</tr>
<tr>
<td>Noun + Relative</td>
<td>Relative + Noun</td>
<td></td>
</tr>
<tr>
<td>Adjective + Standard</td>
<td>Standard + Adjective</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Verbal Qualifiers</th>
<th>VO Order</th>
<th>OV Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative + Verb</td>
<td>Verb + Negative</td>
<td></td>
</tr>
<tr>
<td>Question + Verb</td>
<td>Verb + Question</td>
<td></td>
</tr>
<tr>
<td>Causative + Verb</td>
<td>Verb + Causative</td>
<td></td>
</tr>
<tr>
<td>Potential + Verb</td>
<td>Verb + Potential</td>
<td></td>
</tr>
<tr>
<td>Auxiliary + Verb</td>
<td>Verb + Auxiliary</td>
<td></td>
</tr>
<tr>
<td>Declarative + Verb</td>
<td>Verb + Declarative</td>
<td></td>
</tr>
</tbody>
</table>

Not included in the typological criteria are markers of congruence, gender, case distinction and number, which, because of their restricted occurrence in languages, Lehmann feels to be different from universally present elements such as negative and question.
Lehmann considers a balanced syntactic pattern to be one which completely conforms to a set of VO or OV criteria, citing Japanese and Turkish as examples of consistent OV languages, with Semitic and Irish as consistent VO types. From the observed data of syntactically consistent VO or OV languages, Lehmann posits a further four criteria for classification:

<table>
<thead>
<tr>
<th>VO Order</th>
<th>OV Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ inflection</td>
<td>+ agglutination</td>
</tr>
<tr>
<td>umlaut</td>
<td>vowel harmony</td>
</tr>
<tr>
<td>(vowel influence operating</td>
<td>(vowel influence operating</td>
</tr>
<tr>
<td>right to left)</td>
<td>left to right)</td>
</tr>
<tr>
<td>stress accent</td>
<td>pitch accent</td>
</tr>
<tr>
<td>CVC base syllable</td>
<td>CV base syllable</td>
</tr>
</tbody>
</table>

although he comments that the last two criteria are, at this stage, only tentatively substantiated and need further investigation and testing.

Languages which do not completely conform to either a VO or an OV pattern are considered by Lehmann to be in a state of transition from one consistent base to another. Lehmann believes that once an influence - external or internal - has caused a shift in the basic verb and object sequence, the language will rearrange its order of constituents to conform to the new base pattern. Thus languages with both VO and OV qualities are seen to be in the process of rearranging elements to a new base pattern modelled on the verb and object sequence.
2.1.1 It should be noted that while Lehmann's "Principle of Opposite Side" correctly predicts the placement of certain elements in relation to their head words, it does not predict the order in which two or more modifiers to the same element will occur. For example, if both negative and question qualify the verb, their ordering in relation to each other is not specified. From Lehmann's data in his 1971 and 1973 articles, the ordering of two or more modifiers does seem to show some patterning in that, for example, the negative occupies the position nearer to the verb than does the question. It thus appears that Lehmann has neglected to account for this generalization in his theory.

It should also be noted that Lehmann's list of criteria omits the ordering of Verb and Adverb. If the Adverb is considered a verbal qualifier, it would be expected to precede the verb in VO languages and follow the verb in OV languages. The reverse is in fact the case, for in consistent VO languages, the adverb follows the verb whereas in consistent OV languages it precedes it. Lehmann has not accounted for this discrepancy in his theory, nor has he made provision for Adverb placement should this element be defined as something other than a verbal qualifier.

Edith Moravcsik\textsuperscript{20} points out that Lehmann's typology is based on two assumptions. The first is the primacy of the object over the subject. However, Ross (1972) has argued for the opposite
relationship (i.e. subject over object) and has pointed to several grammatical rules showing that if a rule applies to objects, it also applies to subjects, and that if a rule is lexically or structurally restricted for subjects, it must also be restricted for objects. On the other hand, Lehmann's observations on the "Principle of Opposite Side" ordering suggest that the object is indeed the primary concomitant of the verb. This argument is only valid, however, if nominal modifiers are considered to be primarily modifiers of the object. If the subject has equal claim to nominal modifiers, then the Principle of Opposite Side works for VSO and SOV languages, but not for SVO languages:

VSO \[\text{Qualifier + V} + \text{[S + Modifier]}\]
SOV \[\text{Modifier + S} + \text{[(O)V + Qualifier]}\]
SVO \[\text{[S + Modifier]} + \text{[V + Qualifier]}\].

While the primary concomitant of the Subject in SVO and SOV languages is the VO complex, in VSO types, one would arbitrarily have to assume the Verb as the primary concomitant of the Subject.

Moravcsik points out a further argument in favour of the primacy of object over subject:

"...we may allude to the area of definiteness. There seem to be many regularities here which pertain to the Object but not to the Subject. Two of these I know of as being well-attested in a number of languages. First ... the inflection of the main Verb varies depending on whether the Object is definite or indefinite. Second, in some languages the marking of the Object itself varies depending on whether the Object is definite or indefinite ..."
The second assumption implicit in Lehmann's typology is that there must be a universal node VP, which, dominating the verb and its object, ensures the object as the primary concomitant of the verb. The Principle of Opposite Side thus operates to maintain the close bond of primary concomitants. Schwartz (1972), however, claims that evidence for a VP constituent exists only in some SVO languages and is far from universal. Lehmann's typological theory is thus based on two assumptions - primacy of object over subject and universality of the VP node - which are still the subject of controversy.

2.2.0 Again working from Greenberg's data and his own observations, Theo Vennemann agrees with Lehmann that languages appear to fall into two syntactic classifications, which he refers to as VX and XV (where X = verb complement). Vennemann defines an XV language as one in which the finite verb appears in clause final position, and a VX language as one where this is not the case. Vennemann's concept of the primary importance of the verb in the surface structure correlates with its importance in the deep structure, as suggested by Chafe, who states: "...the entire sentence ... is built around the verb ... the nature of the verb determines what the rest of the sentence will be like ..." Vennemann feels that Lehmann's explanation for the characteristic orders found in VX and XV languages is insufficiently revealing and claims instead that the characteristic orders for these types can be accounted for by the Principles of
Natural Constituent Structure and Natural Serialization. These principles in essence state that in an unmarked order semantic hierarchical dependencies are directly reflected in surface operator-operand relationships, which relationships must be unidirectionally serialized.

The Principle of Natural Constituent Structure is a modification of Behagel's First Law, which states that what belongs together semantically will be placed close together syntactically. Renate Bartsch (1972) developed the Principle of Natural Constituent Structure from Richard Montague's attempt to translate natural language structures into predicate logic. The Principle states that hierarchically adjacent function-argument semantic elements will be linearly juxtaposed in the surface structure. For example, for the phrase, three large brown dogs, the semantic hierarchy would be:

$$\{\text{Adj}_3\} f_3 ({\{\text{Adj}_2\} f_2 ({\{\text{Adj}_1\} f_1 (\{N\})})}$$

$$\rightarrow \{\text{three}\} \text{ be } (\{\text{large}\} \text{ be } (\{\text{brown}\} \text{ be } (\{\text{dogs}\})))$$

and for the sentence, Susan worked during the weekend because of the rain, would be:

$$\{A_2\} (\{A_1\} (f (\{x\})))$$

$$\rightarrow \{\text{because of the rain}\} (\{\text{during the weekend}\} (\text{worked } (\{\text{Susan}\})))$$

The function-argument semantic hierarchies are subsequently directly reflected in operator-operand surface relationships, with the function corresponding to the operator, and the argument to the operand.
Borrowing his terms from symbolic logic, Vennemann defines the operator-operand relationship as corresponding to the specifier-specified or déterminant-déterminé relationship of a given sequence. The operator (specifier, déterminant) delimits the range of the operand (specified, déterminé) to a subset; the operand determines the syntactic class of the combined operator-operand sequence. Thus in the sequence A-B, A is the operator and B is the operand if the syntactic category of A-B is equal to the syntactic category of B. For example, in the phrase *golden bells*, the range of *bells* is limited by *golden* to a subclass of bells which are golden. *Golden* thus acts as a specifier, or operator, on *bells*. The noun *bells* controls the syntactic class of the word sequence, in this instance also modifying the class of *golden*, and is thus seen as the operand.

The most basic operator-operand relationship within the propositional nexus, claims Vennemann, is that of the finite verb and its complement (Vennemann, like Lehmann, assumes the existence of a universal VP node). Other operator-operand relationships exist between verb roots and their (to use Lehmann's term) qualifiers, i.e. negative, question, auxiliary verbs, etc. It is interesting to note that whereas Lehmann sees the negative, etc., as qualifying the verb, Vennemann, in contrast, claims the verb specifies the negative, etc. In fact he considers the verbal 'qualifiers' to be operands on the whole propositional nexus, although he recognizes that they are frequently constructed as operands on the verb alone.
In her discussion of modals, Susan Steele agrees with Vennemann's analysis:

"Assuming ... that modals are higher predicates underlyingly, these positions are predictable from the typology of the language. Modals should occur initially in verb initial languages ... and finally in verb final languages."  

In her excellent paper, Steele provides evidence that modals also occur dependent upon the verb and, more interestingly, claims that in both OV and VO types later movement of sentence operands toward a common sentential position (usually second position) is not an unusual phenomenon. This attraction toward a common sentential position may well explain the deviant orders from consistent VO or OV types. It does not, however, detract from the theory of original basic orders.

Also considered by Vennemann to be in operator-operands relationship are the noun phrase and its associated adposition (i.e. preposition or postposition) respectively. Included in his list of operator-operands relationships are all of the significant syntactic classificatory criteria noted by Lehmann plus the following:

<table>
<thead>
<tr>
<th>VX Order</th>
<th>XV Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>(operand + operator)</td>
<td>(operator + operand)</td>
</tr>
<tr>
<td>Verb + Adverb</td>
<td>Adverb + Verb</td>
</tr>
<tr>
<td>Noun + Number Marker</td>
<td>Number Marker + Noun</td>
</tr>
<tr>
<td>Noun + Numeral</td>
<td>Numeral + Noun</td>
</tr>
<tr>
<td>Comparison Marker + Adjective Stem</td>
<td>Adjective Stem + Comparison Marker</td>
</tr>
</tbody>
</table>

26
The Principle of Natural Serialization demands that a language retain a consistent operator-operand order for all syntactic sequences having this relationship, i.e. the operator-operand order must be unidirectional, with the operator always preceding or always following the operand. For example, the sentences:

2.a (Susan) a donné sa robe jaune à sa soeur.

2.b Est-ce que (le garçon) a frappé le chien?

2.c (Susan-wa) imotoni kiirono fukuo agemashita

(Susan gave her yellow dress to her sister)
2.6. Shone-wa inuo kerimashita ka?

boy dog kick + past Q (Did the boy kick the dog?)

show consistent operator-operand sequencing. The characteristic orderings found in VX and XV languages are thus explained. Vennemann formalizes the Principle of Natural Serialization:

\[
\{\text{Operator}\} \left(\{\text{Operand}\}\right) \rightarrow \left[\text{Operator} \ [\text{Operand}]\right] / \text{XV} \\
\left[\text{Operand} \ \text{Operator}\right] / \text{VX}
\]

It seems, however, that if verb and complement are considered in an operand-operator relationship, the environments for the above formula are redundant, and the rule could be restated:

\[
\{\text{Operator}\} \left(\{\text{Operand}\}\right) \rightarrow \left[\text{Operator} \ [\text{Operand}]\right] \\
\left[\text{Operand} \ \text{Operator}\right]
\]

The Principles of Natural Constituent Structure and Natural Serialization, Vennemann modestly claims, "reduce the entire basic word order structure of a language to a single rule of overwhelming transparency and simplicity." Indeed, perhaps he is right.

2.2.1 Although Vennemann proposes an integrated theory of semantic-syntactic ordering, he does not motivate his claim of correlation between the semantic and surface structures. This relationship has been discussed in more detail by Keenan (1972), who offers a motivation to the effect that the more closely the
syntactic structure resembles the semantic structure, the more easily retrievable the semantic structure will be and the more economical the grammar. Although he has studied word order relationships in a far wider number of languages, Keenan has not so far presented an overall account of his findings. Nevertheless, for detailed word order studies in languages other than Indo-European and for specific structures, Keenan's work offers insights and material not discussed in Vennemann's work.

Vennemann does not specifically comment on the relationship between the verb and its subject. Although in predicate logic verb-subject and verb-object stand in the same relationship (i.e. verb(subject, object)), Vennemann, in order to cover a potential flaw in his theory, argues that the subject and its predicate do not seem to stand in operator-operand relationship, thus exempting the subject from the Principle of Natural Serialization. He further contends that the subject and predicate stand in a topic + comment relationship (see Chapter IV), for which reason the subject is most naturally placed in sentence initial position in both VX and XV languages, having a constant preferred serialization:

\[
\{\text{Subject}\} \{\text{Predicate}\} \quad \Rightarrow \quad [\text{Subject}] + [\text{Predicate}]
\]

i.e.

\[
\{\text{Topic}\} \{\text{Comment}\} \quad \Rightarrow \quad [\text{Topic}] + [\text{Comment}]
\]

This rather cursory disposal of a major sentence element which does not appear to fit his theory is a disquieting aspect of Vennemann's work.
During the early stages of the translation of natural language into predicate logic, Vennemann admits that there was some uncertainty as to identification of the operator and operand of a given sequence, citing, for example, Montague's classification of the verb as an operator on its direct object. This uncertainty may well account for Vennemann's extremely unclear presentation of his theory in his only published (as of January 1, 1975) work on the subject, "Explanation in Syntax". In this article, Vennemann strongly implies that the verb and its object (he has not yet changed his terminology to VX) do not stand in an operator-operand relationship, thus making his theory incomplete and inadequate to account for the data. If verb and object do not display the operator-operand relationship, their serialization cannot be included in the theory and thus can have no bearing on the sequencing of other sentence elements. There is, therefore, no way of predicting why VO and OV types choose the operand + operator and operator + operand sequences respectively. In his first article, Vennemann had to be content with merely stating that:

"The right to left order [i.e. operator + operand] tends to be employed by SOV languages ... the left to right order [i.e. operand + operator] tends to be employed by SVO and VSO languages."

According to "Explanation in Syntax", languages could theoretically have the following four orders:
2.1 VO order: Operator + Operand sequence
II VO order: Operand + Operator sequence
III OV order: Operator + Operand sequence
IV OV order: Operand + Operator sequence

Orders II and III are the most frequently found in languages; orders I and IV are rarely, if ever, found.

Following subsequent development of Montague's theory by Bartsch, Vennemann claims that the uncertainty of the verb and object relationship was eliminated and these elements were classified as operand and operator respectively. Vennemann incorporates these new analyses into his later unpublished papers, on which this section is mainly based.

There are, however, arguments against accepting the operator-operand relationship of the verb and its complement. Firstly, Vennemann claims that the operator-operand categories correspond to the function-argument relationships of predicate logic. This seems to be true for Adverb + Verb, Adjective + Noun, Preposition + Noun relationships, but it does not appear to hold for the verb-object relationship. Compare:

\[
\begin{align*}
\text{\{Adjective\}\{\text{Noun}\}} & \Rightarrow \text{Operator + Operand} \\
\text{\{Adverb\}\{\text{Verb}\}} & \Rightarrow \text{Operator + Operand} \\
\text{\{Verb\}\{\text{Noun}\}} & \Rightarrow \text{Operand + Operator}
\end{align*}
\]
The operator-operand relationship which corresponds to the function-argument distinction is reversed in the case of the verb and its object, and only in this case. As noted above, the subject is not considered in an operator-operand relationship with the verb and yet the object, logically identically positioned with the subject, is so considered. This discrepancy in Vennemann’s argument would appear to cast doubt on his verb-object analysis.

