The successive presentation of sounds within *words*, of words within *sentences*, and of sentences within discourse is a fundamental property of language. In writing, succession in time is substituted by the spatial sequence of graphic elements. This article deals with the order of words within smaller and larger sentential phrases. An important task of word order research is to account for the discrepancy between the enormous number of possible word order combinations and the relatively small number of patterns that are actually attested across languages. This gap is attributable to a set of ordering constraints pertaining to different factors. In most cases, a constraint may be violated in order to obey to another competing constraint (see *preference rules* and *optimality theory*). The different linearization factors have received divergent interpretations and a varying degree of attention reflecting the type of notion that is particularly significant in the respective theoretical approach (cf. section 4 below). In the following three sections, the most important factors will be subsumed under a small number of violable linearization principles, which will be presented informally or in familiar syntactic terms for convenience.

**Linear Continuity and Locality**

According to the principle of linear continuity, elements that are directly connected to each other *syntactically* or *semantically* are placed next to each other within a phrase. Conversely, this principle, bans linear discontinuity between directly related elements. A weaker version requires that related elements occur in a particular local domain. Thus, for example, the following pairs of elements tend to occur in the same phrase: adjective and noun in the noun phrase, preposition and noun in the prepositional phrase, and subject, object, and predicate
within the same clause. Another corroborating observation is that manner adverbs such as *gladly* or *violently*, whose occurrence is strongly restricted by the semantic class of the predicate, tend to appear closer to it than time modifiers such as *in the evening* or *next year*, which are more loosely connected to the predicate.

Phenomena violating this principle are, for example, preposition “stranding” and quantifier “floating,” such as in the English examples *The bed has been slept in* and *The men were all sleeping*. Languages that adhere less strictly to this principle are, for example, Latin and many Australian languages including Warlpiri. The strength of this principle correlates with the amount of internal structure within a phrase, and, accordingly, languages such as Warlpiri are claimed to be non-configurational.

Linear continuity and locality do not restrict the relative order of elements in a phrase. Other general principles, which will be presented in the next two sections, are concerned with this issue.

**Head Linearization**

According to the head linearization principle, the head of every phrasal category tends either to precede or to follow all its dependents, i.e., arguments and modifiers. In language processing, heads are elements that identify and construct mother nodes, i.e., phrases (see Hawkins 1994, 2005). This processing function is based on the grammatical property of heads to determine the category of the phrase: nouns establish noun phrases, verbs verb phrases, and so forth for all categories. Alternatively, the head linearization principle is formulated in terms of a consistent rightwards or leftwards direction of government, yielding head-initial or head-final phrases respectively (e.g., Haider 1997). Government in a general sense means that a head
determines the occurrence, category, *CASE*, syntactic function, or semantic role of its dependents. Figure 1 lists head-dependent pairs and their mirror order:

(1)  

<table>
<thead>
<tr>
<th>head – dependent:</th>
<th>dependent – head:</th>
</tr>
</thead>
<tbody>
<tr>
<td>verb – object</td>
<td>object – verb</td>
</tr>
<tr>
<td>preposition – noun</td>
<td>noun – postposition</td>
</tr>
<tr>
<td>auxiliary – main verb</td>
<td>main verb – auxiliary</td>
</tr>
<tr>
<td>complementizer – clause</td>
<td>clause – complementizer</td>
</tr>
<tr>
<td>verb – manner adverb</td>
<td>manner adverb – verb</td>
</tr>
<tr>
<td>noun – genitive attribute</td>
<td>genitive attribute – noun</td>
</tr>
<tr>
<td>noun – relative clause</td>
<td>relative clause – noun</td>
</tr>
<tr>
<td>noun – adjective</td>
<td>adjective – noun</td>
</tr>
<tr>
<td>noun – numeral</td>
<td>numeral – noun</td>
</tr>
<tr>
<td>noun – demonstrative</td>
<td>demonstrative – noun</td>
</tr>
<tr>
<td>verb – sentence modifier</td>
<td>sentence modifier – verb</td>
</tr>
</tbody>
</table>

Highly consistent head-dependent order is found, for example, in Berber, Biblical Hebrew, Chinook, Irish, Maori, Maasai, Welsh, and Zapotec. The reverse dependent-head order characterizes Basque, Burmese, Hindi, Japanese, Kannada, Laz, and Turkish. Mixed types arise mainly from the inconsistent position of categories that are more loosely connected to their head such as adnominal adjectives, demonstratives, and numerals as well as sentence modifying adverbs such as negation and time adverbs (cf. Hawkins 1983, Chap. 3; Dryer 1992). Due to competing constraints, complementizers (cf. Hawkins 1994, 323-8) and subjects (cf. section 3
below) tend to be placed in initial position in both types of languages.

