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Functional categories, X-bar theory, and grammaticalization theory

Summary

The paper reviews a number of parallels between grammaticalization theory and Chomskyan syntax that are not apparent because of the radically different ways of talking in these two research traditions. First, the recently rediscovered 'functional categories' evidently correspond to highly grammaticalized elements. Second, neither functional categories nor highly grammaticalized elements are restricted to either word or affix status. Third, several functional categories have head status both from the point of view of Chomskyan syntax and from the point of view of grammaticalization theory. However, these parallels break down when determiners are considered, and the treatment of head and dependent marking is also different in both approaches. The reason seems to be that Chomskyan syntax primarily aims at formal elegance and therefore sometimes makes arbitrary choices which are overgeneralized.

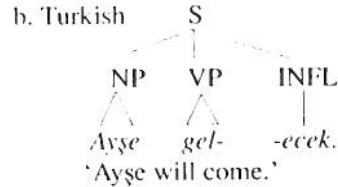
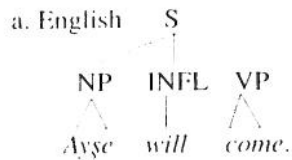
1. Grammaticalization theory and Chomskyan syntax

As is well known, the theoretical discussion of phenomena of grammaticalization and their significance for grammatical theory has mainly taken place among functionally oriented linguists (see, e.g., LEHMANN 1982, HEINE et al. 1991, TRAUGOTT & HOPPER 1993). The currently dominant school of grammatical theory, the Chomskyan school, has hardly taken notice of this discussion. This is not only due to external sociological factors, but is clearly motivated by the ingredients of grammaticalization theory: Phenomena such as gradual grammatical change and variation within the grammatical system are generally idealized away in Chomskyan linguistics, and such fundamental theoretical notions as scales and prototypical categories are not generally accepted – in this respect, Chomskyan linguistics has remained faithful to its structuralist heritage.

Thus, it is no accident that insights of grammaticalization research have not been exploited in generative grammar, and it would evidently be too optimistic to expect this for the foreseeable future. This does not, however, mean that Chomskyan grammar and grammaticalization theory are totally irrelevant for each other. Even though it is very difficult to directly transfer insights into another theory, I maintain that it is nevertheless useful to compare different approaches where they deal with the same phenomena, because they allow us to see these approaches in a new light.

Unfortunately, the following discussion will have to remain at a rather abstract level, and no new data will be cited. This is unavoidable because at more concrete levels, cross-theoretical comparison is even more difficult.

(5) Functional category "INFL" (auxiliary verb, verbal inflection)



Such parallels between function words and affixes cannot be captured if word structure is completely separated from phrase structure, as is done in traditional grammar, but also in some modern theories (e.g. ANDERSON 1992 and other strict lexicalists).

4. Second parallel: head status of "COMP" and "INFL"

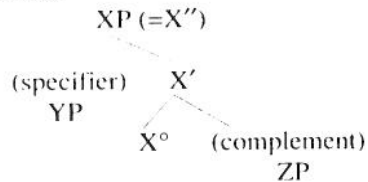
Another interesting parallel between the two approaches, which is apparently little known, is the head status of subordinators (called "COMP" in generative grammar) and auxiliaries and bound verb inflection (called "INFL").

The notion of **head** was introduced into Chomskyan syntax only in CHOMSKY (1970). As the list of alternative terms for heads and non-heads in (6) shows, the head/dependent distinction is also a traditional concept which was first regarded as dispensable, but had to be adopted from other grammatical approaches (or reinvented) later, like the notion of functional categories.

(6) head	dependent	(NICHOLS 1986)
head	specifier, complement	(Chomskyan syntax)
head	attribute	(BLOOMFIELD 1933)
Nukleus	Satellit	(SEILER 1960)
operand	operator	(VENNEMANN)
<i>veršina</i> 'peak'	<i>zavisimoe</i> 'dependent'	(Russian grammar)
<i>vozdžain</i> 'master'	<i>sluga</i> 'servant'	(MEL'ČUK 1974)
determinatum/regens	determinans/rectum	(traditional Latin-based grammar)

However, CHOMSKY (1970) formulated the head/dependent distinction in a very specific way, in the form of X-bar theory. X-bar theory says that the internal structure of a phrasal category generally conforms to the schema in (7).

