Renewal in the Left Periphery: 

Economy and the Complementizer Layer 1

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Abstract
This paper examines cyclical changes involving complementizers, for instance, whether in the history of English. Whether starts out as a pronoun and after frequent topicalization is reanalyzed as an element in the left-most layer of the sentence. The same is true with prepositional phrases that are fronted and then reanalyzed 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 complementizers, full phrases such as demonstrative pronouns and heads such as the verbs that reanalyze 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 complementizers. 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 grammaticalization paths. This paper is about the development of complementizers. 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

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1 Thanks to Mariana Bahtchevanova, Terje Lohndal, and Cecilia Poletto for discussion; and to audiences in Berlin, Naples, Padova, Venice, and Madison for comments in 2006 and 2007.
as well as from verbs. Embedded clause arguments and relative clauses also reanalyze\(^2\) pronouns as complementizers. Adverbal clause complementizers, such as \textit{for} and \textit{after}, develop from circumstantial adverbials. Both pronouns and adverbials are initially topicalized and then reanalyzed 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 two, 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 three, I emphasize cyclical changes in the interrogative main clause. In section four, I turn to embedded arguments and, in section five, I discuss relative clauses since they show a similar grammaticalization path. Adverbial clauses are examined in section six. This part constitutes about a third of the paper and emphasizes the Prepositional Phrases headed by \textit{after} and \textit{for} being reanalyzed as complementizers. As will be obvious later, I consider as a complementizer a word that introduces a clause, such as \textit{that} but also \textit{while} in (6) and \textit{for} and \textit{after}, whereas a preposition introduces a nominal. Section seven 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 on it later.

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

\(^2\) Whenever I use ‘reanalysis’, this means what is obvious in the external language (e.g. when a preposition changes to a complementizer). This change is due to a certain ‘analysis’ by the language learner in his or her grammar.
`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, emphasizes a third factor, namely general cognitive principles.

The three factors are shown in Table 1, adapted from Chomsky (2005: 6).

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

Table 1: Factors in Language design

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, e.g. 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 will be explained in 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 come 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 be. 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 favor 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)  
\[
\begin{array}{c}
\text{VP} \\
\text{V} & \text{D} \\
\text{see} & \text{it}
\end{array}
\]

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 Spec TP, or in other terms is merged from an internal position for language-specific reasons:

(3)  
\[
\begin{array}{c}
\text{TP} \\
\text{lemurs} & \text{T'} \\
\text{uCase} & \text{3P} & \text{T} & \text{vP} \\
\text{i-T} & &
\end{array}
\]
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, 'analyze 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 (namely in 3.3). Some of Roberts & Roussou’s (2003) reanalyses can be seen in this light, e.g. as a reanalysis of F*\text{merge} over F*\text{move}.

2.3 The Expanded CP

Structure (3) is one way of looking at a clause though many linguists recognize 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 will 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 \textit{frankly}, and \textit{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 haven't shown these possibilities in (6):

\[(6)\]

\[
\text{ForceP} \hspace{1cm} \text{Force'} \hspace{1cm} \text{Force} \hspace{1cm} \text{TopP} \hspace{1cm} = \text{CP Layer} \\
\text{that} \hspace{1cm} \text{Top'} \hspace{1cm} \text{Top} \hspace{1cm} \text{FocP} \\
\text{} \hspace{1cm} \text{Foc'} \hspace{1cm} \text{Foc} \hspace{1cm} \text{FinP} \\
\text{} \hspace{1cm} \text{Fin'} \hspace{1cm} \text{Fin} \hspace{1cm} \text{TP}
\]
In some languages, the topic and focus heads are lexically represented, as in (7ab), from Zulgo and Welsh respectively:

(7)  
\[\begin{align*}
\text{a.} \quad & \text{mekele ka ſgat na azla siŋwe ya} \quad \text{Zulgo} \\
& \text{mekele TOP he FOC he-took money FOC} \\
& `\text{As for Mekele, it is he who took the money'} \quad \text{(Haller & Watters 1984: 30).}
\end{align*}\]

\[\begin{align*}
\text{b.} \quad & \text{Dywedais i mai 'r dynion fel arfer a werthith y ci} \quad \text{Welsh} \\
& \text{say I that the men as usual that sell the dog} \\
& `\text{I said that it’s the men who will sell the dog'} \quad \text{(Roberts 2005: 122)}
\end{align*}\]

A Modern English clause also has an expanded CP, as in e.g. (8), with a complementizer and a topicalized element:

(8) \[\ldots \text{think that as for computer skills I am very good at word processing.}\]

(http://dana.ucc.nau.edu/amb96/newpage1.htm)

If the complementizer that in (8) is in the Force head, the topic is below it. However, sentences with whether as complementizer 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)  
\[\begin{align*}
\text{a.} \quad & \text{?I wonder whether those books they will ever read (*them).} \\
\text{b.} \quad & \text{??I wonder those books whether they will ever read (them).}
\end{align*}\]

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 complementizer 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):
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 three, I examine how the heads of the CP change, in particular where interrogatives come from.

3. **Main Clauses Interrogative: two cycles**\(^4\)

In this section, I argue that two cyclical phenomena are responsible for changes in how questions are marked. In 3.1, I show one cycle where the interrogative pronoun is reanalyzed 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 in 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 complementizer (which is further examined in section 4.2).

