

# GRAMMATICALIZATION AND ‘LATERAL’ GRAMMATICALIZATION, FORMALISM AND FUNCTIONALISM

Keith Tse (keith.tse@balliol-oxford.com)

## 1. INTRODUCTION

Grammaticalization occurs cross-linguistically and is a challenge for Lightfoot’s (1999, 2006) models of language change which predict that language evolution should not have cross-linguistic trends. Roberts and Roussou (R & R) (2003:2-7) and van Gelderen (2011:4) propose that grammaticalization is a natural type of change that can occur cross-linguistically.

In section 2, I set out the premises of their arguments.

In section 3, I compare R & R’s grammaticalization with Simpson and Wu’s (S & W) (2002) ‘lateral’ grammaticalization. As the latter analyse Chinese *de* (determiner (D) > past tense marker (T(past))), I compare it with R & R’s analysis of the Romance future (verb (V) > future tense marker (T(future))), since both are geneses of verbal inflections under T.

Section 4 is my conclusion where I reply to Vincent and Borjars (V & B) (2010).

## 2. GENERATIVE MODELS OF LANGUAGE CHANGE

### 2.1. Lightfoot

Lightfoot (1999:60-74, 2006:10-15, 88-89) argues that grammar is moulded during first language acquisition, which is hence the locus for language change. There are three components (Lightfoot (1999:66-68, 2006:10, 45)): (1) internal grammar (IG) (2) universal principles and parameters of grammar (UG) (3) the trigger experience in the form of primary linguistic data (PLD). IG is formed by children scanning their PLD and setting the parameter values of their UG:

- a. Linguistic triggering experience (genotype  $\longrightarrow$  phenotype)
- b. Primary linguistic data (Universal Grammar  $\longrightarrow$  internal grammar)

As UG is a genetic constant, the source for language change lies in the PLD and how it is re-analysed by children (Lightfoot (1999:66-68, 178-179, 2006:11-2, 87-90)).

### 2.2. R & R (2003), Roberts (2010) and van Gelderen (2011)

Lightfoot asserts that language evolution is random because PLD is cross-linguistically unpredictable: “the expression of the cues changed in such a way that a threshold was crossed and a new grammar was acquired (parameter resetting). That is as far as this model goes, and it has nothing to say about why the distribution of cues should change.” (my brackets and italics) (Lightfoot (1999:166)). Lightfoot’s model predicts that the cross-linguistic distribution of ‘cues’ is random.

R & R and van Gelderen introduce a learning device in language acquisition that chooses the ‘simpler’ alternative in ambiguous ‘cues’ (R & R (2003:14-17)), and since grammaticalization always leads to ‘simpler’ structures, it is a natural mechanism in language acquisition that can occur cross-linguistically.<sup>1</sup> R & R (2003) define ‘simplicity’ as the reduction of ‘feature syncretisms’, namely “the presence of more than one formal feature in a given structural position: H [+F, +G...]” (R & R (2003:201), Roberts (2010:49)), whereas van Gelderen (2011:4, 16-17, 20-21, 41-43) argues that uninterpretable features are ‘simpler’ than interpretable ones in not having feature-values.

### 3. GRAMMATICALIZATION AND ‘LATERAL’ GRAMMATICALIZATION

Campbell and Janda (C & J) (2001) give a long catalogue of different definitions of grammaticalization, and they conclude that the only common denominator is ‘some linguistic element > some more functional element’ (C & J (2001:107)), which entails both ‘lexical > functional’ and ‘functional > more functional’. I propose to expand on this by including aspects of grammaticalization that are numerically significant in C & J’s catalogue. Of the thirty-six definitions, I count ‘semantic bleaching’ (mentioned 18 times), ‘phonological weakening’ (mentioned 13 times), and ‘univerbation’ (mentioned 18 times) as numerically significant. ‘Re-analysis’ (mentioned 5 times) and ‘cross-linguistic distribution’ (mentioned 7 times) are not numerically as significant, but as they are crucial to the Minimalist framework of grammaticalization (see previous section), they are also included here.<sup>2</sup> I shall form a partition of these phenomena in comparing the two changes.

#### 3.1. Similarities

I argue that ‘re-analysis’ and ‘cross-linguistic distribution’ are the two main similarities between grammaticalization and ‘lateral’ grammaticalization.

##### 3.1.1. ‘Re-analysis’

- (1) item in mult-is                    hoc re-bus                    dic-ere                    hab-emus  
likewise in many-ABL.PL    this thing-ABL.PL say-INF    have-PRES.1PL  
‘Likewise in many cases we have this to say.’

(Lucretius *De rerum natura* 6.711) (99 – ca. 55 BC)

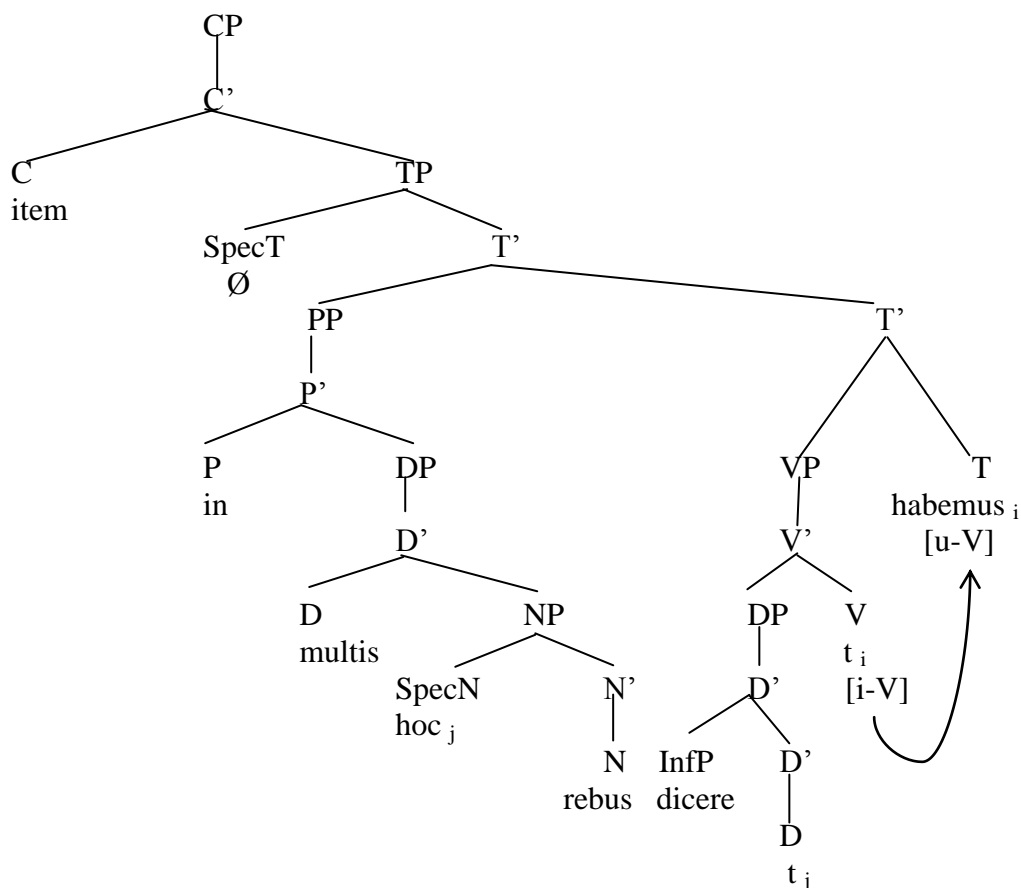
In this first attestation of *habere* + infinitive, *habere* is a lexical verb denoting possession and taking a direct object (*hoc*) modified by the infinitive (*dicere*):<sup>3</sup>

<sup>1</sup> It is not clear whether this learning device is part of UG or not. V & B (2010:280, 293) consider it as part of UG, but van Gelderen (2011:9) equates it with Chomsky’s ‘third factor principles’ i.e. principles not specific to UG. Either way this device plays an important role in Minimalism.

<sup>2</sup> The conceptual importance of these phenomena is confirmed by the fact that these are the aspects of grammaticalization that are examined in Campbell’s (2001) critical analysis of grammaticalization theory.

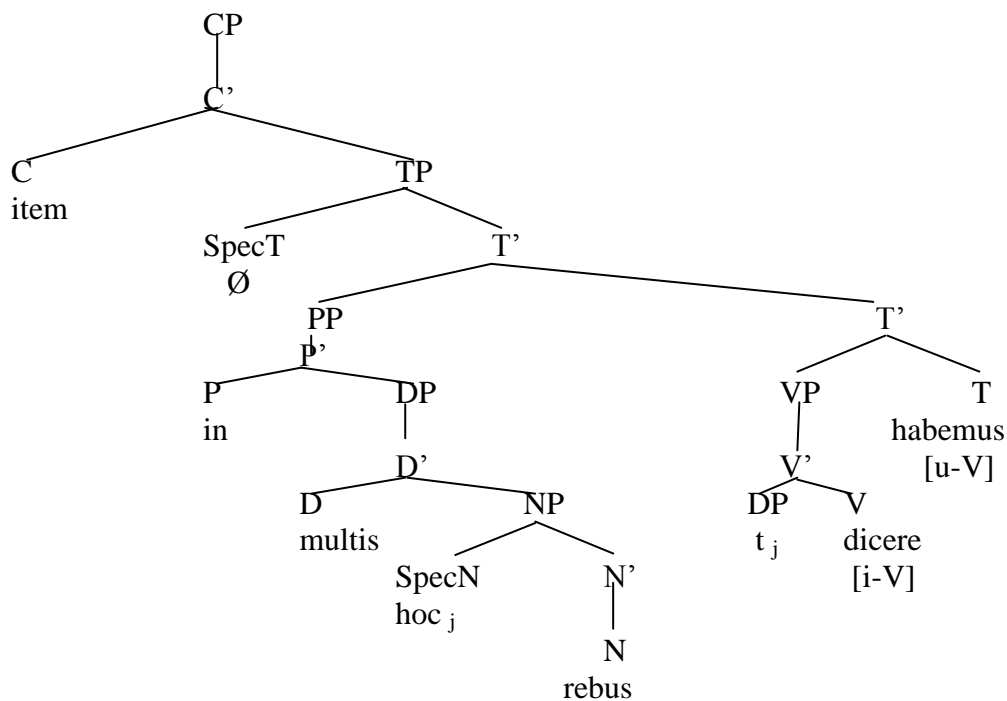
<sup>3</sup> Pinkster (1985:202, 1987:208-209) argues that the infinitive in this construction is equivalent to an earlier predicative gerundive. Since gerundives are adjectival in Latin (Woodcock (1958:158-159, 163)), this infinitive is represented as modifying the object here.

