RENEWAL IN THE LEFT PERIPHERY: ECONOMY AND THE COMPLEMENTISER LAYER[1]

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Abstract

This paper examines cyclical changes involving complementisers, for instance, *whether* in the history of English. *Whether* starts out as a pronoun and after frequent topicalisation is reanalysed as an element in the left-most layer of the sentence. The same is true with prepositional phrases that are fronted and then reanalysed as part of the CP layer. The paper uses a Minimalist approach in that it seeks answers for the linguistic changes in terms of Economy Principles such as Specifier-to-Head Reanalysis. It examines two sources of renewal of complementisers, full phrases such as demonstrative pronouns and heads such as the verbs that reanalyse as question particles in Chinese.

1. Introduction

Clauses contain information about argument structure, about temporal relations, and about topicality and speaker attitude. Within current models of generative grammar, argument structure is coded in the thematic layer, the VP; tense, mood and aspect are located in the grammatical layer, the expanded TP; and topic and speaker information is located in the outer layer, the CP. This CP also marks the anchoring to another clause, if there is one, usually through complementisers. The C is dependent on the V above it, as well as on the V below it, and marks characteristics of both. The CP, as well as the TP and the VP, are layered and can contain many positions.

In this paper, I examine how the clausal edge, the CP layer, is renewed through two grammaticalisation paths. This paper is about the development of complementisers. I first examine the CP in main clauses, most visible perhaps in interrogatives. Markers for main clause yes/no questions such as *whether* in earlier English develop from pronouns as well as from verbs. Embedded clause arguments and relative clauses also reanalyse[2] pronouns as complementisers. Adverbial clause complementisers, such as *for* and *after*, develop from circumstantial adverbials. Both pronouns and adverbials are initially topicalised and then reanalysed as higher elements. I show that Minimalist Economy Principles are relevant in explaining these changes. Willis (2007) discusses cases of change from specifier to the head of the CP in Welsh that fit very well in the framework sketched here, and I refer the reader there for further instances.

The outline is as follows. In section 2, I discuss my assumptions on language change, provide some background on the Minimalist Program, the theoretical framework assumed in this paper, and sketch the structure of the clause, in particular of the CP layer, leaving the positions of sentential adverbials outside the discussion. In section 3, I emphasise cyclical changes in the interrogative main clause. In section 4, I turn to embedded arguments, and in section 5 I discuss relative clauses, since they show a similar grammaticalisation path. Adverbial clauses are examined in section 6. This part constitutes about a third of the paper and emphasises the PPs headed by *after* and *for* being reanalysed as complementisers. As will be obvious later, I consider as a complementiser a word that introduces a clause, such as *that* but also *while* in (6) and *for* and *after*, whereas a preposition introduces a nominal. Section 7 is a conclusion.

2. LANGUAGE CHANGE, MINIMALISM AND THE STRUCTURE OF THE CP

This section provides an introduction to the theoretical background assumed in the remainder of the paper. Where necessary, I expand later.

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[2]Whenever I use 'reanalysis', this means what is obvious in the external language (e.g. when a preposition changes to a complementiser). This change is due to a certain 'analysis' by the language learner in his or her grammar.

2.1. Language change and Minimalism

A generative approach starts from the premise that our ability to acquire a language is a biological one, due to a genetic endowment, also referred to as Universal Grammar (UG). Starting from UG and being exposed to linguistic data is essential in building up an internal grammar that then generates language. Language change in this model is due to changes in the experience, or as in Lightfoot's (1999; 2006) approach, to changes in the 'cue'. In this framework, it is very important to examine the language the child is exposed to. A Minimalist approach, as in Chomsky (1995; 2005; 2007), however, emphasises a third factor, namely general cognitive principles. The three factors are shown in Table 1, adapted from Chomsky (2005: 6).

Table 1. Factors in language design

1. Genetic endowment ($=$ UG)
2. Experience
3. Principles not specific to language

The third factor is divided into several types, including principles of efficient computation, which are 'of particular significance in determining the nature of attainable languages' (Chomsky 2005: 6). Linguistic change in the Minimalist model comes from the 'inside', as it were: the child (re)analyses a lexical item or structure in a more economical way. If certain changes happen in many languages – for instance, the change of a pronoun to a C and of a PP as a C – I will argue that these changes give one insight into the third factor, Economy Principles. The Economy Principles most used in this paper are explained in section 2.2. I focus on these and not the 'cues' as in Lightfoot's framework.

2.2. Minimalism and Economy Principles

In the late 1980s, syntactic structures came to be seen as built up using general rules, such as that each phrase consists of a head (X in (1)), and a complement (ZP in (1)) and specifier (YP in (1)):

(1)

```
            XP
           /  \
         YP    X'
              /  \
             X    ZP
```
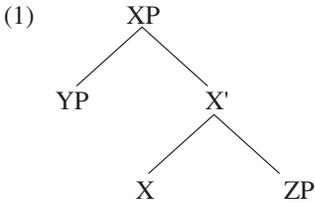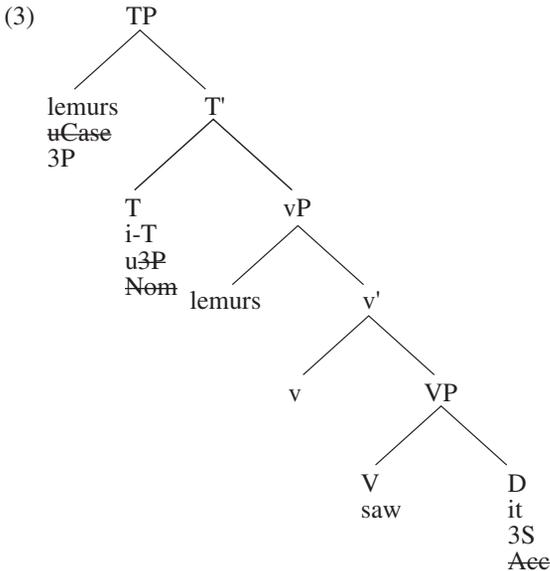
The specifier and complement can be full phrases but the head cannot. This schema holds for both lexical (N, V, A) and grammatical categories (C, D, T). In the (later) Minimalist Program, phrase structures are abandoned in favour of a general rule Merge. Merge combines two bundles of features, and from Merge, the relations in (1) follow automatically. For convenience, I continue to use the levels as in (1), however.

In a Minimalist approach, a derivation starts with a selection of items from the lexicon, such as {saw, it, T, lemurs}. These lexical items come in the shape of features, phonetic, semantic and grammatical, as we'll see below. Elements are then merged, e.g. *saw* and *it* in (2), and one of the two heads projects, in this case V, to a higher VP:

(2)

```
        VP
       /  \
      V    D
     saw   it
```
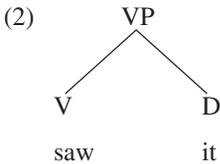
Then, after adding a (small) v and subject *lemurs* to (2), as in (3), functional categories such as T (and C) are merged to VP. Agree ensures that features in TP (and CP, when present) find a noun or verb with matching (active) features to check agreement and Case. So, T has interpretable tense features but uninterpretable phi features. It searches (or probes) for a nominal it c-commands to agree with. It finds this nominal, or goal, in *lemurs* and each element values its uninterpretable features which then delete. The final structure will look like (3), where the features that are not 'struck through' are interpretable and not subject to elimination. The

subject moves to SpecTP, or in other terms is merged from an internal position for language-specific reasons:

(3)

```
              TP
            /    \
      lemurs      T'
      uCase      /  \
      3P        /    \
               T      vP
               i-T   /  \
               u3P  /    \
               Nom lemurs  v'
                        /    \
                       v      VP
                             /  \
                            V    D
                           saw   it
                                 3S
                                 Acc
```

At some point the derivation has to be handed over to the Sensorimotor (SM) and Conceptual-Interpretative (CI) systems that are external to the syntax. This is done through the interfaces PHON and SEM, where these correspond to PF and LF respectively in an older framework. Having sketched the very basics of a derivation, I now explain how Economy is relevant to the derivation.
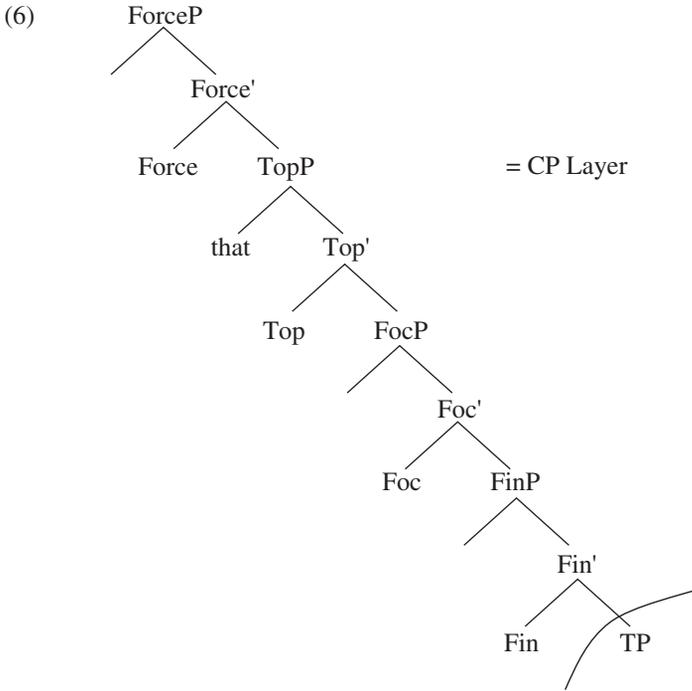
Within Minimalism, Principles of Economy have played an important role. For instance, Rizzi (2004: 224) argues that Relativized Minimality is an Economy Principle 'that appears to be a natural principle of mental computation'. 'Fewest steps', 'last resort', 'least effort' are all relevant in syntactic derivations (see Chomsky 1995). Van Gelderen (2004) proposes two principles of efficient computation that account for language acquisition and change, the Head Preference and Late Merge Principles. The former can be formulated as (4), and this is probably a more general cognitive principle, a third factor principle, 'analyse something as small as possible'. The latter is given as (5):

(4) Head Preference Principle (HPP):
     Be a head, rather than a phrase.

(5) Late Merge Principle (LMP):
     Merge as late as possible.

Recently, Economy has come to be seen in terms of what Baker (2008: 156) calls the Borer–Chomsky Conjecture, namely that all variation among languages finds its origin in the lexicon. As a reaction to that, I will reformulate (4) and (5) as principles of Feature Economy, but will do so at the end of the next section (3.3). Some of Roberts & Roussou's (2003) reanalyses can be seen in this light, e.g. as a reanalysis of F^*_{merge} over F^*_{move}.

2.3. The Expanded CP

Structure (3) is one way of looking at a clause, though many linguists recognise three basic layers, and a more cartographic approach would expand these layers. I now give a general overview of what is in the CP and TP, although in most of this paper I use a simplified CP. As mentioned, a clause consists of three main layers or zones, the VP (or vP), TP and CP. The CP layer connects the proposition to a higher clause or to the speech event. Adapting ideas of Benincà (1996), Rizzi (1997) and Cinque (1999), among others, we can think of the CP layer as including force, topic, focus and mood as well as the high adverbs *frankly* and *fortunately*, though Cinque does not include them in the CP. The highest CP marks interrogative, imperative and declarative force. Rizzi (2001: 289) assumes a separate position for the Interrogative, namely one following Force, and Benincà (1996; 2006) and Haumann (2007: 355) provide an even more elaborate structure; but I have not shown these possibilities in (6):

(6)

```
        ForceP
          |
        Force'
        /    \
    Force    TopP               = CP Layer
            /    \
         that    Top'
                /    \
             Top     FocP
                     |
                    Foc'
                   /    \
                 Foc    FinP
                        |
                       Fin'
                      /    \
                   Fin      TP
```

In some languages, the topic and focus heads are lexically represented, as in (7a), from Zulgo, and (7b) from Welsh:

(7) a. mekele **ka**   ñgat **na**   azla   siñgwe ya   Zulgo
       mekele TOP he   FOC he-took money FOC
       'As for Mekele, it is he who took the money.'

                                          (Haller & Watters 1985: 30)

    b. Dywedais i **mai** 'r dynion fel arfer **a**
       say   I that the men as   usual that
       werthith y ci   Welsh
       sell   the dog
       'I said that it's the men who usually will sell the dog.'

                                              (Roberts 2005: 122)

A Modern English clause also has an expanded CP, as in (8), with a complementiser and a topicalised element:

(8) ... think **that as for computer skills** I am very good at word
    processing.
    (http://dana.ucc.nau.edu/amb96/newpage1.htm)

If the complementiser *that* in (8) is in the Force head, the topic is below it. However, sentences with *whether* as complementiser preceding or following a topic, as in the made-up (9), are judged very marked by native speakers (and a Google search did not find any):

(9) a. ?I wonder **whether those books** they will ever read (*them).
    b. ??I wonder **those books whether** they will ever read (them).

This shows that not all clauses have the same expanded CP: in (9), there is just the CP, no additional TopP.