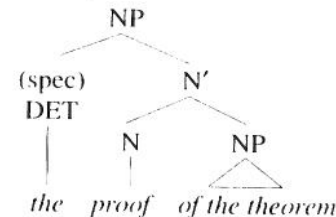
(7) X-bar schema



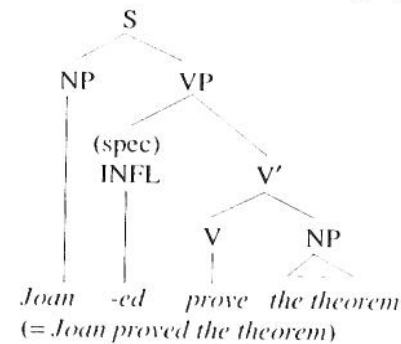
That is, there are three "bar levels": (i) X°, the lexical head of the phrase; (ii) an intermediate level or "projection" X', consisting of X° plus a "complement"; and (iii) the "maximal projection" X'' or XP, consisting of a "specifier" plus X'. This general schema allows generative syntacticians to express certain parallels between different phrasal cate-

gories. Thus, the NP in (8) has a structure quite analogous to the structure of the VP in (9), and both instantiate the schema in (7).

(8) Noun phrase (CHOMSKY 1970, slightly modernized)

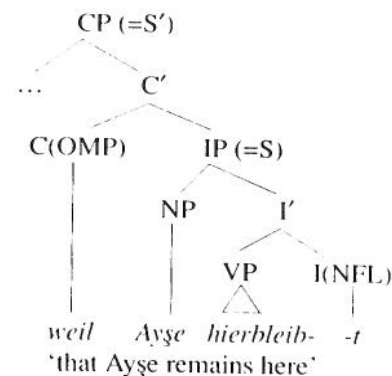


(9) Sentence (CHOMSKY 1970, slightly modernized)

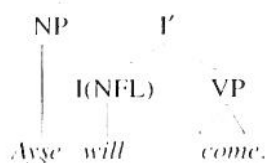


Since the early 1980s, CHOMSKY tried to completely eliminate phrase structure rules, and the attempt was made to subsume also all the other categories under the X-bar schema in (7). With CHOMSKY 1986 (*Barriers*), the standard theory abandoned the categories S and S', which did not fit into the X-bar schema. They were replaced by the maximal projections of the functional categories COMP and INFL, CP and IP. In the *Barriers*-system, the two sentences of (4a) and (5a) have the constituent structures shown in (10) and (11).

(10)



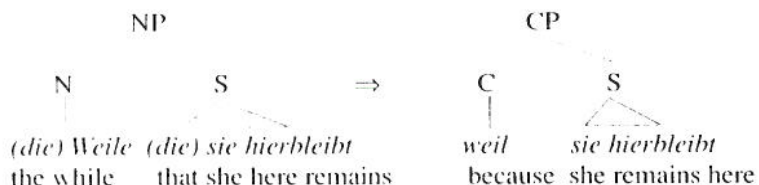
(11) IP (=S')



This analysis leads to more elegance in three respects: (i) There are no longer any categories that do not project up – COMP and INFL, too, now have intermediate projections (C', I') and maximal projections (CP, IP). (ii) There are no longer any exocentric categories like S or S' that are not projections of an X°. (iii) All specifiers and complements are now maximal projections. Thus, the X-bar schema of (7) is much more generally applicable now, and conceptual/esthetic progress has no doubt been made.