(2)



However, as modality is implied,<sup>4</sup> habere can be re-analysed as a modal auxiliary verb in T and the infinitive (dicere) as V governing the direct object (hoc) i.e. 'likewise in many cases we have to say this':

(3)

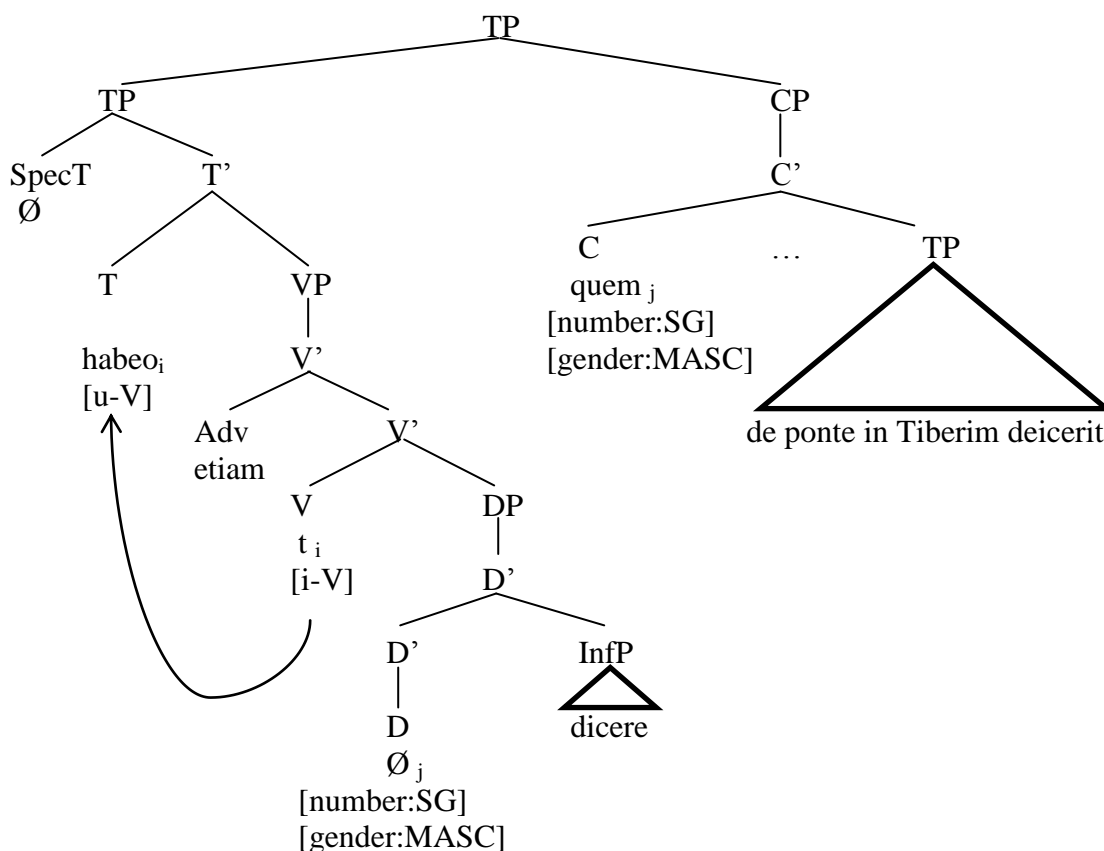


<sup>4</sup> Latin gerundives denote 'obligation/necessity' in predicative constructions (Woodcock (1958:158-159, 163)) (see previous note).

(3) has fewer ‘feature syncretisms’ than (2) since the V-to-T movement in (2) is lost and there are fewer feature place-holders in (3). Furthermore, as habemus is re-analysed as a modal auxiliary in T, its interpretable verbal features ([i-V]) become uninterpretable ([u-V]), which are ‘simpler’. In the other earliest attestation of habere + infinitive, it is preferable to analyse habere as a modal auxiliary verb in T:

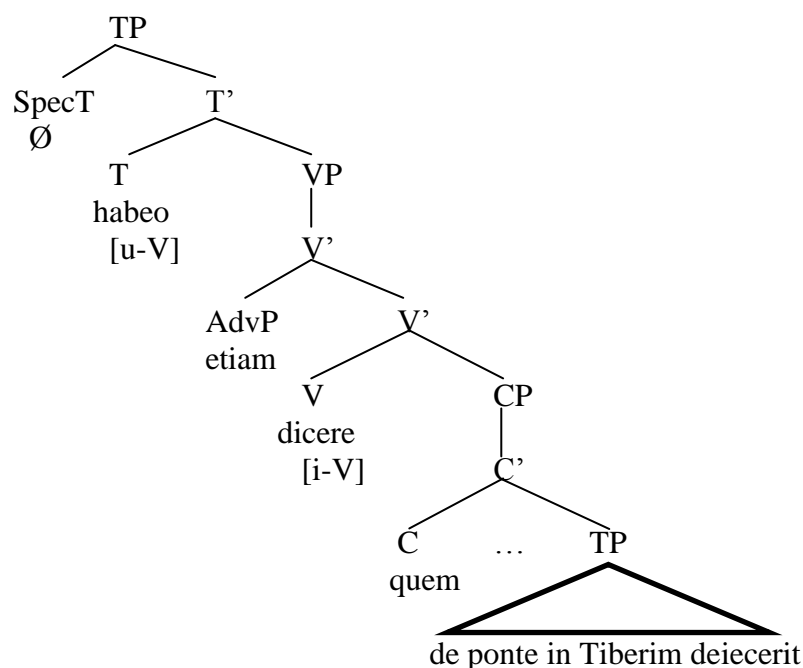
- (4) hab-eo            etiam    dic-ere            qu-em...            de  
 have-PRES.1SG    even    tell-INF    REL.PRO-ACC.SG    from  
 pont-e            in        Tiber-im            deic-erit.  
 bridge-ABL.SG    into    Tiber-ACC.SG    throw.down-PERF.SUBJ.3SG  
 ‘I even have an example to tell you, namely the man whom he threw from the bridge into the Tiber.’  
 (Cicero Pro S. Roscio Amerino 100) (80 BC)

(5)



As the antecedent of the relative pronoun (quem) is ellipsed (habeo (Ø<sub>j</sub>) dicere quem<sub>j</sub> ‘I have (an example<sub>j</sub>) to say, namely whom<sub>j</sub> ...’), it is preferable to re-analyse this as an indirect question where habeo is re-analysed as a modal auxiliary verb in T: ‘I have (an example) to tell you, namely whom...he threw from the bridge into Tiber’ > ‘I have to tell you whom... he threw from the bridge into Tiber’:

(6)



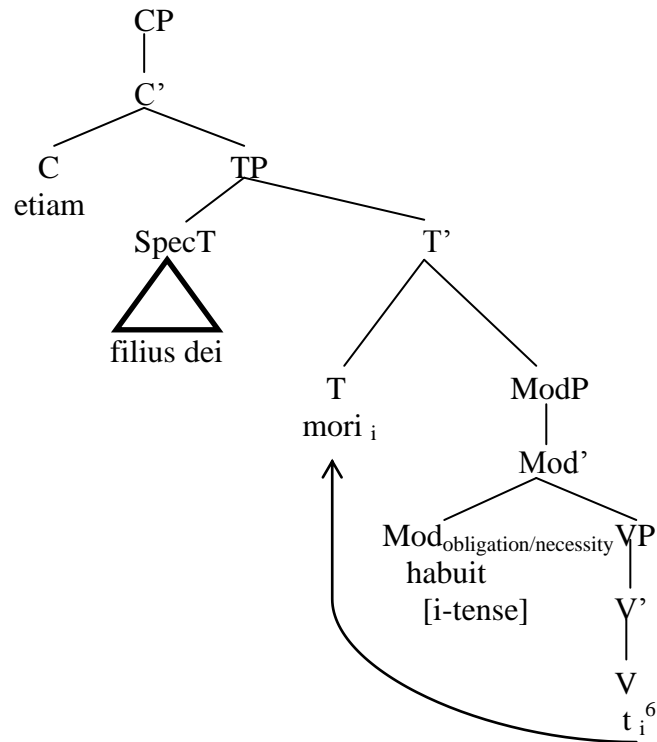
(6) is ‘simpler’ and is hence preferred in language acquisition. Habere is now re-analysed as a modal verb denoting ‘obligation/necessity’ (see note 4). The semantic similarities between ‘obligation/necessity’ and futurity are obvious, since when one is obliged to do something, one will inevitably do it in the future (Coleman (1971:219), Lyons (1977:824)):

