

A Diachronic Survey of Syntactic Features in the Anglo-Saxon Chronicle

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Abstract

On account of its philological complexity, the Anglo-Saxon Chronicle has proven to be a difficult text for coherent and comprehensive diachronic studies. This paper describes criteria for the compilation of a single Chronicle based on four manuscripts from the electronic, syntactically parsed corpus YCOE. The compiled version is subdivided into four periods and thus allows easy investigations of syntactic changes. In order to test the adequacy of this periodisation, the development of six syntactic features is traced: the headedness of IP, VP and PPs, arbitrary PRO, pronominal scrambling and V-to-C movement. All of these studies reveal a clear decrease in conservative structures. Thus, the compiled text files of the Anglo-Saxon Chronicle can plausibly be employed for future studies.

0. Introduction

There are two reasons why the Anglo-Saxon Chronicle (ASC), a collection of annals written in Old English (OE), is of paramount importance for diachronic investigations of early English syntax: Firstly, the text is not based on a Latin *vorlage*, but of genuinely OE origin. Thus, complicating interference effects, such as loan syntax, neologisms, OE renditions of *vorlage* blunders, awkward or over-literal translations etc., do not present a serious problem. Secondly, the composition of the Chronicle spans roughly two and a half centuries. Changes in the OE language during that time are therefore expected to have direct reflexes within this document.

The syntactically annotated and parsed corpus *York-Toronto-Helsinki Parsed Corpus of Old English Prose* (YCOE) (Taylor et al. 2003) includes four of the nine ASC manuscripts that have come down to us – the versions [A],[C],[D] and [E]. However, these text files cannot directly be used to study the Chronicle's syntax diachronically: The manuscripts were copied at and continued into different times and thus have individual but also overlapping contents. It is not clear how duplicate tokens should be treated. As an example, consider the duplicates in (1) below:

(1) Manuscript [A] “Parker”:

ANNO Octavianus ricsode *lvi* wintra. & on þam *xlii* geare his rices Crist wæs acenned.
Þa tungel witgan of eastdæle cuomon to þon þæt hie Crist weorþedon, & þa cild on Bethlem
ofslægene wærun for Cristes ehtnesse from Herode.

Manuscript [C]:

Anno Octavianus rixode *lxvi* wintra, and on þam *lii* geare his rices Crist wæs acenned.
Ða ðry tungolwitigan of eastdæle coman to þam þæt hie Crist weorðodan, and þa cild on Bethleem
ofslegene wæran for Cristes ehtnesse fram Herode.

Manuscript [D]:

Anno. Octavianus rixade *lxvi* wintra and on þam *xlii* geare his rices Crist wæs acenned.
Ða tungelwitegan of eastdæle comon to þam þæt hi Crist wyrþoden, and þa cild on Betleem
ofslagene wæron for ehtnesse fram Erode.

Manuscript [E] “Peterborough”:

ANNO Octavianus rixade *lvi* wintra. & on þam *xlii* geare his rices. Crist wæs acenned.
Ða tungel witegan of eastdæle coman to þan þæt hi Crist wurðoden. And þa cild on Bethleem
ofslagene wæron for ehtnesse fram Herode.

Modern English:

A.D. 1. Octavianus reigned for fifty-six years, and in the forty-second year of his reign, Christ was born.
Then (three) astrologers from the east came so that they could worship Christ. And the children in
Bethlehem were slain by Herod in (Christ’s) persecution.

The brief narration of the year 1 A.D. in (1) is evidently based on only one source despite orthographic differences and occasional omissions (e.g. “Christ’s” in “Christ’s persecution” in [D] and [E]) or additions of words (e.g. “three” in “three astrologers” in [B]). Since mechanic copying of contents from an earlier into a later manuscript of the ASC may have concealed ongoing syntactic changes, it would be a mistake to include duplicate material more than once, i.e. in other than its earliest recension.

Furthermore, a division of the ASC into subperiods is necessary for diachronic investigations. However, the fact that many different scribes worked together on the ASC and often added material to earlier entries obscures the chronological order of the Chronicle’s composition. Some philological examination is therefore required to identify and date the individual scribes. Unfortunately, relevant information on scribes and interpolations that would allow a practical periodisation is not consistently available in the electronic versions of the ASC.

The aim of this paper is to overcome these shortcomings and facilitate diachronic investigations of the ASC. I will therefore present and evaluate here a new “compiled version” of the Chronicle, which I created out of the four separate text files provided by the YCOE. First, I will describe the criteria according to which I removed duplicate contents and the philological evidence that formed the basis for the identification of several subperiods of the ASC. I will subsequently investigate six syntactic changes that occurred during the OE period in the Chronicle, demonstrating the appropriateness of the suggested subdivision.

For statistical tests of significance, I employ Yates Chi-Square and, for small samples, Fisher’s exact test. I deemed it appropriate to use one-tail p-values for the statistical evaluations with Fisher’s exact test because it is commonsensical to assume that the difference between earlier

and later ASC periods can only go in one direction – the later periods should obviously exhibit a higher frequency of innovative patterns. I work with a 5% level of significance.

For the linguistic analyses, I make use of a derivational generative syntax framework that I consider to be fairly standard. My main goal is to trace the development of syntactic features and not their most suitable theoretical analysis. Thus, I am agnostic about theoretical questions such as whether the headedness parameter does in fact exist or whether movement is the correct or even a necessary device to model constituent displacement etc. and simply use these mechanisms as a simple means to study the empirically indubitable phenomena that they are meant to model.

1. Dissecting the ASC

The YCOE includes syntactically annotated and parsed text editions of the ASC based on four different manuscripts: [A] (“Parker Chronicle”), [E] (“Peterborough Chronicle”) (Plummer 1965), [C] (“Abingdon II”) (Rositzke 1967) and [D] (“Worcester”) (Classen & Harmer 1926). In what follows, I will describe criteria for removing duplicate contents, the most important modifications and the resulting periodisation of the Chronicle. In this section, examples are given with a Modern English (ModE) translation but without glosses.

Duplicate criteria

I regarded material in one version of the ASC as independent from a version I compared it to (usually the [A] manuscript) if it (a) spanned more than a single token, (b) contributed additional information and (c) exhibited morpho-syntactic features different from the comparison Chronicle. As an example, consider (2) below:

(2)	<u>[A] “Parker”</u>	<u>[E] “Peterborough”</u>
OE:	& on hiera dagum Hengest & Horsa from Wyrteorne geleapade Bretta kyninge gesohton Bretene on þam staþe þe is genemned Ypwinesfleot. ærest Brettum to fultume, ac hie eft on hie fuhton. Se cing het hi feohtan agien Pihtas. & hi swa dydan, & sige hæfdon swa hwar swa hi comon.	& on þeora dagum gelaðode Wyrteorn Angelcin hider. & hi þa coman on þrim ceolum hider to Brytene. on þam stede Heopwines fleot. Se cyning Wyrteorn gef heom land on suðaneastan ðissum lande. wiððan þe hi sceoldon feohton wið Pyhtas. Heo þa fuhton wið Pyhtas. & heofdon sige swa hwer swa heo comon.
ModE:	In their days Hengest and Horsa, invited by Wurtgern, king of the Britons to his assistance, landed in Britain in a place that is called Ipwinesfleet; first to support the Britons, but afterwards they fought against them. The king directed them to fight against the Picts. And they did so, and had a victory wherever they came.	And in their days Vortigern invited the Angles hither, and they came in three ceols hither to Britain, at the place Wippidsfleet. The king Wurtgern gave them land in the southeast of the land for which they should fight against the Picts. They then fought with the Picts and had a victory wherever they came.