A second argument against accepting the operand-operator classification for the verb and its object is that the restrictions placed on each other by these latter elements do not appear to be the same as the operator-operand restriction existing, for example, between adjective and noun. The true operator-operand relationship is that of quantifier-quantified:

2.\text{d} \quad \text{all cats purr}
\quad = (x_1) f (x)
\quad = \text{of cats (x), all cats (x_1) purr (f)}

2.\text{e} \quad \text{black cats purr}
\quad = (Bx) f (x)
\quad = \text{of cats (x), black cats (Bx) purr (f)}

The true operator-operand relationship exists between \((x_1)/(Bx)\) and \((x)\), for in both cases \((x_1)\) and \((Bx)\) specify or limit the number of \((x)\) which undergo \(f\). The range of \((x)\) is thus specified. Neither
(x₁) nor (Bx) have any power of quantification over f and therefore are not in any operator-operand relationship with it. In the same way, adverbs act as operators on their verbs because they quantify or limit the semantic field of the verb:

2.f talked softly
   = (Av) f (v)
   = of to talk (v), softly to talk (Av) is the case (f).

Even sentence modifiers stand in a quantifier-quantified relationship with the propositional nexus. For the sentence:

2.g Do black cats purr?

the logical expression would be:

(((Bx) f (x)) Q) g (Q)

= of questions (Q), the question do black cats purr
   (((Bx) f (x) Q) exists (g).

While the object of a verb may specify the recipient of the action of the verb, in no way does it limit the quality of the action. It therefore seems to stand in a different relationship with the verb than do the other verbal modifiers.

A third argument against accepting the verb-object = operand-operator relationship is found in VSX languages which, although the least frequent type, in their unmarked order place the subject between the verb and object. If the verb and object stand in an operand-operator relationship, the linear unity of the sequence will be broken by the intrusive subject, a disruption not otherwise
occurring in other operator-operand sequences. Subject interruption of the verb-object sequence raises the question as to whether the subject itself, if not undergoing fronting by topicalization, should be classified in a surface operator-operand sequence, in which case, the role of the object would become even more uncertain:

i) ? Verb + Subject + Object
   __________ op
   __________ od

ii) ? Verb + Subject + Object
    ?   ? (no function-argument relation)
   __________ od

Neither of the two analyses i) and ii) seem adequate, and both are arbitrarily ordered. Vennemann avoids discussion of operator-operand sequences in VSO languages.

Another example of arbitrary operator-operand ordering seems to exist in Vennemann's object and indirect object sequencing (VX = Object + Indirect Object; XV = Indirect Object + Object).

I have been informed by native speakers that the Japanese sentence 2.c is equally acceptable as either 2.c' or 2.c':

2.c (Susan-wa) imotoni kiirono fukuo agemashita.

2.c' (Susan-wa) kiirono fukuo imotoni agemashita.
I find equal acceptability for the English counterparts to 2.c and 2.c':

2.h I gave the yellow dress to my sister.
2.i I gave my sister the yellow dress.

The difference between the sentences in both languages appears to lie in the element of newest information, which will be put in stressed position (NP final in English, post-topic NP in Japanese) regardless of its status as object or indirect object. The semantic level of these elements is equal:

\[ \text{gave (I, yellow dress, my sister).} \]

Vennemann's arbitrary ordering of these NPs does not, therefore, seem justified. In light of this problem, together with that of the operator-operand sequencing of verb and object, I am not satisfied that these major elements of the kernel sentence (i.e. \( V + \text{NPs} \)) can be so easily assigned operator-operand status with respect to each other.

Despite its drawbacks, Vennemann's discussion of syntactic types has some advantage over Lehmann's in that not only does it account for the mirrored syntactic characteristics of VX and XV languages, but it also predicts the order in which two or more nominal modifiers or verbal qualifiers may appear, a prediction which Lehmann's theory was unable to make. Although Vennemann's
explanation of the characteristic syntactic sequences is not completely satisfactory, it does attempt to account for the data formally, for which reason it is superior to Lehmann's. Although Lehmann correctly observes that languages hesitate to break the verb-object bond, he neglects to indicate why this should be so and thus does not explain this intuitive statement. Neither theory accounts for some of the 'other characteristics' of typical VO and OV languages as noted by Greenberg and Lehmann, e.g. Réflexive Affix vs. Reflexive Pronoun; presence or absence of a Relative Pronoun; phonological characteristics, etc.

As noted above, Vennemann's theory contains discrepancies regarding the status of the major sentence elements in respect to one another, and, due to this uncertainty, I feel that language orders 2.I and 2.IV (see p.31) might be possible to generate.

I believe, and shall attempt to show in the following chapter, that the common occurrence of sequences 2.II and 2.III and the (to the best of my knowledge) non-occurrence of sequences 2.I and 2.IV in languages may in part or in whole be due to the operation of perceptual constraints which specify that, because of possible misinterpretation, verb initial and verb final languages must avoid operator + operand and operand + operator sequences
respectively for the ordering of their nominal modifiers and verbal qualifiers. The same perceptual constraints would also account for Lehmann's intuition regarding the close bond between verb and object.
CHAPTER III

PERCEPTUAL CONSTRAINTS ON GRAMMAR

AND THE

IMPLICATIONS FOR WORD ORDER TYPES

3.0 This chapter will attempt to justify the claim made at the end of Chapter II that perceptual constraints are responsible for the avoidance of the theoretically possible word order types I and IV. The first section of this chapter will give a brief background of relevant work in the field of perceptual constraints while the second section will try to show how these constraints operate to prevent the occurrence of orders I and IV.

3.1.0 Studies indicate that certain apparently grammatical structures may not in fact have developed from inherently grammatical rules, but may have arisen through the application of perceptual strategies which operate, at least partially, independently of grammatical rules. Bever (1970) states that between the ages of 2 and 6, a child appears to develop perceptual strategies which constrain his later acquisition of certain linguistic structures. The fact that, in adult grammar, some formally possible structures never appear suggests that the mature speaker may also have some perceptual limitations on his linguistic system.
A grammar which generates such acceptable sentences as 3.a-d will also generate the grammatical, but much less (if at all) acceptable sentences 3.e-h.

3.a The dog beaten by the old man escaped.
b The boy the girl loved died.
c Jane figured the problem out.
d Linguists women admire speak Illongo.
e The dog walked to the lamppost escaped.
f The man the girl the boy despised loved died.
g Jane figured that John wanted to take the cat out.
h Men women and children annoy stay bachelors.

Sentences such as 3.e-h, if they are understood at all, often result in severe misinterpretation. In sentence 3.e, "The dog walked to the lamppost" is initially misperceived as the main clause of the sentence with the result that the complete sentence cannot be grammatically interpreted. Blumenthal (1967) showed that sentences patterned like 3.f are frequently incorrectly paraphrased to a compound structure:

3.i The man, the girl, and the boy despised, loved, and died.

In sentence 3.g the particle out is often incorrectly assigned to the verb take rather than to the verb figure to which, in this instance, it belongs. Sentences of the type 3.h were initially misinterpreted as containing a compound subject + main verb:

3.j Men, women and children annoy ...
The remainder of the sentence again does not allow a grammatical processing of the utterance.

Several theories have been advanced to account for the fact that some linguistic structures generated by rules of the grammar are not within the competence of the mature speaker. Selected aspects of some major works will be briefly reviewed.

Although their terminology differs from one to the other, Bever (1968, 1970, etc.), Grosu (1972) and Kimball (1973) basically agree that there exist three main factors responsible for the misinterpretation of sentences such as 3.e-h:

i) erroneous segmentation of the utterance

ii) short term memory span

iii) perceptual complexity of intervening material in a discontinuous utterance.

3.1.1 According to Bever, the hearer of an utterance will attempt to segment as a unit any sequence whose constituents correspond to primary internal structure relations such as, for example, actor + action. Misinterpretation of sentence 3.e results from the hearer's erroneous segmentation of the initial phrase, which fits the basic actor + action + object sentence pattern.

i.e. The dog walked to the lamppost

actor action object.
Not only is the past participle walked misinterpreted as a finite verb, but, because the verbal form is not marked for subordination, the initial phrase is incorrectly assigned main clause status. In a series of tests, Savin (1965) concluded that a sentence whose initial verb was subordinate was perceptually more complex than one whose initial verb was part of the main clause. This, and other evidence, leads Bever to posit perceptual strategies which account for the erroneous interpretation of 3.e:

"Any Noun Verb Noun sequence within a potential internal unit in the surface structure corresponds to actor-action-object.

"The first Noun Verb (Noun) sequence is the main clause unless the verb is clearly marked for subordination."

Grosu's explanation for the misinterpretation of sentence 3.e (and the initial erroneous segmentation of 3.h) is a modification of Chapin, Smith & Anderson's proposal, which states:

"In imposing an initial structural description on a sentence, the subject attempts at each successive point to close off a constituent at the highest level possible."

Grosu's modification merely adds the clause:

"however, closure is suspended until some significant cue is encountered."
Instead of being interpreted at the lower embedded sentence level, the initial sequence of 3.e would thus be misinterpreted at the higher main clause level until the appearance of escaped, which would signal both the closure of the previous structure and, at the same time, the sentence's erroneous segmentation.

According to Kimball, immediately on reception of the first acoustic signal, the listener begins to parse an utterance in a 'top down' direction, i.e. he will begin his parsing structure with S, then work downward to NP, VP, etc., e.g.

3.k The cat likes fish.

1) The
   S
   /\ NP
   det

2) cat
   S
   /\ NP
   det N

3) likes
   S
   /\ NP VP
   det N V

4) fish
   S
   /\ NP VP
   det N V NP

Fig. 1
Once a phrase has been closed, i.e. when the final constituent of a node has been formed, Kimball theorizes it is then pushed down into a syntactic processing stage and cleared from the hearer's short term memory (it is the subsequent acoustic signal which presumably denotes closure of a preceding phrase as per Grosu's modification above). Once a phrase has been processed, Kimball argues that it is very costly in terms of perceptual complexity to have to retrieve it for reorganization of its constituents. Sentence 3.e would be parsed as follows:

1) The
   \[ S \]
   \[ NP \]
   \[ det \ (STM) \]

2) dog
   \[ S \]
   \[ NP \]
   \[ det \ N \ (STM) \]

3) walked
   \[ S \]
   \[ NP \]
   \[ VP \]
   \[ det \ N \ V \ (STM) \ (PU) \]

4) to
   \[ S \]
   \[ NP \]
   \[ VP \ (STM) \]
   \[ det \ N \ V \ PP \ (PU) \]
   \[ P \]
At this juncture the structure is grammatically acceptable.

Subsequent reception of the signal *escaped* initially removes VP to a processed unit, but then causes problems for the hearer, for there is no node which can be attached to the existing tree under which *escaped* can appear. The hearer is thus forced to retrieve all the processed units and hold them all in his short term memory while he completely restructures the utterance. Kimball's top down parsing method thus accounts for misinterpretation of the sentence.

Although they explain erroneous segmentation in varying terms, Bever, Grosu and Kimball all agree that the hearer will
analyse an utterance at the highest level (or most basic level) possible unless or until he is given an indication that such structuring is incorrect. This principle would seem to indicate that the natural order for English sentence structure would be Main Clause + Subordinate Clause. In that a subordinate clause modifies some aspect of the main clause, it is interesting to note that this ordering corresponds to the Specified + Specifier ordering generally posited for VO languages. It is noted that when perceptual confusion of the two clauses could arise (i.e. when the subordinate clause precedes the main clause), the English subordinate clause is always marked for status, either by a function word or by nominalization, e.g.

3.1 That John came late annoyed Susan.
   m *John came late annoyed Susan.
   n The croupier who worked at Monte Carlo cheats at cards.
   o *The croupier worked at Monte Carlo cheats at cards.
   p His singing upset the cat.
   q *He sings upset the cat.

Correct sentence parsing is thus indicated on reception of the first acoustic signal:}

```
That John
NP
Comp
S
NP
```
Fig. III
The croupier who

\[ \text{S} \]

\[ \text{NP} \]

\[ \text{det} \]

\[ \text{N} \]

\[ \text{rel} \]

Fig. IV

The English system of subordination thus allows for the most economical parsing process. I suspect, but do not know, that most VO languages show subordination markers in clause initial position and would thus fall into the same economical category. 36

By implication, OV languages would be less efficient than their VO counterparts, as overt subordination markers, mirroring the VO pattern, would be clause final:

3.re.g. Basque

[Gurasoak irakurri (züten + n \(\Rightarrow\) züten] libura

the parents read past rel. book

The book that the parents read

3.s Amharic

[bet - u - n (ya - w - sarra \(\Rightarrow\) ya - sarra - w] nīgus

house-the-acc pro.-the-made king

The king who made the house

In a sequence [S(O)V sub. marker] OV the listener could incorrectly parse the initial clause as the main clause until reception of the clause final subordinating marker. While a top down parsing process would have operated for the initial clause, a bottom up adjoining process would have to be used to form the higher S node:
The hearer would not, however, need to retrieve any processed units, as reanalysis of elements within the initial sentence would not be necessary. One could argue that the upward addition of the main clause is no more complex than the longer initial downward parsing of the VO counterparts. Indeed, if one traces the two paths of movement through the tree, the OV version seems more economical:

--- = retracing line

However, the two directions of node addition, the initial misperception of the subordinate clause as a main clause and the subsequent restructuring demanded seem to mark the OV system as the less preferable of the two. The need to overcome this problem may
account for Steele's and Greenberg's observation that in an OV language relative clauses "may precede the head noun" whereas in a VO language they "do not precede the head noun" (italics mine). The not uncommon post-nominal position of the relative clause in OV languages would ensure that a clause formed on the object NP is immediately identified as subordinate, due to the juxtaposition of three nominal elements:

\[
\begin{array}{llllll}
S & O & [S (O) V] & V \\
NP & NP & NP
\end{array}
\]

Because N + Relative constructions usually have a clause initial subordinating marker (see Lehmann's 'other criteria', p. 19), a post-nominal clause formed on the subject NP would also be marked immediately for its subordinate status and thus not misinterpreted as the main clause. Lehmann's criterion that Relative + N constructions usually contain no relative pronoun supports the claim that clause final subordination markers are perceptually inadequate. Some OV languages with Relative + N constructions avoid the late analysis of subordination by introducing a clause initial marker:

3. t³ g. Hindi

[Jo dhobii mere saath aayaa] vah dhobii DaakTar
which washerman my-with came that washerman doctor's
kaar bhaaaii hai
brother is

The washerman who came with me is the doctor's brother.
Other OV languages indicate subordination earlier in the clause by deletion of the equi-NP:

3.ue'q. **Japanese**

\[\text{Yamada-san-ga } \text{Ø-ka'itte iru} ] \text{sa'ru} \\
Yamada-Mr.-sbj. keep be + monkey 
\[\text{pres.}\]

The monkey which Mr. Yamada keeps

3.v **Turkish**

\[\text{Ø sokagin asagisinda oturan} ] \text{ihtiyar adam gecen} \\
street down lives old man last 
\[\text{hafta öldü} \]
week died

The old man who lives down the street died last week.

Other OV languages (e.g. Lakhota) use different case markers for equi-NPs in subordinate and main clauses, while still others (e.g. Tagalog) use topic and comment markers which may, in some way, mark out elements of lesser importance. Investigation into indirect markers of subordination may subsequently show that OV languages usually do indicate the subordinate status of an element before the clause final position is reached.

3.1.2 Although their various explanations are couched in differing terminologies, Bever, Grosu and Kimball generally agree that misinterpretation of sentence 3.g is due partially to the
discontinuity of sentence elements and partially to the complexity of the intervening material.

Bever notes that the more complex of two modifying elements will, if the choice exists, generally appear in second position, e.g. i) preferred to ii):

3.\(w\) i) John walked briskly in a more northerly direction.
   ii) John walked in a more northerly direction briskly.