- (7) etiam fili-us de-i mor-i hab-uit  
 even son-NOM.SG God-GEN.SG die-INF HABERE-PERF.3SG  
 ‘Even the son of God had to die.’ i.e. ‘he would die.’<sup>5</sup>  
 (Tertullian de cultu feminarum 1.1.2) (160-220 AD)

Habere here is a modal auxiliary denoting ‘obligation/necessity’:

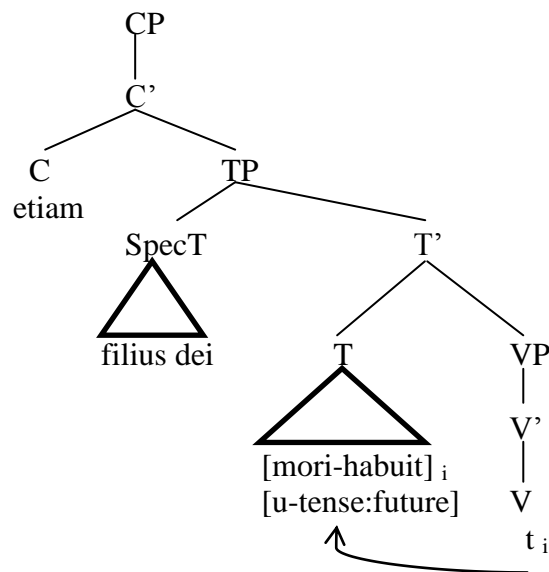
<sup>5</sup> Both Romance future and conditional (future-in-the-past) are formed by the infinitive + habere with habere in the present tense marking future and in the imperfect/perfect tense marking future-in-the-past (Coleman (1971:215)). These are related developments and their outcomes in Romance can therefore be interpreted as occupying the same functional node in T, namely T(future) (Fleischmann (1982:59-61, 66), Fruyt (2011:800)).

(8)



Habere can also be analysed as a future tense suffix:

(9)



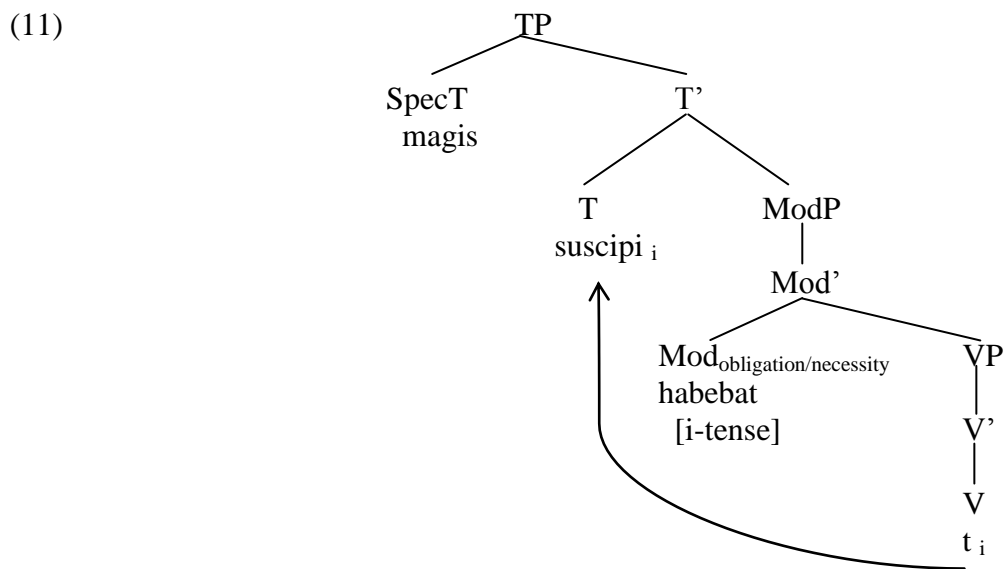
(9) is 'simpler' than (8), since the ModP is eliminated as habere is suffixed to the infinitive (mori), and the interpretable tense features ([i-tense]) become uninterpretable ([u-tense]). There is a particular type of 'obligation/necessity', namely 'predestination', which is first attested in Tertullian (160-220 AD) (Benveniste (1968:89-90), Raiskila (1990:214)):

<sup>6</sup> By the time of Tertullian, habere coming after the infinitive is a clitic, given that it is more than often attached to the infinitive and is only separated from it by unstressed words (Raiskila (1990:213)). In capturing the clitic status of habere in (7-9), I follow R & R (2003:54-55) and Roberts (2010:60) by positing V-to-T movement for the infinitive (mori), the main verb, which bypasses the auxiliary verbal clitic (habere) in Mod<sub>obligation/necessity</sub>.

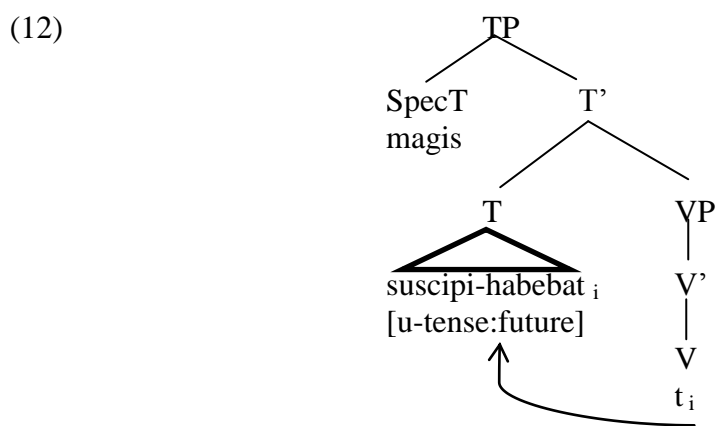
- (10) *innation-ibus*            *a*        *qui-bus*                            *magis*  
 innation-ABL.PL            by        REL.PRO-ABL.PL            most  
*suscip-i*  
 accept-INF.PASS            HABERE-IMPF.3SG  
 ‘Among the nations by which most was to be accepted.’

(Tertullian *Adversus Marcionem* 9.9)

The subject of the sentence (*magis*) is ‘obliged by fate’ to undergo the imminent action (*suscipi*):



However, as the subject (*magis*) displays no ‘intention/volition’ whatsoever, futurity is more appropriate, since ‘intention/volition’ is argued to be related to ‘obligation/necessity’ and the lack of the former weakens the latter (Bybee et alii (1991:26-29), Fleischman (1982:56-58)):



(12), the ‘simpler’ alternative, is preferred.

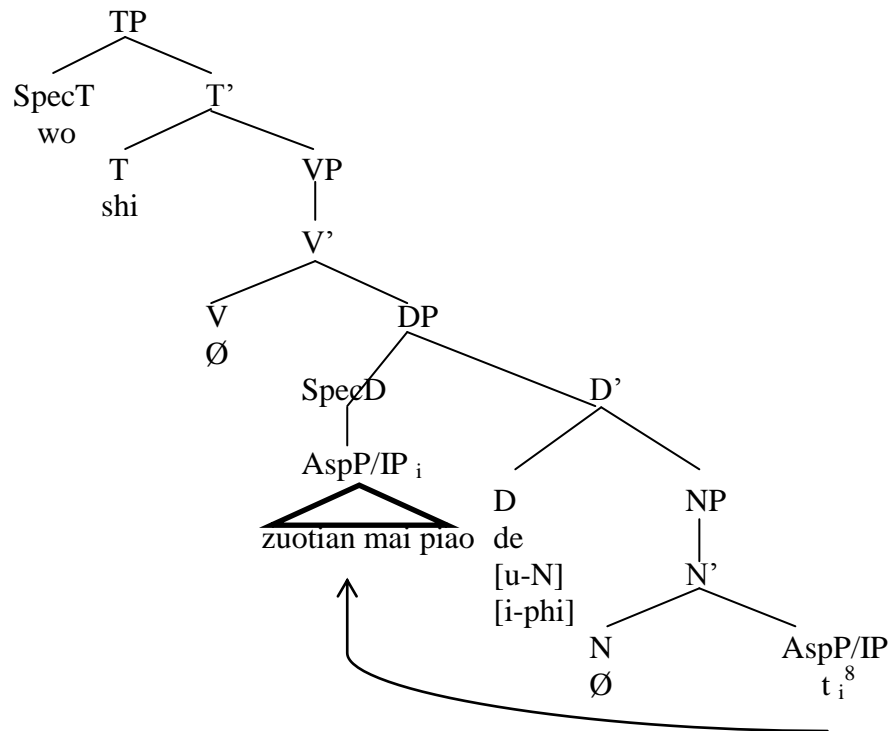
As for Chinese *de*, the following alternation is found in certain dialects of Chinese:<sup>7</sup>

<sup>7</sup> (13b) is argued to be derived from (13a), since examples like (13a) are attested earlier and are pan-Chinese whereas (13b) only occurs in certain dialects (S & W (2002:171)). One is therefore investigating why *de* has been preposed from sentence-final position (13a) to a verbal suffix (13b) rather than the other way round (S & W (2002:171-175)). This has parallels in historical Chinese syntax, namely the Chinese perfective suffix *le*, which is derived from sentence-final *liao* (S & W (2002a:174-175), Wu (2004:122-125, 200ff)).

- (13) a.   woshi    zuotian    mai        piao    de  
           I    be    yesterday    buy        ticket   DE  
       b.   woshi    zuotian    mai        de    piao  
           I    be    yesterday    buy        DE    ticket  
           ‘It was yesterday that I bought the ticket.’