Example (2) presents the entry for the year 449 in the [A] and [E] manuscripts. The latter version contributes information that is markedly different from the former: Instead of the individuals Hengest and Horsa [A], the English nation as a whole is invited by Wurtgern [E]. Some of the information is given in the later version exclusively: Only in [E] does Wurtgern give the English land in exchange for their mercenary services. In addition, there are grammatical differences between the two Chronicles: For instance, while [A] uses a control construction to introduce the English-Pict conflict (“the king ordered them to fight against the Picts”), [E] ascertains that fact with a simple transitive verb (“They then fought against the Picts”). All in all, the changes between the two versions seem substantial. Therefore, this passage has been included in the text file for the Peterborough chronicle.

Changes in the target file were not considered wherever they were brief, did not add considerable new information, and were morpho-syntactically similar to the comparison version. Examples are given in (3) and (4):

(3)	<u>[A] “Parker”</u>	<u>[E] “Peterborough”</u>
OE:	& þa cild on Bethlem ofslægene wærun for Cristes ehtnesse fram Herode. 3: Her swealt Herodus from himselfum ofsticod,	And þa cild on Bethleem ofslagene wæron for ehtnesse fram Herode. & he swealt ofsticod fram him sylfum.
ModE:	and the children in Bethlehem were slain in persecution of Christ by Herod. 3: This year died Herod, stabbed by himself.	and the children in Bethlehem were slain in persecution of Christ by Herod. And he died, stabbed by himself.
(4)	<u>[A] “Parker”</u>	<u>[E] “Peterborough”</u>
OE:	& þa Walas flugon þa Englan swa fyr.	& þa Walas flugon þa Englan swiðe þearle.
ModE:	And the Welsh fled from the English like fire.	And the Welsh fled from the English very much

The parallel excerpts in (3) come from the annals of the years 2 and 3. Evidently, there are some minor changes between the [A] and [E] Chronicles. Most importantly, [E] attributes Herod’s death to the same year as his slaying of Bethlehem’s children and so a pronoun is used to refer back to him anaphorically (“and **he** died”). In [A], on the other hand, Herod kills himself the following year and a proper name is used as the referring expression (“In this year **Herod** died”). The difference is mainly grammatical, very short and does not convey altered information. Therefore, this passage was considered a duplicate from [A] and has been deleted in [E].

Example (4), a part of the entry for 473, illustrates minor lexical differences between two versions of the ASC. Both the Parker and Peterborough Chronicle have an adjunct specifying the manner of the Welsh retreat. But while [A] employs the simile *swa fyr* “like fire”, the

latter is more literal and has simply *swiðe þearle* “very much”. Wherever differences were merely lexical as in this example, they were considered duplicate content and not kept in the final text file.

As a consequence of these guidelines, differences between two versions that are merely syntactic in nature were deleted as well. However, one might find it tempting at first to keep changes such as those exemplified in (5) and (6) because of their potential indication of grammatical changes:

(5)	<u>[A] “Parker”</u>	<u>[E] “Peterborough”</u>
OE:	642: Her Oswald Norðanhymbra cýning ofslægen wæs.	641: Her wæs Osuuald ofslagen Norðhymbra cýning.

ModE: 641/2: This year Oswald, King of the Northumbrians, was killed.

(6)	<u>[A] “Parker”</u>	<u>[E] “Peterborough”</u>
OE:	654: & Botulf ongon mynster timbran æt Icanho.	653: & Botuulf ongan timbrian mynster æt Icanhoe.

ModE: 653/4: And Botolph began to build the minster at Icanhoe

The contrast between the earlier [A] and the later [E] version in (5) might be a reflex of the change from *main verb – auxiliary* to *auxiliary – main verb* order (“killed was” > “was killed”) and, similarly the difference in (6) might be indicative of an underlying change from *object – verb* to *verb – object* order (“the minster to build” > “to build the minster”). Nevertheless, such dissimilarities have not been included as they would introduce an unfair bias towards altered forms. Contrasts such as those shown in (5) and (6) can still be investigated fruitfully by running relevant searches on the unaltered text files of the corpus.

The [A] manuscript

The different hands of the [A] manuscript have been described in detail for example by Bately (1986: xxi-xlii). Furthermore, the corresponding YCOE text file is already coded for the different scribes. Using the information thus provided, one can categorise this version of the ASC relatively easily.

Scribes 1 and 1a are responsible for the annals 60B.C. – 891, which were presumably compiled at the late 9th or early 10th century (e.g. Parkes 1976: 153-5, Ker 1957: 57-9). Scribes 2a-2f compiled entries 891 – 912. There appears to be some evidence that hands 1 and 2 are related and possibly collaborated (Dumville 1992). Given that the [A] manuscript is generally regarded as the “oldest surviving copy of the ‘common stock’ of the Chronicle”

(Bately 2003: 4), it can safely be assumed that scribes 1 and 2 belong to the earliest discernible period of the ASC. The same reasoning can be extended to scribes 3 and 3a, who wrote the entries for 924 – 955 and 710. The composition of these annals can be dated to the mid-tenth century (Ker 1957: 59). Since entry 710 also appears in the [G] manuscript, a copy of A, whose annals end in 1001, and so was copied at around that time (Swanton 1996), scribes 3 certainly made their additions before the end of the 10th century. Another hand that belongs into this time period is scribe 6, whose interpolations to 688 and 728 were also copied into [G].

Scribe 4 is responsible for the entries 958, 962 – 964 and scribe 5 composed 971, 973 – 1001. Since those annals must have been composed after the events they narrate and, naturally, after scribes 1-3 had finished their work, it seems appropriate to group those scribes together and assume a date of composition at around or after 1000. Scribe 6a made a (syntactically) insignificant addition to 902, which I did not include in the text files. However, the absence of this interpolation from the [G] manuscript (Swanton 1996) may strengthen the suggested dating of these scribes after the year 1000.

Scribes 8, 8a-8g wrote annals 11, 519, 640, 725, 748, 760, 768, 785, 924 and 940. Baker (2000) dates the interventions of scribe 8, who also copied the [F] manuscript of the ASC, to 1100-1107.

Finally, scribes 7, 7a, 9, 9a, 10, and 11 can be grouped together. Hand 7 is responsible for annals 1002-1070 and interpolations to 924, 942, 955, 959, 961, 988 and 946 (erased). Scribe 7a added material to 870, 890 and 993 and 9a to 919. Hand 9 wrote annals 1005 – 1060 and scribe 10 1031, 1036, 1038 as well as part of 1070. Hand 11 made some modifications of 1066 – 1068. Scribes 7, 9-11 can be regarded as the latest contributors to the Parker Chronicle, leading up to the last entry of this version, the year 1070. Hand 9 did not write before 1115 (Bately 1986). It appears to be justified to cluster those scribes into one period after 1100. I ignored hand 12, who added annals 200, 250 and 300 because those entries may have been composed earlier.

The [C] manuscript

The [C] manuscript of the ASC (“Abingdon II”) was composed by seven scribes during the 11th century (Irvine 2004: xxxiii). Most of the material leading up to 957 is duplicate content with [A] and was therefore deleted. One important exception is the so-called “Mercian Register”, the addition of the years 902-924 focussing on Mercian events. Scribes 2, 3 and 4 copied annals that are largely independent of the [A] manuscript from 957 – 1053 (first part).