3.\(x\) i) John walked north at a slightly brisker pace.
   ii) John walked at a slightly brisker pace north.

This ordering is presumably due to the fact that 3.\(w\) i) and 3.\(x\) i)
adds only one word to the immediate memory load, whereas 3.\(w\) ii) and 3.\(x\) ii) add a complete phrase. Bever considers that a sentence such as 3.g (here repeated for convenience):

3.g Jane figured [that John wanted to take the cat] out.

is misinterpreted because either the length or the complexity of the intervening sequence may overload the listener's immediate memory. He states that the perceptual complexity of such sentences is directly proportionate to the complexity of the intervening structure. In the case of 3.g specifically, misinterpretation can also occur because the listener expects the more complex element to end the sentence. As John wanted to take the cat out is grammatically acceptable, the listener will perceive out as part of the final complex phrase.
Grosu disagrees with Bever's statement that the distance between internally related elements is proportionately related to perceptual complexity, arguing that in discourse, even though pronouns may be widely separated from their antecedents, understanding can take place. His counter-argument does not, however, appear valid. Whereas Bever's theory concerns discontinuity within a node and the subsequent immediate memory load, Grosu's examples of pronoun and antecedent are based not on the distance within nodes, but on distance between sentences. It is claimed that distance between sentences does not tax the immediate memory in the same way as distance within nodes does in that the sentence as a complete node may be put into long term memory, whereas no part of a node may be stored until the whole is complete. For this reason, Grosu's counterexamples do not prove what they claim. Although Grosu argues that some discontinuous readings are possible, he agrees with Bever that in certain cases (e.g. particles) their acceptability becomes less if the intervening structure is complex, and further believes that where possible a continuous reading will be chosen over a discontinuous one. A discontinuous reading becomes unacceptable, however, if it can be reanalysed and misinterpreted as continuous. (as in sentence 3.g).

Thus in sentence 3.y, the particle down will be analysed as part of the fallen because of a possible continuous
reading, whereas in 3.z misinterpretation will not occur because arrived + down does not form a continuous reading.

3.y John pushed the little girl who had fallen down.
3.z John pushed the little girl who had arrived down.

Grosu thus argues that the listener will accept the simplest (i.e. continuous) interpretation of an utterance unless there is an indication of discontinuity. Continuous structures therefore appear more natural to language than do discontinuous ones.

Based on his argument that English speakers parse incoming utterances in a right branching top down tree structure, Kimball states that misinterpretation of sentence 3.g results from the fact that terminal symbols optimally associate to the lowest leftmost non-terminal node. This principle of Right Association in effect merely schematizes Grosu's principle of 'continuous reading'. Up to the word out, sentence 3.g would be parsed as follows, with the marked phrases being processed as completed units and removed from short term memory:

```
Fig. VII
```

```
S1
  NP
  Jane
  VP (PU)
  V
  figured Comp S2
  that NP
  John V
  wanted Comp S3
  to NP
  take NP VP
  the cat
```
The listener, operating on the Right Association principle, attempts to attach the particle \textit{out} to the lowest leftmost non-terminal node, i.e. VP of $S_3$. This he successfully accomplishes:

![Diagram of VP attachment](attachment.png)

Fig. VIII

but, as a result, misinterprets the intended structure:

![Diagram of attachment failure](failure.png)

Fig. IX

In sentence 3.z, attachment of the particle \textit{down} to the lowest leftmost non-terminal node could not be successfully accomplished. The listener would therefore be forced to reanalyse the complete utterance, which task would demand retrieval of all the previously
processed units. According to Kimball, such retrieval and reorganization is very costly in terms of perceptual complexity. Structures such as Fig. IX violate the otherwise balanced top downward right branching construction of their sentences, this very imbalance accounting for the perceptual complexity of the utterances.

3.1.3 The fact that single centre embedded clauses (3.b) are acceptable, but that multiple embedded clauses (3.f) are frequently misinterpreted, has long provided food for linguistic thought. While double embedded structures may merely be special cases of discontinuity, other explanations for their misinterpretation have been put forward.

To prevent occurrence of double embedded structures, Chomsky & Miller (1965) suggest a rule stating that "a perceptual principle may not interrupt its own operation more than once." Thus sentence 3.f, here repeated for convenience:

3.f [The man [the girl [the boy despised] loved] died].

\[N_1 \quad N_2 \quad N_3 \quad V_3 \quad V_2 \quad V_1\]

is ungrammatical because perceptual assignment of \(N_1\) to \(V_1\) is interrupted by the same relationship of \(N_2\) to \(V_2\), which is, in turn, interrupted by the same relationship of \(N_3\) to \(V_3\). The rule does not, however, explain why one interruption is acceptable but two or more are not.
Bever accounts for the complexity of multiple embedded sentences by a perceptual rule of double functioning. In sentence 3.f, he points out that \( N_2 \text{ the girl } \) performs a double function in relation to the other nouns. \( N_2 \text{ the girl } \) acts as subject in relation to the preceding \( N_1 \text{ the man } \), i.e. the girl loved the man, but acts as object in relation to \( N_3 \text{ the boy } \), i.e. the boy despised the girl. Bever argues that misinterpretation arises because an element is perceived as having two separate functions on the same classificatory dimension. Note that Bever implicitly accepts Chomsky's condition on the similarity of the perceptual principle involved. Other examples of double functioning which Bever offers are, unfortunately, much less convincing than the subject/object example above. As a single embedded sentence could not contain a double functioning element, it appears that Bever's theory accounts for the misinterpretation of multiple embedded sentences.

Grosu, however, does not feel that Bever's double function principle adequately explains the complexity of multiple centre embeddings. He points out that some such structures are acceptable even though they contain a double function element, e.g.

3.A The mountain which the girl the bear chased climbed towered to a height of 15,000 feet.

3.B The surgeon who the girl that the hoodlum raped consulted had won high honours in medical school.
Multiple centre embeddings appear to be acceptable when semantic
correlations restrain potential grammatical units. Rejecting
Bever's double function explanation, Grosu favours a numerical
constraint on multiple centre embeddings, a constraint which
would be tempered according to the restrictions imposed by the
semantic correlations. This numerical constraint could easily
be linked to Grosu's discontinuity argument.

Kimball's explanation for misinterpretation of centre
embedded structures is again associated with the sentence parsing
tree which the listener automatically constructs on reception of
the acoustic signal. Up to the end of $N_3$, sentence 3.f would be parsed:

```
S
  NP
    NP
      S
        NP
          the man rel. NP
            NP
              S
                NP
                  the girl rel NP
                    NP
                      the boy
```

Fig. X
At this point the constituents of three different sentences are being held in short term memory, as no sentence can be considered a processed unit until the rightmost of its immediate constituents has been introduced. Note that, although a multiple right branching structure contains more than two sentences, these sentences can be considered as processed units because the rightmost daughter of each $S'$ has been introduced, e.g.

3.:C) I saw the cat that ate the fish that my aunt cooked.

![Diagram](image)

Fig. XI

To support his claim that it is the unclosed sentence constituent which overloads the capacity of the short term memory, Kimball points out that nominalizations of multiple centre embedded structures are easier to comprehend than are their full sentence counterparts, because the former do not contain unclosed sentences, e.g.
3.D [That [that [that Joe left bothered Susan] surprised Max] annoyed me.]

3.E Joe's leaving bothering Susan's surprising Max annoyed me.

3.D' =

Fig. XII

3.E' =

Fig. XIII
(I must, however, admit that to me neither sentence seems very comprehensible and that 3.E is only a very slight improvement over 3.D). Kimball therefore believes that perceptual complexity in multiple embeddings is proportionate to the number of sentences being held in short term memory at a given time, and his perceptual restriction on multiple embeddings states that the constituents of no more than two sentences can be parsed at the same time. This principle is, however, inadequate in that it does not attempt to explain why two unclosed sentences form the perceptual boundary, nor does it account for the fact that, due to semantic correlation, three stage centre embeddings are in some instances relatively easy to understand.

3.1.4 Although explanations for the misinterpretation of certain English sentences may differ somewhat and may not always be adequate, there appears to be enough evidence to show that perceptual strategies do play a part in the formation of acceptable sentences. As mentioned above, the consensus of opinion arising from the work of Bever, Grosu and Kimball is that perceptual confusion occurs because of three main causes: erroneous segmentation of the utterance, discontinuity of single level constituents, and perceptual or short term memory limitations on multiple centre embedded structures.
The perceptual strategies considered in 3.1 above have all been concerned with English. If, as seems probable, perceptual constraints operate in one language, I suggest that other languages may also be subject to such restrictions. While the perceptual strategies themselves will differ from language to language, I suggest that the three major causes of perceptual misinterpretation as noted in 3.1.4 may be similar for all languages. The need to avoid these causes may influence languages in their choice of an overall syntactic pattern and thus explain the preference for the characteristic word order types noted in Chapter II.

As noted in Chapter II, Vennemann's Principle of Natural Serialization and the resulting unidirectional operator-operand surface sequencing theoretically allows for four word order types, here repeated for convenience:

I VO order: Operator + Operand sequence
II VO order: Operand + Operator sequence
III OOV order: Operator + Operand sequence
IV OV order: Operand + Operator sequence

Orders II and III are frequently found in differing language families; orders I and IV are, to the best of my knowledge, never found. The presence of various nominal modifiers and verbal qualifiers could theoretically provide the following sequences for the four orders:
3.2.1 In the above surface trees, the head elements of the verb and noun phrase nodes are the main verb and the noun respectively, without which the modifying elements would not be present.

The interrelationship between these two basic sentence elements provides the utterance with meaning. In II and III the close positioning of verb and object makes their interrelationship
immediately apparent. In order I, where several elements intervene between the two head elements, the verb and all its qualifiers must be retained in short term memory until the last sentence element, the noun object, is reached in order for the interrelationship to be correctly perceived. The same argument with reverse orderings applies to IV. The more elements separating the verb and its object, the more the short term memory is taxed, e.g.

\[
V + \text{Tense} + \text{Caus} + \text{Neg} + Q + \text{Art} + \text{Adj} \cdot [+ V + \text{Tense} + \text{Art} + \text{Adj} + \text{N}] + N_{\text{obj}}
\]

In II basic element interrelationship is not considered until the verb is encountered; as the next element is the noun object, interrelationship is immediately apparent and all preceding elements can be removed from short term memory. The same argument with reverse orderings applies to III. This would add a modification to Kimball's theory stating:

Not until the head element of the following major sentence constituent has been processed can the preceding node be removed from short term memory.

Separation of the verb and its object by a series of modifiers is another type of discontinuity which, as noted by Bever, etc., is one of the major causes of misinterpretation. Because of the enhanced perceptual complexity caused by discontinuity of head elements of
major constituents, it seems that languages evolve a strategy which states:

The head elements of constituents immediately dominated by the same node should avoid separation by non-head elements of these constituents.

3.2.2 As noted above, misinterpretation of sentences also resulted from erroneous segmentation of constituents. It seems logical to assume that, where they have a choice, languages will choose a word order which is less liable to erroneous segmentation. Potential word order types I and IV juxtapose verbal and nominal modifiers. In some languages, identical markers may modify both verb and noun:

3. Eg. Hindi

Kee os munde ne kute nu maria
Q the boy dog kick+past

Did the boy kick the dog?

3.G (Kee os =>) Kis munde ne kute nu maria
NP
Q-the boy dog kick+past

Which boy kicked the dog?

If a language has some identical nominal and verbal modifiers and also juxtaposes nominal and verbal modifiers as in orders I and IV, erroneous segmentation could easily occur: In order IV, for example, the same string can have two interpretations:
According to Kimball and Grosu, the question marker in the above example would be segmented to the noun phrase, as this constituent is not closed off until an overt verb phrase marker is encountered. In such a language, unless an overt marker were introduced, there would be no way of forming a sentence with the question attached to the verb, i.e. a yes/no question. The same argument can be put forward for the Negative constituent, which in the surface structure could theoretically modify either the noun phrase or the verb phrase. Such misinterpretation results from erroneous segmentation, albeit of a different type from that considered in 3.1.1 above. Languages which order sentential and nominal modifiers on the outer side of the verb-object complex would never provide the environment for such ambiguity to arise. Thus a second reason for languages to choose the characteristic orders of II and III may be the desire to avoid possible erroneous segmentation which could arise from orders I and IV.

3.2.3 The desire not to encumber the capacity of the speaker's perceptual apparatus unnecessarily may provide another reason for the choice of orders II and III over I and IV respectively. In order II (the reverse orders apply to III), the division between the verb phrase and the noun phrase is marked by two possible sequences:
The speaker's perceptual memory need, therefore, store only two signals of major constituent boundaries. In order I (the reverse orders apply to IV) the boundary between the verb phrase and the noun phrase can be marked by several sequences, i.e. any verbal qualifier or the verb itself plus any nominal modifier or the noun itself. The possible sequences include:

\[ X \left[ \begin{array}{c} V \\ \text{Adverb} \end{array} \right] + \left[ \begin{array}{c} N \\ Y \end{array} \right] \]

This unfinished list of modifiers and qualifiers alone provides fifty-six possible sequences which the speaker's perceptual memory must retain in order to identify correctly the boundaries between major constituents. As noted above, the capacity of the short term memory appears to play a part in determining the occurrence and non-occurrence of certain grammatical constructions. I would suggest that what I call the speaker's basic perceptual memory also plays a part in determining which structures shall or shall not appear. Because of the much greater burden on perceptual memory demanded by the division signalling devices of orders I and IV, I feel that orders II and III are chosen as the optimal syntactic systems.
3.2.4 It can also be argued that orders II and III are chosen over I and IV because they produce perceptually more complex structures than do the former. In orders I and IV relative clauses formed on the noun object invariably produce centre embedded clauses:

\[
\begin{align*}
\text{I} & \quad [V][[V [VO] O] O] = V + V + V + O + O + O \\
\text{IV} & \quad [O [O [OV] V]] [V] = O + O + O + V + V + V
\end{align*}
\]

The II and III counterparts, on the other hand, produce right and left branching structures respectively:

\[
\begin{align*}
\text{II} & \quad [V] [O [VO [VO]]] = V + O + V + O + V + O \\
\text{III} & \quad [[[OV] OV] O] [V] = O + V + O + V + O + V
\end{align*}
\]

As noted above, the perceptual complexity and resulting misinterpretation of centre embedded structures has been variously accounted for by Chomsky, Bever, Grosu and Kimball. Whether such structures cause comprehension difficulties because of discontinuity, double-functioning or because of the number of incomplete sentences held in short term memory is immaterial to this argument. The fact remains that such structures are misinterpreted and incorrectly analysed as compound constructions. If a language has the choice between an order which produces centre embedded relative clauses and one which does not, it seems logical that, on ease of perception grounds, the non-centre embedding order will be selected. Thus orders II and III with perceptually less complex relative clause ordering will be chosen over I and IV respectively.
3.3 The four reasons given above for the preferred orders of II and III thus complete Vennemann's and Lehmann's explanations of word order types. Lehmann's statement that languages hesitate to separate verb and object is merely an observation of the data. Vennemann's statement that VX languages tend to use operand + operator sequencing, while XV languages tend to use operator + operand order is also merely an observation of the data. Because of the perceptual problems considered above, the reasons why languages hesitate to separate their major elements and why they choose certain unidirectional sequencings may now be a little clearer.
4.0 Languages are in a constant state of flux, with changes occurring in all their components through time. From the typological viewpoint, this often means that languages will move from one type to another. The various stages of development which languages pass through in changing type can be ascertained by comparing earlier language forms to later ones. Why and how specific languages change is, however, lost to history, and all attempts to account for change must be speculative to a greater or lesser degree. Various theories of evidence of earlier language stages and of language change have been put forward over the past fifty years.