S & W (2002:180-189) analyse *de* as a determiner (D) and *zuotian mai piao* as a clause that is part of a complex noun phrase (NP) headed by *de*:

(14)

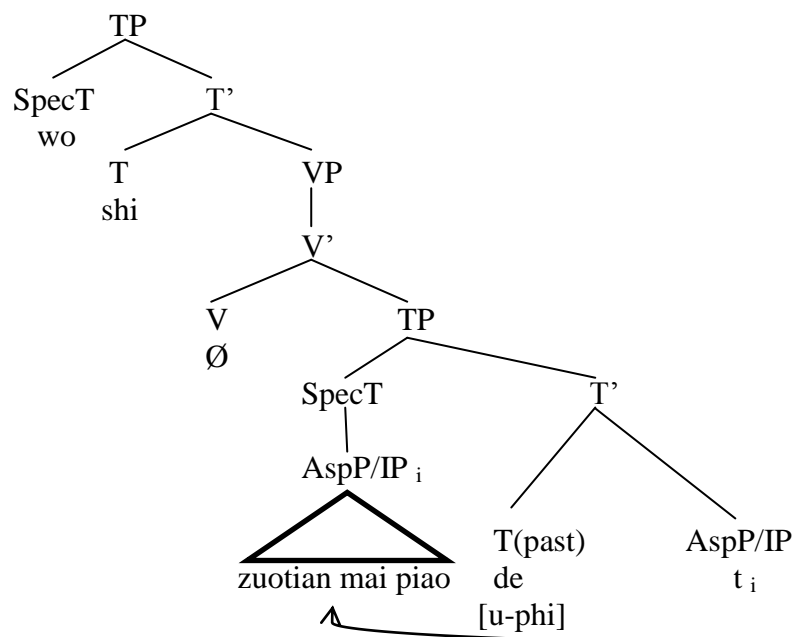


As this construction often implies that the action of the embedded clause (here *zuotian mai piao* ‘to buy ticket yesterday’) has already occurred (S & W (2002:175-177)), *de* can be re-analysed as a past tense marker (T(past)) and the embedded clause as part of this TP:

<sup>8</sup> S & W (2002:186) justify the syntactic movement of the clause (*zuotian mai piao*) as they argue that *de* is a clitic and causes its complement to be preposed.



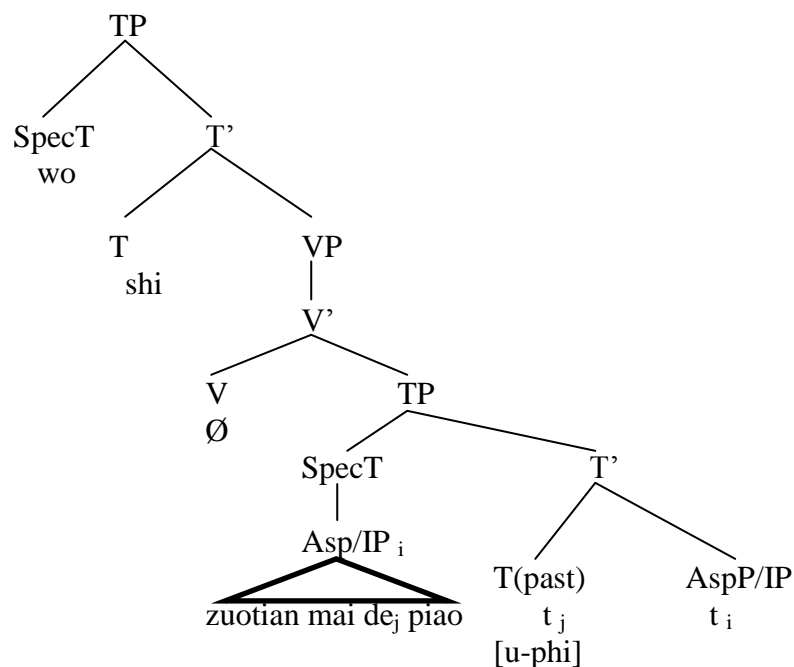
(15)



(15) has fewer ‘feature syncretisms’ than (14) since the Agree relation ([u-N]) between *de* as a determiner and its (empty) nominal complement is lost<sup>9</sup> and there are fewer feature placeholders in (15). Furthermore, while *de* as a determiner holds interpretable phi-features [(i-phi)], as it is originally part of a complex noun phrase (S & W (2002a:180-185)), as a past tense marker it holds uninterpretable phi-features [(u-phi)], which are ‘simpler’.

Examples like (13b) where *de* is juxtaposed to the verb (*mai*) only permit past-time interpretation for the embedded action (S & W (2002:176-177)), and so *de* must be base-generated in T(past) and suffixed onto the verb (S & W (2002:190-191)):

(16)

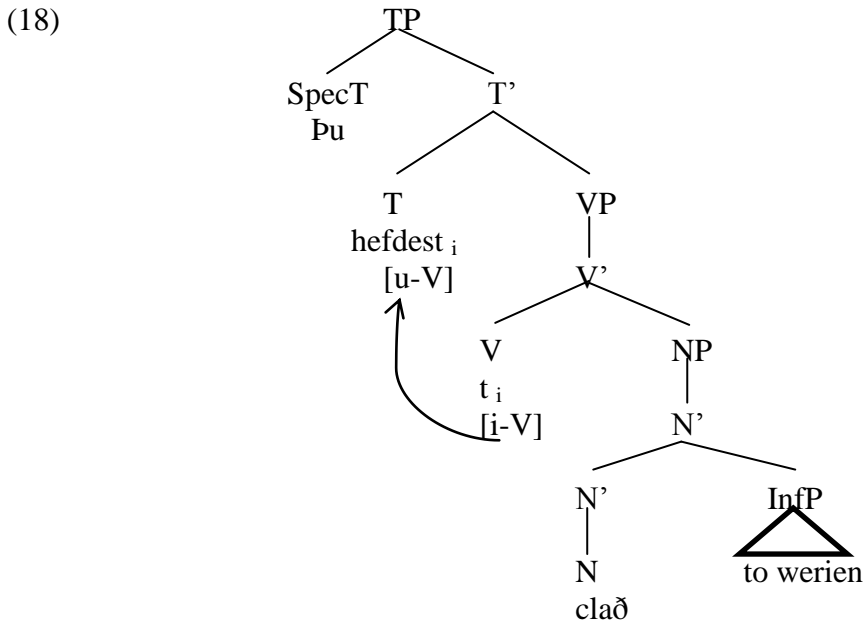


<sup>9</sup> The nominal complement of *de* in (14) is necessarily empty since S & W (2002:180-181, 189-190) argue that the noun in the complex noun phrase is a phonetically null light noun.

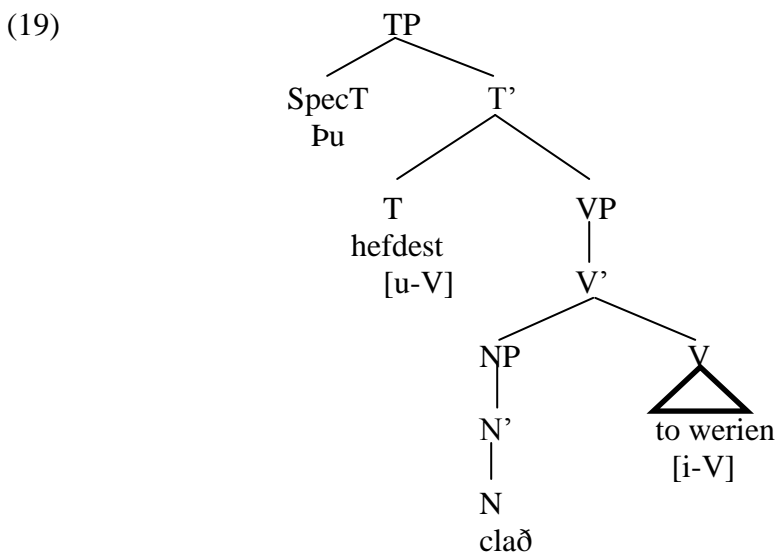
3.1.2. Cross-linguistic distribution

Both Romance future and Chinese *de* have cross-linguistic counterparts that undergo ‘structural simplification’ as well. As for lexical verb ‘to have’ > Mod<sub>obligation/necessity</sub>, one parallel is English *have to* (Fischer (1994:147-150), Denison (1993:316)), which, like (1), originally has the lexical verb ‘to have’ taking a direct object modified by the infinitive:

- (17) *þu hefdest clað to werien*  
 you had clothes to wear  
 (Old English, 900-1066 AD)