    The TP constitutes the so-called grammatical layer, and can be expanded to include information about agreement, tense, mood, aspect and finiteness. Its features are relevant to the complementiser in the CP above it: a finite T has *that* as C and a non-finite/irrealis T may have *for*. The TP layer has at least three positions, as in (10):

(10)
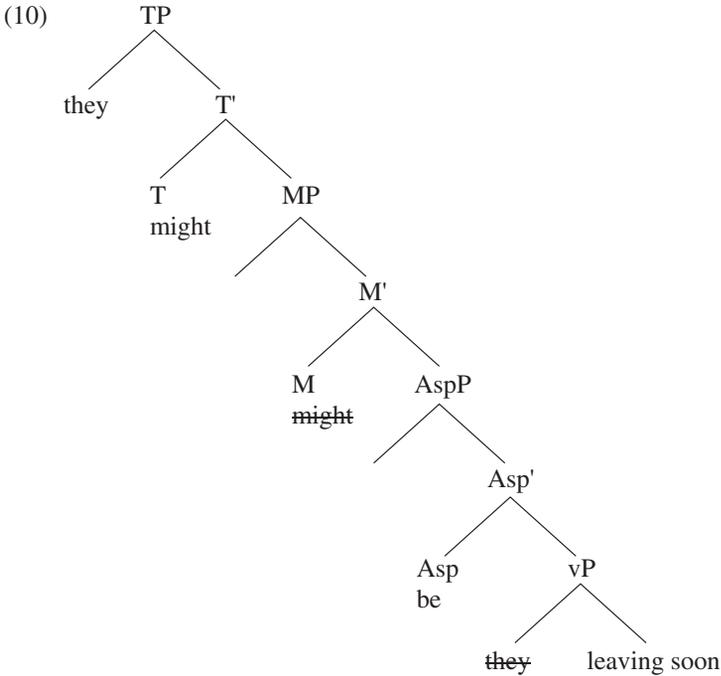
Compared to how little expanded the CP is in Modern English, the TP is quite robust.[3]

I assume that cross-linguistically there are three layers in a clause (I ignore the lexical vP layer here) though they may not all be physically as expanded in one language as in the next. Having given some background to Minimalist derivations and clausal structure, I now turn to some instances of change. In section 3, I examine how the heads of the CP change, in particular where interrogatives come from.

3. MAIN CLAUSE INTERROGATIVES: TWO CYCLES

In this section, I argue that two cyclical phenomena are responsible for changes in how questions are marked. In section 3.1, I show one cycle where the interrogative pronoun is reanalysed as a question marker in specifier position and that subsequently some specifiers become heads over time. The languages discussed here are Old and Middle English, Norwegian, Hindi/Urdu and varieties of Italian. These languages are all at different stages of the cycle. Whenever there is no clear evidence for a split, expanded CP, I simplify the left periphery as CP. The interrogative marker *whether* also develops into a subordinate clause complementiser (which is further examined in section 4.2).

In section 3.2, I consider a second cycle where a lower verbal head is reanalysed as a higher one. The evidence for this cycle comes from varieties of Chinese. This cycle is also well known from African languages and creoles where verbs become declarative complementisers (to be further discussed in section 4.1). In section 3.3, an account in terms of Economy Principles and features is provided, and the changes are formulated as cycles.

3.1. From pronoun to complementiser

I will first show that English *whether* originates as a pronoun that is fronted to the specifier of the main clause and is subsequently reanalysed in that higher position. In Old and Middle English,

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[3]Sentences such as (i), where a quantifier *all* can be left after *they* moves through the specifier positions, show that all the specifier positions are possible:

(i) They might all be leaving soon.

there is a clear tendency for it to be a head. I add some data on contemporary English *how* where the same is true. I then turn to Norwegian, Urdu∕Hindi and Italian, where certain *wh-* pronouns are in various stages of being used as interrogative markers.

3.1.1. *Whether* in the history of English

The OED's etymology of *whether* is as originating from an Indo-European form of 'who' with a comparative suffix. This origin can still be seen in (11a–c) from Old English, where *whether* may be fronted in a question or not. In (11a), the entire phrase *hwæðer þara twegra* is fronted to the specifier of the CP layer, in (11b) nothing is, and in (11c) only *hwæðer* is:

(11) a. **Hwæðer** þara   twegra dyde þæs fæder   willan
      'Who   of-the two   did   the father's will?'
       (*West Saxon Gospel* Corpus, Matthew 21:31, Skeat edn)
  b. ond siþðan witig god on swa **hwæþere**   hond, ... mærðo
    and then   wise lord to so   which-ever hand ... glory
    deme swa him gemet þince.
    grant so   him right   think
    'And may the wise lord grant glory to whichever side he
    thinks right.'   (*Beowulf* 686, Klaeber edn)
  c. **hwæðer** sel   mæge æfter wælræse   wunde gedygan
    who   better may   after bloody-storm wounds survive
    uncer   twega
    1.D.GEN two-GEN
    'Who of us two is better at surviving wound after the
    deadly battle?'   (*Beowulf* 2530–32, Klaeber edn)

Allen (1980: 791) shows that the finite verb immediately follows when these pronominal *wh-* elements are fronted, as in (11a).[4] This is expected in a verb-second language because of the phrasal status of the *wh-* phrase.

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[4]Though (11c) is an exception. I do not agree with Allen, though, that generally 'no inversion happened' when *hwæþer* introduced a question, as (15) and others show.

From this preposed pronominal stage in Indo-European, *whether* is reanalysed, e.g. in Old English, in a higher position: Old English *hwæðer* is a high adverb meaning 'however', as in (12), as well as an (interrogative) complementiser in (13)[5] and (14), and an overt question marker, as in (15) and (16):

(12) **hwæþre** me gyfeþe wearð þæt ic aglæcan orde
however me granted became that I wretch spear-DAT
geræhte
hit
'However, I managed to hit the wretch with my spear.'
(*Beowulf* 555–6, Klaeber edn)

(13) þær se snotera bad.   **hwæþer** him alwalda æfre
there the wise   waited whether him almighty ever
wille ... wyrpe gefremman
would ... change accomplish
'There the wise one waited whether the almighty would ever grant him change.'   (*Beowulf* 1313–5, Klaeber edn)

(14) ða   cwædon ...   **hwæðer** ænig man   him
then said [the disciples]... whether any person him
mete brohte
food brought
'Then said [the disciples] has anyone brought him food.'
(*Anglo Saxon Gospel* John 4:33, Skeat edn)

(15) **Hwæðer** wæs iohannes fulluht þe   of heofonum
Whether was John's   baptism that of heavens
þe of mannum
or of man
'Was the baptism of John done by heaven or by man.'
(*West Saxon Gospel*, Corpus, Matthew 21:25, Skeat edn)

(16) **Hwæðer** ic mote lybban oððæt ic hine geseo
Whether I might live   until I see him
'Might I live until I see him?'
(Aelfric *Homilies*, Thorpe edn 136.30, from Allen 1980b: 789)

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[5]The status of *hwæþer* in (13) is unclear. As can be seen in Zupitza's (1959) facsimile (though not in Klaeber's (1922) now standard edition), the scribe indicates by means of a period, a punctus, that the clauses are separate, so *hwæþer* could be introducing an independent clause with an initial adverb.

Klaeber, in his glossary to *Beowulf*, distinguishes a pronominal *hwæðer* from a complementiser *hwæþer* from an adverbial *hwæþ(e)re*. Note the slight differences in spelling, but I do not think they shed light on the complexity and phrasal status of these elements.

To recap, *whether* is used as a pronominal in (11). It can also function as an adverbial, as in (12). The use of *whether* as interrogative complementiser is shown in (13) and (14). *Whether* is an independent question marker in (15), (16) and (17) and can then be followed by a verb:

(17) **Hwæðer** wille ge   ðæt ic cume to eow, ðe mid gierde ðe
Whether will   you that I   come to you   or with rod   or
mid monnðwære gæste?
with gentle   spirit
'Do you want that I come to you, with a rod or with gentleness of spirit?'
(Alfred, *Pastoral Care*, Sweet edn 117.7–8).

According to Allen, the use of initial *whether* typically does not result in inversion of the verb and subject, i.e. in verb-second. In *Beowulf* this is is true too, and may indicate that *whether* is typically in the head C position in Old English. There are a few instances such as (15) and (17), however. The cases of verb-second continue with the pronominal use until Middle English, see e.g. (18) where the *hweðeres* is part of a phrase, but not when *whether* is a question marker, as in (19):

(18) **hweðeres   fere**   wult tu   beon?
Who-GEN companion will   thou be
'Whose companion do you want to be?'
(*Ancrene Riwle* 284.14, Morton edn)

(19) **Hweðer** eni totilde ancre uondede euer ðis
Whether any peering nun   found   ever this
'Did any peering nun ever experience this?'
(*Ancrene Riwle* 44.18, from Allen 1980b: 790; Morton 102.2–3).

The evidence in (15)–(17) shows that in Old English *whether* is either in a specifier or in a head position, but more often in the latter. If *whether* is occasionally a specifier, one might expect a *þat* or *þe* head in complementiser position, and this is the case in (20):

(20) **Hwæðer** þ   nu   sie to talianne waclic &   unnyt þætte
Whether that now be to reckon   vain   and useless that
nytwyrðost is eallra þissa woruldþinga, þæt is anweald
useful-most is of-all these world-things, that is power
'Is that to be esteemed vain and useless which is the most useful
of all the worldly things, that is power?'

                              (Boethius, 24, Sedgefield edn 56.7)

This does not occur frequently in Old English, and an alternative
analysis (as pointed out by an anonymous reviewer) is that *þæt* in
(20) is a demonstrative. Out of 1,449 variations on *hwæþer(e)*, there
are a handful of examples of (20), providing further evidence for
head status of *whether* in Old English.

From the sentences with *whether* that I have examined (using the
DOE corpus and the OED), there is no evidence for a split or
expanded CP (as in (6) above) with *whether* in Old English. Such
evidence would, for instance, consist of topicalised phrases. There
are a few instances where *nu* 'now' precedes the subject but not
enough to think of a split CP, since *nu* could be a modal particle in
these cases.[6]

After the Middle English period, the vast majority of questions
are formed by moving V to C. A few instances of *whether* remain,
but their status (specifier or head) is now unclear, as (21a) from
1581 and (21b) from 1595 show:

(21) a. **Whither** Charles Arundell dyd not steale ouer into
Irland withein thes fiue yeres, wytheought leaue of
her Magestie and **whether that yeare he** was **not**
reconciled or not to the churche lekwise, or how
long after. (http://ist-socrates.berkeley.edu/˜ahnelson/
INTERROG/810118A.html)
   b. **Whether** hadst thou rather be a Faulconbridge, ...
'Had you rather be a Faulconbridge?'
                        (Shakespeare, *John I*, i.134, Kökeritz edn).

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[6]One such instance is (i):

(i) **Hwæþer nu** gimma wlite   eowre eagan to him getio
whether now gems   beauty your eyes   to them attract
'Does the beauty of gems attract your eyes to them?'
                              (Boethius, Sedgefield edn, 13.28.27)

After the eighteenth century, main clause *whether* disappears and verb movement to C suffices. Assuming question features are checked in CP, this is initially done via spec-head agreement, or movement of *whether* to C but later by head checking of the verb. The latter is of course expected to be reanalysed as a marker of a question base generated in C. In fact, this happens frequently in child language, as in (22), where *is* is analysed as an invariant question marker, somewhat like *whether* was in (15) to (17):

22) a. **Is** I can do that?
    b. **Is** Ben did go?   (Akmajian & Heny 1975: 17)

In the next section, I examine how embedded *whether* fares, but first I turn very briefly to another *wh-* element that is reanalysed from an element moving from the VP to the CP layer to one base generated in the CP domain.

3.1.2. English *how*: loss of *wh-* movement

The adverb *how* typically moves from a VP-internal position, as in (23), to the specifier of CP, as in (24). As such it can also be used in the CP of an embedded CP, as in (25) and (26):

(23) He did that HOW?

(24) How did he do that ~~how~~?

(25) I wonder how he did that ~~how~~?

(26) Consail me, fader, how to liue
      'Council me, father, how to live.'
                              (*Cursor Mundi* 3751, Morris edn)

Willis (2007) provides some data, e.g. in (27), on the *how* that is now being used as a complementiser head and no longer as a *wh-* element in a specifier position. The intended meaning is below it:

(27) Dwyer told the players **how** he wanted to win
      'D. told the players that he wanted to win.'
                              (from the BNC as given by Willis 2007: 434)

Some other examples of *how* as a C are, with (29) ambiguous between a manner adverb and a complementiser:

(28) Your Dad once said **how** I had legs like Betty Grable.

<div align="right">(BNC AC5 2999)</div>

(29) We saw **how**, in Chapter 2, a biological system
       of animals functions like any other mechanistic system.

<div align="right">(BNC C9A 1337)</div>

This means that the manner adverbial *how*, after frequent *wh-*movement, is now – at least in certain varieties of English – base-generated as a C in the CP.