I grouped this material into the same Period_{as} scribes 4, 5 and 6 of the [A] manuscript, i.e. after the year 1000. Hand 5, 6 and 7 composed the entries for 1053 (second part) – 1066, which are not duplicates of [A] either. Those annals were grouped into the same period as scribe 8 of the Parker Chronicle, i.e. around the year 1100. An eighth scribe completed the account of the Battle of Stamford Bridge in the twelfth century with a handful of lines (Swanton 1996), which have been grouped together with the latest period of the Parker Chronicle, i.e. after 1100.

The [D] and [E] manuscripts

The [D] (“Worcester”) and [E] (“Peterborough”) manuscripts are assumed to derive from a common source known as the “Northern Recension” (Plummer 1965) as they frequently focus on northern and Scottish affairs. The [D] manuscript was written in the 11th century (Bately 2003: 3). I deleted all of its duplicate contents, which largely left annals from the years 1033 – 1080 as independent of both the [A] and [C] manuscripts. This material was then grouped into the period at around 1100, i.e. together with scribe 8 from [A] and the earlier part of [C]. For the [E] manuscript, written in the 12th century by a single scribe (ibid.), I kept all of the material leading up to 1121, as long as it was independent of [A], [C] and [D]. I then put this material into the last period of the ASC.

Periodisation

Four main periods result from the classification of the ASC as described in the previous sections: (1) The earliest period illustrates OE as found from roughly the early to the mid/end 10th century and consists of scribes 1,2, 3 and 6 from the Parker Chronicle. (2) The second period covers the eleventh century and contains material from scribes 4 and 5 from the Parker Chronicle as well as the Mercian register and scribes 2 (beginning with the entry for 957), 3 and 4 from [C]. (3) period three represents OE at around the year 1100. It is made up of scribe 8 from [A], scribes 5, 6 and 7 from [C] as well as the years 1033-1080 from [D]. (4) Finally, the latest period is illustrative of Old English of the 12th century. Material that has been grouped into this period comes from scribes 7, 9, 10 and 11 from [A], a very short addition to 1066 in [C] as well as from the non-duplicate content of the Peterborough Chronicle up to the entry for 1121.

Table 1 below summarizes the periodisation of the ASC.

Rough date of composition	Text file: Chronicle & Scribe	# Tokens
891-910	[A], 1, 1a	897
911-920	[A], 2a-f	338
921-1001	[A], 3,3a,6	32
Period 1: 900-1000		1267
1001-1100	[C], Mercian Register	33
1001-1100	[A], 4,5	59
1001-1100	[C], 2(from entry for 957), 3,4	828
Period 2: 1000-1100		920
1100	[C], 5, 6, 7	162
1100	[A], 8	99
1100	[D] (entries for 1033-1080)	706
Period 3: c. 1100		967
1100-1200	[A], 7, 9, 10, 11	48
1100-1200	[C] (entry for 1066 ending)	8
1100-1200	[E] (up to entry for 1121)	2138
Period 4: 1100-1200		2194

Table 1: *Periodisation of the (OE) Anglo-Saxon Chronicle, based on manuscripts [A],[C],[D] and [E]*

2. Diachronic syntax of the ASC

In the second part of this paper, I will survey various syntactic changes known to have occurred during the OE period in order to test the periodisation of the ASC proposed above. If the division of the ASC is in fact appropriate, this should result in quantitatively measurable syntactic developments. I will examine the following syntactic features in turn: (1) Headedness of IP, (2) Verb-Object order, (3) V-to-C movement, (4) arbitrary PRO, (5) High Pronominal Scrambling and (6) Headedness of PPs.

2.1. IP-headedness

One of the most extensively studied changes in OE concerns the relative order of the functional head I° , hosting finite verbs, and its complement VP (e.g. Smith 1893, Pintzuk 1999). It is uncontroversial that the headedness parameter for IP was reset from final to initial before and during the OE period as sketched in (7):



One can estimate a lower bound of the frequency of I-final phrase structure. This is possible by comparing the number of clauses with *non-finite verb – finite auxiliary* order as in (8a) to

the overall number of clauses with a finite and a non-finite verb (e.g. Pintzuk 1999, Kroch and Taylor 2000).

- (8) þæt tæt ilce hiera geferum geboden wære
 that the same their companions ordered was
 'that their companions had to do the same'
 (Period_1 : ChronA_[Plummer]:755.34.537)

I differentiated between main, conjoined main and subordinate clauses since it is well known that the former exhibit less I-final word order than the latter (e.g. Traugott 1992: 272). Assuming that stylistic fronting is by and large impossible in Old English, I did not make a distinction between pronominal and full subjects (for stylistic fronting with pronominal subjects in Middle English, see e.g. Trips 1999, Kroch & Taylor 2000).

Table 2 below shows the frequency of I-final clauses for this context by clause type in the ASC:

ASC Period	Main clauses			Conjoined main clauses			Subordinate clauses		
	Overall relevant clauses	Of those necessarily I-final	% I-final	Overall relevant clauses	Of those necessarily I-final	% I-final	Overall relevant clauses	Of those necessarily I-final	% I-final
1	44	2	4.5	64	9	14.1	72	33	45.8
2	41	0	0	38	5	13.2	81	52	64.2
1&2	85	2	2.4	102	14	13.7	153	85	55.6
3	35	0	0	54	5	9.3	72	38	52.8
4	106	0	0	115	5	4.3	205	56	27.3
3&4	141	0	0.0	169	10	5.9	277	94	33.9

Table 2: Frequency of necessarily I-final clauses with a finite and non-finite verb in the ASC by period and clause type

Table 2 shows two main results. Firstly, the conservative I-final pattern declines constantly in all clause types – from 2% to 0% in main clauses, from 14% to 6% in conjoined main clauses and from 56% to 34% in subordinate clauses. The difference between the earlier and the later periods is significant if all clauses are taken together and for subordinate clauses¹. Furthermore, examples of I-final main clauses can be found exclusively in the very first period (e.g. (5)). Merely the first period for subordinate clauses is an exception to the continuous development across the four subperiods in that it shows a surprisingly high number of clauses that are not necessarily I-final, such as (9).

- (9) forþon he wolde þone Cristes geleafan geryhtan
 because he would the Christ's belief make-right
 'because he wanted to rectify the belief of Christ'
 (Period_1: ChronA_[Plummer]:680.1.388)

¹ Periods 1&2 vs. 3&4: All clauses: $\chi^2 = 10.56$, $df=1$, $p < 0.01$. Main clauses: Fisher's exact test, $p = 0.1445$. Conjoined main clauses: $\chi^2 = 3.14$, $df=1$, $p = 0.0763$. Subordinate clauses: $\chi^2 = 7.03$, $df=1$, $p < 0.01$.

One possible explanation of this fact might be that verb (projection) raising (Kemenade 1987) is considerably more frequent in the earliest period of the ASC than in the others. Verb (projection) raising could then be responsible for the generation of clauses such as (9). If this is true, the actual frequency of I-final structure will be much higher for this period than the lower bound in table 2 indicates. Secondly, main clauses show the lowest frequency of necessarily I-final patterns, subordinate clauses the highest and conjoined main clauses fall in between. This clause type effect is statistically significant both for the earlier and the later periods². The fact that the expected decline in I-final structure and clause type effect could be identified in the data supports the proposed periodisation of the Chronicle.