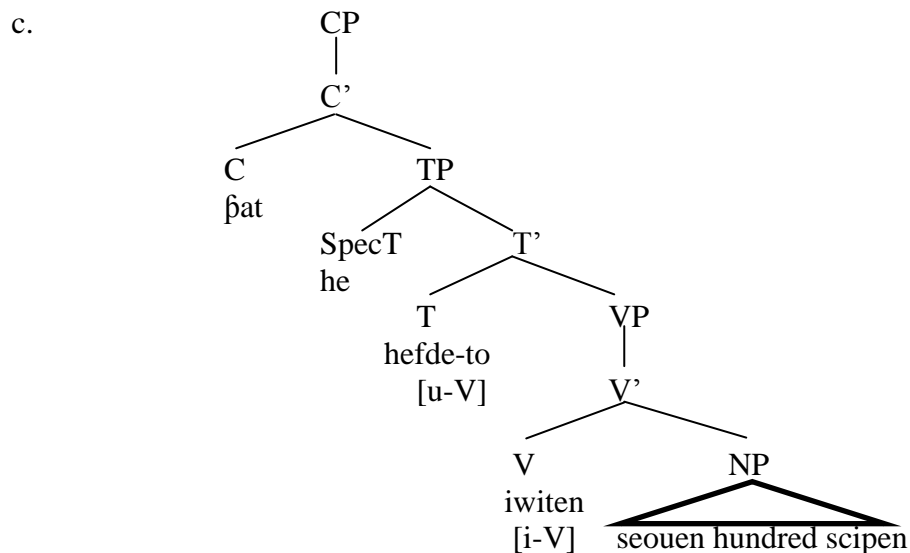
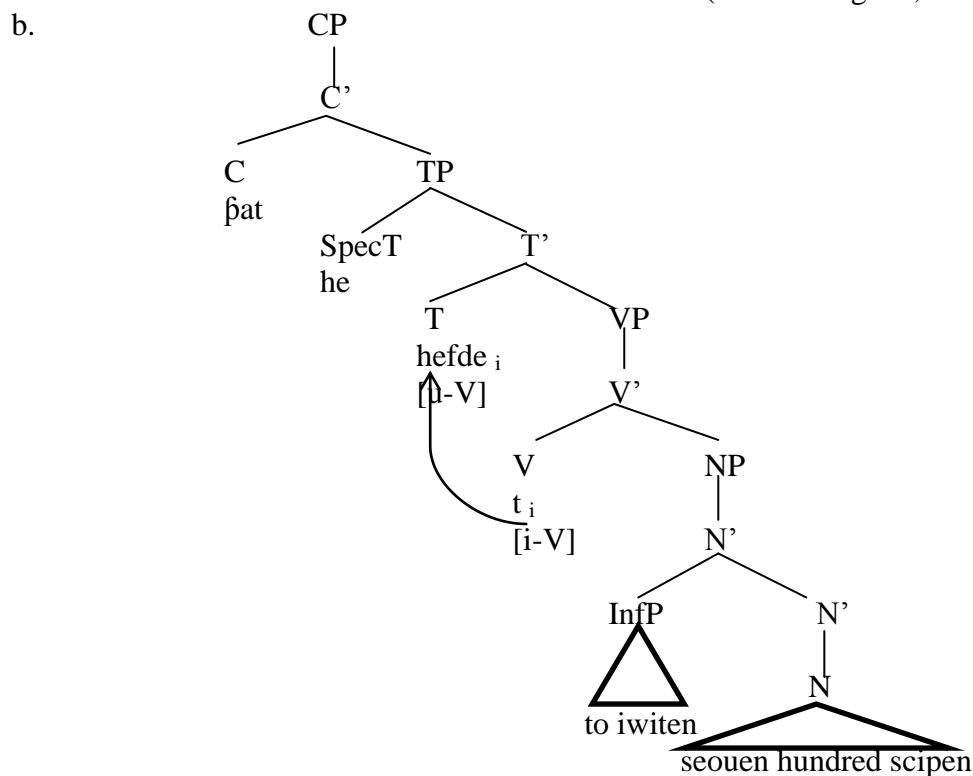
Alternatively, the verb ‘to have’ can be re-analysed as a modal auxiliary in T with the infinitive in V taking a direct object (Denison (1993:316), Fischer (1994:141, 147-150)):



(19) is ‘simpler’ than (18) since, like (3), V-to-T movement is lost and interpretable verbal features ([i-V]) become uninterpretable ([u-V]).

Like (4), English *have to* also goes through weakening of the direct object relation of the verb 'to have', since SOV > SVO change in English caused the object to be shifted from before the infinitive to after it (Fischer (1994:149)):

- (20) a. *þat he hefde to iwiten seouen hundred scipen*  
 So.that he had to guard seven hundred ships  
 (Middle English, 1100-1300 AD)

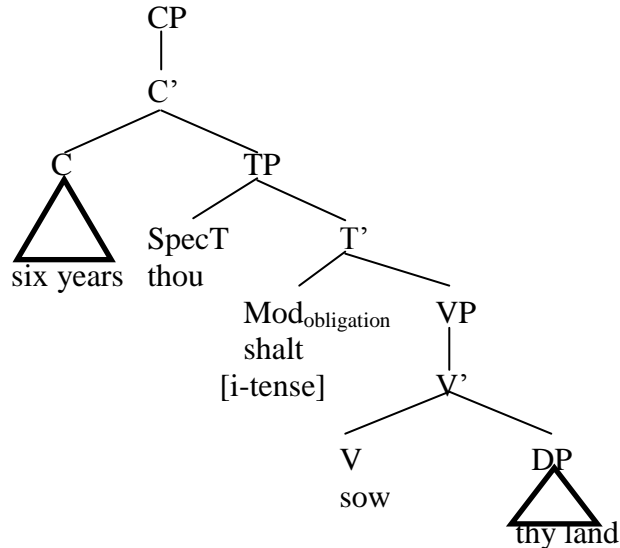


As the object (*seouen hundred scipen*) is closer to the infinitive ((*to*) *iwiten*) and is farther away from the verb 'to have' (*hefde*), it is better analysed as the object of the infinitive (Fischer (1994:149-150)). (20c), the 'simpler' analysis, is preferred.

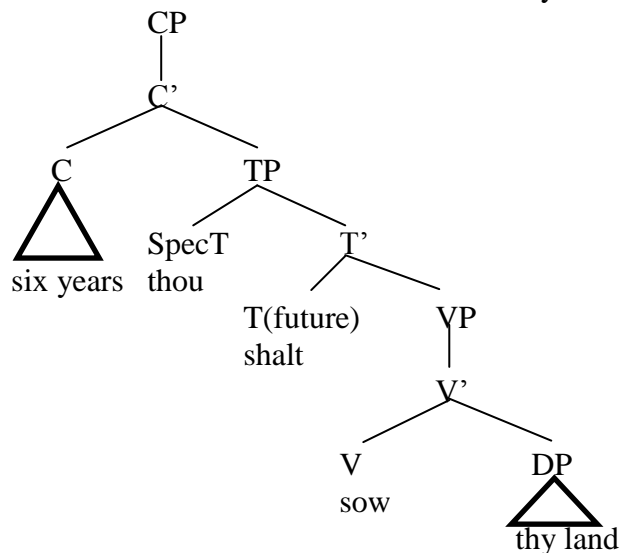
As for  $\text{Mod}_{\text{obligation/necessity}} > \text{T}(\text{future})$ , modern English *shall* is derived from *seal* denoting 'obligation/necessity', which, like (7), is ambiguous between 'obligation/necessity' and futurity (Visser (1969:1582)):

- (21) a. Six years thou shalt sow thy land  
 Six years you shall sow your land  
 ‘For six years you must sow your land.’ i.e. ‘... you will sow your land.’  
 (Bible Exodus 23.10) (1611 AD)

b.



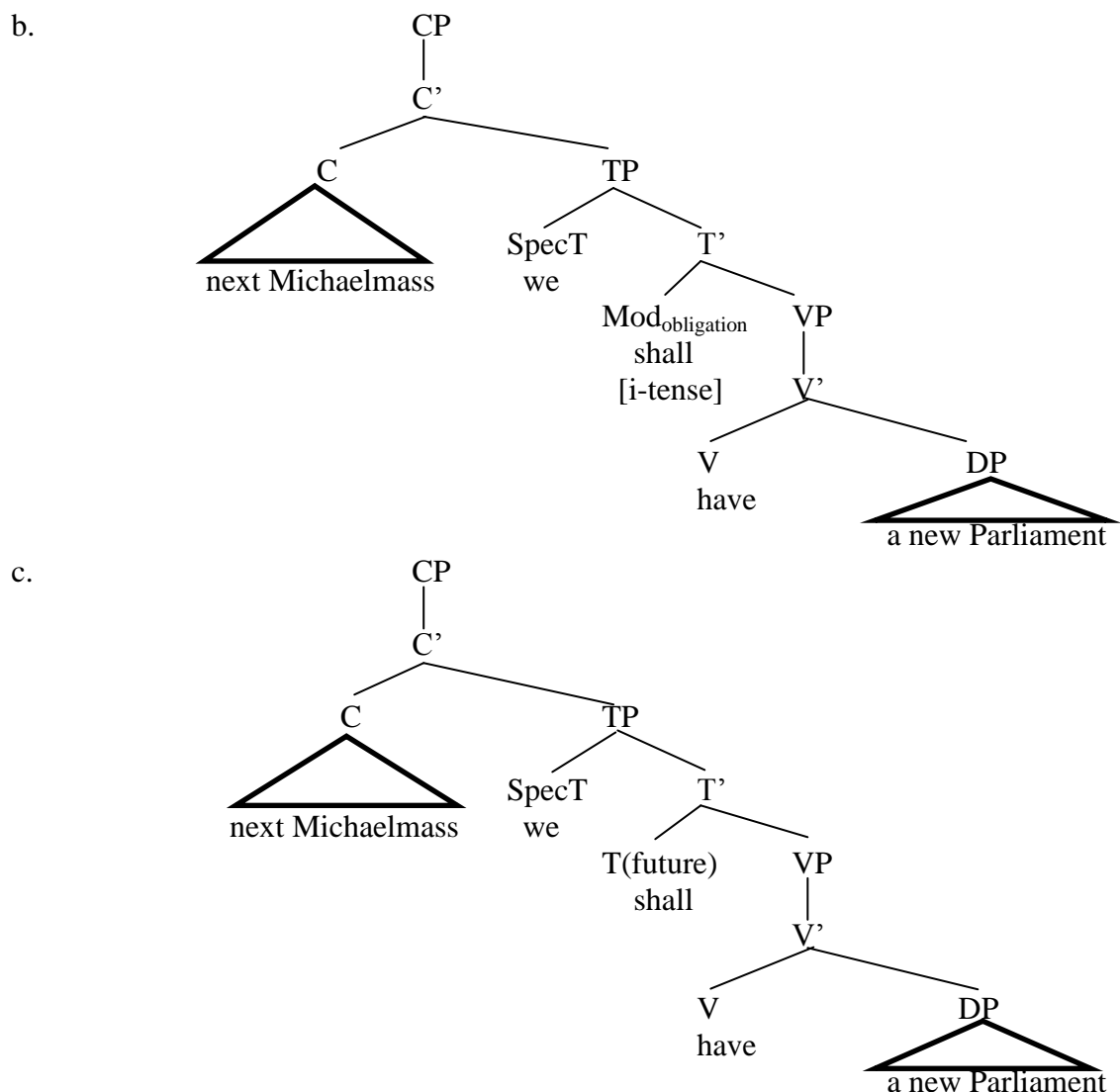
c.