Although it would seem that there was no empirical motivation for the new analysis, we observe an interesting convergence with the grammaticalization perspective. If we assume that head/dependent relations remain constant in grammaticalization and that reanalysis and reversal of the head/dependent relation is not possible (as argued in HASPELMATH 1992), it also turns out that subordinators and auxiliaries are heads. Subordinators generally arise from nouns or adpositions, i.e. from heads, and when these are grammaticalized, preserving the head/dependent relation, we get a function word heading a sentence, as shown in (12). The German subordinator *weil* 'because' < 'while' goes back to the noun *Weile* 'while'. (Cf. KOREMANN in prep. for the grammaticalization of adverbial conjunctions.)²

(12) N-to-C grammaticalization

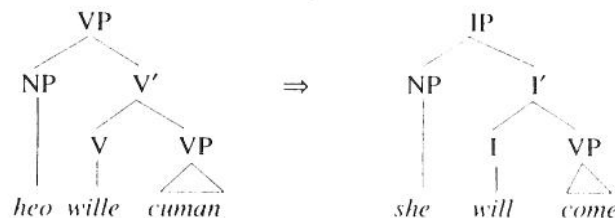


Analogously, auxiliary verbs and tense and aspect affixes as a rule come from full verbs, so that we get an auxiliary verb or even a verbal affix heading the clause, as exemplified schematically in (13). (See BYBEE & DAHL 1989 for the grammaticalization of tense and aspect from lexical verbs.)

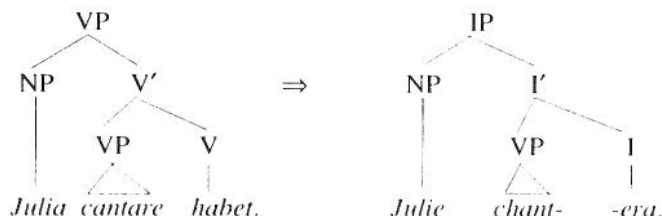
² It is harder to make generalizations about the sources for subordinators used in complement constructions, such as English *that*, German *dass*, Turkish *-dlk*, etc. In some cases they seem to go back to demonstrative or relative pronouns, but in many other cases these subordinators are very old and their origins are unknown. Thus, perhaps not all cases of subordinating conjunctions can be traced back to earlier lexical heads, but subordinators that go back to noun and adposition heads constitute the large majority of subordinators whose source is wellunderstood.

(12) V-to-I grammaticalization

a. Old English to Modern English



b. Latin to French

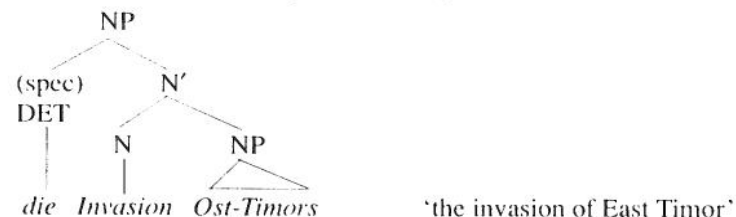


Thus, although perhaps not every grammaticalization theorist would agree that complementizers and tense-aspect auxiliaries and inflections are heads, it is clear that CHOMSKY'S analysis if CP and IP can be given a meaningful interpretation from the point of view of grammaticalization theory.

5. End of the parallel: the DP analysis

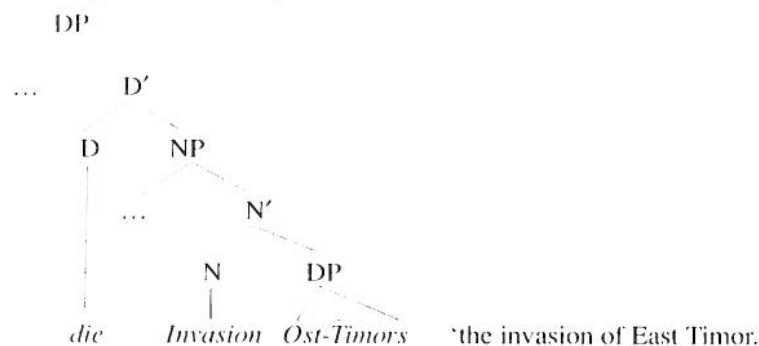
However, the X-bar schema has been extended even further since 1987: ABNEY (1987) proposed to analyze the functional category DET (determiner) in the noun phrase as a head, in analogy to COMP and INFL, so that a noun phrase is no longer an NP, but a DP.