4.1 Although changes in the syntactic component of language have long been noted, Edward Sapir was the first linguist to suggest that some of these might be related as part of an overall systematic change operating within a specific language. Sapir claims that although linguistic changes often appear as random phenomena, the general linguistic drift (Sapir's term)
of a language retains only those changes which seem to be part of an overall pattern and which seem to be acting in concert to alter the language in a single direction toward a new or modified type. Although aware of drift, Sapir is unsure of the basic motivations which control it, commenting:

"linguistic features that are easily thinkable apart from each other, that seem to have no necessary connection in theory, have nevertheless a tendency to cluster or follow together in the wake of some deep controlling impulse that dominates their drift ... we are at present very far from being able to define just what these fundamental form intuitions are."  

To some degree, Sapir can identify this drift in terms of his typological system. Working within his tripartite classification (see 1.6) and using old and modern stages of specific languages for his data, Sapir makes some significant findings regarding drift. Of the three dimensions of classification, the degree of synthesis (analytic - polysynthetic) seems to be most susceptible to change; far less readily changed are modifying techniques (isolating - agglutinating - symbolic); conceptual structures appear most resistant to change and, even when undergoing modification, seem to be unidirectionally restricted, moving from the more complex to the less complex forms (i.e. from Complex Pure Relational to Simple Pure Relational or from Complex Mixed Relational to Simple Mixed Relational). Because he feels it reasonable to
suppose that the less important language characteristics are most vulnerable to change, Sapir concludes that the conceptual level, as it is preserved intact longest, is the most fundamental of his three dimensions of language.

One aspect of Sapir's conclusions is, however, disturbing. If, in the conceptual classification, languages move unidirectionally toward the invariable one concept word, one must assume that any language undergoing this drift exhibits conceptually more complex words in its earlier stages, and that the older the stage, the more complex the word. To conceive of languages originating in a conceptually complex form and becoming successively more simplex through time is hardly convincing. Such an assumption would suppose that a large proportion of morphemes operating in the language originated in the bound stage, since to posit them arising from autonomous roots (which later became bound) would reverse the unidirectional movement which Sapir claims to exist. Talmy Givón (see 4.2 below), working with Niger Congo languages, has recently shown that many presently bound morphemes historically originated as free forms, which he adduces as support for the theory long ago advocated by Bopp for Indo-European that all bound affixes arise from the compounding of free forms. This would suggest that a language depending heavily
on derivational affixes has moved in a conceptually more complex
direction, i.e. from Simple\{Pure\}_{Mixed} Relational to Complex\{Pure\}_{Mixed} Relational, thus throwing doubt on Sapir's claim of unidirectionality.

The claim of unidirectionality is further contradicted
in the Finno-Ugric, languages in which, Hakulinen (1961) points out,
the number of cases has increased rather than decreased - a development opposite to that of Indo-European. Whereas only five cases are postulated for Proto-Finno-Ugric, the modern daughter languages show a range of from six to fourteen. Hakulinen concludes:

"There is therefore no support in Finnish and its related languages for the theory that the development of all languages generally tends towards greater analysis in structure."

Poppe (1965) cites the Altaic languages as examples of the movement from analytic to synthetic. It appears then that both language groups show the development of a morphology from freer syntactic constructions, a development in direct opposition to Sapir's claim of unidirectionality.

4.2 Talmy Givón's work on syntactic change is basically concerned with how a synchronic morphological description of a language can offer evidence of earlier syntactic orders. Implicit in his writing is his acceptance of Sapir's affixing classifications and Greenberg/Lehmann's word order typology. As noted above, Givón
claims that affixal morphemes develop from once free forms which have since become bound. The syntactic rules which originally controlled the ordering of the free morphemes become petrified as lexicalization rules when the free morphemes become fused with another stem - i.e. become derivational affixes. Earlier syntactic stages of the language may thus be reconstructed on the evidence of the bound morphemes. Givón, paraphrasing Bopp and Brugmann, claims: "Today's morphology is yesterday's syntax." In time, he speculates, the bound morphemes become so fused with the word root that they eventually lose their derivational status and are analysed as part of the semantic domain of the root word. Givón's theory of the morphological cyclical development of language types (which subsumes the analytic drift noted by Sapir) can be summarized as follows:

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Isolating - every morpheme free</th>
<th>Syntactic rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 2</td>
<td>Agglutinative - some bound morphemes functioning as derivational affixes or pre/postpositions</td>
<td>Old syntactic rules become lexical rules. New syntactic rules</td>
</tr>
<tr>
<td>Stage 3</td>
<td>Inflectional - bound morphemes fused with stem, so original free form no longer recognizable</td>
<td>Ditto</td>
</tr>
<tr>
<td>Stage 4</td>
<td>Analytic and isolating - if bound morphemes do not become unstressed and drop, they become fused with stem and lose derivational status, so analysed as part of the semantic structure of the stem. (= Stage 1)</td>
<td>Syntactic rules</td>
</tr>
</tbody>
</table>
A similar linguistic cycle, postulated by many scholars of Greek, Latin, and Sanskrit, was questioned by Jespersen (1922) because, he claimed, the complete cycle was never evidenced within one specific language. However, Hodge (1970) has recently argued that the complete cycle can be seen in the development of Egyptian and, to a lesser extent, in Chinese. Hodge thus considers it a reasonable hypothesis that the above linguistic cycle is universal. Commenting on the various morphological typologies put forward over the years (see Chapter I), Hodge remarks that these may merely reflect "the description of the stage of development vis à vis the cycle" and not be indicative of "the basis for more fundamental dichotomies."44

From the morphological evidence for earlier language orders, Givón shows that syntactic ordering does change diachronically, although he offers no explanation of the internal or external causes triggering such change. Unlike Vennemann, who works mostly on a broad theoretical level (see 4.4, below), Givón presents data from several languages to support his less sweeping claims.

Within the verb phrase, Givon claims that verb-deriving affixes, tense and modality markers arise from main verbs which once dominated sentential complements. The structure then becomes a serialized verb construction by predicate raising;
Gwari

4.a Wo lo* tnu-tnu' zo lo
he work working finish go
He is finishing work
*lo = object pronoun formed from verb

Fig. XV

The Gwari example indicates that elements such as aspect may have originated from once full verbs (cf. English I will go,
I'm going to work harder), and may, in a synchronic morphology,
indicate earlier syntactic ordering. An example of a derivative construction is found in the French causative suffix, ir:

4.b blanch-ir
white-make

Fig. XVI
The modern \( V + \text{Comp} \) order of the French verb phrase would not generate the correct verb form after predicate raising. If the verb form arose from a \( \text{Comp} + \text{Verb} \) structure, however, predicate raising would produce the desired result:

\[
\text{VP} \quad \Rightarrow \quad \text{VP}
\]

\[
\begin{array}{c}
\text{NP} \\
S \\
V \\
\text{Adj} \\
\text{blanche}
\end{array}
\quad \text{ir}
\]

\[
\begin{array}{c}
\text{NP} \\
\text{V} \\
\text{blanchir}
\end{array}
\]

Fig. XVII

The causative suffix indicates an earlier \( \text{Comp} + \text{Verb} \) sequence for the verb phrase. For French, the \( \text{Comp} + \text{Verb} \) sequence is attested in Classical Latin. In an SVO language, a corresponding derivational prefix is unlikely to occur because of the intervention of the subject NP of the lower sentence between the two verbs (see Fig. XVI above). In SVO languages, therefore, a free morpheme is usually found. In French, the later rise of the periphrastic tense system from a previously purely suffixed inflectional system is a result of the change from a \( \text{Comp} + \text{Verb} \) to a \( \text{Verb} + \text{Comp} \) syntactic order:
Comp + Verb stage - passe simple

4.c  je chant - ai

I sing + past = I sang

NP  VP
  je NP  V
  S  ai
  NP  VP
    NP  V
      chant

Fig. XVIII

Verb + Comp stage - passé composé

4.d  j'ai chanté

I past  sing  = I sang

NP  VP
  je V  NP
  ai  S
  (habeo)  VP
    NP  V
      chanté
      (cantato)

Fig. XIX
The verb phrase may furnish further evidence of previous syntactic orders through the positioning of independent pronominal objects and of pronominal subject and object clitics to the verb. The older Latin OV order is still reflected in the positioning of Modern French object pronouns:

4.e Jean la lui a donné.

\[ S \quad O \quad IO \quad V \]

= John gave it to him.

Pleonastic subject and object clitic pronouns will appear on the same side of the verb as the full noun forms, claims Givón. As these once independent pronouns become bound to the verb, they freeze in the old syntactic order, thus resisting any change which the independent forms may later make. Amharic, argued by Bach to have originated from a VO order, still reflects this earlier syntax in the subject and object clitics present in its modern SOV order:

4.f Amharic

[yə sábbär-ku-t] wämbär

[that broke-I-it] chair

= the chair that I broke.

In Stage 2 of the proposed language cycle (see p. 72), the subject clitic may retain enough independence to later follow the new syntactic position of its full noun counterpart. If, however, the
clitic enters Stage 3 and loses its separate identity, it will become an inflection incapable of separation from the verb stem. Givón thus hypothesizes that subject-verb number agreement inflections also offer evidence of earlier syntactic orders, a subject + predicate language having preverbal subject agreement inflections, and a verb + subject order having postverbal subject agreement inflections. This claim would appear to have some support in the Verb + Pronoun origin which has been suggested at various times for the number agreement inflected Indo-European verb forms.

The ordering of noun phrase elements may also indicate previous syntactic stages of a language. Givón, as do others before him, believes that genitival and pre/postpositional constructions originally arise from Noun + Noun structures. In the case of pre/postpositions, the head noun of the phrase has become so reduced semantically that it is no longer considered a full free lexical unit, but becomes bound to an accompanying noun. OV languages, where nominal modifiers precede their head noun, will thus produce postpositions, while VO languages will produce prepositions:

\[
\text{OV} \quad \text{NP} \quad \Rightarrow \quad \text{PP} \quad \text{Postposition}
\]

(modifier) (head)

Fig. XX
In many cases, argues Givón, the original NP producing the pre-/postposition may have itself been a genitive construction. He cites the rise of the later English prepositional phrases, where he feels a structural reanalysis has taken place:

4.g on top of the house

\[
\text{on [the top [of the house]]} \\
\text{(head) (gen.)}
\]

\[
\Rightarrow \text{[on the top of [the house]]}
\]

\[
\Rightarrow \text{[on top of] [the house]} \\
\text{(prep.) (head)}
\]

The genitival origin of this particular preposition is supported by the still existing forms housetop, rooftop, tabletop, etc. Other prepositional origins are not so transparent. This phrasal reanalysis implies that full noun phrase elements such as at the bottom of the heap should also be analysed as phrasal prepositions + NP:

4.h [at the bottom of] [the heap]

\[
\text{(prep.) (head)}
\]

since a different analysis for the two expressions would appear contrary to intuition. Taking the argument further, the question then arises as to whether similar expressions should also be analysed phrasally, for example:
4.i at the beginning of the week
j in the middle of the garden
k by the side of the chair
l on the first of March

There seems little evidence to indicate phrasal analyses for these full NP expressions. While Givon may be correct in his phrasal analysis of on top of, a more explicit account of where reanalysis takes place in the continuum of [NP][NP] \(\rightarrow\) [Prep][NP] would perhaps clarify his argument. The synchronic analysis, however, does not detract from the older ordering suggested by prepositions and postpositions. Thus the presence of postpositions or Genitive + Noun constructions in a VO language would indicate an OV syntactic order at some earlier stage. The converse would apply to prepositions and Noun + Genitive constructions appearing in an OV language.

Both Lehmann and Givon claim that compound words indicate earlier syntactic orderings. Object + Verb compounds in English, a VO language, are seen to reflect an older OV order, although the root words themselves need not necessarily have been in the language during the older period:

4.m dogcatcher \(\iff\) X dogs catches = X catches dogs
draft evasion \(\iff\) X the draft evades = X evades the draft.
Although neither Lehmann nor Givón presents data from non-Germanic languages to support this hypothesis, the fact that French and Spanish, more consistent VO languages, compound in the same order as their basic sentence suggests that the claim may be valid:

<table>
<thead>
<tr>
<th>French</th>
<th>Spanish</th>
</tr>
</thead>
<tbody>
<tr>
<td>la porte-monnaie</td>
<td>el mondadientes</td>
</tr>
<tr>
<td>carry money</td>
<td>pick teeth</td>
</tr>
<tr>
<td>= purse</td>
<td>= toothpick</td>
</tr>
<tr>
<td>le tire-bouchon</td>
<td>el metomentodo</td>
</tr>
<tr>
<td>pull cork</td>
<td>put me in all</td>
</tr>
<tr>
<td>= corkscrew</td>
<td>= busybody</td>
</tr>
<tr>
<td>l'essuie-mains</td>
<td>el sábelotodo</td>
</tr>
<tr>
<td>wipe hands</td>
<td>know it all</td>
</tr>
<tr>
<td>= handtowel</td>
<td>= know-it-all</td>
</tr>
</tbody>
</table>

As English is a VO language, one would expect it to be moving toward this VO compounding order. Although it does have some VO compounds (e.g. scarecrow, cutthroat), they are in a minority, and this order does not yet appear to be productive. In the movement of a language from one consistent type to another, therefore, it would appear that the compounding order is one of the last elements to move.
Although Givón adds only subject agreement inflection and pronominal clitic order to Lehmann's list of criteria for determining language type, his explanation as to how the characteristic structures arise supplements Lehmann's work.

4.3.0 In addition to providing syntactic insights into language types on a synchronic level, Lehmann's structural principle of language can also be used to provide tentative reconstruction of older language stages and to predict future developments. Believing that languages prefer the balanced syntactic systems of VO and OV types, Lehmann sees word order change as correlating with the frequently observed tendency of languages to preserve these balanced states. The impetus for change, which Lehmann considers to be externally motivated, comes when the fundamental sentence element, the verb, reverses its linear sequence with its object:

\[ X + V + O + Y \]

i.e. \[ 1 \ 2 \ 3 \ 4 \Rightarrow \]

\[ 1 \ 3 \ 2 \ 4 \]

or \[ X + O + V + Y \]

\[ 1 \ 2 \ 3 \ 4 \Rightarrow \]

\[ 3 \ 1 \ 2 \ \frac{4}{3} \ 4 \]

Since languages appear to have low toleration of imbalanced systems, subsequent movement of the minor sentence elements will occur to conform to the new base pattern set by the verb and its
object. However, Lehmann makes no predictions as to the sequence of the later reorderings -- i.e. whether verbal qualifiers move before nominal modifiers, or vice versa. He thus believes that evidence of older ordering stages can be obtained from an imbalanced syntactic system. For example, a language with the ordering:

\[ Q + V + \text{Art} + \text{Adj} + N_{\text{obj}} \]

would be classified as an old OV language which has undergone verb movement and is presently in the process of reordering minor elements to conform to the new system, the present verb-object sequence always indicating the direction in which the language is moving. In this hypothetical example, the verbal qualifier has already moved, but the nominal modifiers, not yet having undergone change, still represent the old pattern.