3.1.3. Norwegian, Hindi/Urdu and Italian

Standard Norwegian (Nynorsk and Bokmål) is rigidly verb-second, like most other Germanic languages other than Modern English. In Norwegian dialects, however, there is an absence of verb movement to C, as in (30):

(30) Kven du **såg?**   Norwegian variety
      Who you saw
      'Who did you see?'   (Åfarli 1985: 6)

This absence of verb-second in interrogative main clauses has been interpreted as evidence for the head status of the *wh-* element. There are many varieties of Norwegian where verb-second is concerned. For instance, (a) some varieties always have verb-second (Nynorsk and Bokmål), (b) some have no verb-second when the *wh-* word is one word, as in (30), but are otherwise verb-second, as in (31), and (c) some have no verb movement to C but a complementiser *som* in C under certain circumstances, as in (32):

(31) Ka   for nokka   **sa** dokker?   Norwegian variety
      what for something said you
      'What kind of thing did you say?'   (Taraldsen 1985:21)

(32) Kven som kjem der?
      who   that comes there
      'Who comes there?'   (Åfarli 1986: 97)

Taraldsen (1985), Åfarli (1985; 1986), Westergaard (2005), Rice and
Svenonius (2007), to name but a few, provide more background on
the conditions where this happens; one of them is that the *wh-* word
is one word, as in (30), i.e. a head. Sentence (31) requires verb-
second since the *wh-* element is phrasal. The basic explanation is
that C is either occupied by the verb, or the single *wh-* word, or the
complementiser *som*. These data are of course in concordance with
the preference for heads that I will elaborate on later: if a
wh- element can be analysed as a head, it will be.

   A next stage in the cycle could be for the *wh-* word to be
reanalysed as a question marker. This is perhaps happening in some
varieties. Bodil Aurstad (p.c.) remarks that there is renewal in the
form of an indefinite, as in (33) for the same variety:

(33) Kven du såg **for nokon?**   Norwegian variety
     who you saw for someone
     'Who did you see?'

This means that *kven* may no longer be interpreted as the argument
but just as the question marker. However, as Terje Lohndal (p.c.)
points out, this construction is also grammatical for varieties of
Norwegian that still have *wh-* pronouns in the specifier.[7] So, even
though Norwegian varieties may show the beginning of a reanalysis
from pronoun to question marker, it is not clear that this will
become a full-fledged change.

   In Hindi/Urdu, an Indo-European language with a long recorded
history, there is evidence of a preference for the head over the
specifier in main clause yes/no questions where the indeclinable
kya, as in (34), derives from a full-fledged *wh-* pronoun:

(34) **kya** ram jata he?   Hindi/Urdu
     Q   Ram go-3S is
     'Is Ram going?'

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[7]Dutch has a similar construction in (i), though it shows no sign of reanalysis of
the *wh-* pronoun:

(i) Wie heb je   voor iemand gezien?   Dutch
    Who have you for someone seen
    'What kind of person have you seen?'

This *kya* can also be used as an interrogative 'what' (similar to *kim* in Sanskrit) and that use is older. In Sanskrit yes/no questions, an indeclinable *api* is used sentence-initially, as in (35), or *kim* 'what' is, as in (36):

(35) **api** rama vanam gacchati? Sanskrit
  Q Rama wood-ACC go-3S
  'Is Rama going to the forest?'

(36) **kim** aryamno mahas pathaati kramema
  what Aryaman-GEN great-GEN road-INS surpass-1P
  dudhyo? Sanskrit
  inferior-P.ACC
  'Should we overcome the base people on the path of the great Aryaman?'
  (Rigveda I, 105.6cd, Davison 2006, quoted from Etter 1985)

The change (if one can speak of a development) is that interrogative pronouns such as *kya* and *kim* are used as head Cs. A strange fact is that in interrogative constructions, *kya* typically does not move to C in Hindi/Urdu, as (37) shows, but it did to a Focus position in Sanskrit, as (38) and (39) show:

(37) Ap **kya** kerŭge? Hindi/Urdu
  you what do-FUT.2P
  'What are you going to do?'

(38) indrah **kim** asya sakhye cakara Sanskrit
  indrah what his friendship do
  'What did Indrah do in his friendship?'
  (Rigveda 6.27.1b, from Hale 1987: 12)

(39) ratham **ko** nir avartayat? Sanskrit
  chariot-ACC who down rolled
  'Who prepared the chariot?'
  (Rigveda 10.135.5b, from Hale 1987: 11)

Turning to northern Italian dialects, as reported in, for instance, Poletto & Pollock (2004), there are doublings as in (40)–(42), at least for speakers under 40 years of age:

(40) **S'**-a-lo   fat   **(che)**?   Illasi (Verona)
what-has-he done what
'What has he done?'

(41) **Ndo**   e-lo ndat **endoe**?   Illasi (Verona)
where is-he gone where
'Where has he gone?'

(42) **Ch**'et   fat   **qué**   Monno (Brescia)
What-have-you done *what*
'What have you done?'

                        (all from Poletto & Pollock 2004: 242)

Poletto & Pollock (2004: 250) argue that the structure for the
doubled *wh-* elements in (40) to (42) involves a clitic phrase with *che*
and *endoe* as specifiers and *s'* and *ndo* as heads. Due to Economy,
only the heads move to the initial position to check the interrogative
features. The next step, in keeping with the *wh-* cycle, could be for
the *s'* to be reanalysed as a C.

   A dialect where such a reanalysis may have happened is Lombard
(Cecilia Poletto, p.c., based on data by Nicola Munaro). Here, the
element in C is an invariable *che*. The change is not complete with
all *wh-* elements though:

(43) **ch'** ö-t   qual?   Lombard
Q   want-you which
'Which do you want?'

Poletto reports an original *wh-* element such as *che* has become a
general question marker, as in (44), i.e. an earlier specifier is
analysed as a head:

(44) **Che** tu vieni?   Florentine
Q   you come
'Are you coming?'

In this section, I have given a number of instances where a pronoun
is reanalysed as a specifier in C after initially moving there to mark
interrogative force (i.e. to check a *wh-* feature). It can be reanalysed
as a C element as well. In section 3.3, I come back to possible

reasons for the reanalysis, but first I provide another source for C elements.

3.2. From negative verb to question particle

A source for the question particle very different from the indefinite/interrogative pronoun discussed in section 3.1 is the Chinese negative verb being reanalysed as a negative aspectual auxiliary. This auxiliary is then reanalysed as a question particle, as are semantically negative verbs. In other languages, such as the Dravidian family and in creoles, non-interrogative complementisers derive from verbs as well, as we shall see in section 4. In this section, I just discuss negative auxiliaries in varieties of Chinese.

As is well known, Chinese questions can be formed by using a sentence-final *ma*. Ji (2007: 189) discusses the development of *ma* from the verb *wu* 'lack; not have' in Old Chinese (45) to a question marker in Early Chinese (46), and to *ma* in Modern Mandarin (47):

(45) ren   er **wu** xin   Old Chinese
     person but lack trust
     'A person lacks trustworthiness.' (Analects, from Ji 2007: 189)

(46) shan yan xianren yi   wo **wu**   Early Chinese
     good eye immortal recall I   Q
     'The immortal with sharp eyes, can you recognise me?'
     (Ji 2007: 189)

(47) ta lai   le ma   Mandarin
     He come PF Q
     'Did he come?'

Similarly, contemporary Mandarin Chinese negatives such as *bu* and *mei(you)* can also be used as question markers, as in (48) and (49):

(48) ta chang qu **bu**   Mandarin
     he often go not
     'Does he go often?'   (Cheng et al. 1996: 43)

(49) hufei kan-wan-le   nei-ben shu **meiyou**   Mandarin
     Hufei read-finish-PF that-CL book not
     'Has Hufei finished the book?'   (Cheng et al. 1996: 41)

The distribution of the negative particles *bu* and *mei(you)* is aspectually determined: *bu* negates states and auxiliaries, such as *hui* 'know', but not bounded events; *mei(you)*, on the other hand, marks boundedness, and is used for the perfective. This distribution also holds when the negatives are sentence-final particles. This may indicate that these forms are still moving from Neg and Asp to C and are not (yet) reanalysed as base generated in C:

(50)
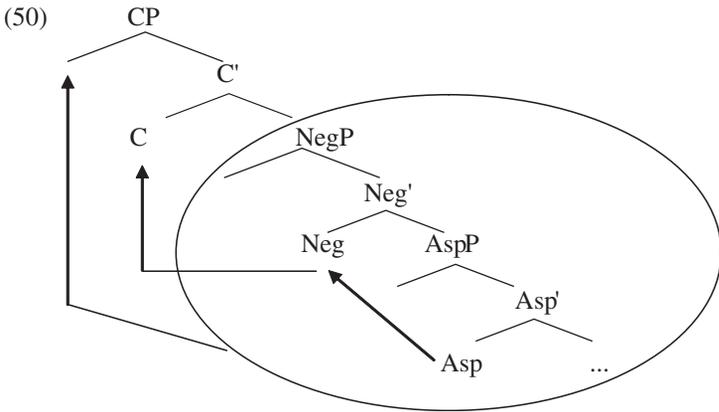
Cheng et al. (1996) argue in favour of a movement analysis on the basis of embeddings. If the negative in C is compatible with the aspect of both the embedded and main clause, as in (51), the question is ambiguous, since the negative can be seen as having moved from either the subordinate or the main clause:

(51) ta   yiwei ni   qu **bu**   Mandarin
    he think you go not
    (a) 'Does he think or not think that you are going?'
    (b) 'Does he think that you are going or not going?'

                                     (Cheng et al. 1996: 58)

If, however, the embedded clause is perfective and the main clause non-perfective, as in (52), the question particle will be *meiyou*, and if the main clause is non-perfective it will be *bu*, as in (53). These sentences are then not ambiguous:

(52) ta hui yiwei ni   qu-guo **meiyou?**   Mandarin
    he will think you go   not
    'Will he think that you have or haven't been there?'
(53) ta yiwei ni   qu-guo **bu?**   Mandarin
    he think you go   not
    'Does he think or not think that you have been there?'
                                    (Cheng et al. 1996: 59)

Cantonese has three negatives, also aspectually determined, but only one of these appears as a yes/no marker, namely *mei*, as in (54):

(54) wufei lei-zo   **mei?**   Cantonese
    wufei come-PF not
    'Has Wufei come yet?'   (Cheng et al. 1996: 41)

This *mei* in C is no longer aspectually determined, and is therefore base generated as a question marker.

   In Chinese, verbs that are semantically negative become negative particles. Since negation can be high, language learners may reanalyse negation as part of the complementiser system, namely the interrogative system.

3.3. Cycles and features

So far in this section, I have given some evidence that interrogative pronouns are, or are beginning to be, reanalysed as question particles in a number of languages, for example in the history of English, in Norwegian, in Hindi/Urdu and in Italian varieties. In other languages, interrogatives may derive from heads. One explanation is that Economy Principles such as Late Merge and Head Preference (see van Gelderen 2004) 'bias' learners and speakers towards analysing elements as higher and as heads. The Head Preference Principle (or HPP) says that the language learner/user prefers heads over full phrases (i.e. specifiers), and the Late Merge Principle claims that learners will analyse an element as base generated in a high position rather than as base generated low with multiple movements to higher positions. The latter is similar to Feature Economy, since fewer features typically
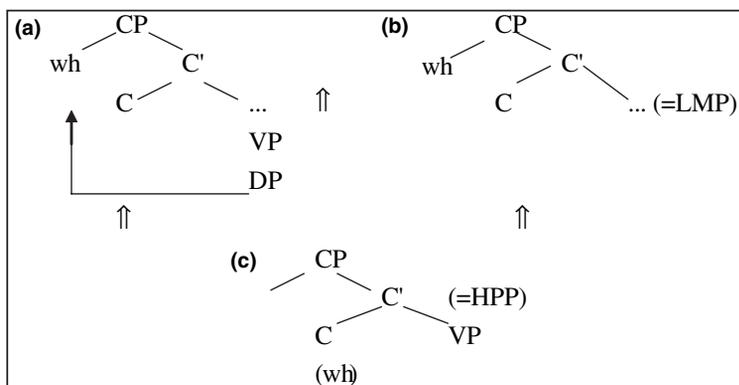
Figure 1. The CP cycle

constitute a higher element than a lower, more lexical one (see van Gelderen 2008a; to appear).

In Figure 1, I summarize the changes involving *wh*- pronouns. Stage (a) represents the stage when a word is moved to the specifier of the CP. That element is often a pronoun, as in English and Hindi/Urdu (or a demonstrative in non-interrogative contexts, as in Gothic and Old English). Stage (a) represents the standard word order (where, in the relevant languages, verb movement to C is triggered). Stage (b) represents a language where the pronoun is reanalysed as an interrogative marker, and stage (c) might come about when the head is reanalysed as a question indicator, and a new *wh*- element appears (usually from an indefinite pronoun). This means we are back at stage (a).

Another way to account for this cycle is to 'blame it on' a feature reanalysis from semantic to interpretable to uninterpretable, as in (55) for *whether*. This loss of semantic features is a central insight of the literature on grammaticalisation. When *whether* is an interrogative pronoun, it has [wh] features. These features are then used to value the uninterpretable features of the interrogative C. *Whether* may itself come to be associated with uninterpretable features. In the latter case, another interrogative element with semantic features would be identified in the clause, starting the cycle again:

(55) *whether*   >   *whether*   >   *whether*
     pronoun   CP specifier   head
     semantic   [i-Q]   [u-Q]

The developments in Chinese (and those in the child language of (22)) show that there is a second cycle: verbal heads that reanalyse as higher (interrogative) heads. These are straightforward cases of Late Merge; again this can be couched in terms of feature reanalysis, since verbal features in Chinese are interpretable, whereas Q-features in C are not. The changes to be discussed in sections 4 and 5 also fit into either the Late Merge and Head Preference or Feature Economy framework. The data in section 6 require a little more detail, and I provide that in section 6.4.

