

Minimalism

Minimalism is the name of the predominant approach in generative linguistics today. It was first introduced by Chomsky in his work *The Minimalist Program* (1995) and has seen several developments and changes since. The central idea of minimalism is that a linguistic theory should contain as few non-derived assumptions as possible. Many notions that had been developed in earlier generative theory, specifically the Government & Binding theory (GB), have been abandoned, in an attempt to derive them from more basic concepts.

In Chomsky's (1995) view, minimalism is an implementation of the more general Principles and Parameters model. According to this language model, the human language capacity consists of a set of universal principles combined with a set of parameters. The principles are thought to be innate, which means that every language adheres to them. The parameters can be thought of as switches that can be set in two positions. Learning the syntax of one's native language, according to Chomsky's view, is a matter of acquiring the correct parameter settings for the language.

Chomsky describes syntax as a cognitive system that connects two other cognitive systems: the conceptual-intentional system and the articulatory-perceptual system. Because syntax is linked to these two systems, the syntactic model defines two interface levels, one for each of them: Phonological Form (PF) is the interface to the articulatory-perceptual system, and Logical Form (LF) is the interface to the conceptual-intentional system.

The grammar model is built up as follows: a clause is derived by selecting a set of lexical items from the lexicon. This set is called the numeration. The syntactic (tree) structure of the clause is built up by taking words out of the numeration one by one and putting ('merging') them in the structure. At the same time, other syntactic operations can take place. The end result of this derivation is LF, the interface form for the conceptual-intentional system. If, during the derivation of LF, a principle of grammar is violated, the derivation is said to *crash*. The clause under consideration is then considered

ungrammatical. At some point during the derivation of LF, *spell-out* takes place. Spell-out refers to the process of deriving PF, the interface form to the articulatory-perceptual system. PF basically contains the phonological and prosodic features of the clause.

Apart from LF and PF, the fundamental concepts in minimalist syntax are *economy*, the principle of *Full Interpretation*, and *features*. These concepts will be discussed here in order. *Economy* means that operations of the syntax component (the *computational system*) must cost as little as possible. Cost is defined in terms of the number of operations that it takes to derive a certain structure, and sometimes also in the relative 'heaviness' of different operations, i.e., some operations can be more costly than others.

In the earlier years of minimalism, there was much discussion on economy. The idea was that the language model must be able to compare the cost of different derivations and then select the least costly one. However, this idea (often called *global relative economy*) was abandoned because it would require too much from the computational system: instead of deriving just one clause, two or even more would need to be derived. Furthermore, it turned out to be difficult to establish which derivations would be candidates for comparison of their 'cost'. Global relative economy was therefore replaced by local absolute economy, which basically means that at each step in the derivation when there are different options for continuing, the least costly option would have to be selected, no matter what the cost of the entire derivation would be.

The adoption of local absolute economy has resulted in the disappearance of the notion of economy from most domains of the theory. The idea of economy was based on comparison of different options, but local absolute economy means that in each situation only one option is possible, and therefore there is no need for comparison. (The notion of economy is still at the basis of what is often called *minimality*: the condition that the distance between two agreeing elements be as short as possible.)

The concept of *Full Interpretation* (FI) is a principle that is fundamental to minimalism. FI states that the syntactic representation cannot contain elements that have no semantic relevance. Earlier generative

theories had introduced a number of elements into the syntactic representation that existed solely to facilitate syntactic computation. Basing himself on the principle of Full Interpretation, Chomsky (1995) claims that these elements should not be postulated: FI has led to the abandonment of several core notions of GB theory, most notably X-bar theory, indices and category labels. (It should be noted, however, that many authors still make use of indices and category labels and even of X-bar levels, because they make an analysis easier to read. Strictly speaking, however, they should be taken as mnemonic devices, not as part of the theoretic apparatus.)

Features are properties of heads. Heads are the basic syntactic components, the elements with which the computational system builds structures. In principle, each word is a head, but elements such as affixes, determiners, complementizers etc. are also heads. Heads can also be covert, i.e., void of phonological content. Technically speaking, a head can be described as a bundle of features. Typical examples of features are gender, number, person, (in)definiteness, tense, aspect, case, etc., which are examples of so-called syntactic features. The grammar model also specifies semantic features, such as a quantifier feature, an interrogative feature, focus and topic features, etc. Less important to syntax proper but nonetheless essential for language are phonological and prosodic features.