(21c) is ‘simpler’ than (21b) since T(future) cannot inflect for tense and hence does not have tense features whereas Mod<sub>obligation/necessity</sub> does.

Like (10), English *seal* acquires the meaning of ‘predestination’ (Flesichman (1982:57 fn 48), Visser (1969:1581-1582, 1601ff)):

- (22) a. next Michaelmass we shall have a new Parliament  
 (Dyrden, Letters 63) (1655-1700 AD)



Here the character is expressing a fated prediction rather than a wish or intention (Visser (1969:1601)), and given that ‘intention/volition’ is related to ‘obligation/necessity’ (Bybee et al (1991:26-29), Fleischman (1982:56-58)), (22c) is preferred.

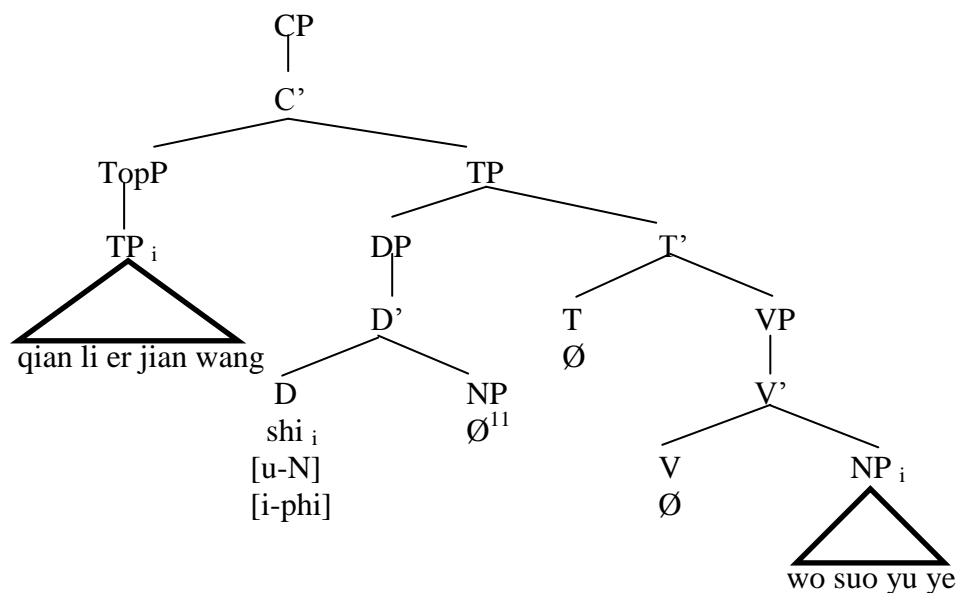
S & W (2002:199-202) give cross-linguistic examples for Chinese *de*, namely determiner (D) > copula verb (T) e.g. Chinese *shi* (Li and Thompson (L & T) (1977)):

- (23) qian            li        er        jian    wang  
 Thousand        mile    then    see     king  
 shi wo suo                            yu     ye  
 this I NOMINALISER            desire DECLARATIVE.PARTICLE  
 ‘To see the king after travelling a thousand miles, this (is) what I want.’  
 (Mencius 4<sup>th</sup> century BC)

Chinese *shi* is analysed as the subject pronoun in apposition with the topic<sup>10</sup> and the predicate:

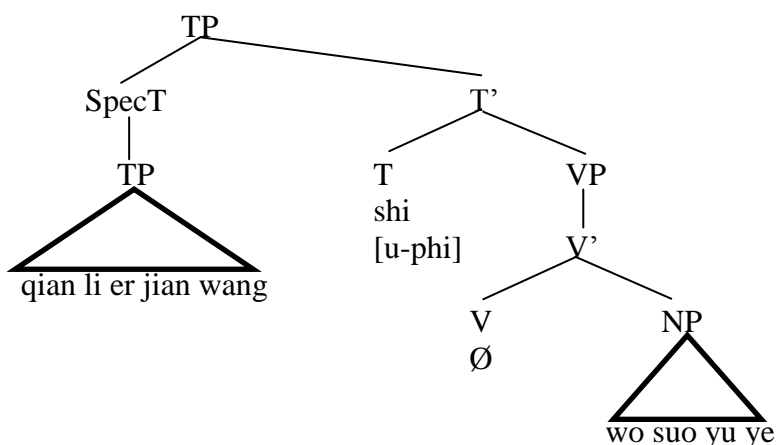
<sup>10</sup> According to Rizzi (1997), topics are part of the CP layer.

(24)



However, as identity between the three constituents is implied, *shi* can be re-analysed as a copula verb ('to see the king after travelling a thousand miles is what I want'):

(25)

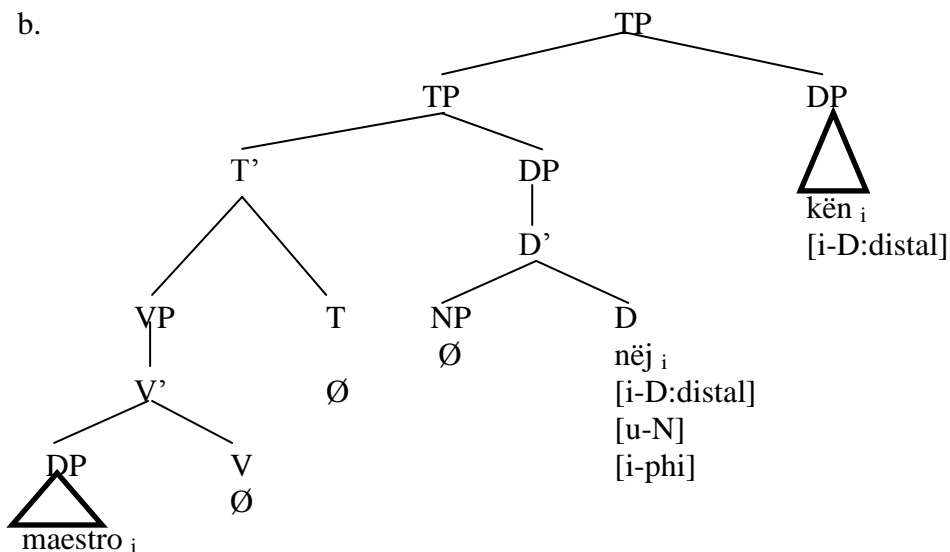
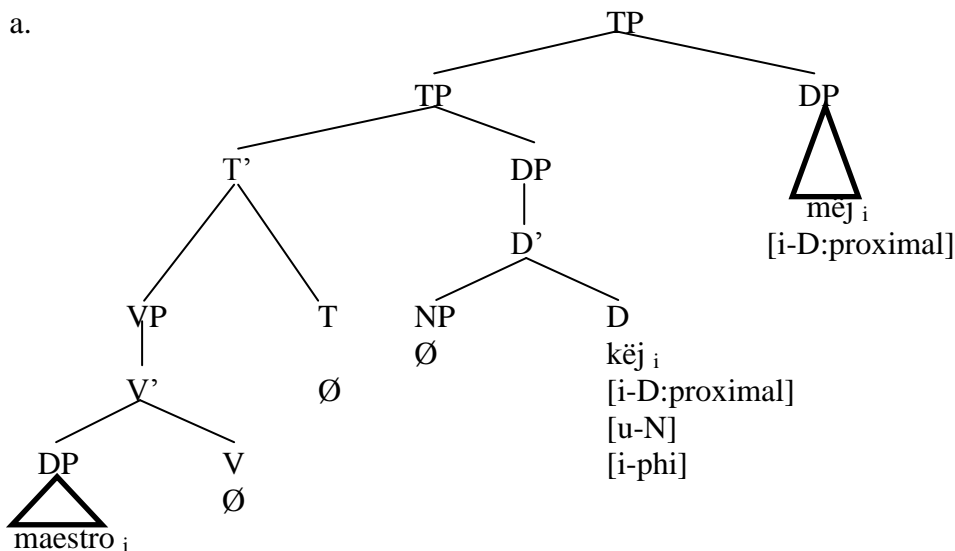


(25) is 'simpler' than (24), since the Agree relation between *shi* and its (empty) nominal complement ([u-N]) and that between *shi*, the topic and the predicate are lost. Furthermore, the interpretable phi-features ([i-phi]) held by *shi* become uninterpretable ([u-phi]) in (25).

There are many examples of subject (demonstrative) pronouns becoming copula verbs (see L & T (1977), van Gelderen (2011: chapter 4)), of which S & W (2002:200) mention copula verbs in Panare, which are derived from different demonstrative pronouns. Like (23), these are originally equational constructions where the demonstrative pronouns are the subject in apposition to the dislocated constituent and the predicate, though Panare is head-final and shows leftwards complementation and right dislocation (Gildea (1993:57-58)):

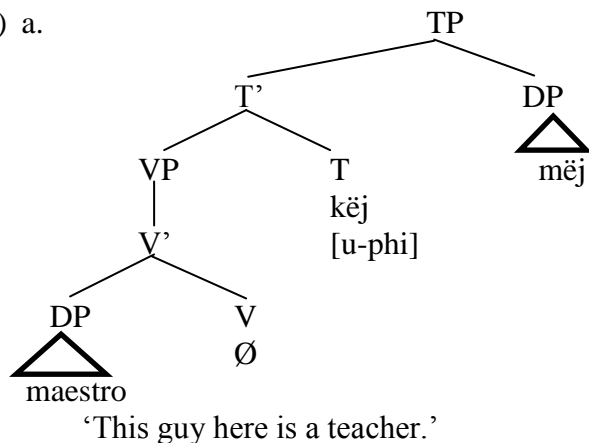
<sup>11</sup> As *shi* in Middle Chinese is attested with nominal complements (L & T (1977:422-423)), the DP it heads should contain a NP complement.