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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 position are possible:

(i) They might all be leaving soon.

\(^4\) I use a `?' indicating the sentence is a question even if the original sentence does not use a question mark.
In 3.2, I consider a second cycle where a lower verbal head is reanalyzed 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 complementizers (to be further discussed in section 4.1). In 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 complementizer

I will first show that English whether originates as a pronoun that is fronted to the specifier of the main clause and is subsequently reanalyzed in that higher position. In Old and Middle English, 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 (11abc) 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. \textbf{Hwæðer} þara twegra dyde þæs fæder willan

'Who of-the two did the father's will’?

(\textit{West Saxon Gospel Corpus, Matthew 21.31, Skeat’s edition})

b. ond siþðan witig god on swa hwæþere hond, ... mærðo deme

and then wise lord to so which-ever hand ... glory grant

\textit{swa} him gemet pince.

so him right think

'And may the wise lord grant glory to whichever side he thinks right'

(\textit{Beowulf} 686, Klaeber’s edition)

c. \textbf{hwæðer} sel ñæge æfter wælraese wunde gedygan \textbf{uncer} twega
who better may after bloody-storm wounds survive 1.D GEN two-GEN
`Who of us two is better at surviving wound after the deadly battle’?
(Beowulf 2530-2, Klaeber’s edition)

Allen (1980: 791) shows that the finite verb immediately follows when these pronominal
wh-elements are fronted, as in (11a)\(^5\). This is expected in a verb-second language
because of the phrasal status of the wh-phrase.

From this preposed pronominal stage in Indo-European, whether is reanalyzed,
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) complementizer in (13) \(^6\) and (14), and
an overt question marker, as in (15) and (16):

(12)  \textit{hwæþre me gyfæþe weard ðæt ic aglæcan orde geræhte}
however me granted became that I wretch spear-DAT hit
`However, I managed to hit the wretch with my spear’ (Beowulf 555-6, Klaeber’s edition).

(13)  \textit{þær se snotera bad. hwæþer him alwalda æfre wille ... wyrpe gefremman}
there the wise waited whether him almighty ever would ... change accomplish
`There the wise one waited whether the almighty would ever grant him change’
(Beowulf 1313-5, Klaeber’s edition).

(14)  \textit{ða cwædon ... hwæðer ænig man him mete brohte}
then said [the disciples]... whether any person him food brought
`Then said [the disciples] has anyone brought him food’

(15)  \textit{Hwæðer wæs iohannes fulluht þe of heofonum þe of mannum}
Whether was John's baptism that of heavens or of man
`Was the baptism of John done by heaven or by man’ (West Saxon Gospel,

\(^5\) 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.
\(^6\) 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 complementizer *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 adverbial, as in (12). The use of *whether* as interrogative complementizer 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 mid monndwære gæste?*

Whether will you that I come to you or with rod or with gentle spirit

’Do you want that I come to you, with a rod or with gentleness of spirit?’

(Alfred, *Pastoral Care*, Sweet’s edition 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 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 *hwæðeres* is part of a phrase, but not when *whether* is a question marker as in (19):

(18)  *hwæðeres fere wult tu beon?*

Who-GEN companion will thou be

’Whose companion do you want to be?’ (*Ancrene Riwle* 284.14, Morton edition).

(19)  *Hwæðer eni totilde ancre wondede euer ðis*

Whether any peering nun found ever this
'Did any peering nun ever experience this?' (Ancrene Riwle 44.18, from Allen 1980: 790; Morton 102.2-3).

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

(20)  

\[ \text{Hwæðer þ nu sie to talianne waelic & unnyt þætte nytwyrðost is} \]

Whether that now be to reckon vain and useless that useful-most is eallra þissa woruldpinga, þæt is anweald

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, XXIV, Sedgefield edition 56.7)

This doesn't 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 1449 variations on hwæþer(e), there are a handful examples of (20), thus 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 topicalized 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 7.

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:

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7 One such instance is (i):

(i)  

\[ \text{Hwæber nu gimma white eowre eagan to him getio} \]

whether now gems beauty your eyes to them attract

`Does the beauty of gems attract your eyes to them? (Boethius, Sedgefield ed. 13.28.27)
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.

(\text{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 edition).

After the 18th 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 reanalyzed again as a marker of a questions base generated in C. In fact, this happens frequently in child language, as in (22), where *is* is analyzed 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?

(from Akmajian & Heny 1975: 17)

In the next section, I will examine how embedded *whether* fares, but first will turn very briefly to another *wh*-element that is reanalyzed 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 edition)

Willis (2007) provides some data on the *how* that is now being used as a complementizer head and no longer as a *wh*-element, as in (27), with the intended meaning 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:

(28)  *Your Dad once said* **how** *I had legs like Betty Grable.* (BNC AC5 2999)
(29)  *We saw* **how**, in Chapter 2, a biological system of animals functions like any other mechanistic system. (BNC C9A 1337)

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?*  

*Who you saw*  

'Who did you see?' (from 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 \textit{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 complementizer \textit{som} in C under certain circumstances, as in (32):

\begin{equation}
(31) \text{Ka for nokka sa dokker?} \quad \text{Norwegian variety}
\end{equation}

\begin{align*}
\text{what for something said you} \\
\text{`What kind of thing did you say?' (from Taraldsen 1985: 21).}
\end{align*}

(32) \textit{Kven som kjem der?}

\begin{align*}
\text{who that comes there} \\
\text{`Who comes there?' (Åfarli 1986: 97).}
\end{align*}

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 \textit{wh}-word is one word, as in (30), i.e. a head. Sentence (31) requires Verb-second since the \textit{wh}-element is phrasal. The basic explanation is that C is either occupied by the verb, or the single \textit{wh}-word, or the complementizer \textit{som}. These data are of course in concordance with the preference for heads that I will elaborate on later: if a \textit{wh}-element can be analyzed as a head, it will be.