In earlier minimalist models, features were often considered binary. E.g., a head had a feature [Tense], which took the value [+Tense] or [-Tense]. In more recent developments, there is a move toward a valued feature system, in which features can have more than just plus or minus values. E.g., a noun has a feature [Gender], which can have the value *masculine*, *feminine* or *neuter*. (Possibly others, depending on the language.) The feature [Tense] now specifies tense (*past*, *present* or *future*), and absence of it means infinitival (which in the old system was [-Tense]).

Features are at the heart of the syntax model of minimalism. All syntactic computation is done on the basis of features. The computational system, i.e., the component that builds the syntactic tree, has two operations: *Merge* and *Agree*. Merge is the operation that combines syntactic elements into larger structures. This is how trees are built. Agree is the operation that establishes a relation between two

different elements in the syntactic structure through which feature values can be exchanged. This operation is responsible for agreement phenomena that we see in language.

The approach sketched here can be considered strictly Chomskian, because it is in essence the approach that Chomsky develops in his work. There are other approaches within generative grammar, however, that adopt minimalist principles in varying degrees, and that at times may interpret certain principles differently, leading to different formalizations. For example, the operation Agree establishes an agreement relation between two elements. These two elements will obviously be in different locations in the structure, the higher one (which is always a head) being called the *probe*, the lower one (which is generally a phrase) the *goal*. In Chomsky's (1998) view, Agree can only be established from the probe to the goal, while other authors (e.g., Lasnik, 1999) argue that it can be established in either direction.

The most influential alternative proposal within generative grammar has been developed by Kayne (1994). In a strict sense, his proposal, generally called *antisymmetry*, is not minimalist, because it is more of a continuation than a break with GB theory: some concepts that Chomsky (1995) abandons because they violate FI, most notably X-bar theory, are retained by Kayne. In a broader interpretation, however, antisymmetry can be seen as a minimalist approach, because like minimalism it is an attempt to reduce concepts from GB to more basic notions.

The tree in figure 1 will help to see the differences between Chomsky's minimalism and Kayne's antisymmetry.

INSERT FIGURE 1: Basic tree structure.

Figure 1 presents the basic structure of syntactic trees that generative grammar uses. H is the head, (i.e., a bare verb, bare noun, preposition, etc.) which projects to H' (pronounced as *H-bar*) and HP.

(Here, the P stands for 'Phrase', while H can represent any head, such as N (noun), V (verb), A (adjective), P (preposition) and others. Thus are formed NP (Noun Phrase), VP (Verb Phrase), AP (Adjective Phrase), PP (Prepositional Phrase), etc.) The head is combined with a *complement*, and the head-complement complex is further combined with a so-called *specifier*. The first difference between Chomsky and Kayne is that Chomsky argues that if the complement is absent, there is no H', and similarly if there is no specifier, HP is absent, (or more correctly, that H or H' equals HP in that case), while in Kayne's view H' and HP are always present, even if specifier and/or complement are absent. Chomsky also argues that there can be more than one specifier, while Kayne maintains the stricter notion that there can be only one specifier. Furthermore, according to Kayne, it is always the case that the specifier precedes the head and the complement follows it, while Chomsky argues that there is no predefined order.

Other differences are more technical. As stated, Chomsky argues that the agreement relation is between a head (the probe) and an element further down in the tree (the goal). When an agreement relation is established, the goal can be moved up to the specifier position of the probe. In Chomsky's view, this is the only situation in which movement can occur: it must follow a successful Agree operation. Kayne, on the other hand, argues that Agree always takes place between a head and its specifier, and he argues that movement can always take place. In other words, for him, there is no relation between Agree and movement, as there is for Chomsky.

In short, *minimalism* is not a specific, well worked-out syntactic theory. Rather, it is a set of ideas on what a linguistic theory should look like. In principle, if one wished, it would be possible to distinguish several different syntactic theories based on minimalist ideas, but in practice it is very rare to find an author adhering strictly to one such theory. Most authors combine concepts from different sources. In other words, the field is still searching for a minimalist syntactic theory that suits both the data and the fundamental conceptual notions best.

One consequence of minimalist theory is that certain phenomena that were previously seen as

syntactic are no longer considered as such, or at least it is questioned whether they should be.