- (26) a. maestro kěj měj  
 teacher DEM.PRO.PROXIMAL PRO.PROXIMAL  
 'A teacher (is) he here, this guy.'
- b. maestro něj kěn  
 teacher DEM.PRO.DISTAL PRO.DISTAL  
 'A teacher (is) he there, that guy.'

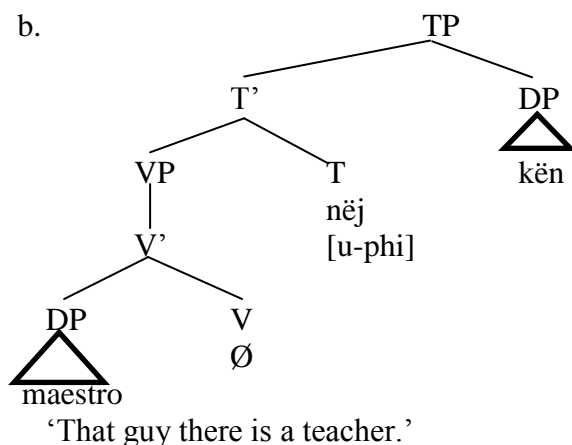


Like (23), identity is implied and so these pronouns can be re-analysed as copula verbs:

(28) a.



b.



(28a) and (28b) both have fewer “feature syncretisms” than (27a) and (27b) respectively, since the Agree relations are lost and interpretable phi-features become uninterpretable.

There are even examples where there is a conflict of deixis between the three constituents:

- (29) a. maestro něj měj  
 teacher DEM.PRO.DISTAL PRO.PROXIMAL  
 ‘This guy here was/will be a teacher.’
- b. maestro kěj kën  
 teacher DEM.PRO.PROXIMAL PRO.DISTAL  
 ‘That guy there is being a teacher right now.’

This conflict of deixis means that there cannot be Agree relations between the three constituents, and so these demonstrative pronouns must be analysed as copula verbs. Their deixes are interpreted temporally and not spatially: kěj, which is a proximal demonstrative pronoun, is interpreted as a present tense copula here (T(present)), whereas něj, a distal demonstrative pronoun, denotes past or future tense (T(past/future)) (Gildea (1993:57-62)).

There are therefore well-attested cross-linguistic counterparts to Romance future (lexical verb ‘to have’ > Mod<sub>obligation/necessity</sub> > T(future)) and Chinese de (D > T).

### 3.2. Differences

I argue that ‘phonological weakening’, ‘univerbation’, ‘semantic bleaching’, ‘lexical > functional’ and ‘functional > more functional’ are the key differences. These can be divided into two further groups: ‘univerbation’ involves bound morphemes that are phonologically



weak (Zwicky (1985:286-287)), and so it can be analysed as the consequence of ‘phonological weakening’; ‘semantic bleaching’ can also be seen as the consequence of ‘lexical > functional’, since lexical categories are semantically richer than functional ones in having antonyms (words with opposite meaning) (Radford (1997:45)).

### 3.2.1. ‘Phonological weakening’ / ‘univerbation’

V > T change displays ‘phonological weakening’ and ‘univerbation’ e.g.

- (30)            dar-as  
                   give-FUT.2SG  
                   ‘You will give.’ (*Fredegar’s Chronicle*, c. 613 AD)

In this example, Latin *habere* is ‘phonologically weakened’ and ‘univerbated’ as a verbal inflection (-as). English *have to* is ‘phonologically weakened’ and ‘univerbated’ as *hafta* (Fleischman (1982:58-59)), and English *shall* is ‘phonologically weakened’ as [ʃəl] / [ʃɪ] (R & R (2003:226)) and may even be ‘univerbated’ as ‘ll [ɪ] (R & R (2003:230)).

With ‘lateral grammaticalization’, however, the evidence for ‘phonological weakening’ and ‘univerbation’ is much harder to find. Chinese *de* is already ‘phonologically weak’ (toneless) and ‘univerbated’ as a determiner (D) (S & W (2002:173-174, 186, 190-194)), and it is hard to argue that its use as a past tense suffix (T) is ‘phonologically weaker’ than as determiner. Chinese *de* as a past tense suffix can be said to be more ‘univerbated’ than its use as a determiner, since the former is a verbal suffix (section 3.1.1, ex. (13b)) whereas the latter is a clitic attached to a clause (section 3.1.1, ex. (13a)). However, this greater ‘univerbation’ is not necessarily the result of ‘phonological weakening’, since in both cases *de* is phonetically realised as toneless with no perceptible difference.<sup>12</sup> The greater ‘univerbation’ of *de* could be an incidental result of the re-analysis from D to T, since verbal suffixes marking tense and aspect (i.e. T) are typically attached to the verb in Chinese (S & W (2002:174-175, 190-191)). ‘Phonological weakening’ is a sufficient, not necessary, condition for ‘univerbation’,<sup>13</sup> and in the case of Chinese *de* ‘phonological weakening’ is not justified, despite greater ‘univerbation’. I find no evidence for copula verbs derived from (demonstrative) pronouns undergoing ‘phonological weakening’ or ‘univerbation’ either.<sup>14 15</sup>

<sup>12</sup> I am an L1 speaker of Chinese and I am not aware of any phonetic difference between these two uses of *de*. I have consulted two speakers of northern Mandarin dialects, both of whom agree with me on this.

<sup>13</sup> Cf Wu’s (2004:234-236) analysis of the grammaticalization of Chinese perfective aspect *liao* > *le*, where she argues that *liao* is ‘univerbated’ as a verbal suffix before undergoing ‘phonological weakening’ (see note 7). There is therefore no causal connection between ‘phonological weakening’ and ‘univerbation’ here.

<sup>14</sup> Chinese *shi* is still toned (tone 4) in modern Mandarin i.e. phonologically and syntactically independent. I am grateful to two anonymous L1 speakers of Palestinian Arabic for confirming the absence of ‘phonological reduction’ and ‘univerbation’ in *hiyye* and *huwwe* (L & T (1977:431-433)), to Joanna Kowalik for that in Polish to (van Gelderen (2011:134-135)), to two Russian speakers for that in Russian *eto* (van Gelderen (2011:134-135)), and to Anat Greenstein for that in Hebrew *hu* and *ze* (L & T (1977:427-431)).

<sup>15</sup> Campbell (2001:121-122) argues that ‘phonological weakening’ is a probabilistic, not absolute, tendency in grammaticalization. Nonetheless, the total absence of it in the corpus of copula verbs derived from (demonstrative) pronouns is striking. Nick Welch (University of Calgary, personal communication) tells me that the copula verb in Tsüüt’inà has undergone ‘phonological weakening’ (?át’à > ?á?à), but this is derived from a lexical verb (V > T) and its ‘phonological weakening’ further highlights the absence of it in D > T change. The absence of ‘phonological weakening’ in ‘lateral’ grammaticalization is therefore a real empirical difference.

### 3.2.2. ‘Semantic bleaching’ / ‘lexical > functional’

Lexical verbs in V have antonyms (Latin *habere* ‘to have’ vs *carere* ‘to lack’, English to have vs to lack), whereas auxiliary verbs in T do not. V > T is hence a ‘lexical > functional’ change, which has resulted in ‘semantic bleaching’. Both D and T are classified as functional by Radford (1997:45-49), and there is no ‘semantic bleaching’ or ‘lexical > functional’ here.

### 3.3. Similarities in Minimalism

‘Re-analysis’ is essential to generative models of language change and is hence a common similarity (see section 2.1). ‘Cross-linguistic distribution’ can also be explained by the fact that all the examples in sections 3.1.1 and 3.1.2 undergo ‘simplification’, which makes them natural types of change that can occur cross-linguistically (see section 2.2).

### 3.4. Differences in Minimalism

#### 3.4.1. ‘Phonological weakening’ / ‘univerbation’ in Minimalism

In V > T re-analysis, the lexical verb loses its V-to-T movement and is merged in a higher position (T). Furthermore, when  $\text{Mod}_{\text{obligation/necessity}}$  is grammaticalized as T(future), it is merged in an even higher position in the T hierarchy established by Cinque (1999:106):

$\text{Mod}_{\text{SpeechAct}}$	$\text{Mood}_{\text{Evaluative}}$	$\text{Mood}_{\text{Evidential}}$	$\text{Mod}_{\text{Epistemic}}$	T(Past)
T(Future)	$\text{Mood}_{\text{Irrealis}}$	$\text{Mod}_{\text{Obligation/Necessity}}$	...	

R & R (2003:224-232) argue that functional hierarchies are defective in terms of ‘Phonological Form’ (PF), and so when a lexical verb is re-analysed as a T element, it undergoes ‘phonological weakening’ and consequently ‘univerbation’. There also seems to be an inversely proportional scale of PF in this hierarchy, since while *habere* as a modal verb is a clitic (see footnote 6), as a future tense marker it is an affix (section 3.2.1, ex. (30)), which is even more phonologically weakened and univerbated (Zwicky (1985:287-288), Zwicky and Pullum (1983:503-506)).<sup>16</sup> An upward shift in the T hierarchy can seem to cause more ‘phonological weakening’ and ‘univerbation’.