A next stage in the cycle could be for the \textit{wh}-word to be reanalyzed 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:

\begin{equation}
(33) \text{Kven du såg for nokon?} \quad \text{Norwegian variety}
\end{equation}

\begin{align*}
\text{who you saw for someone} \\
\text{`Who did you see'}
\end{align*}

This means that \textit{kven} may no longer be interpreted as the argument but just the question marker. However, as Terje Lohndal (p.c.) points out, this construction is also grammatical for varieties of Norwegian that still have \textit{wh}-pronouns in the specifier\footnote{Dutch has a similar (i) though it shows no sign of reanalysis of the \textit{wh}-pronoun:}. 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)  \textit{kya} \quad \textit{ram} \quad \textit{jata} \quad \textit{he}? \\
Q \quad R \quad go-3S \quad is  \\
`Is Ram going'?

This kya can also be used as an interrogative `what' (similar to \textit{kim} in Sanskrit) and that use is older. In Sanskrit Yes/No questions, an indeclinable \textit{api} is used sentence-initially, as in (35), or \textit{kim} `what' is, as in (36):

(35)  \textit{api} \quad \textit{rama} \quad \textit{vanam} \quad \textit{gacchati}? \\
Q \quad Rama \quad wood-ACC \quad go-3S  \\
`Is Rama going to the forest'?

(36)  \textit{kim} \quad \textit{arya} \textit{mno} \quad \textit{mahas} \quad \textit{patha} \textit{ti} \quad \textit{kramema} \quad \textit{dudhyo}? \\
what \quad Aryaman-GEN \quad great-GEN \quad road-INS \quad surpass-1P \quad inferior-P.ACC  \\
`Should we overcome the base people on the path of the great Aryaman'  \\
\textit{\textsuperscript{(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 \textit{kya} and \textit{kim} are used as head Cs. A strange fact is that in interrogative constructions, \textit{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)  \textit{Ap} \quad \textit{kya} \quad \textit{kerëge}? \\
you \quad what \quad do-FUT.2P

---

(i)  \textit{Wie heb je voor iemand gezien}? \\
Who have you for someone seen
‘What are you going to do?’

(38) \textit{indrah kim asya sakhye cakara} Sanskrit

\textit{indrah what his friendship do}

‘What did Indrah do in his friendship?’

(Rigveda 6.27.1b, from Hale, 1987: 12)

(39) \textit{ratham ko nir avartayat?} Sanskrit

\textit{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 e.g. Poletto & Pollock (2004), there are doublings as in (40) to (42), at least for speakers under 40 yours of age:

(40) \textit{S'-a-lo fat (che)?} Illasi (Verona)

\textit{what-has-he done what}

‘What has he done?’

(41) \textit{Ndo e-lo ndat endoe?} Illasi (Verona)

\textit{where is-he gone where}

‘Where has he gone?’

(42) \textit{Ch’et fat qué} Monno (Brescia)

\textit{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 \textit{wh}-elements in (40) to (42) involves a clitic phrase with \textit{che} and \textit{endoe} as specifiers and \textit{s’} and \textit{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 \textit{wh}-cycle, could be for the \textit{s’} to be reanalyzed 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 \textit{che}. The change is not complete with all \textit{wh}-elements though:
Poletto reports an original \texttt{wh}-element such as \textit{che} has become a general question-marker, as in (44), i.e. an earlier specifier is analyzed as a head:

(44) \textit{Che tu vieni?} \hspace{1cm} \text{Florentine}

\begin{align*}
Q & \quad \text{you come} \\
`\text{Are you coming?}' & \\
\end{align*}

In this section, I have given a number of instances where a pronoun is reanalyzed as a specifier in \textit{C} after initially moving there to mark interrogative force (i.e. to check a \textit{wh}-feature). It can be reanalyzed as a \textit{C} element as well. In section 3.3, I come back to possible reasons for the reanalysis, but first provide another source for \textit{C}-elements.

3.2 \textit{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 reanalyzed as a negative aspectual auxiliary. This auxiliary is then reanalyzed as a question particle, as are semantically negative verbs. In other languages, e.g. the Dravidian family and in Creoles, non-interrogative complementizers derive from verbs as well, as we'll see in section four. 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 \textit{ma}. Ji (2007: 189) discusses the development of \textit{ma} from the verb \textit{wu} 'lack; not have' in Old Chinese (45) to a question marker in Early Chinese (46), and to \textit{ma} in Modern Mandarin (47):

(45) \textit{ren er wu xin} \hspace{1cm} \text{Old Chinese}

\begin{align*}
\text{person but lack trust} & \\
\end{align*}
'A person lacks trustworthiness' (Analects, from Ji 2007: 189)

(46) \textit{shan yan xianrenyi wo wu} \quad \textit{Early Chinese}

good eye immortal recall I Q

`The immortal with sharp eyes, can you recognize me?' (from Ji 2007: 189)

(47) \textit{ta lai le ma} \quad \textit{Mandarin}

He come PF Q

`Did he come?'