Lehmann is, however, not explicit as to the cause of the original syntactic movement -- i.e. the verb-object reversal. If a language originally had an optimally balanced syntactic pattern, then an internal impetus is unlikely (but see 4.5 below). Under Lehmann's system, the initial impetus for change would have to be external, resulting from contact with and assimilation to the ordering systems of other language types. Indeed, in his articles, Lehmann often suggests specific external contacts to account for various language changes.
4.3.1 From the data presented in his various articles, Lehmann's claim that the basic verb-object sequence is first to undergo change is not well documented and is thus open to discussion. One could argue, as does Sapir (4.1 above) that the most basic elements in language are, in fact, the most stable and therefore the last to undergo change, in which case, the verb and object would be the last elements to move. It is possible that external influences might first cause change in the more vulnerable minor sequences before affecting the major sentence elements. Indeed, specific language data does belie Lehmann's claim that word order change always originates with verb movement. Persian has the verb in clause final position, yet shows all other classificatory criteria in a VO ordering. According to Lehmann, this would indicate that Persian was recently a VO language whose verb has now moved into clause final position. Following the new OV pattern, the remaining VO criteria in the noun and verb phrases would shortly be expected to change to an OV order. It is, however, commonly accepted that earlier stages of Persian (i.e. Proto-Indo-European) showed the verb in clause final position and demonstrated OV characteristics in the noun phrase. The VO characteristics of the Persian noun phrase cannot, therefore, be explained under Lehmann's theory, as it appears they changed order independent of the verb-object pattern.
(Semitic, probably Arabic, has been cited as the most likely source of influence). Persian thus indicates that minor sentence elements may undergo change before the verb-object sequence.

Evidence of older language stages based on discrepancies between the verb-object and noun phrase orderings may not, therefore, be so readily analysed. The Persian example appears to support Sapir's claim that the more basic elements of language are the most resistant to and thus the last affected by change.

4.4 In contrast to Sapir's and Lehmann's rather theoretical and sparsely documented approach to language change, Sandra Thompson and Charles Li use very specific data to substantiate their claims regarding diachronic language development. Working mainly with Chinese, they present good arguments to show by what paths Mandarin Chinese changed its word order type.49

Archaic Chinese is an SVO language with consistent OV qualities in the noun phrase and a preverbal object pronoun. This inconsistent patterning leads Li and Thompson to speculate that pre-Archaic Chinese was an SOV language which later changed to a VO order in the verb phrase. Archaic Chinese to Modern Chinese is evidencing a reverse movement toward an SOV type, giving an overall movement as follows:
Li and Thompson claim there are several paths by which word order may change and produce evidence to show that some modern Chinese case markers and prepositions are derived from once full verbs, which process results in a new word order sequence:

i) $S + V + O \ [+V] \quad \Rightarrow \quad S + \text{case marker} + O + V$

ii) $S + V + O \ [+V] \quad \Rightarrow \quad S + \text{PP} \ (==\text{Prep} + O) + V$

In i) and ii) an SOV order is thus effected through reduction of the verb to a bound morpheme status.

Whereas Lehmann and Vennemann assume that word order change results from a reorganization of major sentence constituents within the simple sentence, Li and Thompson claim it results not from reordering within the simple sentence but from reanalysis of sentence constituents from primary to secondary status within the complex sentence. Further support for word order change originating in complex sentences comes from Givón and Hyman's work on Bantu, Mande and Kwa, in which syntactic change appears to have occurred through verb collapsing in serialized verb constructions:

iii) $S \ [+V] + O + V \quad \Rightarrow \quad S + V + O + \text{case marker}$
It should, however, be noted that word order change resulting from reanalysis of elements as primary or secondary does not occur only in complex sentences. The development of the English, French and German post-verbal negatives resulted from reanalysis of elements within the simple sentence:

4.o **Old English**

\[\text{Nu ic ne eom wie} \text{rpe } \text{bet ic } \text{bêo } \text{þinasunu nemned ...} \]

<table>
<thead>
<tr>
<th>S</th>
<th>Neg.</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>primary</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.p **Middle English**

They ne spared not her throte.

<table>
<thead>
<tr>
<th>S</th>
<th>Neg.</th>
<th>V</th>
<th>Neg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.q **Modern English**

The trees are not in blossom yet.

<table>
<thead>
<tr>
<th>S</th>
<th>V</th>
<th>Neg.</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>primary</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What appears in the surface sentence to represent a reordering of elements in fact results from a gradual semantic reanalysis of two related constituents, one of which subsequently reduces or drops.

As a result of their observations, Li and Thompson argue that the new word order resulting from specific reanalyses will probably exist side by side with the original order, thus making word order change a gradual and pervasive process rather
than an "abrupt and traumatic one" which, they claim, a direct reordering of major constituents within the simple sentence would be. Li and Thompson criticize Vennemann's language cycle schema for, among other things, not providing for the direct SVO ⇒ SOV change which their evidence shows Chinese to have undergone (Vennemann posits an SVO ⇒ Free Word Order ⇒ SOV cycle in "Explanation in Syntax." This cycle was later revised to incorporate an SVO ⇒ SOV move — see 4.5 below).

A noteworthy aspect of Li and Thompson's data is that they indicate prepositions and case markers may arise from once full verbs. Whereas Vennemann and Givón see prepositions and case markers originating from the head noun of an NP and, on this basis, reconstruct an earlier syntactic order, Li and Thompson's verbal preposition and case marker origin will allow a different reconstruction:

**Preposition derived from head noun**

Preposition + Noun \(\iff\) Noun + Noun

(\text{head}) (\text{modifier})

Reconstruct VO order

**Preposition derived from verb**

Preposition + Noun \(\iff\) \[
\begin{align*}
S & + V & + O & [+V] \\
\text{Reconstruct VO order} \\
S & [+V] & + O & + V \\
\text{Reconstruct OV order}
\end{align*}
\]
Case marker derived from head noun

\[ \text{Noun + Case Marker} \iff \text{Noun} + \text{Noun} \]

(modifier) (head)

Reconstruct OV order

Case marker derived from verb

\[ \text{Noun + Case Marker} \iff \begin{cases} S + V + O [+V] \\ \text{Reconstruct VO order} \\ S [+V] + O + V \\ \text{Reconstruct OV order} \end{cases} \]

It thus appears that, unless prepositional and case marker morphemes clearly indicate whether they are of nominal or verbal origin, they may be much less indicative of earlier syntactic orders than has previously been suggested.

4.5.0 Returning to the theoretical level, Vennemann claims that his principle of natural constituent structure and unidirectional serialization on which his typology is based can predict future syntactic developments, in that a language not having a unidirectional operator-operand sequence will move toward a consistent sequence, probably that exemplified by the verb and its complement. Presumably, Vennemann's typological explanation would also posit older language stages. Agreeing with Lehmann that the verb is the most fundamental sentence element, Vennemann states that verb shift is the basic cause of all syntactic type changes. If the verb moves to form a new operator-operand
sequence with its most important operator, the complement, the prediction is that all other operator-operand sequences will follow suit to conform to the principle of natural serialization. Thus a language showing inconsistent serialization is in a transitional stage from one serialization to another, the new order being shown in the serialization of the verb and its complement, and the older order being reflected in inconsistent operator-operand sequences. Vennemann also claims that the reordering of the noun phrase lags behind that of the verb phrase. He offers no data in support of this statement however, and it appears to be contradicted by the Persian example (see p. 84).

Theorizing that syntactic change can be internally motivated within language, Vennemann offers a more explicit reason for the original basic verb movement than does Lehmann. Vennemann claims that the order of basic elements SXV is the most natural for language. On the grounds that, in unaffected speech, the subject case indicates the topic of a sentence and the object case the comment, Vennemann believes the subject will naturally precede its object. This claim is supported by Greenberg (1966) and Keenan, who, in his paper "A Universal Definition of Subject", states "subjects normally precede the other major NPs".
According to Vennemann, a marked order would show the topicalized element in the object case. He defines "topic" as "phenomena ... already established within the consciousness of the speakers," (i.e. old information). Keenan lends support to this analysis too by stating that subject NPs are normally presupposed referential and "normally express information known to speaker and hearer." He further contends that "if a language has a special topic or old information marker, it will naturally occur on subjects." Citing Behagel's second law that sentence elements which take up preceding material naturally come before those which do not, Vennemann argues for the universal rule:

\[
\{\text{Topic}\}\{\text{Comment}\} \quad \Rightarrow \quad [\text{Topic}] + [\text{Comment}]
\]

This argument is independently stated by Chafe (1971) who suggests that what comes from the speaker's deep memory (i.e. old information) is found in sentence initial position. In languages with which he is familiar (i.e. English and German), Vennemann states that, although both verb and object form the sentence comment, it is the object which receives the intonation peak, with the verbal element functioning to show the particular relationship between subject and object. Because of the special topic-comment relationship existing between subject and object, Vennemann expects these elements to be juxtaposed within the sentence, and thus sees
the verb as standing outside the intrinsic S-O complex, i.e. \{V\}\{S-O\}. Whereas the SXV order retains topic + comment sequencing for all constructions, the VSX order uses it only for transitive verb structures, reversing it in intransitive verb constructions where the verb alone forms the comment:

\[ V + S + O \]
\[ ? \text{ topic comment} \]
\[ V + S \]

comment topic

An SVX order is less than ideal on two counts. Firstly, the intrinsic topic-comment or subject-object complex is broken by the verb. Secondly, if an SVX language follows the not unusual practice of constructing sentence operands (modality, tense, aspect, etc.) as verbal operands, the propositional nexus of its sentence will be interrupted:

\[ S + \text{Modality} + V + X \]

sitional nexus

For these reasons, Vennemann considers the SXV order, where topic always precedes comment, and where the propositional nexus is never broken, to be the optimal syntactic type. In making this hypothesis, however, Vennemann disagrees with Greenberg, who suggests that the dominant order is for the verb to precede the
object. Steele interprets Greenberg's observations and other evidence (e.g. Tranel 1972) as indicating that "importance attaches to the preceding as opposed to the following,"\textsuperscript{59} and uses this principle to partially explain the overall importance which she feels belongs to sentence initial position (see p.26).

Vennemann's statement that stress usually falls on the object NP is not sufficiently accurate. Stress in English usually falls in sentence final position; in Japanese it usually falls on the first post-topic element (see p.35). A more accurate representation of stress placement would state that stress falls on the final or first elements of the comment in VX and XV languages respectively. In both language types stress falls on the comment element furthest from the verb. This appears to indicate that the verb is of secondary importance in the comment and that, despite its primacy in the functional structure of the sentence, its purpose in the topic-comment dimension may indeed be to link the oldest and newest pieces of information within the sentence.

4.5.1.0 Vennemann's proposed cycle of language change, explained in more detail below, originates and finishes with his optimal SXV type. An SXV language losing its inflectional markers may, via a Topic + V + X (TVX) stage, become only SVX. After the new operator-operand sequence has readjusted itself, new inflections may in time form in preverbal and prenominal positions,
allowing the language to revert to the optimally functional SXV order. Alternatively, an SVX language may become VSX (by a process described in 4.5.1.2 below). The VSX type may again build up a new set of prefixal inflections which allows it to move back to the SXV order, or it may, through a marked stylistic pattern, revert to the SVX type. The various potential movements can be schematized as follows:

\[
\begin{array}{c}
\text{VSX} \\
\uparrow \\
\text{SVX} \\
\downarrow \\
\text{TVX}
\end{array}
\rightarrow
\begin{array}{c}
\text{SXV}
\end{array}
\]

i.e. SXV $\Rightarrow$ TVX

TVX $\Rightarrow$ SVX

SVX $\Rightarrow$ \{VSX\} \{SXV\}

VSX $\Rightarrow$ \{SXV\} \{SVX\}

Vennemann states that although the subject case is the preferred one for a topicalized sentence element, the object case may also be used for topicalization (and the associated NP fronted), resulting in the following marked orders:

<table>
<thead>
<tr>
<th></th>
<th>SXV</th>
<th>SVX</th>
<th>VSX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unmarked</td>
<td>$NP_S NP_O V$</td>
<td>$NP_S V NP_O$</td>
<td>$V NP_S NP_O$</td>
</tr>
<tr>
<td>Marked</td>
<td>$NP_O NP_S V$</td>
<td>$NP_O NP_V$</td>
<td>$NP_O V NP_S$</td>
</tr>
</tbody>
</table>
Of the three marked orders, only in the SXV stage does the NP-V sequence stay the same as the unmarked order:

<table>
<thead>
<tr>
<th></th>
<th>SXV</th>
<th>SVX</th>
<th>VSX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unmarked</td>
<td>NP NP V</td>
<td>NP V NP</td>
<td>V NP NP</td>
</tr>
<tr>
<td>Marked</td>
<td>NP NP V</td>
<td>NP NP V</td>
<td>NP V NP</td>
</tr>
</tbody>
</table>

If an SXV language is to prevent perceptual ambiguity arising from the use of a marked order, reasons Vennemann, it must regain a "uniform and conspicuous" system of case distinction or, alternatively, a distinction for indicating marked topicalization. This claim is supported by Greenberg's Universal 41, which states:

If, in a language, the verb follows both the nominal subject and the nominal object as the dominant order, the language almost always has a case system.

However, continues Vennemann, phonological change in language is constantly operative and in time erodes unstressed elements, thus causing loss of distinctive case markers. Loss of case distinction in an SXV language leads to ambiguity between marked and unmarked topicalization, thereby rendering the syntactic system inadequate. To prevent ambiguity and to solve the topicalization problem, the verb, which Vennemann claims, is the only element unable to undergo topicalization, moves to separate the topic from the comment. This movement takes place first in transitive verb structures and later in intransitive constructions, as the
latter contain no direct object whose marked topicalization could cause ambiguity. For example, an SOV transitive marked topicalization order:

\[ \text{NP} + \text{NP} + \text{V} \]

could be misinterpreted, whereas an intransitive structure:

\[ \text{NP} + \text{Adverb} + \text{V} \]

would cause no problem. So develops a Topic + V + X ordering evidenced, states Vennemann, in languages such as Old English, French, Old German, etc., in which either subject or pronominal forms (topicalized by definition) or both may precede the verb:

4.r Her cōm Swegen mid his flōtan to Nordwic. 61
4.s Pa gelamp hit swā pæt hie... 62
4.t Se papa hine hōht Petrus. 63
4.u Jean la lui ai donnée.
4.v J'y en ai vu.

Modern Czech has two basic verb positions, one following the first topicalized element of a sentence, and the other following all topicalized elements, i.e.

either \[ T_1 + V + X \]

or \[ T + V + X \]

During the TVX stage, claims Vennemann, several characteristic elements appear, among which are included the definite article and the passive voice. Both arise to fill the
need for a topic marker: the definite article signals a previously mentioned element, while the passive allows object topicalization through a distinctive verb form and agent marking.

Another characteristic of TVX languages is the brace construction, which occurs when one element has shifted position before its associated constituent, e.g.

4.w  German - subordinate clause showing consistent SXV order
   dass (Maria) mich gesehen hat.
     3  2  1

4.x  dass (Hans) gestern angerufen hat.
     3  2  1
- main clause showing brace construction

4.w'  (Maria) hat mich gesehen
       1  3  2

4.x'  (Hans) hat gestern angerufen.
       1  3  2

The subordinate clause shows a normal SXV order. The main clause shows *mich* and *gestern* braced by the finite verb and its participle, indicating movement of the finite verb, but as yet no movement of its associated participle or of the other XV orderings. The reason main clauses contain bracing constructions whereas subordinate clauses do not, claims Vennemann, is that topicalization is more important in the former. Thus the main clause will respond to the
topicalization ambiguity problem before the subordinate clause. This argument is in accordance with Ross's penthouse principle (1973) which states that higher sentences undergo change before embedded ones. A further characteristic of TVX languages and another example of the brace construction is the Adjective + Comparative + Standard order found in such phrases as:

4. y tall + er than John
   Adj.   Comp.    Standard

The normal XV and VX orders are respectively:

4. y' Standard + Adjective + Comparative
   than grass   green  er
   and

4. y'' Comparative + Adjective + Standard
   more    green  than grass

The Adjective + Comparative + Standard order indicates that the Standard element has moved from an XV to a VX order before its directly related constituents, Adjective and Comparative, thus leaving a brace construction:

\[
\begin{array}{ccc}
\text{Standard} & \text{Adjective} & \text{Comparative} \\
1 & 2 & 2 \\
\emptyset & 2 & 3 & 1
\end{array}
\]
In time, the VX movement around the Comparative pivot will presumably be completed:

\[
\begin{array}{cccc}
\text{Adjective} & \text{Comparative} & \text{Standard} \\
2 & 3 & 1 \\
\emptyset & 3 & 2 & 1 \\
\end{array}
\]

A third example of a brace construction is found in the bracing negation of Middle English and Modern French. In this particular example, Vennemann gives an explanation for the observations made by Li and Thompson regarding the shift of sentence elements from primary to secondary importance and vice-versa (see pp. 86/7).