4. EMBEDDED ARGUMENT CLAUSES

In section 3, I examined the cycle of question-word replacements in the main clause. In this section, I examine renewals in the CPs of embedded object clauses. The typical complementiser renewal candidate for embedded arguments is a verb or pronoun. These two sources for complementisers are not surprising, considering the results of the previous section. I will be brief about the first, namely the change from a verb meaning 'say' to a C. This is well known from Afro-Asiatic, Niger-Congo, Tibeto-Burman and Dravidian. Then I focus on the pronominal sources, first the interrogative *whether* and then the declarative *that*.

4.1. V to C

In (22), I suggest that an auxiliary can be reanalysed by a child as an interrogative marker. There are other such changes. Dravidian languages have clause-final complementisers that derive from verbs of saying, e.g. (56):

(56) saməharə minissu hitənəwa [maTə salli   Sinhala
     some   people   think   me   money
     tiyenəwa **kiynəla]**
     be say-PRT
     'Some people think I have money.' (Gair & Paolillo 1997: 66)

Some Indo-European languages have borrowed this pattern: for example, the variety of Hindi-Urdu that is in contact with Dravidian languages, Dakkhini Hindi-Urdu, uses *bolke* 'having said'.

Creole languages also use 'say' for a neutral complementiser:

(57) Jan go glad **se** dem fain di moni   Jamaican Creole
     John FUT glad that they find the money
     'John will be glad that they found the money.'

                                                   (Winford 1993: 294)

This could in principle be analysed as Late Merge. I will not go into V to C further. since I do not have the necessary details – unlike, for instance, the case of the pronouns in section 4.2 or the PPs in section 6.

4.2. *Interrogative Cs*

In section 3, we saw the use of *whether* as a main clause yes/no marker. As mentioned, it is not clear if, for instance in the *Beowulf* example repeated here as (58), it occurs in an embedded context or a main clause one:

(58) þær se snotera bad.   **hwæþer** him alwalda æfre
     there the wise   waited whether him almighty ever
     wille ... wyrpe gefremman
     would ... change accomplish
     'There the wise one waited whether the almighty
     would ever grant him change.'

                               (*Beowulf* 1313–15, Klaeber's edn)

It is of course to be expected that, if *whether* is checking the interrogative features of the main clause, it will come to be analysed as an embedded C as well.

Therefore, I will now try to examine the position of the embedded *whether*. Good evidence is hard to come by in Old English. The verb does not move in a subordinate clause, so that will not work to show it is a specifier. If *whether* were a specifier, one might expect a *that* or *the* in complementiser position, as is the case in varieties of Modern English, such as (59). I have not found any such instances.

Due to the use of *whether* as an adverbial, as (60) shows, there are many sentences that look as if *whether* precedes the complementiser. This may indicate that *whether* was a head, for example in (58), right from the start:

(59) I just wondered **whether that** as a next step we might look
to see why this seems to be the case   (CSE-FACMT97).

(60) Cwædon **hwæðre þæt** heo ne meahton buton heora leoda
said   whether that they not might   except their people
geþfunge &   lefnesse
consent   and leave
heora ealdan þeawas onscunian 7   forleatan
their old   customs reject   and leave
'They said that they could not without
the consent of their people reject and
give up their old customs.'

(Bede II, Miller edn, p. 100.13–15)

In Middle English, there are some instances of *whether* followed by a complementiser, as in (61), indicating that *whether* is in the specifier position; the majority is in the head position, however, as in (62). In Early Middle English, it may be the case that phonologically longer forms are in the specifier position with *that* in the head, as in (61). Shorter forms, as in (62), may be more head-like:

(61) If þai ani child miht haue, **Queþer þat** it ware scho or he
'If they might have any child, whether it were a she or he.'
(*Cursor Mundi* 10205 Göttingen version, Morris edn)

(62) O þis watur he gert ilkan Drinc, **quer** he wald or nan
'Of this water he gives each to drink whether he
wanted it or not.'
(*Cursor Mundi* 6617–18 Cotton Vespasian version, Morris edn)

The *Cursor Mundi* is a long text of which two northern (Cotton and Göttingen) versions and two others (Fairfax and Trinity) exist. There are many instances of *queþer* but only a handful with *that*. What is interesting is that the pronominal ones (also phrasal

in Old English) continue to be phrasal and have a complemen-
tiser, as in (63)–(66), the same line in all four versions:

(63) þou sceu nu **queþer o   þir   tua here,** þat þou will
     thou show nu who   of these two here that you want
     haue to þis mister.
     have to thy master
     'Show us which of these two here you want to have for your
     master.'
     (*Cursor Mundi* 18903–4 Cotton Vespasian version, Morris edn)

(64) Shewe vs **wheþer of þese here þat** þou wolt haue to þi mistere.
                     (*Cursor Mundi* 18903–4 Fairfax version, Morris edn)

(65) þu scheu vs **queder of þis tua sere,** þat þu will haue to vs
     mistere.
                 (*Cursor Mundi* 18903–4 Göttingen version, Morris edn)

(66) Shewe vs **wheþer of þese here þat** þou wolt haue to þi mistere.
                     (*Cursor Mundi* 18903–4 Trinity version, Morris edn)

The instances of *that* or *the* following the purely interrogative
whether, as in (61), are very infrequent in Middle English, as are
combinations such as *hweþer þæt þe*. This indicates that *whether*
became a head early on.

   If *whether* is used as expected, namely as a head, in Old and
Middle English, the puzzle is therefore why it is a specifier in
Modern English, as (59) above and (67) show. In (67), *whether*
blocks *wh-* movement, and is therefore assumed to be in the
specifier of the CP:

(67) *Who do you wonder whether I saw ~~who~~?

Some reasons for this may be the phonological weight of two
syllables and the choice of *whether or not* that remains part of the
meaning and makes it phrasal. There is also prescriptive pressure
to use *whether or not*. For instance, Kirszner & Mandell, in their
writing guide, say that *whether or not* is used 'when expressing
alternatives' (1992: A26) and would force it to be a phrase.
Because of this prescriptive pressure, there is perhaps enough

direct evidence for the learner to keep it phrasal. For instance, as is shown in van Gelderen (2004: 95), *whether* is immediately followed by *or not* in 18 per cent of the instances of a spoken but formal American corpus. However, because the use of pronominal *whether*, a phrase, was frequent in Old and Middle English, the learner did get input that *whether* could be a specifier, even in those stages. I will leave the Modern English stage as a puzzle.

4.3. Declarative Cs

I turn to the pronominal pattern next, starting with a non-Indo-European language. Pustet (1995) shows that in the Siouan language Lakota, the definite article is used as a complementiser. Lakota has the indefinite article *wą* (from *wążí'* 'one') and *k'eya'* 'some', and the definite *kį* and *k'u*. Pustet says that 'Lakota has the very same definiteness-indefiniteness distinction found in Indo-European languages … but is more subtle in providing a further subdifferentiation within definiteness'. What is important here is that the definite *kį* and *k'u* are used as general complementisers, as in (68):

(68) ną wana' ø-tąyą'-sni   **kį** slol-ø-ø-ya'   Lakota
     and now   3S-well-NEG   C know-3S-3S-V
     'and now he knew that he was not alright.'

(Pustet 1995: 183)

The same reanalysis occurs in other languages that I now turn to: declarative *that* derives from a demonstrative and is incorporated into the head of the CP and then reanalysed as the head C.

In Germanic, the complementiser *that* is derived from the demonstrative pronoun in another clause (see e.g. Lockwood 1968: 222 and Hopper & Traugott 2003: 191–2). One piece of evidence that the demonstrative originally belongs to the main clause is that the case in Old English is often that of the main clause, unlike in Modern English. Hock (1991: 342) mentions that 'similar patterns are found in Old Norse and traces also in Gothic'. Allen (1977: 84–5) says that in Old English 'there are a few examples where the relative pronoun "attracts" into the case of the head noun phrase', as in (69), where *þone* is accusative even though it functions as subject in the relative clause:

(69) Ic wat   wytodlice ðæt ge secað ðone   haeland **ðone**
     I know truly   that you seek   the-ACC saviour that-ACC
     ðe   on rode hangen waes.
     that on cross hung   was
     'I know that you seek the saviour who was crucified.'
                              (Matthew 28:5, from Allen 1977: 87)

Another hint is that there is a 'heralding object' (Visser 1963: 459), as in (70):

(70) Ic **þæt** gehyre [þæt þis is hold   weorod frean Scyldinga].
     I that heard   that this is strong company lord Scyldings
     'I heard that this is the strong company of the lord of the
     Scyldings.'   (*Beowulf* 290–91, Klaeber edn)

Evidence that the demonstrative in Old English is analysed in the specifier position of the CP is the occurrence of (71), where *ðe* would be in the head.[8] A similar example is given in (72):

(71) wen   ic talige   gif þæt gegangeð **þæt** ðe   gar
     expectation I maintain if   it   happens   that that spear
     nymeð
     takes [the lord]
     'I firmly believe if it comes to pass that the lord dies...'
                              (*Beowulf* 1845–6, Klaeber edn)

(72) forðam wearð ylda   bearnum undyrne cuð ...
     therefore became to-elders to-children not-hidden known ...
     þæt þe Grendel wan   hwile wið   Hroþgar
     that that Grendel fought while against Hrothgar
     'Therefore, all mankind found out in sad tidings that
     Grendel fought against Hrothgar.'
                              (*Beowulf* 149–151, Klaeber edn)

There are no *wh*- extractions with *þæt þe* expected if *þæt* is still in a specifier position. As Allen (1980b: 285) points out, there is the possibility to move out of *þæt*-clauses, as in (73):

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[8]However, Allen (1977: 128–9) thinks of *þæt ðe* as an augmented form of *þæt*, not a double complementiser.

(73) hwæt hi   wendon ðæt he wære
     what they thought that he was
     'what they thought he was'
                    (*Anglo Saxon Homilies*, from Allen 1980: 285)

That is in the specifier position early on, but changes to a head, in accordance with the Head Preference Principle. In a number of cases, the scribes start to write *þætþe* as one word. Once *þæt* is a head, it also starts to delete around 1250 (see OED entry for *that* II. 10).

It is hard to know which phrase in the expanded CP *that* would be a specifier of in Old English. We know from adverb placement that, as a result of further grammaticalisation (and in accordance with Late Merge), *that* probably changes from the lower position in the CP, the Fin(ite)Phrase, to the highest position in the CP, the ForcePhrase, in Middle English (see van Gelderen 2004). The data in (74)–(76) show an initial low *that* but then by Chaucer's time a predominantly high *that* as well, as in (77)(79):

(74) For wyn in   his hede **þat** wende
     for wine into his head that went
     'because of the wine that went to his head'
                              (*Gawain* 900, Tolkien & Gordon edn)

(75) I trowe I loved hym best, **for that** he | Was of his love
     daungerous to me
     'I believe I loved him the best because he was with his love
     standoffish to me.'
            (Chaucer, *Wife of Bath Prologue* 112.513–14, Benson edn)

(76) I sal   yu lere þe dute of god, his wille **þat** 3e
     I shall you teach the duty of God, his will   that you
     may do
     may do
     'I shall teach you the duty to God, so that you may do it.
                              (*Benet* 2.5, from Kroch & Taylor 1997: 315)

(77) Ther may   swich cause ben ... | **That** hardily   thou
     there may   such reason be   that certainly you
     wolt thiselven saye
     want yourself say
     'There may be such a reason that certainly you yourself
     want to say ...'
            (Chaucer, *Troilus and Criseyde* 577.1305–6, Benson edn)

(78) And thus I lyved ful many a day | **That** trewely I
hadde no ned | Ferther than ...
'And thus I lived fully for many days so that really I
had no need other than ...'
(Chaucer, *Book of the Duchess* 345.1252–3, Benson edn)

(79) Blanchardyn answerd, **that** [for no drede nor fere that
he had of hym] he shuld kepe ...
'Blanchardyn answered that not for dread or fear of him
should he ...'
(*Caxton's Blanchardyn* 84/3, Kellner edn)

A possible tree showing the earlier (*that* in Fin) and later (*that* in
Force) positions of *that* is (80):

(80)
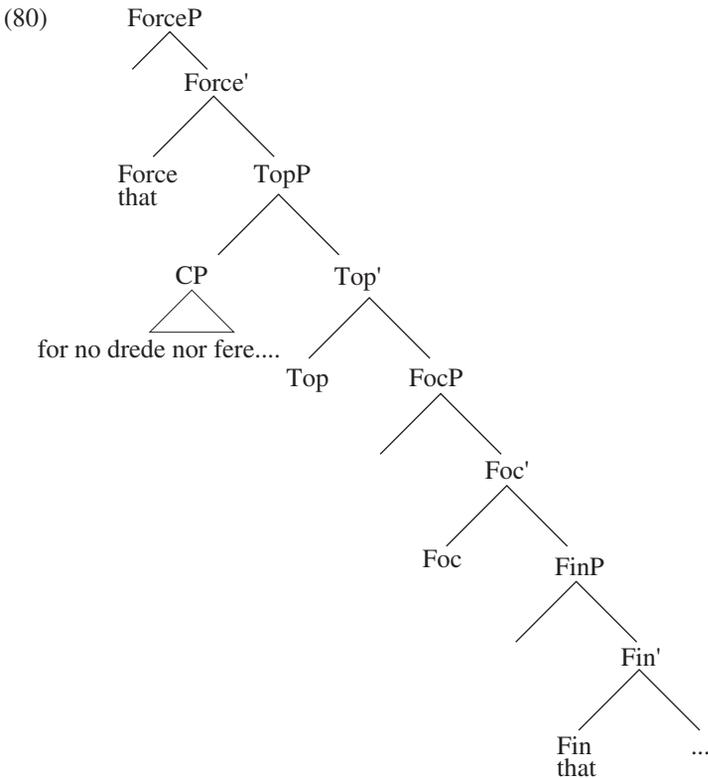
In this section, I have given some evidence that *that* is incorporated as a specifier in the CP layer and then is reanalysed from specifier to head (where initially there is no indication of a split CP) and from lower head to higher head (in later Middle English, when there seems to be a split CP). Both changes are of course in accordance with the Head Preference Principle and the Late Merge Princple mentioned in section 3.3. In terms of Feature Economy, *that* as a demonstrative has person and number features (i.e. [i-phi]) but as a complementiser, initially in the Fin head and then in the Force head, it does not.