There is another context that allows calculating the frequency of I-final phrase structure. The number of clauses with (at least) two arguments before the finite main verb must be compared to the overall number of sentences that contain a finite main verb and (at least) two arguments (Pintzuk 1999). This diagnostic presupposes that Old English does not generate verb-third clauses with I-initial structure (contra e.g. Speyer 2010). Again, I looked at main (10a), conjoined main (10b) and subordinate clauses (10c) separately. While pronominal subjects are permissible arguments, only full (“heavy”) objects may be considered since object pronouns can scramble to a high clausal position (ibid., Mitchell 1964, Kemenade 1987, see below). I did not consider empty subject arguments, which are particularly frequent in conjoined main clauses (Ohkado 2004). In addition, I did not consider prepositional phrases as potential argument diagnostics since they are not easy to distinguish from adjuncts with the annotations provided by the YCOE. Examples of relevant I-final clauses are given below, where bold print indicates argumenthood.

(10)a. Her **Romane** [I' [VP **Leone þæm papan his tungon**] forcurfon],
 here Romans Leo the pope his tongue off-cut
 ‘This year the Romans cut out the tongue of Pope Leo’
 (Period_1: ChronA_[Plummer]:797.1.596)

b. & **sio laf** [I' [VP wiþ þone here **friþ**] nam]
 and the living with the army peace took
 ‘And the survivors made peace with the army’
 (Period_1: ChronA_[Plummer]:867.10.773)

c. þæt wildefyr. ðe **nan mann** [I' [VP æror **nan swyle**] ne gemunde]
 that wild-fire which no man earlier nothing such not remembered
 ‘a wild fire, such as no man ever remembered before’
 (Period_4: ChronE_[Plummer]:1032.1.2087)

² Period 1&2: Main clauses vs. Conjoined main clauses: $\chi^2 = 5.26$, $df=1$, $p=0.0218$. Conjoined main clauses vs. Subordinate clauses: $\chi^2 = 20.49$, $df=1$, $p<0.001$. Main Clauses vs. Subordinate clauses : $\chi^2 = 34.6$, $df=1$, $p<0.001$. Period 3&4: Main clauses vs. Conjoined main clauses: Fisher’s exact test, $p=0.0027$. Conjoined main clauses vs. Subordinate clauses: $\chi^2 = 29.44$, $df=1$, $p<0.001$. Main Clauses vs. Subordinate clauses : $\chi^2 = 42.1$, $df=1$, $p<0.001$.

The results of the investigation of this context are presented in table 3:

Period	Main clauses			Conjoined main clauses			Subordinate clauses		
	Overall relevant clauses	Of those necessarily I-final	% I-final	Overall relevant clauses	Of those necessarily I-final	% I-final	Overall relevant clauses	Of those necessarily I-final	% I-final
1	72	9	12.5	107	30	28.0	19	15	78.9
2	37	0	0	103	22	21.4	20	12	60.0
1&2	109	9	8.3	210	52	24.8	39	27	69.2
3	42	1	2.4	77	10	13.0	22	13	59.1
4	125	7	5.6	159	23	14.5	43	16	37.2
3&4	167	8	4.8	245	34	14.0	68	32	44.6

Table 3: Frequency of necessarily I-final clauses with two nominal arguments before a finite main verb in the ASC by period and clause type

The data in table 3 is very similar to the data in table 2. Again, it shows a decline of I-final phrase structure in all clause types – from 8% to 5% in main clauses, from 25% to 14% in conjoined main clauses and from 69% to 45% in subordinate clauses. The difference between the earlier and the later periods is significant for all clauses grouped together and for conjoined main clauses³. For subordinate clauses, the syntactic change is continuous over the four subperiods (78.9%-60.0%-59.1%-37.2%). Furthermore, the same clause type effect as before can be observed: Conjoined main clauses take an intermediate position between innovative main and conservative subordinate clauses regarding the headedness of IP. The effect is significant both for the earlier and the later periods⁴. Thus, the results of this study add further evidence to the assumption that the proposed ASC periodisation is adequate.

Conversely, it is also possible to calculate a lower bound of the frequency of I-initial clauses. Since particles, stranded prepositions, pronouns, bare demonstratives, negative adverbs and negatively quantified objects do not postpose, clauses that show these elements in postverbal position must have been generated by an I-initial grammar (Pintzuk 1999, Haerberli & Pintzuk to appear). The examples in (10) illustrate such necessarily I-initial structures in subordinate clauses. The diagnostic elements are in bold print.

³ Periods 1&2 vs. 3&4: All clauses: $\chi^2 = 6.93$, $df=1$, $p<0.01$. Main clauses: $\chi^2 = 0.71$, $df=1$, $p=0.3994$. Conjoined main clauses: $\chi^2 = 5.37$, $df=1$, $p=0.0205$. Subordinate clauses: $\chi^2 = 1.02$, $df=1$, $p=0.3125$.

⁴ Period 1&2: Main clauses vs. Conjoined main clauses: $\chi^2 = 8.13$, $df=1$, $p<0.001$. Conjoined main clauses vs. Subordinate clauses: $\chi^2 = 11.66$, $df=1$, $p<0.001$. Main Clauses vs. Subordinate clauses: $\chi^2 = 27.71$, $df=1$, $p<0.001$. Period 3&4: Main clauses vs. Conjoined main clauses: $\chi^2 = 6.55$, $df=1$, $p=0.0105$. Conjoined main clauses vs. Subordinate clauses: $\chi^2 = 18.74$, $df=1$, $p<0.001$. Main Clauses vs. Subordinate clauses: $\chi^2 = 36.34$, $df=1$, $p<0.001$.

(10)a. *post-verbal particle*

& þy ilcan geare þe se here for **forþ** up ofer þa brycge æt Paris
and the same year which the army went away up over the bridge at Paris
'and during the same year that the army advanced beyond the bridge at Paris'
(Period_1: ChronA_[Plummer]:887.16.981)

b. *post-verbal stranded preposition*

op þam burgwarum com mara fultum **to** utan to helpe
until the city-inhabitants came more help to from.outside as help
'till more aid came to the citizens'
(Period_1: ChronA_[Plummer]:921.43.1305)

c. *post-verbal pronoun*

oð þet hi ofslogon **hine**
until that they killed him
'until they killed him'
(Period_4: ChronE_[Plummer]:1046.47.2214)

d. *post-verbal bare demonstrative*

ða Uhtred geahsode **þis**
When Utreht asked this
'When Utreht asked this'
(Period_2: ChronC_[Rositzke]:1016.23.1653)

e. *post-verbal negative adverbs*

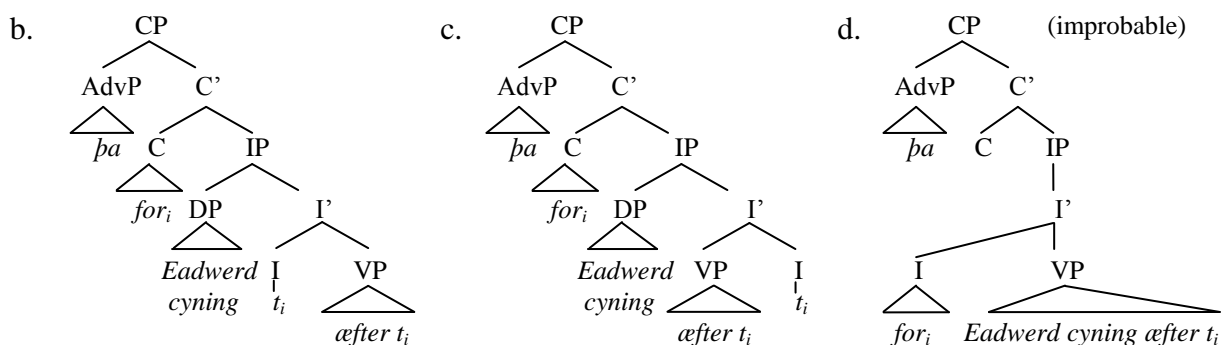
se ne lyfode **na** **leng** þan an geare. syððan he abbod wæs
who not lived not-at-all longer than one year since he abbot was
'who lived no longer than one year after he was abbot'
(Period_4: ChronE_[Plummer]:1103.19.3394)

f. *post-verbal negatively quantified object*

for þan þe he ne gefremede **naht biscoplices** þæron
for that that he not acted nothing episcopal therein
'for he did not behave like a bishop therein'
(Period_3: ChronD_[Classen-Harm]:1050.47.1905)