Similarly, contemporary Mandarin Chinese negatives such as \textit{bu} and \textit{meiyou} can also be used as question markers, as in (48) and (49):

(48) \textit{ta chang qu bu} \quad \textit{Mandarin}

he often go not

`Does he go often?' (Cheng et al 1996: 43)

(49) \textit{hufei kan-wan-le nei-ben shu meiyou} \quad \textit{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 \textit{bu} and \textit{meiyou} is aspectually determined: \textit{bu} negates states and auxiliaries, such as \textit{hui} `know', but not bounded events; \textit{meiyou} 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) reanalyzed as base generated in C:
Cheng et al. (1996) argue in favor 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 $bu$  
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 $meiyou$?  
he will think you go not  
‘Will he think that you have or haven't been there?’

(53) $ta$ yiwei $ni$ qu-guo $bu$?  
he think you go not  
‘Does he think or not think that you have been there?’ (p. 59)

Cantonese has three negatives, also aspectually determined, but only one of these appears as a Y/N marker, namely *mei* as in (54):

(54) $wufei$ lei-zo $mei$?  
wufei come-PF not  
‘Has Wufei come yet?’ (Cheng et al 1996: 41)
This *mei* in C is no longer aspectually determined and 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 reanalyze negation as part of the complementizer 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, reanalyzed as question particles in a number of languages, e.g. 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 analyzing 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 analyze 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 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 reanalyzed as an interrogative marker, and stage (c) might come about when the head is reanalyzed 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 grammaticalization. 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)  

\[
\text{pronoun} > \text{whether} > \text{whether} \\
\text{semantic} \quad [\text{i-Q}] \quad [\text{u-Q}] 
\]

The developments in Chinese (and those in the child language of (22)) show that there is a second cycle: verbal heads that reanalyze 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 four and five also fit in either the Late Merge
and Head Preference or Feature Economy framework. The data in section six require a little more detail and I will provide that in 6.4.

4. Embedded argument clauses

In section three, 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 complementizer renewal candidate for embedded arguments is a verb or pronoun. These two sources for complementizers 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, and 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) above, I have suggested that an auxiliary can be reanalyzed by a child as an interrogative marker. There are other such changes. Dravidian languages have clause-final complementizers that derive from verbs of saying, e.g. (56):

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

Some Indo-European languages have borrowed this pattern, e.g. the variety of Hindi-Urdu that is in contact with Dravidian languages, Dakhkhini Hindi-Urdu, uses bolke 'having said' (See Bayer 1999).

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

(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 analyzed as Late Merge. I will not go into V to C further since I don't have the necessary details unlike, for instance, in the case of the pronouns in 4.2 or the PPs in section six.

4.2 Interrogative Cs

In section three, we saw the use of *whether* as a main clause Yes/No marker. As mentioned, it isn't clear if, e.g. 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 wille ... wyrpe gefremman*

there the wise waited whether him almighty ever would ... change accomplish

`There the wise one waited whether the almighty would ever grant him change' (Beowulf 1313-5, Klaeber’s edition).

It is of course to be expected that, if *whether* is checking the interrogative features of the main clause, it will come to be analyzed 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 doesn’t move in a subordinate clause, so that won’t work to show it is a specifier. If *whether* were a specifier, one might expect a *that* or *the* in complementizer 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 in (60) shows, there are lots of sentences that look as if *whether* precedes the complementizer. This may indicate that *whether* was a head, e.g. 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 gepfunge & lefnesse*

said whether that they not might except their people 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 edition, p. 100.13-15)

In Middle English, there are some instances of whether followed by a complementizer, as in (61), but the majority is in the head position, 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 any child might have, whether it were she or he
    (*Cursor Mundi*. 10205 Göttingen version, Morris edition)

(62) *O þis watur he gert ilkan Drinc, quer he wald or nan*
    of this water he gives each to drink whether he wanted or not.
    (*Cursor Mundi* 6617-8 Cotton Vesp. version, Morris edition)

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 complementizer, as in (63) to (66), the same line in all four versions:

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

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

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

(66) Shewe vs *wheþer of þese here þat þou wolt haue to þi mistere.*
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 (1992), 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 precriptive 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% 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'll 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 complementizer. Lakota has the indefinite article *wą* (from *wąži‘ 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 \( k'i \) and \( k'u \) are used as general complementizers, as in (68):

(68) \( ną \ wana' o-tayq'-sni \ k'i \ slol-o-o-ya' \) 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 reanalyzed as the head C.

In Germanic, the complementizer 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) \( Ic \ wat \ wytodlice ðæt ge secad ðone haeland ðone ðe on rode ahangen waes. \)
    I know truly that you seek the-ACC savior that-ACC that on cross hung was
    `I know that you seek the savior 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 (of the) lord (of the) Scyldings
    (Beowulf) 290-1, Klaeber’s edition)
Evidence that the demonstrative in Old English is analyzed in the specifier position of the CP is the occurrence of (71), where ðe would be in the head. A similar example is given in (72):

(71) wen ic talige gif þæt geganged þæt ðe gar nymeð

expectation I maintain if it happens that that spear takes [the lord]

`I firmly believe if it comes to pass that the lord dies ...' (Beowulf 1845-6, Klaeber’s edition).