(14) a. NP analysis of the noun phrase (example from German)



³ This analysis is not possible for all cases of grammaticalization, but it is possible for a large number of cases.

b. DP analysis of the noun phrase



The DP analysis allows one to extend the X-bar schema also to the noun phrase, so that it is now maximally general, and further conceptual/esthetic progress has been made.

However, here the parallel between Chomskyan syntax and grammaticalization theory stops. Determiners do not arise from lexical heads like subordinators and auxiliaries, but from lexical dependents, so that from the point of view of grammaticalization there is no reason to think that they would ever become heads. Determiners like definite articles generally come from demonstrative adjectives (e.g. English *the* from Old English *se* 'that', Italian *il* from Latin *ille*), indefinite articles generally come from the numeral 'one' (see GIVÓN 1981), quantifiers like 'all' and 'every' often come from adjectives (see HASPELMATH to appear).

Here we see the decisive difference between the two approaches: Chomskyan syntax makes the general assumption that functional categories are heads, because otherwise they would not fit into the X-bar schema. (Dependents have to be phrasal categories in the X-bar schema, and functional categories are not phrasal themselves.) Grammaticalization research, by contrast, has shown that not only heads, but also dependents (both modifiers and arguments) can be grammaticalized. Grammaticalization and head/dependent status are thus independent of each other, as illustrated by the examples in (15).

(15) Grammaticalization of heads and dependents

heads		nouns	> adpositions
			> subordinators
		verbs	> auxiliaries, verbal affixes
			> adpositions
dependents	modifiers	adpositions	> subordinators
			> case affixes
	arguments	adjectives	> determiners
		adverbs	> applicative-markers
		pronouns	> agreement affixes

¹ See SILLIG (1992) for a recent study of the grammaticalization of demonstratives into articles in Latin and Romance.

Perhaps grammaticalization of lexical heads is more common than grammaticalization of lexical dependents, but there is no reason to assume that there exist any restrictions on the grammaticalization of dependents. Thus it is quite normal that there are both function elements that are heads (like auxiliaries and most subordinators) and function elements that are dependents.

As far as I can see, there is no empirical motivation for the assumption in Chomskyan syntax that all functional categories are automatically heads. This assumption follows from the arbitrary decision to give quasi-axiomatic status to the X-bar theory and not to admit deviations from it. This quasi-axiomatic status of X-bar theory is quite clear from the literature defending the DP analysis (e.g. ABNEY 1987, HAIDER 1988, FELIX 1990). The arguments in these discussions are almost always purely theory-internal and boil down to the undeniable observation that the DP hypothesis fits better with the X-bar schema. Now one cannot object on principled grounds to theory-internal argumentation, if it is not applied too often. But the problem with X-bar theory is that there is no independent reason to assume that the X-bar schema is universally valid in precisely this form without admitting exceptions.

If Chomskyan grammarians took the insights of grammaticalization theory seriously and admitted grammaticalization as one of many explanatory factors, the main motivation for the DP analysis would disappear. If functional categories are highly grammaticalized elements, and if both heads and dependents may be grammaticalized (as I have just argued), then we would expect that functional categories can appear also in specifier or complement position. An NP with a functional dependent DET as in (14a) would not constitute a problem anymore.

6. Head/dependent marking and NP licensing

Let us finally look at another instance where Chomskyan syntax has made quasi-axiomatic decisions without sufficient empirical justification.