Generally, the derivation towards LF as explained above is called *core syntax*. The operations that are available in core syntax are limited, which means that the type of phenomena that can be accounted for in core syntax is strictly defined. It turns out that there are systematic phenomena that have always been regarded as syntactic that cannot easily be described in core syntax within a minimalist framework. As a result, ideas have developed in which such phenomena are dealt with not in core syntax but in other domains, most notably in the derivation of PF.

In Arabic syntactic research, minimalism is the dominant approach. Although many different aspects are discussed (see, for example, the series *Perspectives on Arabic Linguistics*), there are a few issues that receive more attention than others. One of the topics no doubt most often discussed is the VSO word order pattern, the alternation with SVO order and the verbal agreement that appears in these cases. There are few authors that follow the idea of traditional Arabic grammar that SVO is basically a topic-comment (*mubtada' - xabar*) structure. (Although they would probably agree that it can be sometimes.) The discussion therefore focuses on several points: what is the cause of the word order variation, i.e., what is the syntactic structure of both word orders and how are the structures derived; how is the agreement relation established between the verb and the subject, both in SVO and in VSO orders, and why does SVO show full agreement, while VSO only shows agreement in gender?

There are several different proposals to solve these questions. (A discussion of some of them can be found in Harbert & Bahloul, 2002.) One proposal says, for example, that there are actually two different types of agreement relations in language (which differs from 'standard' assumptions, which state that there is only one type) and that SVO instantiates a different type than VSO. Another proposal is that there is only one type of agreement, but there are two independent agreement processes, which take place in different positions in the clause: one establishes agreement in gender, and one establishes agreement in number. The idea is that the subject of a clause always first moves to the position where

gender agreement occurs, which is the position directly following the verb. It is then possible but not obligatory to move the subject to a higher position preceding the verb, where number agreement takes place. If the verb moves to this position, SVO order results, together with agreement in both gender and number. If the verb does not move, VSO order results, and there is only agreement in gender. This type of proposal is somewhat problematic for minimalist theory, because a strict interpretation of minimalism does not allow optionality. Therefore, it would be necessary to establish why the subject moves to the highest (most frontal) position in some cases and not in others.

Another type of proposal is worked out by Ackema & Neeleman (2003). Their proposal is a good example of the development mentioned above that certain phenomena are no longer seen as part of core syntax. Ackema & Neeleman's proposal is formulated in another minimalist-based framework, called *flexible syntax* (Neeleman & Weerman, 1999). The central idea of this framework is that certain types of operations take place not within syntactic domains but within prosodic domains. With this idea, Neeleman & Weerman account for word-order variation between various languages (VO vs. OV), and they link other phenomena (such as the possibility of *scrambling*: deviations from 'standard' word order for pragmatic reasons) to it. Ackema & Neeleman build on this, and argue that there are more phenomena than just word order and scrambling that can be better accounted for in prosodic domains than within syntactic ones.

One example they discuss is so-called *split agreement*, the fact that certain languages show different subject-verb agreement paradigms in VS orders than they do in SV orders. The phenomenon occurs for example in some Eastern Dutch dialects, and even in one form of present tense agreement in Standard Dutch. When the subject follows the verb, the subject and verb form a prosodic domain. The idea is that when this happens, a 'phonological' agreement process can take place, which has a different paradigm than 'syntactic' agreement. The latter occurs when the subject precedes the verb, in which case the two do not form a prosodic domain.

Ackema & Neeleman then develop the idea that something similar happens in Arabic. In an SVO

order, subject and verb do not form a prosodic domain, and hence full agreement is required. In VSO order, however, subject and verb are in the same prosodic domain, which results in a weakening of the agreement. In other words, Ackema & Neeleman argue that there are two types of agreement, but unlike the proposal mentioned above, it is not the case that there are two types of syntactic agreement. Rather, the two types can be distinguished by the place where they occur: one type of agreement exists in core syntax, another type can occur in the derivation of PF.

The VSO nature of Arabic and the split agreement that it has are actually quite important to generative grammar and minimalism in particular. The most heavily studied languages in generative grammar are the Romance and Germanic languages, which are SVO with SOV alternations in some languages, and Japanese, which is SOV. Together with the Celtic languages, Arabic is probably the most widely studied VSO language in generative grammar, and as such it has a lot to contribute to the development of the general theory.