(72) forðam wearð ylda bearnum undyrne cuð ... þæt þe Grendel wan hwile wið Hroþgar

therefore became to-elders to-children not-hidden known ... that that Grendel fought while against Hrothgar

`Therefore, all mankind found out in sad tidings that Grendel fought against Hrothgar' (Beowulf 149-151, Klaeber’s edition).

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

(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 grammaticalization (and in accordance with Late Merge), that probably changes from Fin to Force in Middle English (see van Gelderen 2004). The data in (74) to (76) show an initial low that but then by Chaucer's time a predominantly high that as well, as in (77) to (79):

---

9 However, Allen (1977: 128-9) thinks of þæt ðe as an augmented form of þæt, not a double complementizer.
(74) *For wyn in his hede* pat wende
for wine into his head that went
‘because of the wine that went to his head’ (Gawain 900, Tolkien edition).

(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 112.513-4, Benson edition).

(76) *I sal yu lere þe dute of god, his wille pat 3e may do*
I shall you teach the duty of God, his will that you may do
‘I'll teach you the duty to God, so that you may do it’ (Benet 2.5, from Kroch &

(77) *Ther may swich cause ben ... | That hardily thou wolt thiselven saye*
there may such reason be that certainly you want yourself say
‘There may be such a reason that certainly you yourself want to say ...’ (Chaucer,

(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 ...’

(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 edition).

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

```
(80)  ForceP
     /   \    
    Force'  
       /     
      Force  TopP
        /     /  
       that  Top'  
         /       
        CP      FocP
```
In this section, I have given some evidence that *that* is incorporated as a specifier in the CP layer and then is reanalyzed 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 Principle 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 complementizer, initially in the Fin head and then in the Force head, does not.

5. **The Relative Cycle**

I will now show (a) that demonstrative pronouns are incorporated as CP specifiers and (b) that heads are chosen over specifiers in relative clauses, e.g. *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 stop 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 so do Lakota (Pustet 1995) and Tok Pisin (Sankoff & Brown 1980), the latter possibly through contact. Aikhenwalde (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, e.g. 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 *pone* is accusative even though it functions as subject in the relative clause:

(82) *Ic wat wytodlice ðæt ge secað ðone haeland ðone ðe on rode ahangen waes.*

I know truly that you seek the-ACC savior that-ACC that on cross hung was

`I know that you seek the savior who was crucified' (Matthew 28.5, 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, e.g. 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 hors' (Orosius, 17.22, Bately edition)

(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 edition)

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 [schaft] hier bewuBt eine Neurerung"). This first happens in letter closings in the early part of the 15th 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 pe 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).

These cyclical changes can be represented as in Figure 2.

![Figure 2: Relative Cycle](image)

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

(86)    Neo endi ni kumid thes uuidon rikeas giuuand Old Saxon
        never and not comes of-the wide kingdom end
        the he giuualdan scal
        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* complementizer over a *wh-*
pronoun in relative clauses, by at least a 4 to 1 ratio (e.g. Romaine 1982; Montgomery &
Bailey 1991; van Gelderen 2004; Tagliamonte et al. 2005, etc). 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)\(^{10}\), Surinamese Dutch (de
Kleine 2007: 113), Non-Standard French (Foulet 1928; Joseph 1988), in Italian
(Giacalone Ramat 2005), and in 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
complementizer. The origin of the Persian *ke* is the interrogative pronoun:

\[
\begin{align*}
(87) & \quad jene \text{ vos } hohn \text{ gezen zajne } \text{kuncn} \quad \text{ Yiddish} \\
& \quad \text{those that have seen his tricks} \\
& \quad \text{’those who have seen his tricks'} \text{ (from Krogh 2001: 46)}
\end{align*}
\]

\[
\begin{align*}
(88) & \quad \text{op een manier } \text{dat } \text{anders } \text{ is } \quad \text{Surinamese Dutch} \\
& \quad \text{in a way that different is} \\
& \quad \text{’in a way that's different'} \text{ (de Kleine 2007: 113)}
\end{align*}
\]

\[
\begin{align*}
(89) & \quad mardi \text{ ke } \text{didam} \quad \text{Persian} \\
& \quad \text{man that saw-1S} \\
& \quad \text{’The man that I saw'}.
\end{align*}
\]

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

\[
\begin{align*}
(90) & \quad \text{Les enfants qui/que jouent là} \quad \text{French}
\end{align*}
\]

---

\(^{10}\) Fleischer's (2004: 239) suggests that, in the case of relative *vos*, "we are dealing with a more general
subordinator".
the children who/that play there
'The children who are playing there' (from Joseph 1988).

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

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

The phenomenon in (90) has been noted for a long time (Foulet 1928 and Auger 1993) but the doubling in (91) is more recent. 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 ...' (from Giacalone Ramat 2005: 116)

Creole languages such as Sranan and Saramaccan use di (derived from an earlier demonstrative disì) in relative clauses and as complementizers, 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 ia em ...* Tok Pisin
girl this she was young girl big girl 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); and Bruyn (1995). As pidgins evolve, relative clauses emerge using third 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, e.g. in (99), another indication that the C head is used rather than the specifier:

(99) Deh had no stove fuh cook on

‘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, e.g. as in Gothic (100) and Old English (101):

(100) Aþþan  all  uskiusaiþ  þatei  goþ  sijai  gahabaþ

But all prove that-that good is hold

‘Prove all things; keep what is good' (I Thessalonians 5,21).