Abstract grammatical relationships are signaled by markers which, as grammaticalization research has shown, generally go back to earlier more concrete expressions. Thus, case markers go back to adpositions, and person agreement markers go back to anaphoric pronouns. In the first case, heads are grammaticalized, in the second case, dependents are grammaticalized. The resulting constructions show dependent marking by means of case or head marking by means of cross-referencing agreement. Head marking and dependent marking are two complementary but not mutually exclusive ways of signaling the relations between syntactic units. Thus, the relation between the subject and the verb may be signaled by nominative or ergative case on the subject NP (i.e. dependent marking, cf. 16a), or by cross-referencing agreement on the verb (i.e. head marking, cf. 16b), or by both (cf. 16c).

(16) a. Lezgian

Alfija-Ø q̄we-zwa.
Alfija-NOM come-IMP
'Alfija is coming'

b. Italian

Davide viene.
Davide come:PRES:3SG
'Davide is coming.'

- c. Russian
Njusja prixodit
 Njusja:NOM come:PRES:3SG
 'Njusja is coming'

Analogously, the relation between the possessor and the possessum may be signaled by genitive case on the possessor (i.e. dependent marking, cf. 17a), or by cross-referencing agreement on the possessum (i.e. head marking, cf. 17b), or by both (cf. 17c).

- (17) a. Coptic
t-šeere n̄-te-šime
 ART-daughter GEN-ART-woman
 'the woman's daughter'
- b. Hungarian
az ember ház-a
 the man house-3SG
 'the man's house'
- c. Huallaga Quechua (WEBER 1989: 254)
Hwan-pa wasi-u
 Hwan-GEN house-3SG
 'Hwan's house'

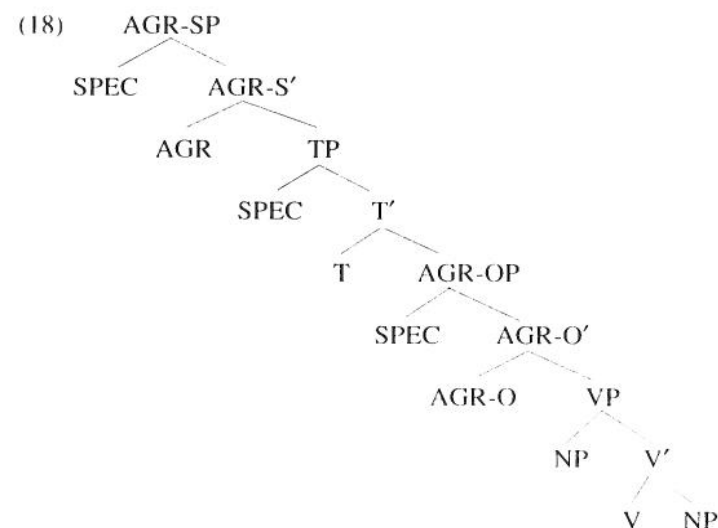
NICHOLS (1986) has established head marking vs. dependent marking as an important typological parameter, demonstrating that languages tend to show consistent head marking or consistent dependent marking.

How does Chomskyan syntax deal with these phenomena? Before the government-binding framework, neither case marking nor agreement were prominent in Chomskyan grammar, perhaps because neither is prominent in English syntax. But with the new 1981 framework, in which cross-linguistic considerations were given an important role, CHOMSKY introduced the theoretical notion of Case as the primary mechanism for licensing NPs, i.e. an analog to dependent marking. The idea was that verbs (and adpositions) assign Case to their complements, and that NPs lacking Case would be ruled out by the "Case filter".

Given that dependent marking is not the only device used by languages to signal syntactic relations, there is no empirical motivation for assuming that all NP licensing must be via Case marking. However, CHOMSKY made the quasi-axiomatic decision that the Case filter applies universally. Thus, a source for the nominative Case had to be sought, and CHOMSKY proposed that the INFL node assigns nominative Case, just like the verb assigns accusative Case. This might appear pretty arbitrary, but what is correct about it is that the agreement contributes to the licensing of the NP by signaling the relation between the verb and the NP. However, agreement is a head-marking device, and by saying that the agreement INFL assigns case, CHOMSKY in effect says that a head-marking device leads to invisible dependent marking. This is a curious situation, but it is unavoidable once the decision has been made that NP licensing is uniformly based on Case, despite the known cross-linguistic and language-internal diversity.