5. THE RELATIVE CYCLE

I now show (a) that demonstrative pronouns are incorporated as CP specifiers and (b) that heads are chosen over specifiers in relative clauses, for example, *that* over a PP *from which* in (81):

(81) I haven't been to a party yet **that** I haven't got home
         the same night (Miller 1993: 112).

Prescriptive forces have managed to stigmatise this development in languages such as Modern English and French.

   Comrie (2002) has noted that the (typically European) relative pronoun strategy is relatively rare cross-linguistically, though languages do borrow this pattern. Indo-European languages typically have a demonstrative in this function. However, Valenzuela (2002) describes relatives in Shipibo-Konibo, a Panoan language spoken in Peru, as using a demonstrative strategy, and the same is true for Lakota (Pustet 1995) and Tok Pisin (Sankoff & Brown 1980), the latter possibly through contact. (Aikhenvald 2002: 182–3) claims that young speakers of Tariana, an Arawakan language of the Brazilian Amazon, 'use interrogative pronouns as markers of relative clauses' following the Portuguese they are in contact with.

   The origin of relatives is relevant here. For some, such as Curme (1912), early demonstrative pronouns as in (82) were not relatives but regular paratactic constructions, since the case in Old English is often that of the main clause, unlike in Modern English. The case of the demonstrative is still that of the main clause, as in (69) above, repeated here as (82), where *þone* is accusative even though it functions as subject in the relative clause:

(82) Ic wat   wytodlice ðæt ge secað   ðone   haeland
I know truly   that you seek the-ACC saviour that-ACC
ðone ðe on rode ahangen waes.
that on cross   hung   was
'I know that you seek the saviour who was crucified.'

              (Matthew 285, from Allen 1977: 87)

As with embedded arguments, discussed in section 4, the demonstratives are then incorporated into the specifier position. The history of the relatives in English is a perfect example of the CP cycle: in Old English, an element is introduced in the specifier position, and both the specifier and head can be occupied, as in (83), but in Middle English this shifts to just the head, as in (84):

(83) ðonne cymeð se man **se** þæt swiftoste hors hafað
'Then comes the man who has the fastest horse.'

              (*Orosius*, 17.22, Bately edn)

(84) and suggeð feole þinges ... **þat** næuere nes   i-wurðen
and say   many things   that never not-was happened
'and say many things that never happened.'

          (Layamon, Caligula 11472–3, Brook & Leslie edn)

Since the head is perhaps perceived as too bland for a construction that is often used in highly formal contexts, there is then an introduction of the *wh-* element as specifier. Many have observed that the *wh-* form is extended from interrogative to relative on the basis of Latin and French. Steinki (1932: 43) argues that the *wh-*forms are introduced consciously ('die Volkssprache [schafft] hier bewusst eine Neurerung'). This first happens in letter closings in the early part of the fifteenth century only in the use as in (85), but is extended in the second part of that century:

(85) wyche schalle be on Wedynsday next, be þe grace of **God,**
who preserue 3ow.
'which shall be on next Wednesday by
the grace of God, who keeps you'

           (*Paston Letters* 395, Davis p. 636)
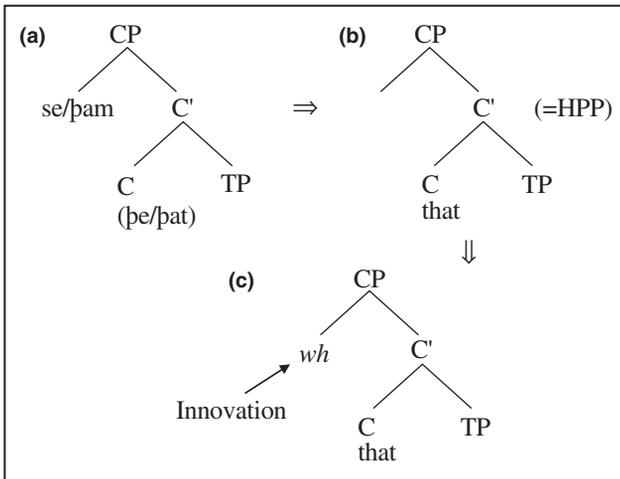
Figure 2. The relative cycle

These cyclical changes can be represented as in Figure 2.

Similar changes have occurred in Old Saxon. Olson & Dubenion-Smith (2007) give evidence for three relative strategies, akin to those in Old English. In Old Saxon, the simple complementiser strategy, as in (86), is the most common:

(86) Neo endi ni kumid thes   uuidon   Old Saxon
    never and not comes of-the wide
    rikeas giuuand **the** he giuualdan scal
    kingdom end   that he rule   shall
    'The end of the great kingdom that he shall rule will never
    come to an end.'
                   (*Heliand M*, 267, Olson & Dubenion-Smith 2007)

It is well known that English speakers prefer a *that* complementiser over a *wh-* pronoun in relative clauses, by at least a 4:1 ratio (e.g. Romaine 1982; Montgomery & Bailey 1991; van Gelderen 2004; Tagliamonte et al. 2005). This is expected under the HPP, since *that* is in the head C but the *wh-* pronoun is in the specifier position. Prescriptive rules keep reinforcing the *wh-* pronoun, however.

This preference for heads also holds in Swedish (Wessén 1970), Norwegian, Pennsylvania Dutch (Haag 1982), Yiddish (Fleischer 2004),[9] Surinamese Dutch (de Kleine 2007: 113), non-standard French (Foulet 1928; Joseph 1988), Italian (Giacalone Ramat 2005), and Spanish (Escobar 2004). An example from East Yiddish is given in (87), where the undeclined *vos* is preferred, from Surinamese Dutch in (88), and from Persian in (89), where the only possible relative, *ke*, is identical to the complementiser. The origin of the Persian *ke* is the interrogative pronoun:

(87) jene **vos** hobn gezen zajne kuncn   Yiddish
     those that have seen his tricks
     'those who have seen his tricks'   (Krogh 2001: 46)

(88) op een manier dat anders is   Surinamese Dutch
     in a way that different is
     'in a way that's different'   (de Kleine 2007: 113)

(89) mardi **ke** didam   Persian
     man that saw-1S
     'the man that I saw'

In certain varieties of French, *que* 'that' is used rather than the standard *qui* 'who':

(90) Les enfants **qui/que** jouent là   French
     the children who/that play there
     'the children who are playing there'   (Joseph 1988)

In colloquial French, the subject pronoun is fast becoming an agreement marker, and (90) would become (91):

(91) Les enfants **qu'ils** jouent là   Colloquial French
     the children that-they play there
     'the children who are playing there'   (Joseph 1988)

The phenomenon in (90) has been noted for a long time (Foulet 1928; Auger 1993) but the doubling in (91) is more recent.

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[9]Fleischer's (2004: 239) suggests that, in the case of relative *wos*, 'we are dealing with a more general subordinator'.

Apparently, Old French and Late Latin already had a preference for the head (see Giacalone Ramat 2005), as in (92), with non-agreeing *qui* but also with invariable *quem*:

(92) vendo tibi terra   mea **qui** habet finis   Late Latin
     sell-1S you field-FEM my   that has   borders ...
     'I sell you my field that has as borders ...'
                                   (Giacalone Ramat 2005: 116)

Creole languages such as Sranan and Saramaccan use *di* (derived from an earlier demonstrative *disi*) in relative clauses and as complementisers, as in (93):

(93) Di womi **di**   ko   aki da mi tata   Saramaccan
     the man   that come here is my father
     'The man who comes here is my father.'

(94) **Di**   mi waka go a lio   hen a kai mi   Saramaccan
     when I   walk go to river the he call me
     'When I go to the river, he calls me.'
                                   (both from McWhorter 1997: 17)

The history of the relative in Tok Pisin is similar. Sankoff & Brown (1980: 219) state that although there are *wh-* forms available, these are used infrequently in Tok Pisin. Instead, an indeclinable relative *ia* is used, as in (95), in accordance with the HPP. This *ia* is used after the modified noun and at the end of the relative clause. A resumptive pronoun inside the relative clause is optional:

(95) **meri ia**   em i   yangpela meri dripela meri
     girl this she was young   girl big   girl
     ia   em ...   Tok Pisin
     REL she ...
     'This girl, who was a young, big girl, was ...'
                                   (Sankoff & Brown 1980: 213)

Sankoff & Brown (1980: 252–4) suggest that the origin of *ia* is in the place adverb 'here' that was extended to be a demonstrative and then later (after the 1950s) used for clefting and relatives.

Heine (2006) provides some data from Kenya Pidgin Swahili where the connection between two clauses is still frequently

ambiguous. In (96), it is not clear whether *ile* 'that' is a demonstrative or a relative:

(96) Wewe naweza ona Fort Jesus **ile** najeng-wa na watu ya
     Portugal Pidgin Swahili
     you can see Fort Jesus D/REL built-PASS by people of
     Portugal
     'You can see FJ. That has been built by the Portuguese.'
     'You can see FJ which has been built by the Portuguese.'
                                                        (Heine 2006)

Relative clauses have frequently been examined in pidgins and creoles (e.g. Sankoff & Brown 1980; Bruyn 1995). As pidgins evolve, relative clauses emerge using 3rd person pronouns and locative markers. This is fairly similar to the history of Germanic, where pronouns are incorporated into the specifier. The difference is that it is not clear to what extent the specifier is used in pidgins and creoles. For instance, in Gullah, the relative is an invariant *weh*, as in (97) and (98):

(97) Every word (weh) Pa say   Gullah
     'every word that Pa said'

(98) Da man (weh) I meet he son laas week   Gullah
     'the man whose son I met last week'
                                        (both from Mufwene 1986)

This variant also shows preposition stranding, for example in (99), another indication that the C head is used rather than the specifier:

(99) Deh had no stove fuh cook **on**   Gullah
     'They had no stove to cook on.'   (Mufwene 1986: 4)

In some languages, the element from the specifier combines with the element in the head position, as in Gothic (100) and Old English (101):

(100) Aþþan all uskiusaiþ **þatei**   goþ sijai gahabaiþ
      But   all prove   that-that good is   hold
      'Prove all things; keep what is good.'
                                          (1 Thessalonians 5:21)

(101) and wundor godes **þætte**   on þam cnihtum gecyþed
   and miracle of-god that-that to the youths made-known
   wæs
   was
   'and God's miracle that was made known to the youths'
        (Daniel 470–71, from Grossmann 1906: 26–7)

The use of a demonstrative as a relative has often been seen as an Indo-European trait. I have given some examples from creoles above, but will point out a few other non-Indo-European examples from Arabic and Chinese.

 Standard Arabic has a very robust relative pronoun, as in (102), that is demonstrative-based but that is in the process of simplifying morphologically:

(102) ra'ay-tu   r-rajul-ayni   **lladd-ayni**
   I-saw   the-men-DUAL-ACC that-DUAL-ACC
   qatalaa 'asad-an   Arabic
   killed lion
   'I saw the men that killed a lion.'
        (Haddad & Kenstowicz 1980: 142)

In (102), the relative has the same case as the noun in the main clause, in this case accusative, even though its function in the relative clause is subject, indicating it is not in SpecCP. The Arabic relative pronoun is a combination of the definite article (*l*), a particle (*l*) and a demonstrative (Haywood & Nahmad 1965: 284). As in the case of colloquial French, English, and other languages discussed above, in modern spoken varieties of Arabic, the complex relative pronoun is replaced by an indeclinable head, namely *illi/il,* and in north African dialects by *iddi/di/d* (Fischer 1982: 85).

 Lehmann (2002: 62) argues that an older form of Chinese relative *de* is *zhi*, which is a demonstrative. Shi & Li (2002) argue the same, but only provide examples of the possessive use of *zhi*, which would be changed to *de* in Modern Chinese:

(103) fuzi   zhi wenzhang kede   er wen   ye
   teacher ZHI article   accessible and understand PART
   'The teacher's articles are accessible and therefore we know
   it it.' (Lun yu-Gong Yezhang, 500 BC, from Shi & Li 2002)

In section 5, I have given some evidence of a Relative Cycle in a variety of languages.

6. ADVERBIAL CLAUSES: PP TO C[10]

There are several pathways for adverbial clause complementisers. They can be described through Late Merge and the Head Preference Principle, as well as through Feature Economy. The prepositions that become complementisers, *after*, *before*, etc., were part of PPs that were frequently preposed, but *in* and *ofer* over', prepositions that do not become temporal or spatial complementisers, are not preposed.