It is not possible, however, to use the word order *finite verb – non-postposing element* in root clauses as direct evidence of necessarily I-initial phrase structure. The reason for this is the possibility of V-to-C movement in this clause type. Where the finite verb appears in C°, typically after “operator adverbs” like *þa* or *nu* (e.g. Haeberli 2002), and certainly before a pronominal subject (Pintzuk 1999), the headedness of IP cannot be ascertained. This is exemplified by example (11a), which includes the post-verbal particle *æfter*, and its ambiguous phrase structure in (11b), (11c) and (11d).

(11)a. þa for Eadweard cyning æfter
 then went Edward king after
 'King Edward went after'
 (Period_1: ChronA_[Plummer]:905.5.1180)



To avoid this ambiguity, I exclusively considered root clauses that show the finite verb in post-subject position. Moreover, in comparison to conjoined main clauses, there are only relatively few main clauses with a diagnostic element (134 main clauses vs. 489 conjoined main clauses). Out of these clauses, only a very small number is necessarily I-initial (4 examples for the first two ASC periods). Since this number is too low to conclude a coherent diachronic development, I considered main and conjoined main clauses together for this study.

Table 4 below gives the results for the investigation of necessarily I-initial clauses.

Period	Root clauses			Subordinate clauses		
	Overall relevant clauses	Of those necessarily I-initial	% I-initial	Overall relevant clauses	Of those necessarily I-initial	% I-initial
1	158	13	8.2	64	6	14.1
2	93	17	18.3	56	9	10.7
1&2	251	30	12.0	120	15	12.5
3	127	32	25.2	53	7	13.2
4	245	48	19.6	139	18	13.0
3&4	372	80	21.5	192	25	13.0

Table 4: Frequency of necessarily I-initial clauses with a diagnostic element in post-verbal position in the ASC by period and clause type

There is a significant increase in the percentage of root clauses with a diagnostic element in post-verbal position from the earlier (12.0%) towards the later periods of the ASC (21.5%)⁵. In my opinion, this constitutes good evidence for the assumption that the headedness of IP is measurably reset from final to initial during the time of the composition of the Chronicle. However, the percentage of necessarily I-initial phrase structure remains unchanged in subordinate clauses⁶. Perhaps this finding can be interpreted as support for the hypothesis that

⁵ Periods 1&2 vs. 3&4: Root clauses: $\chi^2 = 6.16$, $df=1$, $p=0.0131$.

⁶ Periods 1&2 vs. 3&4: Subordinate clauses: $\chi^2 = 0$, $df=1$, $p=1$.

syntactic changes usually start out in root clauses and only later spread towards embedded clauses (Lightfoot 1991).

To sum up, there are two diagnostic contexts for I-final phrase structure, which both reveal a continuous, measurable decline in necessarily I-final clauses in the ASC. Conversely, necessarily I-initial structure increases as measured by the frequency of non-postposing diagnostic elements in post-verbal position, at least for root clauses. Thus, the investigation of the change in IP-headedness supports the proposed periodisation of the ASC.

2.2. Verb-object order

Another well known syntactic change in early English affected the relative order of the head of the verb projection (V) and its complement, an object DP (O). Similar to the change in headedness of IP, the verb projection gradually changed from a head-final (12a) to a head-initial parameter setting (12b). Interestingly, in the history of English in particular and among the languages of the world in general, there are no known cases where the headedness of VP has already reset under a conservative IP, i.e. the pattern **V-O-Auxiliary* is ungrammatical (e.g., Kiparsky 1996, “final-over-final-constraint” Bieberauer et al. 2007).



While the end of this change falls into the Middle English period (Trips 2002), there can be no doubt that VO order already existed in OE and thus that the change had its origins in this period (Kroch and Taylor 2000).

I measured the change in VP headedness by looking at clauses in the ASC with an auxiliary (to avoid the interfering effect of movement of the main verb to I), a non-finite verb (as an indicator of V), and a verbal complement DP (as an indicator of O), where the latter two elements are in post-subject position. PPs were not considered as potential verb complements. The number of clauses with pre-verbal objects (the “OV group”) and post-verbal objects (the “VO group”) were counted and diachronically compared.

However, one cannot directly regard the position of just any object as indicative of underlying VO or OV structure on account of the availability of leftward (scrambling) and rightward (extraposition) object movement. These processes are in turn determined by the quantificational type and the heaviness of the object (e.g., Pintzuk & Taylor 2004, Pintzuk

2005). A study on the change of VP headedness must minimise the “risk” of scrambling and extraposition since a failure to do so would lead to greater variance in object-verb orders and hence a distorted diachronic pattern of superficial OV/VO clauses.

Therefore, the OV and VO groups were established as follows: I distinguished between three types of objects: (i) “Neutral objects”, which are neither pronominal nor particularly heavy (between 1-3 words) nor negatively quantified, (ii) “Non-postposing objects”, which I defined as DPs that only dominate a bare demonstrative or pronoun or are negatively quantified and (iii) “Heavy objects”, which were defined as objects that dominate a conjunction, a relative clause or, generally, more than three words.

(i) *Neutral objects* are the best candidates to investigate the change in VP-headedness since they occur in relatively free variation in respect to their pre- or post-verbal position. As a rule of thumb, they seem to be good indicators of OV and VO phrase structure in pre- and post-verbal position respectively. However, neutral objects can potentially undergo scrambling and extraposition, both when they are non-quantified (positive) and when they are positively quantified. (13a) and (14a) show a positive and positively quantified object respectively in a necessarily scrambled position since they precede a VP adjunct; (13b) and (14b) exemplify necessarily extraposed positive and positively quantified objects since they do not immediately follow the main verb⁷.

(13)a. *scrambled positive object (VP adjunct in bold print)*

þæt hie ne mehton [DP Suð Seaxna lond] **utan** berowan
 that they not could South Saxon’s land from-without be-row
 ‘that they could not row beyond Sussex’
 (Period_1: ChronA_[Plummer]:897.48.1150)

b. *extraposed positive object (non-object immediately following verb in bold print)*

þæt mann sceolde *forðian* **ut to Sandwic** [DP scipu]
 that one should send out to Sandwich ships
 ‘that ships should be sent out to Sandwich’
 (Period_4: ChronE_[Plummer]:1052.2.2320)

(14)a. *scrambled positively quantified object (VP adjunct in bold print)*

ta þa hi hæfdon [QP mæst] **to yfele** gedon
 then when they had most to evil done
 ‘when they had done most in an evil way’
 (Period_3: ChronD_[Classen-Harm]:1055.15.2064)

⁷ It is sometimes assumed that positive objects only prepose/scramble from underlying OV structure (e.g. Pintzuk & Taylor 2004). Sentences such as (13a) would then indicate necessarily OV order. I will assume here, however, that scrambling from VO position may potentially also be an option.

b. *extraposed positively quantified object (non-object immediately following verb in bold print)*

þæt he scolde *tyðian* **mid his writ & mid his bletsinge** [QP eal þis forsprecene þing]
that he should grant with his writ and with his blessing all this before-spoken thing
'that he would ratify with his writ and his blessing all aforesaid things'
(Period_4: ChronE_[Plummer]:656.116.471)

It is impossible to rule out completely the option of scrambling and extraposition for neutral objects. Nevertheless, I could at least reduce the probability of the application of these rules by only considering clauses where a positive object *immediately* follows or precedes the main verb (i.e. by ignoring cases such as (13) or (14). Furthermore, I ignored quantified objects that are either very light, dominating only a quantifier (so that (14a) would be excluded independently even if the QP immediately preceded the main verb), or very heavy, i.e. dominating more than 3 words (so that (14b) would be ruled out independently even if the QP immediately followed the main verb). Relevant examples of the kind of clauses I did consider are given in (15a) for the OV group and in (15b) for the VO group.