(101) and  wundor  godes  þætte  on  þam  cn ihtum  gecyped  wæs

and miracle of-god that-that to the youths made-known was

‘and God's miracle that was made known to the youths' (Daniel 470-1, 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  qatalaa  'asad-an

I-saw the-men-DUAL-ACC that-DUAL-ACC killed lion

‘I saw the men that killed a lion' (from 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 the Spec CP. The Arabic relative pronoun is a combination of the definite article (l), a particle
(1), 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/iI, 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)

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

6. Adverbial clauses: PP to C

There are several pathways for adverbial clause complementizers. They can be described through Late Merge and the Head Preference Principle, as well as through Feature Economy. What I show is that the prepositions that become complementizers were part of PPs that were frequently preposed. To finish, I show that spatial in and ofer 'over', prepositions that do not become temporal or spatial complementizers, don't get 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 (circumstantial in Cinque's 1999 terms). In this function, they can be topicalized 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 complementizer. 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 reanalyzable as embedded clauses and this happens. Rosenkvist (2004: 215ff.) likewise argues that PPs can

11 Some of the material in this section is discussed in van Gelderen (2008b). The analysis is more detailed here, however.
be reanalyzed as CPs (due to ambiguity). Rissanen (2007: 65-69) sketches the development of \( op \) from P to C and these data fit the below framework very well. I won’t go into that here.

A formal alternative for the reanalysis of a P as a C is of course Simpson & Wu’s (2002) model of lateral grammaticalization 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 grammaticalization from P to C I have in mind is that the latter requires movement and then reanalysis in that higher position, whereas lateral grammaticalization 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 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 after 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, e.g. the West Saxon Chronicle A, mainly indicate time, as in (104):

(104) He hæfde twegene sunu Ermenred & Ercenberht.
     & þær Ercenberht rixode after his fæder

‘He had two sons Ermenred and Ercenberht
and Ercenberht ruled after/following his father'.

(Chronicle A, entry for the year 640, Thorpe edition)

In Middle English, after broadens to indicate "the aim or object of many" verbs adjectives and nouns, e.g. 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, 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* 118-9, Klaeber’s edition)

(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* 116-7, Klaeber’s edition)

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 15 instances of *after* occur in a fronted PP and none of these introduce a subordinate sentence:

(107) Æfter þæm wordum Wedergeata leod eftste mid elne
after those words Weather-Geats chief hastened with strength
(*Beowulf* 1492-4, Klaeber’s edition)

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

(108) Pa æfter pam for se here eall up
'Then after that went the army all there'
(Chronicle A, entry for the year 918, Thorpe edition).

(109) Æfter pysan com Thomas to Cantwarebyri
'After this, Thomas came to Canterbury'.
(Chronicle A, entry for the year 1070, Thorpe edition)

(110) æfter don uutedlice ic eft-ariso ic forlioro l iowih in galileam
'after that surely I arise-again I come before you in Galilee'
This fronting makes it possible for the PP to be reanalyzed as a complementizer and the clause to which it belongs as an embedded adverbial clause, as in (111) to (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 edition)

(112)  *& þær wearþ Heahmund biscep ofslægen, & fela godra monna; & æfter þissum gefeohhte 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 edition)

(113)  *Her forðferde Wulfstan diacon on Cilda mæsedæge 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 edition)

(114)  *Æfter þæm Iulius for to Rome & bæd…*

'After that Julius went to Rome and asked …'

(Orosius, 126.11, Bately edition)

*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%) by a demonstrative; the PP is preposed in 27% 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%). In Table 2, the differences are summarized, with percentages rounded off.

<table>
<thead>
<tr>
<th></th>
<th>Beowulf</th>
<th>Chron A &lt;892</th>
<th>Chron A &gt;892</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dem objects</td>
<td>2/65=3%</td>
<td>2/26=8%</td>
<td>17/22=77%</td>
</tr>
<tr>
<td>Fronting</td>
<td>2/65=3%</td>
<td>7/26=27%</td>
<td>12/22=55%</td>
</tr>
</tbody>
</table>

Table 2: Numbers and percentages of demonstrative objects (Dem) with *after* and fronting
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%). 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 complementizer one, where R is the reference point indicated by R and E the main event. The preposition *after* is connected with R.

--- `that` --- Gyric dies ---

Figure 3: The temporal meaning of an adverbial PP inside the VP

The first instances of complementizer use involve sentences such as (115) to (118), where (115) is from around 900, (116) is from around 1000, and (117) and (118) are from around 1200. These are technically not complementizers 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 the ones mentioned before in that a complementizer follows the PP:

(115) *Æfter þæm þe he hie oferwunnen hæfde, he for on Bretanie*

    after that that he them conquered had, he went to Britain

    ‘After he had conquered them, he went to B’. (Orosius, 126.3-4, Bately edition)

(116) *Witodlice æfter þam þe ic of deaþe arise ic cume to eow on galilee*

    Surely after that that I of death arise I will come to you in Galilee

    ‘Surely after I rise from the dead I will come to Galilea’

    (West Saxon Gospel Matthew 26.32 Hatton Ms, Skeat’s edition).