Changes in the prepositions *for* and *after* constitute a core case of Late Merge. PPs of time, place or cause can function as VP adverbs ('circumstantials' in Cinque's 1999 term). In this function, they can be topicalised and then start to link one clause to another. Movement of the PP from inside the VP to the Topic position enables the PP to do double duty. This in turn can lead to a reanalysis as sentence-initial adverb and complementiser. Sentences with an initial *after* and nominal are main clauses in Old English, Old English (writing) being more paratactic than Modern English; but later, they are reanalysable as embedded clauses, and this happens. (Rosenkvist 2004: 215ff.) likewise argues that PPs can be reanalysed as CPs (due to ambiguity). Rissanen (2007: 65–9) sketches the development of *oþ* from P to C, and these data fit the framework below very well. I do not go into this here.

A formal alternative for the reanalysis of a P as a C is of course Simpson & Wu's (2002) model of lateral grammaticalisation, which allows for 'a functional head from one type of syntactic domain [undergoing] re-interpretation as an equivalent functional head in a second domain'. The main difference between the horizontal grammaticalisation from P to C I have in mind is that the latter requires movement and then reanalysis in that higher position, whereas lateral grammaticalisation does not.

6.2.1. *After*: from space to time

A brief history of *after* is as follows. The preposition and adverb in Old English, according to the OED, indicate place (or order) or

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[10]Some of the material in this section is discussed in van Gelderen (2008b). The analysis is more detailed here, however.

time, 'following with the intent to overtake', and manner, where *according to*, first attested in 1450, would be the modern equivalent. The ninth-century Mercian *Vespasian Psalter* glosses have *efter* as a gloss for the Latin *post* 'after' twice (once meaning place and one unclear) and 54 times for *secundum* 'according to' (see Kuhn 1965: 205). The instances in other early texts, such as the West Saxon Chronicle A, mainly indicate time, as in (104):

(104) He hæfde twegene sunu Ermenred & Ercenberht.
      & þer Ercenberht rixode **æfter his fæder**
      'He had two sons Ermenred and Ercenberht
      and Ercenberht ruled after/following his father.'
              (Chronicle A, entry for the year 640, Thorpe edn)

In Middle English, *after* broadens to indicate 'the aim or object of many' verbs, adjectives and nouns, such as *to search*, *to call*, *to look*, and less concretely *to long*, *to hunger* and *to strive,* even though Old English *Beowulf* already has a *him after … langað*.

   As far as the syntax of these constructions is concerned, in early texts such as *Beowulf*, *after* is only used as a preposition in a PP situated inside the VP, as in (105) and (106):

(105) Fand þa ðær inne æþelinga gedriht swefan **æfter symble**
      found then there in noble company sleeping after feast
      'He found therein a company of nobles sleeping after their
      feast.'   (*Beowulf* 118–19, Klaeber edn)

(106) hu hit Hringdene **æfter beorþege** gebun hæfdon
      how it Ring-Danes after drinking lived had
      'how the Ring-Danes were doing after their drinking
              (*Beowulf* 116–17, Klaeber edn)

Of the 65 instances of *after* in *Beowulf*, only two occur inside a fronted PP, as in (107), and in *Christ* from the *Exeter Book*, none of the fifteen instances of *after* occurs in a fronted PP and none of these introduces a subordinate sentence:

(107) **Æfter** þæm wordum Wedergeata leod efste mid elne
      'After those words the Weather-Geats chief hastened with
      strength.'   (*Beowulf* 1492–4, Klaeber edn)

In later (prose) texts, the PPs are fronted more often and the object is a demonstrative, as in (108)–(110). These clauses are still independent, however:

(108) Þa **æfter þam** for se here eall up
       'Then after that went the army all there.'
                    (Chronicle A, entry for the year 918, Thorpe edn)
(109) **Æfter þysan** com Thomas to Cantwarebyri
       'After this, Thomas came to Canterbury.'
                    (Chronicle A, entry for the year 1070, Thorpe edn)

(110) **æfter ðon** uutedlice ic eft-ariso ic forlioro l iowih in galileam
       'after that surely I arise-again I come before you in Galilee.'
                    (Lindisfarne Gospel, Matthew 26:32, Skeat edn)

This fronting makes it possible for the PP to be reanalysed as a complementiser and the clause to which it belongs as an embedded adverbial clause, as in (111)–(114):

(111) Her Leo se æþela papa & se halga forþferde, & **æfter him**
       Stephanus feng to rice.
       'In this year, Leo the noble and holy pope died
       and after him, Stephen started to rule.'
                    (Chronicle A, anno 814 [816], Thorpe edn)

(112) & þær wearþ Heahmund biscep ofslægen, & fela godra
       monna; & **æfter þissum gefeohte** cuom micel sumorlida.
       'And there was Bishop H. killed and many good men,
       and after this fight came many summer troops.'
                    (Chronicle A, anno 871, Thorpe edn)

(113) Her forðferde Wulfstan diacon on Cilda mæssedæge
        7 **æfter þon** forðferde Gyric mæsse preost.
       'In this year died Wulfstan deacon ... and after that
       died Gyric the mass-priest.'
                    (Chronicle A, entry for the year 963, Thorpe edn)

(114) **Æfter þæm** Iulius for to Rome & bæd…
       'After that Julius went to Rome and asked …'
                    (*Orosius*, 126.11, Bately edn)

The Anglo Saxon Chronicle A contains entries that, up to 891, are copied by Hand I but after 892 are entered for each year. Before 892, *after* is followed by a noun or pronoun and rarely (7.7 per cent) by a demonstrative; the PP is preposed in 27 per cent of the cases. In the later Chronicle (i.e. after 892), many of the objects of *after* are demonstratives, as in (108) and (109), namely 17 out of 22 (= 77 per cent). In Table 2, the differences are summarized, with percentages rounded off.

Table 2. Numbers and percentages of demonstrative objects (Dem) with *after* and fronting

	Beowulf	Chron A < 892	Chron A > 892
Dem objects	2/65 = 3%	2/26 = 8%	17/22 = 77%
Fronting	2/65 = 3%	7/26 = 27%	12/22 = 55%

The use of a demonstrative object indicates that the PP is starting to be seen as an adverb linking the sentence to another. This is confirmed by the frequent fronting of the PP (12 out of 22 = 54.5 per cent). The fronting can be seen as a consequence of Late Merge.

The temporal meaning of (113) can be represented as in Figure 3, which as we'll see differs significantly from the complementiser meaning, where R is the reference point indicated by R and E the main event. The preposition *after* is connected with R.

```
------------- that --------- Gyric dies ----------------
              R              E
```
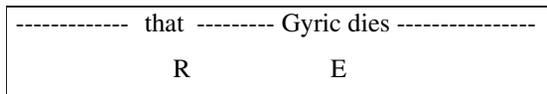
Figure 3. The temporal meaning of an adverbial PP inside the VP

The first instances of complementiser use involve sentences such as (115)–(118), where (115) is from around 900,[11] (116) is from around 1000, and (117) and (118) are from around 1200. These are technically not complementisers but PPs in the specifier of the CP, and indicate time, so could be derived from a structure such as (122) below. They are different from those mentioned before in that a complementiser follows the PP:

[11]Thanks to a reviewer for pointing out the Orosius examples.

(115) **Æfter þæm þe**   he hie   oferwunnen hæfde, he for   on
      after   that that he them conquered   had,   he went to
      Bretanie
      Britain
      'After he had conquered them, he went to B.'
                                      (*Orosius*, 126.3–4, Bately edn)

(116) Witodlice **æfter þam þe**   ic of deaþe arise ic cume to
      S*urely   after that that I of death arise I   come to*
      eow on galilee
      you in Galilee
      'Surely after I rise from the dead I will come to Galilea.'
      (*West Saxon Gospel* Matthew 26:32 Hatton MS, Skeat edn)

(117) **for   efterþan   þet** þe mon bið dead me   leið
      Because after-that that the man was dead they lay
      þene licome in þere þruh
      the body   in the   tomb
      'After the man was dead.'
                                      (*Lambeth Homilies* 51: 4–5, Morris 1868)

(118) **Affterr þatt tatt** he wass dæd Ne toc   3ho wiþþ
      after   that that he was dead not took she (with)
      nan oþerr
      no   other
      'After he was dead, she did not take another (man).'
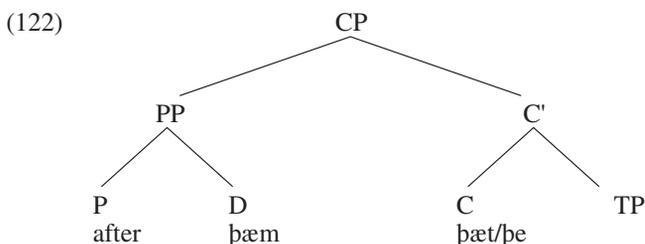   (*Ormulum* 7667, Holt edn)

Notice that (114) and (115) occur very close to each other in the
manuscript and are clearly variants. I see (115) as a development
from (114). The same variation occurs in Middle English. For
instance, in the *Lambeth Homilies* (West Midlands, early thirteenth
century), variants such as (119), (120), and (121) represent different
stages:

(119) **Efter þon** he him sceawede þe sea of helle and innan þan
      sea weren …
      'After that he showed him the sea of hell and in that sea
      were ...'   (*Lambeth Homilies* 43.2, Morris edn)

(120) Sunnendei fond noe lond **efter þet** ure drihten hefde þet folc adreint.
'Sunday found Noah land after that our lord had drowned the people.'   (*Lambeth Homilies* 139–41, Morris edn)

(121) for   **efter þan þet** þe mon bið dead me leið þene
Because after-that that the man was dead they lay the
licome in þere þruh
body   in the   tomb
'after the man was dead'
                    (*Lambeth Homilies* 51: 4–5, Morris edn)

In (119), the PP is clearly preposed and not at all conjoining the sentence to another. In (120), it is in principle possible to analyse the PP as having preposed, but this is unlikely, and in (121), the PP has shifted to a conjoining role.

The tree for (121) would be as in (122):

(122)

```
                         CP
                 _____|_____
                PP                C'
             ___|___           ___|___
            P       D         C       TP
          after    þæm      þæt/þe
```

The meaning of these has shifted to the one represented by the timeline in Figure 4. This shows that *after* is now taking the TP as its complement. I return to this at the end of this section.

```
-------- arise ------------- come to Galilea -------
         R                      E
```
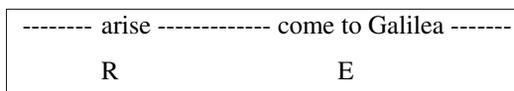
Figure 4. Temporal meaning of the complementiser

As can be seen by putting these together, there is a semantic reanalysis of the entire construction but the reference point remains with *after*. To facilitate the comparison (see Figure 5), I will use sentences (123) and (124), with (123) representing the earlier stage and (124) the later:

```
------------- that=rain --------- left ----------------
              R (after)        E
------------- left ------------- rain -------
              R (after)        E
```
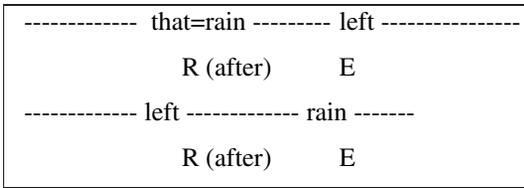
Figure 5. A semantic reanalysis of constructions with *after*

(123) It rained. After that, he left.

(124) After he left, it rained.

The Lindisfarne gloss renders the relevant part of (116) as (110), without the complementiser. They are not based on the Latin original, which lacks the complementiser, since the Rushworth and West Saxon glosses put it in. The complementiser-less stage can be seen as representing an earlier variety. This is confirmed by data in Rissanen (2007: 61, 64), who examines the Helsinki Corpus Old English parts and finds an increase in complementisers following the PP. The two clauses in (110) are more independent of each other and the PP could be a regular adverb. In these early Lindisfarne glosses, there are 29 instances of *after*, of which (115) is one. In only one is there an overt C, the abbreviated þ in (125), but that may be the result of an overt C in the Latin (126):

(125) 7 betuih **æfter** tid **þ** gesohte l gefragade from dryum
       and under according time that [Herod] soughtand asked
       from wise
       'and according to the time that Herod had found out
       from the magi'
                                (*Lindisfarne,* Matthew 2:16, Skeat edn)

(126) et infra secundum tempus **quod** exquisierat a magis
       and under according time that asked to wise
       'and according to the time that Herod asked the wise'

In the other versions (more southern and later), an overt C is more the rule, as in (122).

So far the development has been that the PP with *after* is fronted and that its object is often a demonstrative, not a full noun. The demonstratives are still inflected and cannot be 'mistaken' for complementisers. This means the PP is still adverbial. The second stage, we have seen, is for a complementiser to follow the PP. This stage involves a change in the temporal representation of the clause. The third stage, which we turn to now, is for the preposition to become a complementiser. The first use of *after* as a clear head in the OED is in the Late Middle English (127). This is attributed to Wyclif and as (127) shows, *after that* and *after* are variants. In the Bible translation done by his followers, *that* is almost always present, but in the *Apology*, as in (127), it is not:

(127)   **After þat** Crist had ordeynid his apostlis, and sent hem to
preche; **after** he assignid seuenty and two disciplis, and
sent hem …
'After Christ had ordained his apostles and sent them
to preach; after he appointed 72 disciples and sent them …'
(*c*.1360 Wyclif *Apology for Lollard Doctrines VI*, from
Middle English Compendium)

Example (128) is from the middle of the fifteenth century. This set of letters too shows an occasional *that*. In future work, I will examine stylistic factors that may be at work here:

(128)   **after** I met wyth hym in þe strett and spak wyth hym
'After I met him in the street and spoke with him …'
(*Paston Letters* 119, Davis p. 204)

In conclusion on *after*, it expresses features such as [time, order, motion, past] in Old English but loses a few of these features through reanalysis from P to C. This reanalysis is triggered by a frequent preposing of the PP, which plays a clause-connecting role, as in (122) and (123). The complete changes are indicated in Table 3.