(15)a. *pre-verbal neutral object, probably OV*

& hie hæfdun [DP hiera cyning] *aworpenne*
and they had their king out-thrown
'and they expelled their king'
(Period_1: hronA_[Plummer]:867.1.765)

b. *post-verbal neutral object, probably VO*

þa sceolde se ealdorman ælfric *lædan* [DP þa fyrde],
then should the nobleman Aelfric lead the troop
'Then, nobleman Aelfric should lead the troop'
(Period_2: ChronC_[Rositzke]:1003.6.1353)

Sentences with ditransitive verbs and a positive object both in pre- and post-verbal position as in (16) were counted in both the OV and the VO group.

(16) *post- and pre-verbal positive object, both OV and VO*

þæt man sceolde [DP gafol] *gyldan* [DP þam flotan]
that one should tribute pay the fleet
'that tribute should be paid to the fleet'
(Period_2: ChronC_[Rositzke]:1002.1.1335)

(ii) *Non-postposing objects*, on the other hand, cannot be used in the same way to study the change in VP headedness: As is well known, pronominal / bare demonstrative objects are likely to scramble to the left. Likewise, negatively quantified objects commonly appear in a

scrambled position. Examples of clauses where scrambling has necessarily taken place are given in (17).

(17)a. *scrambled non-postposing object (pronoun) (VP adjuncts in bold print)*

þa ne mehte seo fird [DP hie] **na hindan** *offaran*
then not could the army them not-at-all behind overtake
'The army could not overtake them from behind'
(Period_1: ChronA_[Plummer]:894.95.1084)

b. *scrambled non-postposing object (negatively quantified object) (VP adjuncts in bold print)*

þæt man ne dorste [QP nan þing] **ongean his willan** *don*
that one not dared no thing against his will do
'that one didn't dare to do anything against his will'
(Period_4: ChronE_[Plummer]:1086.85.2904)

Since scrambling (rather than genuine OV word order) appears to be a likely option for the derivation of sentences with pre-verbal non-postposing objects, I included neither preverbal pronominal / bare demonstrative objects as in (18a) nor negatively quantified objects as in (18b) in the OV group.

(18) a. *probably scrambled non-postposing object (bare demonstrative)*

ðe hi [DP þæs] *geworden hæfde*
when they this become had
'after they had become so'
(Period_2: ChronC_[Rositzke]:918.5.1127)

b. *probably scrambled non-postposing object (negatively quantified object)*

forþon hie ne meahton [QP nanne mete] *geræcan*
cause they not could no meat reach
'because they could not reach any meat'
(cochronA-2c, ChronA_[Plummer]:918.21.1247)

In contrast, post-verbal pronominal / negatively quantified objects can never move to the right. This is schematically illustrated in (19).

(19)a. *extraposed pronominal object, ungrammatical*

* V non-finite main verb in V – X – pronominal object

b. *extraposed negatively quantified object, ungrammatical*

* non-finite main verb in V – X – negatively quantified object

Therefore, post-verbal pronominal and negatively quantified objects can be regarded as direct indicators of necessarily V-initial phrase structure. Thus, I included clauses such as in (20a) and (20b) in the VO group.

(20) a. *post-verbal pronominal object, necessarily VO*

and he wolde *geofan* [DP him] þone castel æt Mustræl
 and he would give him the castel at Montreuil
 ‘and he would give him the castle of Montreuil’
 (Period_3: ChronD_[Classen-Harm]:1075.5.2420)

b. *post-verbal negatively quantified object, necessarily VO*

þæt hig noldon him agyfan [QP nanþingc þæs þe se cing heom gegyfen hæfde]
 that they not-would them give nothing of.this which the king them given had
 ‘so that they would give him nothing of that which the king had given them’
 (Period_2: ChronC_[Rositzke]:1049.10.1868)

(iii) *Heavy objects* cannot be directly used in all positions either since they frequently extrapose. An example of a clause where a heavy object has necessarily extraposed is given in (21).

(21) *necessarily extraposed heavy object (non-object immediately following verb in bold print)*

& ic wile *wurðigen þis dæi* [DP Crist & Sancte Peter].
 and I will honour this day Chris and St. Peter
 ‘and I will glorify Christ and St. Peter on this day’
 (Period_4: ChronE_[Plummer]:656.38.414)

Therefore, I did not include post-verbal heavy objects as in (22) in the VO group seeing that extraposition may have taken place.

(22) *probably extraposed heavy object*

he wolde *adraefan* [DP anne æþeling se was Cyneheard haten]
 he wanted out-drive one prince who was Cynehard called
 ‘he wanted to expel a prince who was called Cynehard’
 (Period_1: ChronA_[Plummer]:755.6.512)

However, heavy objects do not generally move to the left. This is schematically illustrated in (23).

(23) *scrambled heavy object, highly unusual*

??? heavy object – X – non-finite main verb in V

For that reason, pre-verbal heavy objects are most certainly reflexes of underlying OV order. Thus, I included clauses such as (24) in the OV group.

(24) *pre-verbal heavy object, probably OV*

Her eac wearð æþeredes dohtor Myrcna hlaforðes [DP ælces anwealdes on Myrcum] *benumen*
 here also was Ethelred daughter Mercians' lord.gen each power over Mercia deprived
 'This year Ethelred's daughter, lord of the Mercians, was deprived of all dominion over the Mercians'
 (Period_2: ChronC_[Rositzke]:919.1.1129)

Finally, I simply compared the number of all relevant objects thus identified in post-verbal and pre-verbal position. Again, I considered main, conjoined main and subordinate clauses separately. The results of this study are summarized in table 5.

Period	Root clauses			Subordinate clauses			All clauses		
	Overall relevant OV	Overall relevant VO	% OV	Overall relevant OV	Overall relevant VO	% OV	Overall relevant OV	Overall relevant VO	% OV
1	2	1	66.7	7	2	77.8	13	1	92.9
2	2	4	33.3	2	0	100	16	3	84.2
1&2	4	5	44.4	9	2	81.8	29	4	87.9
3	2	2	50	3	1	75	9	3	75.0
4	1	3	25	6	6	50	16	20	44.4
3&4	3	5	37.5	9	7	56.3	25	23	52.1

Table 5: *Frequency of superficially VO and OV clauses in the ASC by period and clause type*

Table 5 reveals two central findings. Firstly, there is a weak clause type effect determining the frequency of superficially VO/OV order. For the earlier periods, main clauses are significantly more likely to show innovative VO order than subordinate clauses. For the later periods, this effect has disappeared, which may indicate convergence of the syntax between the different clause types⁸. Secondly, there is a clear decline in the conservative OV pattern from the earlier to the latter periods in all clause types, dropping from 44% to 38% in main clauses, from 82% to 56% in conjoined main clauses and from 88% to 52% in subordinate clauses. In fact, for embedded clauses the decline is very continuous across all four subperiods of the ASC (92.9%-84.2%-75.0%-44.4%). The difference in OV vs. VO order is not statistically significant⁹, which I believe to be mainly due to the limited corpus size. Despite the failure in statistical significance, the coherent decrease of conservative OV surface order can be regarded as support for the proposed periodisation of the Chronicle.