More recently, a new mechanism of NP licensing has been introduced to Chomskyan syntax. Following CHOMSKY (1991: 434 and 1992), it is now widely assumed that the clause structure contains separate functional categories of subject agreement (AGR-S)

and object agreement (AGR-O), even in languages that do not show overt object agreement. The structure of the clause assumed by CHOMSKY and his followers is shown in (18).



It had been proposed earlier that the subject NP has to raise out of its [NP, VP] position to the specifier position of IP (now AGR-SP) in order to be assigned its Case by INFL (now AGR-S). Now CHOMSKY assumes that the same applies to the object NP – it also has to raise to the SPEC of AGR-O in order to get its accusative Case.⁴ Both nominative and accusative Case is now assigned by functional heads in a SPEC-head configuration (or, in recent Chomskyan parlance, "case features are checked" in this situation).⁵

The effect of this change is that NP licensing is now achieved largely by means of agreement, a head-marking device, even if there is no overt agreement (as in the case of the object in English and many other languages). Thus, dependent marking like accusative case is now attributed to invisible head marking. This is again a rather curious result, this time forced by the quasi-axiomatic decision to extend the model of subject licensing to other arguments as well. No empirical motivation whatsoever was presented for this change in the machinery – again the main impetus seems to come from the desire to have theoretical uniformity or "elegance", despite the known cross-linguistic diversity in the distribution of head marking and dependent marking.

⁴ The correct SVO order for English is insured by raising of the verb to T ("tense"). Thus, the VP is completely empty at a later stage of the derivation. (Incidentally, this shows that the tree structures and movement processes have been completely reconceptualized in recent Chomskyan syntax: Tree structures can no longer be thought of as representations of constituent structure, and movement no longer captures marked word order. Rather, there is a complex interplay of various formal devices, none of which bears a direct relation to the phenomenological level.)

⁵ See GASDE (1993) for some discussion of the problems encountered in extending CHOMSKY'S account to non-inflection languages like Chinese.

7. Conclusion

This paper has highlighted a couple of points where recent Chomskyan syntax and functional-typological approaches, especially grammaticalization theory (but also head/dependent-marking typology), seem not to be irrelevant for each other. Although the theoretical goals and methods of Chomskyan grammatical theory are very different from those of functional-typological grammatical theory, the fact that both ultimately deal with the same data means that again and again there are points of contact between the two approaches. As I showed in sections 2–4, there has even been a limited amount of theoretical convergence. I also identified a number of respects in which functional-typological syntax and Chomskyan syntax diverge (sections 5–6). I tried to show that the problems with Chomskyan syntax are due to the tendency in that research tradition to favor formally elegant descriptions, even if they involve overgeneralizations that are not empirically justified (especially X-bar theory, Case assignment and NP licensing by AGR nodes). In each of these cases, formal elegance in one domain is bought at the price of less regularity elsewhere in the grammar, and the decision which part of the grammar should be generalized maximally appears to be empirically unconstrained and therefore arbitrary.

My criticism of Chomskyan syntax should not be taken to imply that I consider it a totally worthless endeavor. On the contrary, over the decades Chomskyan syntax has made substantial contributions to our knowledge of language and languages. But I think that linguistics would make more progress if syntacticians of different persuasions at least ceased to ignore each other's work. It is not realistic to expect theoretical convergence given the fundamentally different goals of functionalist linguistics (which tries to explain language structure) and Chomskyan linguistics (which tries to explain language acquisition), but mutual awareness could help linguists in both approaches to improve their theories.

Abbreviations

AGR	agreement
ART	article
COMP	complementizer
DET	determiner
DP	determiner phrase
GEN	genitive
IMPF	imperfective
INFL	inflection
NOM	nominative case
PRES	present tense
SG	singular
T	tense

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