Table 3. Renalyses involving *after*

a.	PP	PP	pre-900	–	present
b.	PP C		900	–	1600
c.	C		1360	–	present

The development of *after* shows that after an initial period of double duty, the PP headed by *after* is reanalysed as a sentence adverbial and then as a complementiser.

6.2.2. *For* and variants

The history of *for* (and *before*) is quite different from that of *after*. The phonologically shorter *for* is used quite early on to indicate causation (see below), whereas *fore* and *before* are used for the spatial and temporal meanings. The preposition *for* includes a semantic feature [cause] that can also be expressed in C, and that is why *for* is reanalysed as a C, as will be shown below.

As is well known, the earliest use in English of *for* is as preposition of location, later a complementiser, but never an adverb. Heine et al. (1991: 156) show that space is the least grammaticalised. In early Old English, for example *Beowulf* (129), this locational meaning can be observed. There is also an early temporal meaning for *for(e)*, e.g. in (130), but this is infrequent. More frequent already at that point is the use as a reason or cause marker, as in (131):

(129) hlynode   **for**   **hlawe**
      made-noise before mound
      'It made noise before/around the gravehill.'
                                 (*Beowulf* 1120, Klaeber edn)

(130) ða   geworden aron in iuh **for long** in asca ... dydon
      which become   are in you for long in ashes ... did
      l   worhton
      and   made
      'which were done in you (they) long ago would have
      repented'   (Lindisfarne Matthew 11:21, Skeat edn)

(131) wen   ic þæt ge **for wlenco** nalles for wræcsiðum. ac
      expect I that you for daring not   for misery/exile but
      for   **higeþrymmum**   Hroðgar sohton.
      for   greatness-of-heart Hrothgar sought
      'I expect you were seeking Hrothgar because of
      your daring and greatness of heart rather than
      because of being exiled.' (*Beowulf* 338–9, Klaeber edn)

The purpose marker is often seen as predecessor of the cause meaning (Heine et al. 1991: 157) but this meaning could be the one in (132). Note that, like (131), it is preposed:

(132) **for** werefyhtum ... ond **for** arstafum usic sohtest
     for fighting ... and for support (you) us sought
     'You wanted us to help fight.' (*Beowulf* 457–8, Klaeber edn)

In later Old English, e.g. the Peterborough Chronicle (133) (PC), *for* is used as a preposition of causation, but no longer as a spatial preposition, an indication of further grammaticalisation. In the other version of the same Chronicle (the Parker Chronicle or Chronicle A), the use of *for* as a preposition is very infrequent, and I will therefore not examine this text. The passage from which (133) is taken is in fact a twelfth-century addition to the entry for the year 675, one which the other versions are lacking:

(133) ouþer **for untrumnisse** ouþer **for lauerdes neode** ouþer
     for haueleste ouþer **for hwilces cinnes oþer neod** he
     ne muge þær cumon
     'Either from infirmity or from his lord's need or from lack
     of means or from need of any other kind he cannot go
     there.'   (PC, anno 675)

As with *after* above, the number of constructions in which the PP of which *for* is the head is preposed, as in (131) and (133), is very relevant to the claim that movement precedes the grammaticalisation of the P as a C head is. This use continues into Middle English, as in (134) and (135):

(134) **for** mine londe 7 **for** mine feo. mine eorles fulle to mine cneo
     'for my land and for my property my earls fell to my knees'
            (Layamon, Caligula 1733–4, Brook & Leslie edn)

(135) **For**   þan weorldes scome; **&   for** þan muchele
    for/because of the wordly   shame and for the great
    grome. þat Dardanisc   kun. þe we beoð of icomene.
    blame that the Dardanian tribes that we have of come
    woneð in þisse londe … heo beoð to-gadere icumene
    live   in this land … they have together   come
    'They have come together because of the worldly shame and
    great blame which our ancestors the Dardanian tribes live in.'
                (Layamon, Caligula 226–30, Brook & Leslie edn)

According to van Dam (1957: 6), this fronting occurs regularly in
Old English. Once *for* is ambiguous between being part of a fronted
PP and being base generated in the CP, the language learner ends
up reanalysing the P(P) as C. In Old and Middle English, *forðæm*
and its variants also function as 'because', as in (136). This shows
that what was originally an entire PP is functioning as C:

(136) Theodorus archiepiscopus hine gehalgode on Eoferwic
    þam forman Eastordæge to biscope to Hagustaldesham.
    forþam Trumbriht wæs adon of þam biscopdome
    'Archbishop Theodorus hallowed him at York on easter to
    bishop of Hexham, because Trumbyrht had been
    deprived of his biscopric.'   (PC anno 685)

Table 4 shows the early and late situation.

Table 4. Numbers and percentages of demonstrative objects (Dem)
with *for* and fronting

	Beowulf	PC
Dem objects and *forðan*	16/54 = 30%	67/150 = 45%
Fronting	18/54 = 33%	80/150 = 53%
Total *for* as PP	54	150
C	0	16
Total *for(ðan)*	54	166

The earliest instance of *for* as a finite complementiser in English
seems to be in the PC, if the OED is correct, and is from the
Peterborough Chronicle entry for the year 1135, as in (137). There
are two others from the entry for 1135, as in (138) and (139):

(137) **for** þæt ilc gær warth þe king ded   (PC, 1135, 6)
'because (in) that same year was the king dead'

(138) **for** æuric man sone ræuede oþer þe mihte   (PC, 1135, 8)
because every man soon robbed another that could
'because everyone that could robbed someone else'

(139) **for** agenes him risen sona þa rice men   (PC, 1135, 18)
'because against him soon rose the powerful men'

This locates the first use of complementiser *for* with the second scribe, who starts adding information from 1132 on. Between 1135 and 1154, the use increases dramatically compared to the period before 1135, as (140)–(146) show for the next year that there is an entry:

(140) **for** he hadded get his tresor
'because he had got his treasure'   (PC, 1137, 3)

(141) **for** æuric rice man his castles makede
'because every powerful man made his castles'
                                    (PC, 1137, 13–14)

(142) **for** ne uuæren næure nan martyrs swa pined alse hi wæron
'because never were martyrs as tortured as they were'
                                    (PC, 1137, 20)

(143) **for** nan ne wæs o þe land
'because none was in that land'   (PC, 1137, 42)

(144) **for** ouer siþon ne forbaren hi nouther circe ne ...
'because nowhere did they forbear a church nor ...'
                                    (PC, 1137, 46)

(145) **for** hi uueron al forcursæd
'because they were all accursed'   (PC, 1137, 53)

(146) **for** þe land was al fordon mid suilce dædes
'because the land was all fordone bysuch deeds'
                                    (PC, 1137, 54–5)

Excluding the verb *for* 'went', there are 101 preposition and complementiser occurrences of *for* in the PC. Of these, 16 are finite complementisers recorded during the last few years, as in (137) to (146). The Middle English of 100 years later, of course, has many variants, as in (147):

(147) Locrin 7 Camber to þon scipen comen. **for** to habben
al þa æhte
Locrin and Camber to the ships came for to have all the goods
'Locrin and Camber came to the ships to take all the goods.'
                    (Layamon, Caligula 1113–14, Brook & Leslie edn)

So, the stages are (a) preposing of the (causative) PP, (b) reanalysis of the PP as a CP specifier, and (c) reanalysis of *for* as a C head. A PP occupies the specifier position of the CP, whereas *for* on its own never does. In Old English, *for* occurs in combinations such as *for ðon ðe, for ði, for ðæm ðe*, as in e.g. (148). With *ðe* present, there is no verb-second, indicating that *ðe* is in C and the PP *for þæm* in the specifier position, similar to (114) above:

(148) ac **for þæm þe**   hie us near sint, we ... ne magon ...
      but for that that they us close are, we ... not may ...
      'but because they are near to us, we cannot ...'
                              (*Orosius*, Bately edn, 122.18–19)

For has variants, *before* and *fore*. In Old English, (*be*)*fore* functions as an adverb and preposition of space and time. In the Vespasian Psalter, *fore* is used to indicate location, and it is preposed and precedes a demonstrative. This is not the case in the later texts. In the more southern Chronicle A, *beforan* is used three times as adverb and preposition but never connects a clause. That is true in the Lindisfarne glosses as well. Even though *befora/e* is more frequent, namely 15 times, its phrase is never preposed or followed by independent demonstratives. *Fore* also occurs, but with the same characteristics. So, unlike *after*, (*be*)*fore* is quite limited in function.

For some reason *fore* is never used as a complementiser, but the other forms are. The first clearly complementiser use of *before* in the OED is in early Middle English *Ormulum*, as in (149). Preposing of PPs is frequent in the *Ormulum*, as in (113) above, and also with *through that* and *off that*, as in (149) and (150):

(149) **Biforenn þatt** te Laferrd crist Wass borenn her to mann
    'before (that) the Lord Christ was born here to man'
              (*Ormulum* 964, from the OED, Holt edn)

(150) Oþerr godnesse uss hafeþþ don þe Laferrd Crist onn erþe,
    þurrh þatt he wass i flumm Jorrdan Fullhtnedd forr ure
    nede
    'Other goodness us has done the Lord Christ on earth
    through that he was baptized in the river Jordan for
    our needs.'   (*Ormulum* 189–92, Holt edn)

Only in the middle of the fourteenth century is *before* used on its own, at least 100 years after such use with *after*:

(151) On oure **byfore** þe sonne go doun, He …
    'An hour before the sun goes down, he …'
            (*Pearl* IX, Gordon edn, p. 19)

This use occurs till the present. I have not examined the development of *before* but just wanted to mention it. It remains for further research.

   Table 5 provides a comparison of use in Matthew in Lindisfarne, *Beowulf* and the Peterborough Chronicle. If Lindisfarne is considered the earliest, it can be seen that the use of *(be)fore* decreases and that of *for* and forms such as *forðan* 'for that' and other spelling variants increase.

Table 5. The forms of *(be)for(e)*

	for	*for(e)*-DEM	*fore*	*before*
Lindisfarne	6	356	66	24
Beowulf	44	11	5	3
PC	85 + 16	65	5	6

6.2.3. *In* and *ofer*

When *after* and *for* were heads of PPs in Old English, these PPs were often preposed and their objects were demonstrative pronouns. We will now compare this to *in* and *ofer*, prepositions that never become temporal Cs. In Table 6, I have listed all uses of *in* and *ofer* heading PPs in the same version of the Anglo-Saxon Chronicle I used before: there is very little preposing or use of demonstrative objects.

Table 6. Demonstrative objects (Dem) and PP fronting with *in* and *ofer* in Chronicle A

| | < 892 | | > 892 | |
	in	*ofer*	*in*	*ofer*
Dem	0/27	0/24	0/3	0/32
Fronting	2/27 = 7.4%	0/24	0/3	0/32

The ones with *ofer* are very spatial, as in (152). A rare example of fronting with *in* is given in (153); the usual is as in (154):

(152) 7 foron þa suþ **ofer** Temese
        'and went then south over the Thames'
                                    (Chronicle A, anno 851, Thorpe edn)

(153) Her Cuþwine 7 Ceawlin fuhton wiþ Brettas, 7 hie .iii.
        kyningas ofslogon, Coinmail, 7 Condidan, 7 Farinmail,
        in þære stowe þe is gecueden Deorham.
        'In this year, Cuthwine and Ceawlin fought against the
        Britons, and they killed three kings, Commare,
        Condidan, and Farinmail, in that place that is called
        Deorham.'   (Chronicle A, anno 577, Thorpe edn)

(154) *Her Cuichelm wæs gefulwad **in Dorcesceastre***
        'In that year, Cwichelm was baptized at Dorchester.'
                                    (Chronicle A, anno 636, Thorpe edn)

There is of course a sentence-initial *in that*, as in (155). This is an unrelated and very specialized and quite late development. The OED doesn't give an etymology but suggests that it is short for 'in the fact that'. The first instance in the OED is from the fifteenth century, as in (156), and I have not found an earlier instance, for example in the Helsinki Corpus; it is infrequent in centuries after that:

(155) Margaret Thatcher is a rarity among national leaders **in that**
        she has a science background.   (BNC, AB6 345)

(156) The child is not apte to serve god, **in that** he is inparfite.
                                    (OED, *Gesta Romanoram* II .xxi. 399)

Having shown that PPs can be reanalysed as Cs in the history of English, I briefly examine this in related languages.

6.3. *Dutch and French prepositions as complementisers*

In many (Germanic) languages, a preposition ends up as an adverbial complementiser. Braunmüller (1978: 107) shows that in a number of Germanic languages, the preposition and complementiser also reduce to one word, as in English *after* and *for*. Examples are Middle Dutch *sedert dat* 'since that' and *ter wilen dat* 'the while that' to Modern Dutch *sedert* 'since' and *terwijl* 'while', and Early Modern High German *während dass* 'while that' to *während* 'while'.

   Dutch, German, Norwegian, and other languages still have some PP-looking Cs, since (157) and (158) are common, but the structure is that of (122):

(157) Hij doet dat **voordat**   ik begonnen ben met zoeken Dutch
        He does that before-that I   started   have with search
        'He does this even before I started searching.'