(117) *for efterþan þet þe mon bið dead me leið þene licome in þere þruh*

    Because after-that that the man was dead they lay 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 nan oþerr*

    after that that he was dead not took she (with) no other

---

12 Thanks to a reviewer for pointing out the Orosius examples.
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 13th 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 …*

\[\text{`After that he showed him the sea of hell and in that sea were'}\]

(*Lambeth Homilies* 43.2, Morris edition)

(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* 139-141, Morris edition)

(121) *for efter þan þet þe mon bið dead me leið þene licome in þere þruh*

Because after-that that the man was dead they lay the body in the tomb

\[\text{`After the man was dead'}\] (*Lambeth Homilies* 51: 4-5, Morris edition).

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

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

\[
\text{(122) } \begin{array}{c}
\text{CP} \\
\text{P} & \text{D} & \text{C'} \\
\text{after} & \text{þæm} & \text{þæt/þe} & \text{TP}
\end{array}
\]

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 come back to this again at the end of this section.
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, I will use sentences (123) and (124), with (123) representing the earlier stage and (124) the later one:

(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 complementizer. They are not based on the Latin which lacks the complementizer since the Rushworth and West-Saxon glosses put it in. The complementizer-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 complementizers 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 *after* tid þ gesohte l gefragade from dryum
and under according time that [Herod] sought and asked from wise
'and according to the time that Herod had found out from the magi' (Lindisfarne, Matthew 2.16, Skeat edition)

(126) *et infra secundum tempus quod exquisierat a magis*

and under according time that asked to 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 complementizers. This means the PP is still adverbial. The second stage, we have seen, is for a complementizer 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 complementizer. The first use of *after* as a clear head in the OED is in the Late Middle English (127). This is attributed to Wycliff 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 …’.

(c1360 Wyclif *Apology for Lollard Doctrines VI*, from Middle English Compendium).

(128) is from the middle of the 15th 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.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>PP</td>
<td>PP</td>
<td>pre 900 - present</td>
</tr>
<tr>
<td>b.</td>
<td>PP C</td>
<td>900 - 1600</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>C</td>
<td>1360 - present</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Renalyses involving *after*

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

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's why *for* is reanalyzed 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 complementizer, but never an adverb. Heine et al. (1991: 156) show that space is the least grammaticalized. In early Old English, e.g. *Beowulf*’s (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 edition).

(130)  *ða geworden aron in iuh for long in asca ... dydon l worhton*

which become are in you for long in ashes .. did and made
'which were done in you (they) long ago would have repented' (Lindisfarne Matthew 11.21, Skeat edition).

(131) wen ic þæt ge for wlenco nalles for wræcsiðum. ac for higeprymmum Hroðgar sohton.
expect I that you for daring not for misery/exile but 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 edition)

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 too 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 edition).

In later Old English, e.g. the Peterborough Chronicle’s (133) (hence PC), for is used as a preposition of causation, but no longer as a spatial preposition, an indication of further grammaticalization. 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 12th 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 oper 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 grammaticalization 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 edition).

(135)  *For* þan weorldes scome; & *for* þan muchele grome. þat Dardanisc kun. þe we beoð of icomene. woneð in þisse londe … heo beoð to-gadere icumene
for/because of the worldly shame and for the great blame that the Dardanian tribes that we come from live in this land ….. they have come together.
‘They have come together because of the worldly shame and great blame which our ancesters the Dardanian tribes live in’. (Layamon, Caligula 226-230, Brook & Leslie edition)

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 reanalyzing 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. forðam 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>
<thead>
<tr>
<th></th>
<th>Beowulf</th>
<th>PC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dem objects and</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>forðan</em></td>
<td>16/54 =30%</td>
<td>67/150 =45%</td>
</tr>
<tr>
<td>Fronting</td>
<td>18/54 =33%</td>
<td>80/150 =53%</td>
</tr>
<tr>
<td>Total <em>forðan</em></td>
<td>54</td>
<td>150</td>
</tr>
</tbody>
</table>
The earliest instance of *for* as a finite complementizer 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*
  because (in) that same year was the king dead (PC, 1135, 6)
(138)  *for æuric man sone ræuede oþer þe mihte*
  because every man soon robbed another that could
  'because everyone that could robbed someone else' (PC, 1135, 8).
(139)  *for agenes him risen sona þa rice men*
  'because against him soon rose the powerful men' (PC, 1135, 18).

This locates the first use of complementizer *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) to (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, 13-4).
(142)  *for ne uuæren næure nan martyrs swa pined alse hi væron*
  'because never were martyrs as tortured as they were' (PC, 1137, 20).
(143)  *for nan ne væs o þe land*
  'because none was in that land' (PC, 1137, 42).
(144) *for ouer sifon 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 complementizer occurrences of *for* in the PC. Of these, 16 are finite complementizers 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 1113-4, Brook & Leslie edition).

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 V-second, indicating 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 can't ...' (Orosius, Bately 122.18-9).

*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 bewora/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 complementizer, but the other forms are. The first clearly complementizer 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 edition).