⁸ Period 1&2: Main clauses vs. Conjoined main clauses: Fisher's Exact Test, p=0.1017. Conjoined main clauses vs. Subordinate clauses: Fisher's Exact Test, p=0.4732. Main Clauses vs. Subordinate clauses: Fisher's Exact Test, p=0.0126. Period 3&4: Main clauses vs. Conjoined main clauses: Fisher's Exact Test, p=0.3334. Conjoined main clauses vs. Subordinate clauses: Fisher's Exact Test, p=0.5012. Main Clauses vs. Subordinate clauses: Fisher's Exact Test, p=0.3524.

⁹ Periods 1&2 vs. 3&4: All clauses: $\chi^2 = 1.84$, df=1, p= 0.1750; Fisher's Exact Test, p = 0.0873. Main clauses: Fisher's Exact Test, p=0.6049. Conjoined main clauses: $\chi^2 = 0.09$, df=1, p=0.7642; Fisher's Exact Test, p=0.3792. Root clauses (=Main and Conjoined main clauses): $\chi^2 = 0.07$, df=1, p=0.7913; Fisher's Exact Test, p=0.244. Subordinate clauses: $\chi^2 = 1.7$, df=1, p < 0.1923; Fisher's Exact Test, p=0.0961.

I conducted another study to investigate the change in VP-headedness in the ASC: The six diagnostic elements used in 2.1. to investigate the frequency of necessarily I-initial clauses (see (10a)-(10f)) also indicate necessarily V-initial phrase structure where they appear after a non-finite main verb (Kroch & Taylor 2000). The reasoning behind this diagnostic context is that pronominal and negatively quantified objects do not rightwards extrapose and therefore indicate a post-verbal object position, at least when it is assumed that leftward movement of the main verb is excluded (see above). Other light elements, i.e. negative adverbs, stranded prepositions and particles, are then assumed to follow a parallel distribution. Examples of relevant clauses with pronouns and negatively quantified objects were given in (20a) and (20b). Examples of post-verbal particles and stranded prepositions can be found in (25a) and (25b) respectively.

(25)a. post-verbal particle

þa wæs Eadmund cyng ær ðam gewend **ut**
 then was Edmund king before that turned out
 ‘King Edmund had earlier gone out’
 (Period_2: ChronC_[Rositzke]:1016.44.1673)

b. post-verbal stranded preposition

& wes [þær]; mycel folc gegaderod [PP t_i **ongean**]
 and was there much people gathered against
 ‘and a great crowd had gathered against this’
 (Period_4: ChronE_[Plummer]:1052.26.2346)

Bare demonstratives and negative adverbs do not occur after a non-finite main verb in the ASC. Nevertheless, clauses with these elements have been included in the overall count since they are potential contexts of V-initial structures. Note that unlike the structures used in 2.1., the sentences investigated here are straight-forward indicators of VO order both in root clauses as well as in subordinate clauses – since I assume that the non-finite verb cannot move leftwards at all, V-to-C movement is obviously not a complicating option in root clauses either. Note further that relevant sentences with a finite verb, a non-finite verb and a diagnostic element are extremely rare, and especially so where the diagnostic element follows the main verb. Therefore, I grouped main and conjoined main clauses together as root clauses. Table 6 summarizes the findings of this investigation.

Period	Root clauses			Subordinate clauses			All clauses		
	Overall relevant clauses	Of those necessarily V-initial	% V-initial	Overall relevant clauses	Of those necessarily V-initial	% V-initial	Overall relevant clauses	Of those necessarily V-initial	% V-initial
1	55	0	0.0	30	0	0.0	85	0	0.0
2	21	1	4.8	39	1	2.6	60	2	3.3
1&2	76	1	1.3	59	1	1.4	145	2	1.4
3	28	1	3.6	31	2	6.5	59	3	5.1
4	54	5	9.3	88	4	4.5	142	8	5.6
3&4	82	6	7.3	119	6	5.0	201	11	5.5

Table 6: Frequency of necessarily V-initial clauses as measured by diagnostic elements after a non-finite main verb in the ASC by period and clause type

Table 8 shows, firstly, that there are only very few clauses that exhibit necessarily VO structure overall (between 1.3% and 7.3%). This may indicate the relative earliness of the change under investigation. Secondly, there are no cases of necessarily I-initial structures at all for the very first period of the ASC. Next, probably on account of the low overall numbers of relevant clauses in the corpus, the difference in frequency of necessarily V-initial clauses between the earlier and the later periods of the ASC is neither significant for root clauses nor for subordinate clauses – albeit for the former clause type only just so¹⁰. Again, this may be interpreted as evidence for the hypothesis that syntactic changes usually originate in root clauses. Finally, when taking all clauses together, one can indeed observe a significant increase in VO orders at least with Fisher’s exact probability test¹¹. For this group, the diachronic development is unvaryingly continuous across the four subperiods (0.0%-3.3%-5.1%-5.6% necessarily VO order).

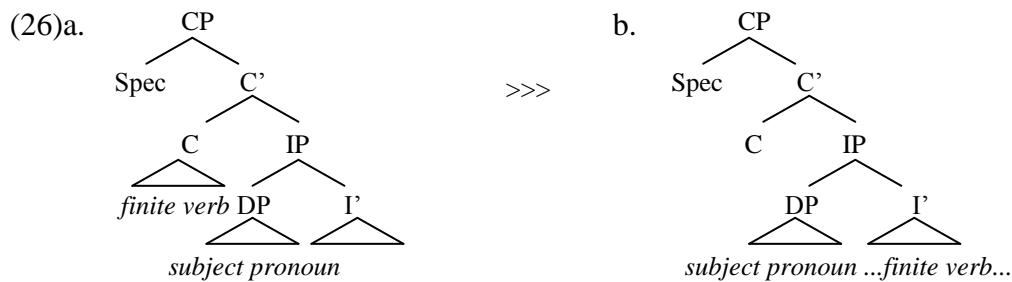
To summarize, the investigation of OV/VO word order supports the suggested sub-division of the Chronicle. There is a coherent decrease in superficially OV word order as well as a statistically significant increase in necessarily V-initial order across all clause types. The first subperiod, in particular, is evidently very conservative regarding the headedness of VP.

2.3. V-to-C movement

The finite verb can move to the structurally high C position in Old English root clauses. Subject pronouns (spro), which are assumed to invariably occupy Spec,IP, can be used as a diagnostic element of the position of the finite verb. The order *verb – pronoun* indicates V-to-C movement (26a) while the order *pronoun – verb* indicates its absence (26b) (Pintzuk 1999).

¹⁰ Period 1&2 vs. 3&4: Root clauses: Fisher’s exact test, p=0.08. Subordinate clauses: Fisher’s exact test, p=0.21.

¹¹ Period 1&2 vs. 3&4: All clauses: Fisher’s exact test, p<0.05.