                                                        (variant of (159))

(158) **Etter at**   vi hadde spist gikk vi   Norwegian
        after that we had   eaten went we
        'After we had eaten, we left.'

In Dutch, there is a colloquial version of (157), namely (159) without the *dat*. I assume this is because the preposition is analysed as a head. Another instance with just the preposition is (160):

(159) Arne wijst   het punt aan waar we zitten, **voor**   ik
        Arne points the point to   where we sit   before I
        begonnen ben te zoeken   Dutch
        started   have to seek
        'Arne is showing the point (on the map) where we are,
        before I even have started to look.'
                    (W. F. Hermans, *Nooit meer slapen*, ch. 23, p. 120)

(160) Hij ... vermaalt het met z'n hak **tot**   er   geen spoor
       he ... grinds   it   with his heel until there no   trace
       meer van terug te vinden is
       more of back to find   is
       'He grinds it into the ground until there is no trace left.'
                        (W. F. Hermans, *Nooit meer slapen*, ch. 22, p. 118)

Norwegian can also leave out *at* 'that' in (158) (Lohndal, p.c.). If
the change from (157) to (159) is indeed a trend in Dutch, it is quite
similar to stage (c) in Table 3.

   In the history of French, similar processes have taken place.
Rosenbauer (1886: 19) points out that by the twelfth century the
rich set of complementisers that had been present in Latin were
much reduced. *Si*, *quando*, *quomodo* and *quod* were the only ones
inherited as *si*, *quand*, *comme* and *que*. As a result, complementisers
such as *quand* 'when' are used quite frequently in temporal and
causal use, but *que* is used the most (p. 34), as (161) and (162) show
for temporal and spatial adverbial clauses. In a modern translation,
the *que* of (162) is rendered as *où* 'where' (see Geddes' 1906
translation into Modern French):

(161) Ço sent Rollant **que** la mort le tresprent,   Old French
       Devers la teste ...
       this feels Roland when the death him overcomes from the head...
       'Roland feels that death overcomes him completely from his
       head.'   (*Chanson de Roland*, 2355–6[12])

(162) Il nen i   ad ne veie ne senter, Ne voide tere,
       he not there is no road nor path   nor empty earth
       ne alne ne plein pied,
       nor ell   nor full   foot
       Que il n'i   ait o Franceis   o paien.
       where he not-there is or Frenchman or heathen
       'There is no road nor path, nor any empty piece of ground,
       nor any ell or full foot,
       where there is no Frenchman or heathen.'
                                   (*Chanson de Roland*, 2398–2400)

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[12]The quotes in (161)–(164) from the *Chanson de Roland* are from: http://
www.utexas.edu/cola/centers/lrc/eieol/ofrol-2-X.html

Que is of course also used for complements:

(163) Pur ço   l'ad   fait **que** il voelt veirement **Que** Carles
for that he-has done that he wants really   that Charles
diet e   trestute sa gent,
says and all   his people
Li gentilz quens, **qu**'il fut mort cunquerant.
the gentle count that he has   died conquering
'He has done this for the reason that he really wants
that Charles and his entire people say that he the brave
count has died as a conqueror.'
                                                   (*Chanson de Roland*, 2361–3)

(164) Adubez vos, si criez vostre enseigne, Si sucurez vostre
maisnee gente:
Arm you and cry your war-cry and help your army fair
Asez oez **que** Rollant se   dementet!
well hear that Roland himself laments
'Arm yourself, and shout your war cry, And go to the help
of your fair army:
You hear very well that Roland is lamenting.'
                                                   (*Chanson de Roland*, 1793–5)

This means the head *que* is more predominant compared to Latin.
There are interesting renewals, for instance in (165). According to
Rosenbauer (1886: 53), the combination of a preposition and
demonstrative and *que*, or just the preposition and *que*, is very
frequent:

(165) Ne l'amerai …, Ne Oliver, **por ço qu**'il est si cumpainz
not him-love-will-I … nor Oliver for that that-he is his companion
Li duze per,   por [ço] qu'il l'aiment tant
the dozen peers for that-they him-love so
'I'll not love him, ... | Nor Oliver, because he is his
constant companion, | The dozen peers, because they
love him so.'   (*Chanson de Roland*, 323–5)[13]

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[13]http://www.hs-augsburg.de/~harsch/gallica/Chronologie/11siecle/Roland/
rol_ch00.html

6.4. *Feature Economy*

In this section, I have so far shown how the prepositions *after* and *for* are reanalysed as complementisers. This is a process that involves preposing of the entire PP and then a reanalysis as a head. It is therefore very analysable in terms of the Late Merge and Head Preference. Below, I will provide an account in terms of Feature Economy. In section 3.3, this explanation was introduced for interrogatives and here I apply it to prepositions.

If one thinks of syntax as inert and the same cross-linguistically, it is the features that differ and change. I therefore reformulate Late Merge in terms of feature change and loss. From Chomsky (1995) on, features are divided into interpretable (relevant at LF) and uninterpretable (not relevant to the interpretation). Interpretable features are acquired by a child before uninterpretable ones, as argued in Radford (2000), but are later reinterpreted as uninterpretable ones, triggering the functional/grammatical system. The same happens in language change. For instance, changes from verbs to auxiliaries and from prepositions to complementisers can be accounted for by arguing that (initially) semantic features are reanalysed as interpretable ones and then as uninterpretable ones. For instance, the PP inside a VP would have semantic features of time and these are reanalysed as grammatical time when the PP is used to link an adverbial clause. This can be stated as in (166) in very general terms, but will be made more precise below.

(166) Feature Economy:
Minimize the semantic and interpretable
features in the derivation, e.g:

VP-Adverbial		CP-Adverbial		C-Head
semantic	>	[iF]	>	[uF]

Chomsky (2004; 2007) argues that we need to attribute as little as possible to UG and instead rely as much as possible on principles not specific to the faculty of language. Many Economy Principles, (166) included, fall into this latter category in that they reduce the computational burden.

A preposition such as *after* has semantic features (e.g. [time, order, past]) and phonological ones (two syllables, etc.). The latter are not accessible during the derivation. In addition, there are

formal features, which are accessible during the computation and include categorial, Case, and phi features, at least in Chomsky (1995: 230–32). Assuming that prepositions have unvalued phi features[14] and search/probe for interpretable ones, they in turn value the Case of the DP in their domain. So, the Case of the DP, the [uCase] in (167), is valued after agreement with an appropriate probe (I use ACC to show this but nothing hinges on this, and in current work I am developing the idea that [u-Case] is really licensed by the time/place features of the preposition):

(167)   PP

      P   DP
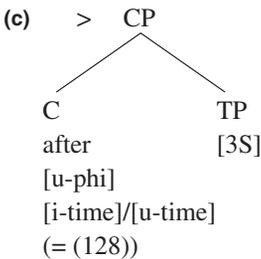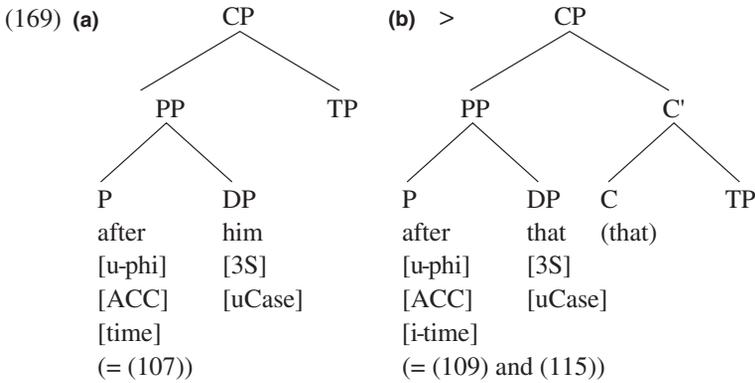   *after*   *him*
      [u-phi] [3S]
      [ACC]   [uCase]
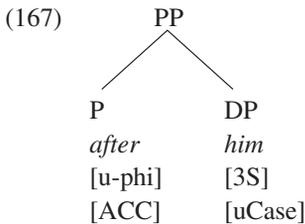
Thus, there is a formal uninterpretable and unvalued feature [u-phi] that makes prepositions into probes. This is the feature that is relevant for the derivation; other features are in fact a burden on the computational system. Language learners and users thus use (166) to eliminate [ACC] from the lexical item.

    With the interpretable [ACC] feature reanalysed, the structure will be as in (168), and the same for *like* and *for* (and a number of others). The uninterpretable, unvalued features of C will probe/-search into the clause it c-commands, and find a goal in the lower TP to value its phi features. It is well known that CPs (as subjects) trigger third-person singular agreement on the verb. This is expected if the complementiser has phi features (that are overt in many languages):

(168)   CP

      C   TP
      after [3S]
      [u-phi]

---
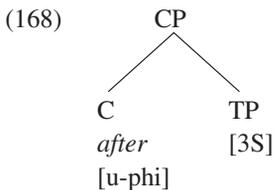
[14]See Baker (2008: 112–13) for more on the phi features of adpositions.

If the PP in (167) is topicalised and functions as complementiser, what happens to the features? I have put the developments in (169). I assume the C (when the PP is topicalised) is not specified for temporality (yet) or is not even present, as in (169a), but that the semantic features of [time] connected to *after* express that. When the PP is base generated in the CP, [time] is analysed as an [iF] on *after,* as in (169b). After the reanalysis of *after* as C in (168), *after* may keep those [iF] features. Alternatively if it loses them, a null temporal element inside the VP has to be assumed. A complete picture of the changes is given structurally in (169) and in terms of Feature Economy in (170):

(169) **(a)**

```
              CP
           /      \
        PP          TP
       /  \
      P    DP
   after   him
   [u-phi] [3S]
   [ACC]   [uCase]
   [time]
   (= (107))
```

(b) >

```
              CP
           /      \
        PP          C'
       /  \        /   \
      P    DP    C       TP
   after  that (that)
   [u-phi] [3S]
   [ACC]   [uCase]
   [i-time]
   (= (109) and (115))
```

(c) >

```
        CP
      /    \
     C      TP
  after    [3S]
  [u-phi]
  [i-time]/[u-time]
  (= (128))
```

(170)

P	>	P	>	C
[u-phi]		[u-phi]		[u-phi]
[ACC]		[ACC]		[i-time]/[u-time]
[time]		[i-time]		
(in (107))		(in (109), (113))		(in (120), (127))
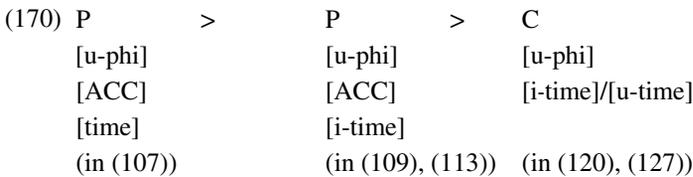
The change in meaning discussed in relation to Figures 3 and 4 follows from what the complement of *after* is, a DP or a TP. This is very clear in (169a) and (169c). In (169b), the C can be filled, in which case, it has a [u-time] feature and *after* has the TP as its complement, or the C can be absent and *after* takes the DP.

Concluding, Late Merge is argued to be a motivating force of linguistic change, accounting for the change from specifier to higher specifier (in the case of the PPs) and head to higher head (in the case of verbs). The reason is that these principles help a child reanalyse their linguistic input. I have reformulated the LMP as a Feature Economy Principle. Feature loss, I argue, can then be responsible for certain changes. One can think of feature loss as happening through the addition of certain words to the lexicon with different features.

7. Final remarks

In this paper, I have shown how the left periphery, or CP layer, is renewed. Phrases that are base generated in the VP (or vP) get to be fronted and then serve two functions. They are later reanalysed as CP layer elements, both of the main clause and of the embedded one. This can be seen as a cycle, namely a CP cycle.

Having prepositions change to complementisers has also been seen as a case of lateral grammaticalisation, a direct shift from P to C, as in Simpson & Wu (2002). My discussion shows that lateral grammaticalisation cannot be the relevant factor, since that would not involve a stage of the P or PP first moving before becoming a C, and this is similar to lateral grammaticalisation.

I will now briefly return to what this means for grammatical change. Lightfoot in much recent work (e.g. 2006) has talked about 'cuing'. This refers to the 'idea that children scan their linguistics environment for structural cues' (2006: 32), and concerns the change of the triggering experience from the E-language such that the language learner will come up with an I-language different from that of the previous generation. Thus, for Lightfoot, change can only come from the outside, i.e. triggered by variable data. In this paper, I have argued the opposite: that change can come from the inside.

ABBREVIATIONS

ACC	Accusative Case
ASP	Aspect
BNC	British National Corpus
CL	Classifier
C(P)	Complementiser (Phrase)
DEM	Demonstrative
DOE	Dictionary of Old English Corpus
Fin(P)	Finite (Phrase)
FOC/Foc	Focus
FUT	Future
HPP	Head Preference Principle
i-	interpretable
LMP	Late Merge Principle
M(P)	Mood (Phrase)
NEG	Negation
OED	Oxford English Dictionary
PART	Particle
PC	Peterborough Chronicle (Thorpe edn)
PF	Perfective
PP	Preposition Phrase
phi	Person and number features
Q	Question
REL	Relative marker
TOP/Top	Topic
T(P)	Tense (Phrase)
u-	uninterpretable
UG	Universal Grammar
V-2	verb-second
VP	Verb Phrase
X	any head
XP	any phrase
1P	first plural, etc.
3SM	third person singular masculine, etc.
%	unattested

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