4.z Middle English

For I ne kan nat fynde/A man, though but I walked into Ynde. 64

French

4.A Je n'ai rien dit.

Because of the change in sentence accent (see below), the preverbal negative element loses its stress and has to be reinforced by a postverbal emphatic particle (nat, rien). The semantic power of the weakened preverbal negative is gradually transferred to the stressed postverbal emphatic element which is subsequently reanalysed as a negative element. This transfer is reinforced by the contemporary move toward a VX order of the Adverb + Verb sequence, which becomes Verb + Adverb (see p. 26). If the negative is analysed not as a sentence adverbial, but as a verb adverbial, it will be influenced by the general operand + operator movement affecting the entire
language. A bracing negation is thus seen by Vennemann as indicating an SXV $\Rightarrow$ TVX movement occurring within a language.

During the TVX period, the language reduces from an agglutinative through an inflectional to an isolating type due to the increasing redundancy of the remaining suffixal markers. This explains Lehmann's observation that VO and OV languages tend to be inflectional and agglutinative respectively.

The last of Vennemann's TVX characteristics to be noted here is sentence accent. Due to the fact that an operator-operand sequence is in effect a new information-old information structure and that a new information element generally carries the focus, an XV operator + operand language will show an accentual pattern of `\', whereas a VX operand + operator language will show a `\' pattern. During the TVX period of change, claims Vennemann, languages will demonstrate both patterns, as evidenced by English:

4.B The man catches dogs. (VX)
     the dogcatcher (XV)

From the TVX stage, continues Vennemann, a language will develop into an SVX type. As a sentence usually contains only one topicalized element, and as the subject case is usually chosen to represent the topic, new language learners confronted with the common T (=S) + V + X pattern will reanalyse it as SVX. A new functional analysis is thus reached.
To this point several criticisms can be made of Vennemann's theory of SXV → SVX change.

Firstly, Vennemann does not define the terms subject and object. While initially he appears to use surface case markings as his defining criteria as, for example, when he refers to the subject 'case' as the one most commonly chosen by a topicalized element, he later appears to be defining subject (agent?) and object as deep structure elements as, for example, when he comments that passivization allows topicalization of the object for, although passivization certainly topicalizes a deep structure object, it brings it out on the surface with subject case markings, in effect preserving the S + V ordering. This lack of consistency in the use of very vital terminology constitutes a serious flaw in Vennemann's argument.

Secondly, having stated that a VSX language has a V + (S-O) order, where S = topic and O = comment, and having theorized that the verb can never itself be topicalized, thus indicating that the language has a V + topic + comment [-topic] order, Vennemann then proceeds to show marked topicalization as NP o V + NP s. If topic position is post-verbal in the VSX type, as it surely must be according to Vennemann's analysis, there can be no justification for moving the topicalized object to preverbal position. The topicalized object would presumably be moved into the post-verbal topic position, in which case the language would be as ambiguous as its poorly inflected SXV
counterpart. According to Greenberg's universals, VSX types do have alternate SVX orders. However, whether this order indicates a focus construction or whether it indicates marked topicalization I do not know. If it is a marked topic construction, it would indicate that topic holds sentence initial position, thus disproving Vennemann's claim that the verb is always [-topic] (cf. unmarked VSX constructions). If, on the other hand, the sentence initial NP represents a focus construction, and the marked topicalization position remains postverbal, then one would expect a VSX language to have a "conspicuous and uniform" system of case markers in order to prevent ambiguity. There is no Greenberg universal to support this expectation. Accordingly, one must assume that the sentence initial NP in a VSX type represents marked topicalization and must also assume that the verb in a normal VSX structure represents part of the sentence topic. Marked topicalization would then allow the object case to be moved into sentence initial topic position.

In accounting for motivation of the SXV $\rightarrow$ TVX movement, Vennemann has assumed (as have many others before him) that sound change - in this case the erosion of inflections - causes and therefore occurs before syntactic change. Although it is highly questionable, Vennemann gives no data to support this claim. If the case system of a language is a viable entity,
functionally significant morphemes would be very resistant to coalescence or erosion, as they are essential components in the operation of the syntactic system. Sapir writes:

"I believe that such influences [of the morphosyntactic structure of a language on its phonetic development and vice-versa] may be demonstrated and that they deserve far more careful study than they have received. If speech sounds exist merely because they are the symbolic carriers of significant concepts and groupings of concepts, why may not a stronger drift or a permanent feature in the perceptual sphere exercise a furthering or retarding influence on the phonetic drift?"

If, however, sound change does indeed begin to threaten the syntactic system, the language can easily rescue its system by, for example, paradigmatic borrowings, development of subject and object clitics, or clitics which indicate marked object topicalization. A language is less likely to reorder its basic linear sequence to adjust to the loss. Phonological change is a doubtful cause of major syntactic change in my opinion. On the other hand, inflectional coalescence and erosion can easily result after the occurrence of linear sequence change. Once surface subject and object are indicated by their relative positions to the verb, case markers become redundant and thus highly susceptible to erosion. Phonological levelling of case systems is more likely to be a result of, rather than a causal factor of, syntactic change.
Vennemann states that the loss of final syllables in the Germanic languages is "a consequence of the word initial stress accent of these languages." Although Latin and French assign primary stress (or length) to the penult or antepenult, they did not undergo initial syllable reduction, as would be expected from a reverse application of Vennemann's argument for German final syllable loss. French and Latin in fact paralleled the German final syllable loss. Stress placement does not, therefore, seem to be the major conditioning factor for this particular syllable reduction. In fact, German, despite its initial syllable stress, retains some case endings, whereas French retains none:

<table>
<thead>
<tr>
<th></th>
<th>German</th>
<th>French</th>
</tr>
</thead>
<tbody>
<tr>
<td>der Mann</td>
<td>Sg. Nom.</td>
<td>le paysan</td>
</tr>
<tr>
<td>den Mann</td>
<td>Acc.</td>
<td>le paysan</td>
</tr>
<tr>
<td>des Mannes</td>
<td>Gen.</td>
<td>le paysan</td>
</tr>
<tr>
<td>dem Manne</td>
<td>Dat.</td>
<td>le paysan</td>
</tr>
<tr>
<td>die Männer</td>
<td>Pl. Nom.</td>
<td>les paysans</td>
</tr>
<tr>
<td>die Männer</td>
<td>Acc.</td>
<td>les paysans</td>
</tr>
<tr>
<td>der Männer</td>
<td>Gen.</td>
<td>les paysans</td>
</tr>
<tr>
<td>den Männern</td>
<td>Dat.</td>
<td>les paysans</td>
</tr>
</tbody>
</table>

In addition, if initial syllable stress were responsible for the loss of Germanic case endings, one would expect all cases to be affected. As it is, only the subject and object cases have coalesced, leaving the other oblique cases inflectionally marked (see also below).
In his statistical study of syntactic constructions from the Old English to the Modern English period, Fries (1940) states that:

"in a count covering more than 2,000 instances, less than 10% of Old English forms [NPs including article and adjective] which are synthetically nominative and accusative lack the distinctive case endings." [to 70 distinguish them from each other; not from other cases].

According to Vennemann, Old English is syntactically TVX, exhibiting main clause verb in post topic position and having several of the posited TVX characteristics. Vennemann claims that "even less than 10%" of potentially ambiguous sentences is sufficient impetus for a language to change its verb position. With this statement I find it very hard to agree. Misinterpretation arising from the less than 10% figure of subject and object coalescence would be restricted to sentences showing marked topicalization order, as normally topicalized SVX sentences would be interpreted according to the perceptual strategy developed from the commonest order NP V NP = Subject Verb Object. Misinterpretation would be further restricted to those sentences which allowed either subject or object to be semantically perceived as subject. In addition, number inflection on the verb would frequently identify the subject NP. Misinterpretation would thus be reduced to a figure well below Fries' "less than 10%". I question whether such a small percentage of potential misinterpretations would be sufficient impetus for a language to reorder its basic syntactic pattern.
Syntactic and phonological change is not sufficiently documented in the Indo-European languages to state whether the loss of inflections or verb movement took place first. R. Lakoff (1972) writes:

"Did the loss of distinctiveness in endings force the Romans to abandon their beloved case system? Or conversely, did the decline and fall of the case system and consequent growth of prepositions enable the decadent Romans to slough off the endings? ... Clearly neither was caused by the other."

Although some SVX Indo-European languages still retain subject and object case distinctions, many no longer mark these functions by case. It is, however, interesting to note that in several languages which retain partial case marking systems, it is the subject and object markers which have coalesced and the less common case markers which have been retained:

4.D **Old English** - noun class

<table>
<thead>
<tr>
<th>Sg. Nom.</th>
<th>eorl</th>
<th>longung</th>
<th>scip</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acc.</td>
<td>eorl</td>
<td>longunge</td>
<td>scip</td>
</tr>
<tr>
<td>Gen.</td>
<td>eorles</td>
<td>longunge</td>
<td>scipes</td>
</tr>
<tr>
<td>Dat.</td>
<td>eorle</td>
<td>longunge</td>
<td>scipe</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pl. Nom.</th>
<th>eorlas</th>
<th>longunga</th>
<th>scipu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acc.</td>
<td>eorlas</td>
<td>longunga</td>
<td>scipu</td>
</tr>
<tr>
<td>Gen.</td>
<td>eorla</td>
<td>longunga</td>
<td>scipa</td>
</tr>
<tr>
<td>Dat.</td>
<td>eorlum</td>
<td>longungum</td>
<td>scipum</td>
</tr>
</tbody>
</table>

**German**

<table>
<thead>
<tr>
<th>Sg. Nom.</th>
<th>der + N</th>
<th>die + N</th>
<th>das + N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acc.</td>
<td>den + N</td>
<td>die</td>
<td>das</td>
</tr>
<tr>
<td>Gen.</td>
<td>des + N + es</td>
<td>der</td>
<td>des</td>
</tr>
<tr>
<td>Dat.</td>
<td>dem + N + e</td>
<td>der</td>
<td>dem</td>
</tr>
</tbody>
</table>
This evidence can be interpreted in two ways:

I. It could be argued that in the SXV stage, subject and object markers were more vulnerable to coalescence or erosion due to their more frequent usage. To avoid ambiguity after the distinctive functional endings were lost, reordering of verb and object occurred. The less commonly used functional endings were retained.

II. The counterargument to I is that after the verb moved between subject and object, these two particular functional markers became redundant and easily succumbed to phonological erosion or coalescence. Because the functions of the other oblique cases had not been affected by verb movement, these cases retained their distinguishing markers as they were still essential to the operation of the syntactic system.
Of the two possible interpretations of SVO case evidence, I seems the weaker. Firstly, more frequently used forms (in this case the nominative and accusative forms of the noun) are usually less vulnerable to change and are able to survive intact longer than are their less frequently used counterparts. Even if this were not the case, the argument for the retention of case markers because of their less frequent usage would not be strong, for less frequently occurring forms rarely resist a change occurring in the commoner forms. If the more frequently used cases reduced to a common form because of phonetic change, I think it unlikely that the less frequent cases would not follow suit and succumb to the same change. I therefore consider argument II to be the stronger and see it as evidence for syntactic reordering before, and perhaps hastening, phonological change.

Following his probably erroneous assumption regarding the reason for syntactic reordering, Vennemann claims that SVX languages develop via TVX from SXV types whose eroded case systems insufficiently distinguish between subject and object. This explanation is inadequate, for many languages change from SXV to SVX without losing these case markers:

4.E **Icelandic**

<table>
<thead>
<tr>
<th>Strong noun class</th>
<th>Weak noun class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sg. Nom. hestur</td>
<td>tími</td>
</tr>
<tr>
<td>Acc. hest</td>
<td>tíma</td>
</tr>
<tr>
<td>Gen. hests</td>
<td>tíma</td>
</tr>
<tr>
<td>Dat. hesti</td>
<td>tíma</td>
</tr>
</tbody>
</table>
Hyman, citing the Niger Congo languages as examples, also notes that "many SXV languages which have never had case markings have changed to SVX." Vennemann's explanation for the SXV → SVX movement thus seems insufficiently investigated.

A third criticism of Vennemann's theory is that it has languages fluctuate between dimensions of ordering. The SXV stage shows ordering by grammatical function; the TVX stage reforms itself into a semantic topic-comment system; the SVX stage again
restructures the system, reverting to the original functional model. It is true that Vennemann states the topic-comment division exists in the SXV stage, but the language did not order syntactically according to this division and no evidence is presented to show that the transitional intermediate stage underwent the perceptual remodelling of sentence elements into new categories before reverting to its original divisions.

While I am not claiming that the topic-comment division is invalid - on the contrary, I think it is a valuable insight - I feel that its emergence in the posited TVX stage as the dominant or the only controlling force is not justified.

Furthermore, Vennemann does not seem to realize that, according to his theory, marked object topicalization during the TVX stage would be just as ambiguous as during the inadequately inflected SXV stage. A TVX language has the following topicalization possibilities:

<table>
<thead>
<tr>
<th></th>
<th>T</th>
<th>V</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unmarked</td>
<td>NP_s V NP_o</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marked</td>
<td>NP_o V NP_s</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The marked topicalization pattern is identical to the unmarked form, i.e. NP V NP. Unless the NPs were adequately marked for their respective syntactic functions, ambiguity would occur as frequently as in the SXV stage. Indeed, the very reason Vennemann
- 111 -

gives for the verb to change position in the SXV $\Rightarrow$ TVX movement is inadequate. In the SXV stage, loss of case markings caused confusion between the respective functions of the subject and object -- never did it cause confusion between the topic and the comment for, according to Vennemann, the topic always remained in first position. Even assuming phonological change was the impetus for change, the verb must have moved, not to distinguish the positions of the topic and comment, about which there was never any doubt, but to distinguish between the functions played by the two NPs. Even languages that have been analysed with more certainty as topic-comment types (e.g. Tagalog, Japanese) show definite functional relationships:

4.F **Japanese**

Shonen-ga inu-o kerimashita.

boy+sbj. dog+obj kick+past

= The boy kicked the dog.


I + sbj. yesterday saw old man+topic English+obj. teaches

= The old man I saw yesterday teaches English.