(150) **Oþerr godnesse uss hafęþþ don þe Laferrd Crist onn erpe, purrh þatt he wass i flumm Jorrdan Fullhtnedd för urre nede**

`Other goodness us has done the Lord Christ on earth through that he was baptized in the river Jordan for our needs’. (*Ormulum* 189-192, Holt edition)

Only in the middle of the 14th century is before used on its own, at least a hundred years after such use with after:

(151) **On oure byfore þe sonne go doun. He se …**

`An hour before the sun goes down, he saw …’ (*Pearl* IX, Gordon edition, 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.
6.2.3  *In* and *ofer*

When *after* and *for* were heads of PPs in Old English, these PPs 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, and there is very little preposing or use of demonstrative objects:

<table>
<thead>
<tr>
<th></th>
<th>&lt;892</th>
<th>&gt;892</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>in</em></td>
<td>0/27</td>
<td>0/3</td>
</tr>
<tr>
<td><em>ofer</em></td>
<td>0/24</td>
<td>0/32</td>
</tr>
</tbody>
</table>

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

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 swþ *ofer* Temese

`and went then south over the Thames`

(Chronicle A, anno 851, Thorpe edition)

(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 edition)

(154) *Her Cuichelm wæs gefulfad in Dorcesceastre*
'In that year, Cwichelm was baptized at Dorchester'.

(Chronicle A, anno 636, Thorpe edition)

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 15th century, as in (156), and I haven’t found an earlier instance e.g. 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 reanalyzed as Cs in the history of English, I briefly examine this in related languages.

6.3 *Dutch and French prepositions as complementizers*

In many (Germanic) languages, a preposition ends up as an adverbial complementizer. Braunmüller (1978: 107) shows that in a number of Germanic languages, the preposition and complementizer 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

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

(159) *Arne wijst het punt aan waar we zitten, voor ik begonnen ben te zoeken* Dutch

Arne points the point to where we sit before I 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 meer van terug te vinden is* he ... grinds it with his heel until there no trace 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 12th century the rich set of complementizers 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, complementizers such as *quand* `when' are used quite frequently in temporal and causal use, but especially *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, Devers la teste ...* Old French

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).13

(162) *Il nen i ad ne veie ne senter, Ne voide tere, ne alne ne plein pied,*
he not there is no road nor path nor empty earth 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).

*Que* is of course also used for complements:

(163) *Pur ço l'ad fait que il voelt veirement Que Carles diet e trestute sa gent,*
for that he-has done that he wants really that Charles 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 SE 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, e.g. in (165). According to Rosenbauer (1886: 53), the combination of a preposition and demonstrative and *que*, or just the preposition and *que* are very frequent:

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13 The quotes in (161) to (164) of the *Chanson de Roland* are from http://www.utexas.edu/cola/centers/lrc/eieol/ofrol-2-X.html.
Ne l'amérai a trestut mun vivant, 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'aient tant
the dozen peers for that-they him-love so

(Chanson de Roland, 323-5)

6.4 Feature Economy
In this section, I have so far shown how the prepositions after and for are reanalyzed as complementizers. This is a process that involves preposing of the entire PP and then a reanalysis as a head. It is therefore very analyzable in terms of the Late Merge and Head Preference. Below, I will provide an account in terms of Features Economy. In 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 in 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 complementizers can be accounted for by arguing that their (initially) semantic features are reanalyzed as interpretable ones and then as uninterpretable ones. For instance, the PP inside a VP would have semantic features of time and these are reanalyzed 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:

<table>
<thead>
<tr>
<th>VP-Adverbial</th>
<th>CP-Adverbial</th>
<th>C-Head</th>
</tr>
</thead>
<tbody>
<tr>
<td>semantic</td>
<td>[iF]</td>
<td>[uF]</td>
</tr>
</tbody>
</table>
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: 230-2). 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):

(167)  

\[
\text{PP} \\
\text{P} \quad \text{DP} \\
\text{after} \quad \text{him} \\
[\text{u-phi}] \quad [\text{3S}] \\
[\text{ACC}] \quad [\text{uCase}]
\]

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 reanalyzed, 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 complementizer has phi-features (that are overt in many languages):

\[^{14}\text{See Baker (2008: 112-3) for more on the phi-features of adpositions.}\]
If the PP in (167) is topicalized and functions as complementizer, what happens to the features? I have put the developments in (169). I assume the C (when the PP is topicalized) is not specified for temporality (yet) or isn't 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 analyzed 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   > b. CP
     PP  TP   PP   C'
     P   DP    P   DP  C   TP
  after   him  after   that (that)
 [u-phi]  [3S]  [u-phi]  [3S]
 [ACC]    [uCase] [ACC]    [uCase]
 [time]   [i-time]
 (=107))  (=109) and (115))

>  c. CP   >  b. CP
    C   TP   C'  TP
  after   [3S]  after   that (that)
 [u-phi]  [u-phi]
 [i-time]/[u-time]
 (=128)

(170) P   >  P   >  C
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 reanalyze 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 reanalyzed 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 complementizers has also been seen as a case of lateral grammaticalization, a direct shift from P to C, as in e.g. Simpson & Wu (2002). My discussion shows that lateral grammaticalization 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 grammaticalization.

I will now briefly come back 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, namely that change can come from the inside as it were.

**Abbreviations and notes**

- ACC: Accusative Case
- ASP: Aspect
- BNC: British National Corpus
- CL: Classifier
- C(P): Complementizer (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 edition)
- 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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Middle English Compendium

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