#### 3.4.2. ‘Semantic bleaching’ / ‘lexical > functional’ / ‘functional > more functional’ in Minimalism

R & R (2003:218-224) argue that functional categories are also defective in terms of Logical Form (LF), and T is weaker than V in terms of argument structure (R & R (2003:218-221)). As lexical verbs, *habere* and *have* are both transitive and are two-place predicates (see section 3.1.1, ex. (1-6), section 3.1.2, ex. (17-20c)) whereas as a modal verb *habere* has no argument structure as it can be used intransitively/passively (section 3.1.1, ex. (7-12)). Furthermore, when  $\text{Mod}_{\text{obligation/necessity}}$  is grammaticalized as T(future), both *habere* and English *shall* lose interpretable tense features (section 3.1.1, ex. (7-12), section 3.1.2, ex. (21a-22c)). There is therefore also an inversely proportional scale of LF in the T hierarchy, since an ascent from  $\text{Mod}_{\text{obligation/necessity}}$  to T(future) seems to cause even more ‘semantic bleaching’. ‘Functional > more functional’ can therefore be defined in terms of Cinque’s

<sup>16</sup> The same can be said for English *shall*, since its shortest (i.e. phonologically weakest and most univerbated) form // seems to be reserved mainly for its future function rather than its modal functions (Heine (1993:51)).

hierarchy where higher elements are ‘more functional’ than lower ones in being ‘semantically weaker’.

‘Lateral grammaticalization’, on the other hand, is either a wholesale replacement of a DP by a ‘simpler’ TP (Chinese *de*, section 3.1.1, ex. (13)) or it is the re-analysis of SpecT as T (determiners > copula verbs, section 3.1.2, ex. (23-29)). These positions do not correlate to any functional hierarchy and so there is no weakening of PF or LF in D > T change.

#### 4. V & B (2010)

V & B (2010:291-293) criticise R & R (2003) and Roberts (2010) thus:

“it (‘lateral’ grammaticalization) does not follow from the principles and mechanisms established by Roberts and Roussou (2003), nor from the cartographic approach (i.e. Cinque’s hierarchy) adopted by Roberts in this volume (Roberts (2010)). This is problematic, since, if both ‘upward’ and ‘sideways’ types of grammaticalization exist, then we still need to seek the generalization that accounts for them, or else conclude that there is not after all a unified phenomenon from the point of view of UG.” (V & B (2010:293))

Here I defend R & R (2003) and Roberts (2010) by pointing out that ‘simplicity’ is defined as the reduction of ‘feature syncretisms’ and the presence of uninterpretable features, both of which account for the cross-linguistic distribution of both changes (see sections 3.1.2, 3.3). R & R’s (and van Gelderen’s) account is very much supported by S & W’s ‘lateral’ grammaticalization, since their definitions of ‘simplicity’ have independently and coincidentally predicted and explained its ‘cross-linguistic distribution’. The structural differences between the two changes (section 3.4) also allow us to capture their empirical differences (section 3.2). Minimalism is therefore an elegant model in accounting for the relationship between grammaticalization and ‘lateral’ grammaticalization.

V & B (2010) also assert that formalism and functionalism should not be seen as mutually exclusive. Formalism is argued “to model this data in terms of the innate asymmetries of Universal Grammar (R & R’s and van Gelderen’s ‘simplicity’)” (my brackets) (V & B (2010:280)), while functionalism “seeks to explain these diachronic patterns with reference to discourse and interpersonal communication strategies” (V & B (2010:280)). In section 3.1.2, I have shown that while R & R’s ‘simplicity’ (formalist) holds for all the cross-linguistic examples, the examples themselves (functionalist) are by no means cross-linguistically random: Latin *habere* (1) and English *have to* (17) have the verb ‘to have’ taking a direct object modified by the infinitive implying modality and both subsequently undergo weakening of their direct object relation ((4), (20)); Latin modal *habere* (7) and English *seal* (21) imply ‘obligation’ and ‘futurity’ simultaneously and both go through weakening of ‘intention/volition’ via ‘predestination’ ((10), (22)); all the copula verbs that are derived from (demonstrative) pronouns (23-29) originate from equational constructions where the subject pronouns are in apposition with the dislocated constituent and the predicate. Such cross-linguistic patterns contradict Lightfoot’s prediction of random PLD (section 2.3)

Furthermore, functionalist factors can be used to support formalism. In V-to-T and D-to-T re-analyses, there are many sub-types: while lexical verbs ‘to have’ are re-analysed as *Mod<sub>obligation/necessity</sub>* (section 3.1.1, ex. (1-6), (17-20c)), both Latin *habere* and English *have* are also grammaticalized as markers of perfective aspect (*Asp<sub>perfect</sub>*) in modern Romance and English (R & R (2003:56-58)). Panare demonstrative pronouns are also grammaticalized as different copula verbs marking different tenses (section 3.1.2, ex. (29)). All this can be

accounted for by functionalist factors, namely the different semantic and pragmatic readings that are implied by different verbs/demonstratives in different constructions, and these dictate the T nodes under which they are merged in grammaticalization. Formalism and functionalism are therefore not only not mutually exclusive, they can also mutually support one another.

## 5. REFERENCES

- Benveniste, E. (1968) "Mutations of Linguistic Categories", in Y. Malkiel, W.P. Lehmann (eds.) *Directions for Historical Linguistics*. University of Texas Press, Austin, 83-94.
- Bybee, J.L., Perkins, R. D., Pagiuca, W. (1991) "Back to the Future", in E.C. Traugott, B. Heine (eds.) *Approaches to Grammaticalization*, vol II, 17-58.
- Campbell, L. (2001) "What's wrong with grammaticalization?" *Language Sciences* 23:113-161.
- Campbell, L. & Janda, R. (2001) "Introduction: conceptions of grammaticalization and their problems", *Language Sciences* 23, 93-112.
- Cinque, G. (1999) *Adverbs and the Universal Hierarchy of Functional Projections*, Oxford University Press, Oxford.
- Denison, D. (1993) *English Historical Syntax: Verbal Constructions*, Longman, London.
- Fischer, O. (1994) "The Development of Quasi- Auxiliaries in English and Changes in Word Order", *Neophilologus* 78, 137-64.
- Fleischman, S (1982) *The Future in Thought and Language. Diachronic Evidence from Romance*, Cambridge University Press, Cambridge.
- Fruyt, M. (2011) "Grammaticalization in Latin", in P. Baldi, P. Cuzzolin (eds.) *New Perspectives on Historical Latin Syntax*, volume 4, *Complex Sentences, Grammaticalization, Typology*, 661-864.
- Gelderen, E. van. (2011) *The Linguistics Cycle. Language Change and the Language Faculty*, Oxford University Press, Oxford.
- Gildea, S. (1993) "The Development of Tense Markers from Demonstrative Pronouns in Panare (Cariban)", *Studies in Language* 17.1, 53-73.
- Heine, B. (1993) *Auxiliaries: Cognitive Forces and Grammaticalization*, Oxford University Press, Oxford/New York.
- Hopper, P., Traugott, E. (1993) *Grammaticalization*. Cambridge University Press, Cambridge.
- Li, C. N., Thompson, S. A. (1977) "A Mechanism for the Development of Copula Morphemes", in C.N. Li (ed) *Mechanisms of Syntactic Change*, University of Texas Press, Austin and London, 419-444.
- Lightfoot, D. (1999) *The Development of Language: Acquisition, Change, and Evolution*, Blackwell, Oxford.
- Lightfoot, D. (2006) *How New Languages Emerge*, Cambridge University Press, Cambridge.
- Lyons, J. (1977) *Semantics*, vol II, Cambridge University Press, Cambridge.
- Radford, A (1997) *A Syntactic Theory and the Structure of English: A Minimalist Approach*, Cambridge University Press, Cambridge.
- Raiskila, R. (1990) "Periphrastic use of habere in Tertullian", in G. Calboli (ed.) *Latin vulgaire – latin tardif II*, Actes du II<sup>ème</sup> colloque international sur le latin

- vulgaire et tardif (Bologne, 29 Août-2 Septembre 1988), Niemeyer, Tübingen, 209-217.
- Rizzi, L. (1997) "The fine structure of the left periphery", in L. Haegeman (ed.) *Elements of Grammar*, Kluwer, Dordrecht, 281-337.
- Roberts, I. (2010) "Grammaticalization, the clausal hierarchy and semantic bleaching", in E.C. Traugott, G. Trousdale (eds.) *Gradience, Gradualness and Grammaticalization*, John Benjamins Publishing Company, 45-73.
- Roberts, I., Roussou, A. (2003) *Syntactic Change. A Minimalist Approach to Grammaticalization*, Cambridge University Press, Cambridge.
- Simpson, A., Wu, Z. (2002) "From D to T – determiner incorporation and the creation of tense", *Journal of East Asian Linguistics* 11, 169-202.
- Vincent, N., Borjars, K. (2010) "Grammaticalization and models of language", in E.C. Traugott, G. Trousdale (eds.) *Gradience, Gradualness and Grammaticalization*, John Benjamins Publishing Company, 279-299.
- Visser, F. T. (1969) *An Historical Syntax of the English Language*, vol III, Brill, Leiden.
- Woodcock, E. C. (1958) *A New Latin Syntax*. London : Methuen.
- Wu, Z. (2004) *Grammaticalization and Language Change in Chinese: A Formal View*. Oxford: Oxford University Press.
- Zwicky, A. M. (1985) "Clitics and Particles", *Language* 61.2, 283-305.
- Zwicky, A. M., Pullum, G. K. (1983) "Cliticization vs Inflection: English *n't*", *Language* 59.3, 502-513.