Czech, according to Vennemann a prime example of a TVX language, marks subject and object in its still extensive case system. Indeed, were these relationships not specified, the meaning of the utterance could not be elicited. Such grammatical relationships must be indicated either by case endings or by strict word order. By definition, Vennemann's TVX stage rejects both types of functional signalling and is thus not a viable entity.
At one point in his argument, Vennemann attempts to redeem this oversight by claiming that during the TVX stage demonstrative pronouns which, he states, retain their case markers longer than do full nouns, are increasingly used with the topicalized noun to mark that noun's grammatical function. The definite article, a marker of topicality, is thus created. This hypothesis is, however, hardly convincing. Firstly, the demonstrative pronouns which developed into articles in Old English and Old French were only slightly better marked for case than were their full noun counterparts:

4.H Old English

<table>
<thead>
<tr>
<th>Demonstratives</th>
<th>Strong Nouns</th>
<th>Weak Nouns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nom. M</td>
<td>F</td>
<td>N</td>
</tr>
<tr>
<td>se/þes</td>
<td>só/þes</td>
<td>þat/bis</td>
</tr>
<tr>
<td>ðone/pisne</td>
<td>þa/þas</td>
<td>þat/bis</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pl. Nom.</th>
<th>M</th>
<th>F</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>þā/þās</td>
<td>ð̄</td>
<td>eorlas</td>
<td>longunga</td>
</tr>
<tr>
<td>þā/þās</td>
<td>ð̄</td>
<td>eorlas</td>
<td>longunga</td>
</tr>
</tbody>
</table>

Old French

<table>
<thead>
<tr>
<th>Demonstratives</th>
<th>Nouns</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>F</td>
</tr>
<tr>
<td>Nom. li</td>
<td>la</td>
</tr>
<tr>
<td>Acc. lo</td>
<td>la</td>
</tr>
<tr>
<td>Pl. Nom. li</td>
<td>les</td>
</tr>
<tr>
<td>Acc. les</td>
<td>les</td>
</tr>
<tr>
<td>M</td>
<td>F</td>
</tr>
<tr>
<td>murs</td>
<td>fille</td>
</tr>
<tr>
<td>mur</td>
<td>fille</td>
</tr>
<tr>
<td>murs</td>
<td>filles</td>
</tr>
<tr>
<td>murs</td>
<td>filles</td>
</tr>
</tbody>
</table>
Consequently, there would have been little, if any, advantage in using the demonstrative pronouns were their main purpose to mark function. Secondly, if the demonstrative pronouns were introduced into common usage to mark function, one wonders why the language did not use them to mark function in the poorly inflected SXV stage, instead of shifting the order of its basic sentence elements. It seems strange to argue that the language changes its word order in order to overcome the loss of functional markers, then starts to use the very functional markers which have always been available to it, thus rendering superfluous the change from SXV to TVX. I therefore find it hard to correlate the rise of the definite article with the need for functional disambiguity.

4.5.1.2 Having accounted for the SXV $\Rightarrow$ SVX movement, Vennemann continues his theory of language change by claiming that from an SVX order, a language may further develop into a VSX type. If this hypothesis is correct, one would expect to find more XV characteristics in an SVX language than in a VSX one, as the initial verb movement would have had more time to influence the operator-operand sequencing in the latter. Greenberg's language sampling data supports this expectation:
Note that an SVX type having some XV characteristics could not be considered a transitional stage from VSX $\Rightarrow$ SXV because in the SVX stage the VX sequence is still present and could not account for the occurrence of any XV characteristics. Vennemann speculates the SVX $\Rightarrow$ VSX movement takes place due to the pronominalization of the subject in topic position, i.e. $S + V + X \Rightarrow Pro + V + X$. Vennemann states that during the Pro + V + X stage, the emphatic subject may be repeated post-verbally, resulting in a Pro + V + S + X order:

4.1 He came, my brother, to the party.

Repeated pronominalization of the subject in topic position may, Vennemann claims, eventually result in the preverbal subject pronoun becoming proclitic to the verb. The SVX $\Rightarrow$ VSX movement thus goes through three stages:

i) $S + V + X \Rightarrow S + V + X$  
   \[+pro]\n
ii) $\Rightarrow S + V + S + X$  
   \[+pro] \[-pro]\n
iii) $\Rightarrow$ Inflection+V + S + 0
Stage iii) in this sequence, showing the preverbal subject agreement inflection, is evidenced in most VSX languages:

4.J  Topotha
    a - lozi ayong
    Agt. go I
    = I am going

4.K  e - lozi inges
    Agt. go he
    = He is going

Admittedly, Vennemann only speculates on the rise of the VSX structure but, even so, his explanation is hardly convincing. His example: He came, my brother, may sound reasonable for sentences containing less than a one place verb, but in sentences containing more than a one place verb, ambiguity could easily occur:

4.L  He gave my brother a smile.
    brother = subject or object?

4.M  She fought my sister the policewoman.
    sister = subject or object?

Only if subject and object were adequately marked for function would ambiguity be avoided - i.e. the language must have an operative inflectional system. Vennemann, however, has already stated that SVX languages develop from the SXV stage precisely
because they do not have an adequate inflectional system. To accept the SVX $\Rightarrow$ VSX movement, one would have to argue that the SVX stage had been in existence long enough for the operator-operand sequence to reverse direction and form new clitics (from prepositions, head nouns, etc.) which would provide sufficient inflection to avoid ambiguity. According to Vennemann's general cycle of language change, however (see p. 94), if the SVX stage recreates sufficient new inflectional markers, it will revert directly to the SXV pattern, as this is the optimal order toward which all languages strive. Although the data supports Vennemann's hypothesized SXV $\Rightarrow$ SVX $\Rightarrow$ VSX movement, his explanation for the SVX $\Rightarrow$ VSX movement does not appear to fit with the rest of his theory.

Continuing his argument on the sequence of language change, Vennemann claims that if an Inf.+V + S + X language does not quickly change to an SXV type, sound change will erode the initial subject agreement inflection to $\emptyset$VSX. As a result, the postverbal full subject position will be extended to include pronominal forms, firstly for emphatic subjects and subsequently for all subjects, creating an obligatory pattern, V + Pro + (S) + X. Through emphatic subject repetition in preverbal position, a subsequent move to SVX may then occur, providing the following
sequence of change:

i) Inf. + V + S + X $$\Rightarrow$$ V + S + X  

ii)  $$\Rightarrow$$ S + V + S + X  

iii) $$\Rightarrow$$ S + V + inf. + X  

This last movement is supported to some extent by an example from Kapampangan, which shows a VSX order in the unmarked form, but an SVX order when the subject occurs in an unbound form:

4.N sisipan-ku-me (unmarked)

kick I you

= I am kicking you

4.O aku sisipan-ku-me (marked)

I kick I you

= I am kicking you

4.P *sisipan-ku-me aku 76

In that Vennemann claims subject agreement inflection to be a reduction of a once full pronoun form indicating an earlier syntactic order, he agrees with Givón's hypothesis (see p. 78), but whereas Givón sees subject agreement inflection as a pronominal repetition of the full subject, Vennemann theorizes that these inflections indicate the erstwhile position of the full subject itself, and can therefore appear only in a language which has undergone subject movement. Thus, where Givón could accept a preverbal
subject agreement inflection in an original SXV language, Vennemann would posit no agreement inflection. The latter's theory is also open to question in that it is the less common emphatic subject structure which influences the more common unemphatic subject to alter position, an analogical process which I find hard to accept.

Vennemann makes no attempt to account for the common occurrence of object clitics in non-Indo-European languages:

4.Q  Upper Chehalis (Salishan)
(cáni wi) ?it jap-án tat pešipš
  he cop. asp. kill-him* the kittens
  = He killed the kittens.

4.R  ?it ?ax-án čš tit cáni
  asp. see-him thou the he
  = You see him.

*gender is unmarked

nor does he explain the cycle which allows subject clitics to appear on the same side of the verb as the full subject.

Following Givón's argument, Vennemann believes that nominal case markers arise from old head nouns, with an XV language type producing postnominal markers (∈ N[mod] + N[head]) and a VX language type producing prenominal markers (∈ N[head] + N[mod.]).
Vennemann thus claims that older language stages can be identified from the evidence of nominal case markings and verbal number agreements. If these clitics are still readily identifiable as former independent elements, Vennemann considers the language a 'young' representative of its type, having only recently developed from a former stage; if the clitics are not easily recognizable, the language represents an 'old' member of its type. Vennemann thus claims that the origin and relative age of a language type can be deduced from its synchronic morphology. His tables for historical reconstruction are reproduced below: 79

<table>
<thead>
<tr>
<th>Key: T = present and pronominal origin transparent</th>
<th>+ = present</th>
<th>- = absent</th>
<th>W = worn inflection</th>
<th>P = pronominal origin of inflection betrayed</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Type: VSO</th>
<th>very young</th>
<th>young</th>
<th>old</th>
<th>very old</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-V Agreement Inflection</td>
<td>Verb-initial</td>
<td>T</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Verb-final</td>
<td>+</td>
<td>-</td>
<td>T</td>
</tr>
<tr>
<td>Previous type</td>
<td>SVO</td>
<td>very young VSO</td>
<td>young VSO</td>
<td>old VSO</td>
</tr>
</tbody>
</table>

Table 1
<table>
<thead>
<tr>
<th>Type: SOV</th>
<th>very young</th>
<th>young</th>
<th>old</th>
<th>very old</th>
<th>very young</th>
<th>young</th>
<th>old</th>
<th>very old</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-V</td>
<td>Verb-initial</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>Agreement</td>
<td>Verb-final</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Case</td>
<td>Noun-initial</td>
<td>T</td>
<td>+</td>
<td>-</td>
<td>T</td>
<td>+</td>
<td>T</td>
<td>-</td>
</tr>
<tr>
<td>Marking</td>
<td>Noun-final</td>
<td>-</td>
<td>T</td>
<td>-</td>
<td>-</td>
<td>T</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Previous</td>
<td>young VSO or SVO</td>
<td>very young SOV</td>
<td>young SOV</td>
<td>old SOV</td>
<td>old SOV</td>
<td>very young SOV</td>
<td>young SOV</td>
<td>old SOV</td>
</tr>
</tbody>
</table>

Table 2

<table>
<thead>
<tr>
<th>Type: SVO</th>
<th>young</th>
<th>old</th>
<th>young</th>
<th>old</th>
<th>young or old</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-V</td>
<td>Verb-final</td>
<td>+</td>
<td>W</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>Agreement</td>
<td>Verb-initial</td>
<td></td>
<td>+</td>
<td>W</td>
<td>P</td>
</tr>
<tr>
<td>Inflection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Case</td>
<td>Noun-final</td>
<td>+</td>
<td></td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Marking</td>
<td>Noun-initial</td>
<td>+</td>
<td>+</td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Previous</td>
<td>SOV</td>
<td>young VSO</td>
<td>old VSO</td>
<td>SOV</td>
<td>young VSO</td>
</tr>
</tbody>
</table>

Table 3

* Vennemann's key does not explain the difference between '-' (absent) and a blank space.
The above tables presumably show the immediately preceding stage for only those languages which have changed type, for Vennemann gives all SXV languages subject-verb agreement inflection, indicating by his previous argument that at some earlier stage they developed from an SVX or VSX type. As noted above, an original SXV type would show no subject agreement inflection.

4.5.2 Vennemann's account of the sequence of language change is highly theoretical and, in the later claims especially, includes little specific data as evidence. In addition to this, it appears that his theory of language change is inconsistent and inadequate in some respects. In spite of the above criticisms, however, I feel that Vennemann's theory does provide some valuable insights into syntactic ordering within language.

4.6.0 After considering Vennemann's arguments, I believe that syntactic ordering is subject to two independent, but parallel systems, one indicating grammatical function and one indicating topic-comment status. Unlike Vennemann, however, I do not necessarily believe the verb stands outside the topic-comment division. In SXV and SVX languages, the verb can be analysed as a constituent of the comment, albeit of secondary importance. Its analysis in VSX types, however, is less clear but, as the topic naturally appears in sentence initial position, I would suggest that in these types the verb be analysed
as part of the topic. Only by analysing the verb as topic in VSX types can the marked SVX subtypes be accounted for (see p. 124 below). I am not, however, very satisfied with this analysis.

The two syntactic systems have marked orders. In the grammatical function system a marked order would result in an oblique case being moved into topic position - this being the order previously referred to as 'marked topicalization.' In the topic-comment system, a marked order would result in a comment + topic sequence, i.e. a focus or emphatic construction. Four possible orders result from the interaction of the two systems:

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marked Function</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Marked Topic-Comment</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

In an SXV language where cases mark function, the four orders would be:

4. S I SXV e.g. Brutus Caeserem occidit.
   TC
II XSV Caeserem Brutus occidit.
   TC
III SXV Brutus Caeserem occidit
   CT
IV XSV Caeserem Brutus occidit.  80
In an SVX (NP V NP) sequence where surface function is marked by word order, marked topicalization must be shown by a different word order pattern. As the topicalized element must appear in sentence initial position, the marked order would be NP NP V (as claimed by Vennemann). The SVX type would theoretically show the following four orders:

4.T I SVX e.g. Mary invited Ted.
   TC

II XSV Ted Mary invited
   TC

III SVX Mary invited Ted.
   CT

IV XSV Ted Mary invited.
   CT

(A tentative suggestion for the uncommon occurrence of structures II and IV in Modern English will be put forward below). A VSX type would have the orders:

4.U I VSX e.g. Writes George a letter.
   TC

II VXS Writes a letter George.
   TC

III SVX George writes a letter.
   CT

IV XVS A letter writes George.
   CT
If the VSX type marked function by case, order II could be readily understood as marked. If, however, function were indicated by word order, as in Welsh, the marked order would necessarily show preverbal preposing of the topicalized NP, resulting in IIa:

IIa A letter writes George.

An SXV language does not have this option as, in a transitive construction, the sentence initial topic position is invariably followed by an NP and can never directly precede the verb without simultaneously showing a marked topic-comment order.

For whatever reasons it occurred (and there are several possible - see 4.3 and 4.4 above), a change in sentence pattern during the SXV stage would have directly resulted in an SVX order. The topic-comment order would remain unchanged.

It should here be noted that the several qualities of a TVX language noted by Vennemann (e.g. brace constructions, sentence accent shift, etc.) can all be accounted for by the direct change from SXV $\Rightarrow$ SVX. This, however, in no way detracts from the credit which must go to Vennemann for explaining these constructions within his operator-operand reversal theory. In the early period after the SXV $\Rightarrow$ SVX movement, when the new order was not rigidly fixed as a functional marker, the retention of cases as functional markers allowed the variant order VSX, frequently
found in Old English main clauses:

4.V Cwæþ hē: "Sing mē frumsceaf." 81

4.W Song hē ærest be middangeardes gesceape ... 82

4.X ... cume ēn spearwa and hræelic þæt hus þurhflēo ... 83

4.Y Pa gemette hie Æpelwulf aldorman ... 84

Providing no semantic ambiguity can arise, the same structure may still be used in some styles of Modern English. Such sequences are understandable because of a perceptual rule which must exist stating that, unless marked otherwise, the first NP of a sentence is the subject of that sentence. The very variety of Old English sentence patterns suggests that verb movement was not primarily to mark the function of the noun phrases for, were this the case, one would expect the SVX order to be much more dominant than it actually was.

As the SVX order became more stable, new language learners identified an element's function by its position in respect to the minor comment element, the verb. Case endings, therefore, became redundant for subject and object full noun phrases, resulting in syllable final erosion or coalescence.

The levelling and subsequent disappearance of case endings also meant the disappearance of nominal markers. During the case-marked period, a noun could be recognized as such by
its inflection. With inflection disappearance, however, nouns were no longer regularly marked for their nominal status and a new marker had to be found. This new marker was, I believe, the definite article. Vennemann is quite correct in noting that the definite article arose only in those Inde-European languages which changed from SXV → SVX, and this phenomenon must be explained. However, as noted above (see pp. 112/3), I cannot agree that the definite article arose as a result of the need for a topicalization marker or a function marker. I feel the rise and regular appearance of be during the Early Middle English period resulted directly from the loss of nominal (i.e. case) markers during the Old English period. This hypothesis is supported by the following facts.

Firstly, the Indo-European VX languages which retain nominal case systems often do not have definite articles, e.g. Russian, Czech, Serbo-Croatian. All Indo-European VX languages without nominal case-marking systems do have a definite article.

Secondly, Edward Matte (p.c.) has informed me that Modern French (VX) classifies a 'noun' not accompanied by an article as an adjective:

4.Z Il est un professeur. (professeur = noun)
4.al Il est professeur. (professeur = adjective)
This indicates that the article, or some other marker (e.g. preposition) is necessary to indicate the nominal status of the following word.

Thirdly, in a comparison of English and French, the former may drop the definite article in plural forms, whereas the latter may not:

4.bl   English
Trees are beautiful.

4.cl   Cars make me ill.

4.bl'  French
Les arbres sont beaux.

4.cl'  Les autos me font mal.