The Relative Position of Dependents: Dependency and Familiarity

According to one principle that governs the relative position of dependents, a non-head
element that depends syntactically or semantically on another non-head element tends to be
preceded by it in linear order (cf. Primus 2001). Such a dependency relation holds, for example,
between antecedents and their ANAPHORA (see BINDING). The semantic reference of an
anaphor such as himself is dependent on that of its antecedent, e.g. John admires himself. In
order to assess the referent of himself one has to know the referent of John. The ordering
principle under discussion correctly predicts that antecedents tend to precede their anaphora.
Besides antecedent-anaphor relations, the range of non-head dependencies includes the pairs in
(i) – (iv), which are linearized as stated:

i) An element having semantic scope over another element tends to precede it. In the
preferred reading of all men admire a woman, for example, the interpretation of the
existential quantifier a is dependent on that of the universal quantifier all: the number of
admired women depends on the total number of men in the situation. Contrast the
interpretation of a woman is admired by all men.

ii) Elements that set the frame of reference for other elements, i.e. topics, tend to precede
non-topical elements.

iii) In general, an oblique object unilaterally implies a nominative subject. Accordingly,
nominative subjects are preferably placed before oblique objects.

iv) In general, the affectedness of a participant in the situation described by a predicate
unilaterally implies a source or instigator, i.e., agent or causer. Accordingly, agents or
causers tend to precede affected objects.

The dependency principle and the fact that the subject function correlates with the topic, nominative or agent function are claimed to explain the observation that in about 95 percent of the world’s languages subjects precede objects in the normal order, cf. John (topic, nominative, agent, subject) wrote a letter (non-topic, oblique, object, affected by the action of John).

Another pertinent principle is based on the notion of familiarity (cf. Tomlin 1986; Siewierska 1988, 1993). Due to this principle, elements that refer to entities that are familiar to the speaker or hearer—such as personal pronouns, definite and animate noun phrases—tend to precede unfamiliar elements. Since subject selection favors familiar elements, this principle contributes to an explanation of the subject-first preference.

Main Theoretical Approaches and Recent Developments

Word order is a main topic of research in various frameworks. Within the tradition dedicated to TYPOLOGY and FUNCTIONAL LINGUISTICS, Greenberg (1963) is a pioneering work for the observations leading to the general principles discussed above (see Primus 2001 for further references). This framework, which is affiliated to COGNITIVE GRAMMAR and COGNITIVE LINGUISTICS, is particularly interested in functional principles based on familiarity and other cognitive or semantic-pragmatic factors (e.g., Tomlin 1986; Siewierska 1988, 1993). In the last decades, typological research has been concerned with enlargening the data base and improving the language sampling methodology (e.g. Tomlin 1986; Dryer 1992, 2002).

Mainstream GENERATIVE GRAMMAR is primarily concerned with general syntactic principles and abstract PHRASE STRUCTURES that constitute UNIVERSAL GRAMMAR (see
PRINCIPLES AND PARAMETERS THEORY and MINIMALISM). Linear order is generally considered to be an epiphenomenon of phrase structure and, accordingly, eliminated in the formulation of general principles in favor of structural relations in some approaches (e.g., Kayne 1994; Haider 1997). Major contributions of this paradigm towards a better understanding of word order phenomena include the clarification of pertinent structural notions such as the head of a phrase (cf. section 2 above) and a structural, locally restricted government notion (cf. section 1 above). In addition, this framework explains a word order pattern that violates a general principle in terms of MOVEMENT. The focus lies mainly on Universal Grammar and on abstract, UNDERLYING STRUCTURES; the variation that is manifest across languages is considered to be a superficial phenomenon.

Following the development of the neurosciences in the last decades, approaches to word order that are based on language processing have gained impetus. A processing explanation for consistent head linearization is offered by Dryer (1992) and Haider (1997) in terms of a consistent rightwards or leftwards branching direction of syntactic nodes. Non-head dependencies have also been given a neurolinguistic foundation (cf. Schlesewsky et al. 2003). The work of Hawkins (1994, 2004) constitutes the most far-reaching enterprise. Linear continuity, locality, consistent head serialization, the linear expression of non-head dependencies as well as other phenomena including the tendency to place shorter constituents before longer ones are assumed to follow from a few general principles that guarantee a more rapid and efficient online processing of linguistic structures.

New areas for future research include the following topics. Word order correlates with many other aspects of grammar, but apart from inflexion, which is better understood (see Siewierska 1998; Dryer 2002), further correlating factors need to be discovered and studied.
systematically. The relatively recent discovery of broader AREAL and genetic patterns constitutes another new challenging area of research (cf. Haspelmath et al. 2005). The divergent views of functional-typological, formal-structural, and processing-based frameworks are an impediment to cooperation. A promising integrative approach is proposed by Culicover and Jackendoff (2005).

-- Beatrice Primus

Works Cited and Suggestions for Further Reading