There are one or two other properties of Arabic that have a similar status, the *construct state* being one of them. The first to discuss the construct state within a generative framework was Ritter (1991), who discusses the possessive structures of Modern Hebrew. As with the VSO/SVO alternation, there are several different proposals for the structure of the construct state. One proposal, (e.g., Mohammad, 1988) and perhaps the most common, is based on the observation that with deverbal nouns, the subject of the original verb becomes the genitive possessor. This prompts the suggestion that the possessor is located in the specifier position of the possessed noun, just like the subject of a verb is in the specifier location of the verb. Since this would lead to a surface order of possessor-possessed, which is incorrect for Arabic, it is suggested that the possessed noun moves to the position of the determiner. This movement would explain why the possessed noun in the construct state does not have a definite determiner at all: its canonical position (usually labeled D), is already occupied by the noun.

Another proposal is put forth by Benmamoun (2000), who argues that the lack of number agreement in VS structures is related to the absence of a determiner on the possessed noun in the construct state.

The idea is that the verb and its subject, and likewise the possessed noun and its possessor, undergo some form of phonological 'merger' operation after syntax proper, that results in a single complex (phonological) word, in which the number feature and the definiteness feature can only be represented once.

A different analysis is developed by Kremers (2003). Kremers, whose analysis is made within a strictly minimalistic, Chomskian approach, points out some similarities between the construct state and the so-called *Saxon genitive* in English (the pre-nominal possessor construction such as 'the man's car') and argues that both constructions have basically the same structure. (The obvious word order differences between the two constructions, which would normally follow from the structural analysis, are accounted for with an extra-syntactic linearization procedure.)

This analysis shows that the concept of construct state has had some influence in generative syntax in general. Kremers is not the first author to suggest that a construct state analysis could apply to possessive constructions in non-Semitic languages. Longobardi (1995) makes a similar suggestion for a certain type of possessive construction in Romance languages.

Another topic that may be considered to be of interest to generative grammar in general is negation in Arabic. The fact that Standard Arabic has two types of negation, one that carries tense (*lā*, *lam* and *lan*) and one that does not (*mā*) confirms the notion that both tense and negation are present on independent heads in the structure. Furthermore, Ouhalla (2003) argues that the negation circumfix that is common in several spoken varieties of Arabic confirms certain ideas on the logical representation (the LF form) of negation.

A final topic to be mentioned here is that of adjective ordering, (and ordering on noun-phrase modifiers in general, i.e., demonstratives, numerals, quantifiers.) Arabic has strictly post-nominal adjectives, and as such contrasts with Germanic (which has pre-nominal adjectives) and with Romance (which usually has both pre-nominal and post-nominal adjectives.) Because of certain restrictions that the antisymmetric framework of Kayne (1994) mentioned above places on syntactic trees, a very

specific type of analysis has to be developed to account for post-nominal adjectives, which is attempted for example by Fassi Fehri (1999) and Shlonsky (2000). This analysis is challenged, however, by Kremers (2003) who develops an alternative account, which is compatible with Chomsky's minimalist approach rather than with Kayne's antisymmetry.

There are many other topics that are the object of investigation and discussion in Arabic syntax. Some good recent collections of papers can be found in Ouhalla & Shlonsky (2003) and the series *Perspectives on Arabic linguistics: Papers from the annual symposia on Arabic linguistics*.

Because generative grammar aims at developing a universal syntax theory, it has a strong comparative nature. Structures that are studied in a Germanic or Romance language are often compared to equivalent structures in other Germanic or Romance languages, because the languages within these families are often very alike. As a result, there is some focus nowadays on *micro-variation*, variation in details among languages and dialects that are by and large very similar. Arabic, with its large variety of spoken dialects, would lend itself quite well for this sort of research, but to date not much comparative work between different dialects has been done, one recent exception being Benmamoun (2000). Similarly, comparative studies between Standard Arabic and the spoken varieties is still not too common.

A bit more comparative work is being done on Hebrew and Arabic, although mainly by Israeli authors, as witnessed by several papers in Shlonsky (1997) and Ouhalla & Shlonsky (2002). Although Arab authors and Western arabists are familiar with the work on Hebrew and use it where appropriate (the construct state, for example, was first analyzed in Hebrew, and this analysis was adapted to Arabic), they usually do not venture to extend their analyses to Hebrew.

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