I believe this difference can be accounted for by the fact that the English plural inflection /z/ is pronounced, thereby indicating a nominal status for the preceding root, whereas the French plural nominal inflection is not pronounced:

\[\text{[a\,br\,z]}\] = singular
\[\text{[a\,br\,z]}\] = plural

thus necessitating the appearance of another nominal marker, the definite article. It should be noted that, during the Old French period, when nominal inflections were still pronounced, the use of the definite article was optional. Only with the loss of nominal inflections has its use become mandatory. A similar situation
appears to have existed in the earlier stages of English.

Elizabeth Traugott writes:

"While the Peterborough Chronicle illustrates uses of 

the that are typical of NE, the modern use of the was 

not fully established in prose writings until Shake­

peare's time. In the poetry of the sixteenth and 

seventeenth centuries many rather archaic structures 

still persist. These involve mainly the absence of 

the where we would expect it." 85

During its early use, the definite article contained 

the feature [+specific] 86, no doubt retained from the demonstra­

tive from which it developed and which had always been available 

as a [+specific] marker. With the increasing loss of nominal 

status markers, [-specific] nouns also needed a nominal marker, 

which need resulted in the later rise of the indefinite article.

This explanation does not suffice for German, however, 

which uses both case markers and a definite article. Case markers 

on Germanic nouns pattern as follows:

<table>
<thead>
<tr>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>Ø Ø Ø Ø Nom. &quot; &quot; &quot; er (e)n</td>
<td></td>
</tr>
<tr>
<td>Ø Ø Ø (e)n Acc. &quot; e &quot; er (e)n</td>
<td></td>
</tr>
<tr>
<td>s (e)s (e)s (e)n Gen. &quot; e &quot; er (e)n</td>
<td></td>
</tr>
<tr>
<td>Ø (e) (e) (e)n Dat. 'n, &quot; en &quot; ern (e)n</td>
<td></td>
</tr>
</tbody>
</table>
As can be seen, for many noun forms there is no nominal marker, which in itself would be grounds for the appearance of the definite article as a marker. In addition, it is possible that those markers which do exist might be confused with other function markers, thus negating their effectiveness as nominal markers:

- e.g. **Nominal Marker** sounds the same as
- *(e)n* -en (verbal marker)
- -er *-er* (comparative marker).

This possible misinterpretation of some nominal markers, combined with the lack of any nominal markers in several parts of the paradigm, could warrant the rise and consistent use of a stable nominal marker, i.e. the definite article. The retention of case markers on the definite article itself is probably due to the frequent usage of this item.

Because in the early SVX stage the topic-comment ordering was not altered, all topicalized elements still appeared in preverbal position. For this reason, object pronouns, by definition topicalized, also remained preverbal, resulting in the orders found in Old English and the Romance languages. Since the usual topic, the subject, often appeared in pronominal form also, a Pro + Pro + V order often occurred, potentially analysable as:

- \( \text{Pro}_s + \text{Pro}_o + V \) e.g. I him fought bravely.
- or \( \text{Pro}_s + \text{Pro}_s + V \) e.g. I (and) he fought bravely.
Because of the potential ambiguity arising from the two juxtaposed pronominal forms, the pronoun system retained its distinctive markings of function. Sentences containing full NP comments, however, demonstrated \( NP_s V NP_o \) ordering, with the result that new language learners gradually perceived a strict functional ordering \( S + V + X \) and transferred this into the topic-comment system as \( T_1 + V + X \). Object pronouns were thus moved postverbally and their functional markings were either lost or became obscured:

4.d1  Him and me went to the movies.
4.e1  This is between he and I.

Thus the word order pattern became more standardized and, consequently, more rigidly \( SVX/T_1VX \).

The increase of the passive and reciprocal constructions and the introduction of the passive+expressed Agent structure during the Middle English period of English is, I believe, a result of the increasing stability of linear word order. The deep structure cases of Agent and Object are usually translated into the surface structure cases of subject and object respectively. In the early stages after verb movement from \( SXV \Rightarrow SVX \), when the noun phrases still retained their case markings, the deep structure Object manifested in the surface structure object case was more
readily topicalized than in later periods. This, I believe, was a carryover from the SXV stage when object topicalization was fairly common (witness the remarks of many traditional grammarians regarding the free word order of SXV languages). With the loss of surface case endings and the subsequent rigidity of word order, the surface object case was not so readily topicalized. To overcome the lack of an acceptable mechanism for object case topicalization, the deep structure case began to be manifested in the surface subject case along with a special verb construction to indicate the deep structure [-Agent] function of the surface subject case. During the Middle English period, the agentive marker by was introduced in order to show the deep structure Agent at surface level. The appearance of the deep structure Object in the subject case was also evidenced by the rise of reciprocal verbs, whose increased usage was also evidenced during the Middle English period. Old English impersonal verb constructions, where the indirect object pronoun preceded the verb, were reanalysed as subject + verb constructions in accordance with the new functional pattern:

4. fl Hemit ne debo no suour. X + V + S
⇒ They needed no help S + V + X
I would tentatively suggest that the strong SVX pattern accounts for the rare occurrence of structures such as:

4. T
   II Ted Mary invited.
   IV Ted Mary invited. (see p. 123)

where the object case appears in sentence initial position. In order to preserve the SVX pattern of the language, II is manifested in the SVX passive construction, while IV removes the surface object from sentence initial position by inserting a dummy construction to create the usual SVX order:

4. gl It was Ted that Mary invited.

Thus both II and IV are forced into the SVX pattern, although in different constructions so as to mark the separate nature of topicalized and focus structures. The focus construction for the object case later spreads to all comment + topic structures:

4. hl It was Mary who invited John.

I realize that my suggestions are purely theoretical and would need to be tested against a great deal of data before their validity could be seriously considered. However, inaccurate theories also help develop our understanding of language, albeit only by eliminating some of our potential misunderstandings. Perhaps by finding the wrong answers we will be able to narrow down our search for the right ones.
SUMMARY AND CONCLUSION

This paper has attempted to review the development of classificatory systems of language and to assess their respective merits and inadequacies.

The early morphological typologies, although using varying terminologies, developed systems which were essentially very similar; they also shared a restriction in scope -- the restriction of the word. With such a limited viewpoint on language, these typologies seem unable to capture the basic dichotomies of language and may well, as suggested by Hodge (1970), merely reflect stages in the linguistic cycle, itself encompassed within a wider syntactic typological shift.

The advent of word order typologies increased the boundaries of classificatory systems from the word to the sentence. Following modern linguistic practice, the two typologies examined in Chapter II have formalized their claims regarding word order universals. Because both theories are based on the universality of the VP node, they cannot satisfactorily account for the VSO subtype of the VO type. They do, however, seem to capture word order generalizations in SVO and SOV types, and it is Venne-mann's typology which I consider to provide greater insights in
this regard, even though some of his claims are not well substantiated and may need to be explained through the perceptual strategies discussed in Chapter III.

The use of syntactic typologies and other evidence of earlier word orders as discussed in Chapter IV is, I feel, valuable in giving insight into previous syntactic orderings in languages. To use evidence of a specific earlier order (e.g. Adjective + Noun = OV) to reconstruct an entire OV ordering for the whole language on the basis of the syntactic typologies is not justified at this time in my opinion. Explanations of the sequence and reason for language change are also highly theoretical and often subject to argument. The most we can say is that certain characteristics are indicative of earlier word orders -- the why and the wherefore of these characteristics are as yet not satisfactorily accounted for.

At the moment there appears to be no satisfactory universal principle explaining existing word orders and predicting word order change. All theories examined have some merit, but all need supplementary principles to explain or allow for special difficulties. Syntactic typologies are, however, a very recent phenomenon, and their proponents must be credited with attempting to explain characteristic word orders. They must also be credited
with arousing renewed interest in typology, an interest which has forced linguists to look at a wide variety of data and has brought up many new ideas which would not, perhaps, have been considered otherwise. The testing and development of these ideas is now before us.
FOOTNOTES

1 Pages 1 - 5 of this paper are to a large extent adapted from Kibbey Horne's Language Typology, 19th and 20th Century Views (Georgetown, 1966).


4 This is Horne's calculation - LT, p.39.


6 Ibid., p.144.

7 Ibid., p.140.

8 Ibid., p.144.


10 Sapir, p.144.

11 Sapir, p.144.

12 F.W. Householder, "First Thoughts on Syntactic Indices," IJAL, XXVI (1960), 195.


17 Lehmann does not define the terms "subject" and "object" (see also 66 below).

18 Lehmann cites no references for these "recent grammatical studies."


21 Ibid., p.146.

23 It should be noted that until January 1975, Vennemann's only published work on this subject was "Explanation in Syntax," in *Syntax and Semantics*, Vol. 2, ed. J. Kimball (New York, 1973). This article could be heavily criticized for its lack of clarity, its insufficient explanation and its often inconsistent reasoning. In subsequent unpublished papers, however, and in the just published "An Explanation of Drift", Vennemann has greatly clarified and refined his hypothesis on synchronic ordering to the point where it is now a comprehensible and plausible theory.

24 The semantic ordering of right to left is entirely arbitrary.


26 This semantic/syntactic correlation is confirmed by G. Lakoff (1969), who claims that a quantifier which precedes another quantifier [or a noun] on the surface is usually higher in the semantic structure of the sentence. Whether he intends this statement to be universal is unclear, as he does not comment whether the expected mirror VO structure also has this semantic correlation.

Like Lehmann, Vennemann does not define the term "subject." It seems he cannot define it as the NP which shows agreement inflection on the verb, as he does not posit verbal inflection for all languages. However, neither does he specifically define the subject as the deep structure Agent. I feel, therefore, he must define it as the NP which appears in the nominative case (see also 66 below).

Vennemann, "EIS." At this stage of his writing, Vennemann is still using the terms VO and OV and has not yet changed to VX and XV.

VSX languages, of course, are counterexamples to Vennemann's claim that the subject + predicate order is natural for all languages.


35 Kimball theorizes that the listener must have a very limited look-ahead capacity which allows him to correctly structure That John as an embedded sentence rather than as a potential NP, e.g. That John is fat - this one isn't.

36 Languages which immediately come to mind as conforming to this statement include Arabic, the Romance, Germanic and Celtic branches of the Indo-European family, the Bantu family, etc.

37 Kimball comments that "the operation of New Nodes [the creation of a new node in the parsing tree] in SOV languages needs further examination," (in "Seven Principles of Surface Structure Parsing in Natural Language," in Cognition, 2:1 (1972)). He also states that it is a "frequently observed
fact that sentences of natural language organize themselves
generally into right branching structures and that these
structures are less complex than left branching structures..."
Whether he intends this remark to apply just to English or
intends it as a language universal is not specified.

38 Susan Steele, "SFTA&EWO", p.12.
39 This is a restatement of Ross's theory of Heavy NP Constraint.
40 N. Chomsky & G.A. Miller, "Introduction to the formal analysis
of natural languages," in Handbook of Mathematical Psychology,
Chapter 11.
41 Edward Sapir, Language, p.141.
42 Lauri Hakulinen, The Structure and Development of the Finnish
43 Talmy Givón, "Historical syntax and synchronic morphology:
an archaeologist's field trip," paper presented at the 7th
Regional Meeting of the Chicago Linguistic Society (Chicago,
44 Carleton T. Hodge, "The Linguistic Cycle," Language Sciences
French uses the past participle as the base for its past periphrastic tenses.

This claim is independently made by D. Ingram in "A Note on Word Order in Proto-Salish," a paper presented at the IXth International Conference on Salishan Languages (Vancouver, 1974).

Emmon Bach's example, quoted in Givon, "HS&SM..."

Both older and more recent Indo-Europeanists agree that Proto-Indo-European went through a period of showing the verb in sentence final position. See, for example, C.O. Watkins, "Preliminaries to the reconstruction of Indo-European sentence structure," in Syntactic Theory Structuralist, ed. F.W. Householder (Penguin, 1972), p.124-134.


53 Li and Thompson, "HCOWO...", p.15.

54 Although Vennemann does not specifically state these reordering stages, they are implied by his theory.


57 Keenan, "AUDOS," p.2


59 Steele, "SFA&EWO," p.45.


Vennemann claims that the two stress patterns can account for Chomsky & Halle's Nuclear Stress Rule and Compound Stress Rule, which he feels are not language specific but result from the word order change which English is still in the process of undergoing. The stress rules would thus be part of a universal stress pattern. This claim appears to have some flaws in it (e.g. how does he explain redcoat vs. red coat by word order change), but they are not pertinent to this paper.

Keenan points out that the notion "subject" is very hard to define. His paper, "A Universal Definition of Subject of," attempts to provide a list of the characteristic properties of subjects. He admits, however, that these properties have been drawn from NPs which he "feels to be subjects of the sentences in which they occur" (p.1).

Vennemann's language cycle motivation and this criticism of it is based on internal cause and does not take into account
external influences such as language contact. P. Wolfe (p.c.) has suggested that the loss of Old English inflections was prompted by the intermingling of two languages whose roots were similar, but whose inflections were different (i.e. Anglo-Saxon and Norse). As Old English was already SVX when the language interaction occurred, it is difficult to judge to what extent the redundancy of the Old English inflectional markers hastened this process.


72 Old Icelandic noun paradigms varied as to whether they differentiated between the nominative and accusative cases, depending upon the class they belonged to. Modern Icelandic has levelled noun paradigms to those shown above, i.e. which
distinguish between the two cases. That the non-distinguishing paradigms changed to conform to the distinguishing ones suggests that the latter were in the majority, thus appearing to provide a counterexample to Vennemann's theory of motivation for the SXV $\Rightarrow$ SVX movement.

The Slavic languages do not differentiate nominative and accusative markers in inanimate and neuter paradigms, but the difference appears due to semantic rather than to phonological causes.

73 Larry Hyman, p.c. to Li and Thompson, "HCOWO..." p.19.

74 Compiled from Greenberg's "SUOG:rTl

75 Larry Hyman, p.c. to Vennemann, "EIS."

76 Susan Steele's example, "SFTA&EWO," p.55.

77 This statement is made in "Explanation in Syntax." In his later papers, Vennemann does not mention lack of verb agreement in SXV languages. I feel he has probably revised his opinion on this. In fact, all Vennemann's theories from p.13 4.5.1.2 of this paper onward are based solely on "Explanation in Syntax" and are not mentioned in subsequent papers.

78 These examples were provided by M.D. Kinkade (p.c.).
These tables are copied from "Explanation in Syntax."

I am not claiming such sentences are attested. I am merely using them as possible theoretical patterns.


Ibid.

"The Conversion of Edwin," in Anderson & Williams, OEH.

"The Anglo-Saxon Chronicle," in Anderson & Williams, OEH.


Traugott points out that the use of demonstratives in Old English did not parallel the use of the definite article which later arose. She writes:

"One of the most striking things about the NP in OE is the almost complete absence of anything directly corresponding to our a and the ... the derives from the OE b- element that occurs in most forms of the demonstratives this and that. Pes, pēos, bis, this is used specifically as a pointer or deictic; se, sēo, pes, that may be either a pointer or more often an element that singles out a specific noun from the general class ..." (86).
Traugott indicates that se, seo, ëæø sometimes carry the meaning 'aforesaid,' and comments:

"The grew directly out of such uses of se, seo, ëæø. While the does not occur in OE, there are instances of se seo, ëæø ... used in a way that suggests weakening of the dual sense 'specific' and 'aforementioned' to simply 'aforementioned.'" (87)

I would suggest that the broadening environment for se, seo ëæø is evidence of its spread as a general nominal marker.

87 Vennemann also notes this tendency.
LIST OF WORKS CITED


Fries, Charles C. "On the development of the structural use of word order in Modern English," Language, 16. 1940.


____. Lecture #2 Handout at Linguistic Society of America summer institute. 1974.