V-to-C movement occurs categorically in direct questions, frequently after the clauses initial adverbs *þa*, *þonne* and *nu*, as shown in (27), occasionally in verb initial contexts, as in (28), but not generally after initial topics in Spec,CP (ibid., Haeberli 2000).

(27)a. *V-to-C movement after initial 'þa' (frequent)*

þa for he norðward mid ealre his fyrde
 then went he northwards with all his troop
 'then, he went northwards with his army'
 (Period_3: ChronD_[Classen-Harm]:1068.33.2348)

b. *absence of V-to-C movement after initial 'þa' (rare)*

þa he þæt hierde
 then he that heard
 'then, he heard that'
 (Period_1: ChronA_[Plummer]:835.3.671)

(28)a. *V-to-C movement resulting in a verb-first clause (sporadic)*

Wæron hi eac swyþe druncene
 were they also very drunk
 'they were also very drunk'
 (Period_2: ChronC_[Rositzke]:1012.8.1536)

b. *absence of V-to-C movement (frequent)*

Eac he wæs swyðe wurðful
 also he was very worth-ful
 'he was also very admirable'
 (Period_4: ChronE_[Plummer]:1086.80.2900)

V-to-C movement is considerably more frequent in main than in conjoined main clauses and altogether impossible in subordinate clauses, where the C position is already occupied by a complementizer (e.g. Haeberli 2005). To take this effect into account, I investigated those three clause types separately. The application of verb movement to C is also determined by factors such as mood (where subjunctive favours V-to-C) and negation (where a negated verb is more likely to move to C than a positive verb). However, subjunctives and negation occur

too rarely in the ASC to be studied fruitfully¹² and so I simply grouped all finite verbs together.

Table 7 shows the development of V-to-C movement in the Chronicle.

Period	Main clauses			Conjoined main clauses			Subordinate clauses		
	V-spro	spro-V	% V-to-C	V-spro	spro-V	% V-to-C	V-spro	spro-V	% V-to-C
1	23	9	71.9	14	99	12.4	0	151	0.0
2	19	12	61.3	6	116	4.9	1	166	0.6
1&2	42	21	66.7	20	215	8.5	1	317	0.3
3	10	25	28.6	5	103	4.6	0	139	0.0
4	38	98	27.9	8	223	3.5	4	345	1.1
3&4	48	123	28.1	13	326	3.8	4	484	0.8

Table 7: Frequency of clauses with V-to-C movement as measured by the relative order of subject pronoun and finite verb in the ASC by period and clause type

As expected, there is a strong clause type effect: Main clauses are significantly more likely to show V-to-C movement than conjoined main clauses both in the earlier and in the later periods¹³. With a frequency of less than a percent, V-to-C movement can be assumed to be ungrammatical in embedded clauses altogether. More importantly, however, placement of the finite verb in C is in general decline, falling from 66.7% to 28.1% in main clauses and from 8.5% to 3.8% in conjoined main clauses. Both differences are statistically significant¹⁴. It is also worth noting that the change is very consistent across the four subperiods (71.9%-61.3%-28.6%-27.9% in main, 12.4%-4.9%-4.6%-3.5% in conjoined main clauses). All in all, the investigation of V-to-C movement therefore strongly suggests that the proposed chronological division of the Chronicle is in fact appropriate.

2.4. Arbitrary PRO

OE frequently uses non-finite constructions with an arbitrary PRO subject (Fischer 1991, Denison 1993, Fischer et al. 2001: 227), sometimes termed “infinitives with passive sense” in the traditional literature (Callaway 1913). This means that the subject of the non-finite clause is neither an overt accusative (or, rarely, dative) DP (raising) nor phonologically null and co-referential with an argument of the matrix verb (control). Rather, the subject is null and its reference is left wholly unspecified, “vague or recoverable from context” (Denison 1993: 189). While such constructions still exist marginally in Present Day English (e.g. *He said to go, This is to do, He made believe., He heard say...*), they were quite wide-spread in earlier

¹² There are 6969 positive indicative tokens but only 201 negative indicative tokens, 229 positive subjunctive tokens and 30 negative subjunctive tokens in the compiled ASC.

¹³ Periods 1&2 Main clauses vs. Conjoined main clauses: $\chi^2=51.72$, $df=1$, $p < 0.01$. Periods 3&4: Main clauses vs. Conjoined main clauses: $\chi^2=45.1$, $df=1$, $p < 0.01$.

¹⁴ Main clauses: $\chi^2=10.68$, $df=1$, $p<0.01$. Conjoined main clauses: $\chi^2=4.13$, $df=1$, $p=0.0421$.

periods of the language. Therefore, it seems likely that a comparison between the number of non-finite clauses with an arbitrary PRO subject and the number of all other non-finite constructions will reveal a relative decline of the former type.

In the ASC, arbitrary PRO constructions appear after the verbs *lætan* ‘let, cause’ as in (29a), *hatan* ‘command’ as in (29b), in non-finite complements of adjectives (and, similarly, in tough-movement constructions) as in (29c), in the expression “hear say” as in (29d), in some “be-to-do” constructions as in (29e) and in some nominal complements as in (29f).

(29)a. And he let [PRO_{arb} ferian syððan Sancte ælfeges reliquias of Lundene to Cantwarabyrig]
and he let go then St. Elphege’s relics from London to Canterbury
‘And he had St. Elphege’s remains brought from London to Canterbury’
(Period_2: ChronC_[Rositzke]:1023.3.1763)

b. & se Cenwalh het [PRO_{arb} atimbran þa ciricean on Wintunceastre]
and the Kenwal ordered build the church at Winchester
‘This Kenwal ordered the church at Winchester to be built’
(Period_1: ChronA_[Plummer]:643.1.322)

c. Hit is earfoð [PRO_{arb} to witane þara biscopa þe þærto common]
it is difficult to know of.the bishops who thereto came
‘it is difficult to have knowledge of the bishops who came there’
(Period_3: ChronD_[Classen-Harm]:1050.54.1911)

d. ða herde ægelric biscop [PRO_{arb} þet gesecon]
then heard Aylric bishop that say
‘Then Bishop Aylric heard this’
(Period_4: ChronE_[Plummer]:1070.61.2630)

e. nis na [PRO_{arb} to forgytane] þæt gode frið þe he macode on þisan lande
NEG-is not-at-all to forget that good peace which he made in this land
‘one must not forget that good peace that he made in this land’
(Period_4: ChronE_[Plummer]:1086.95.2914)

f. ðær wurdon [...] þa aðas gesworene [PRO_{arbi} his_i dohter þam Casere to gifene]
there were the oaths sworn his daughter the Caesar to give
‘The oaths were sworn to give his daughter to the emperor’
(Period_4: ChronE_[Plummer]:1109.4.3475)

In contrast, non-finite clauses with a raised or controlled subject are a lot more diverse. Firstly, there are various subject-to-object raising constructions, traditionally referred to as “Accusativus cum Infinitivo” (AcI). That means that an overt argument carries the thematic role of the subject of the non-finite construction but is formally construed as a non-thematic object of the higher verb (this analysis is supported by various pieces of evidence such as object case depending on the argument structure of the matrix verb (accusative, or, rarely, dative case) (30a), across-the-board extraction (30b), potential for passivization (30c) and various forms of A-bar movement such as topicalization (30d), scrambling (30e) etc.). In the

ASC, subject-to-object raising constructions can frequently be found after *lætan* ‘let, cause’ as in (30a), *hatan* ‘command’ as in (30b) – in contrast with (29a) and (29b) – as well as after other matrix verbs, e.g. verbs of physical perception (30c).

- (30)a. for þan þe his fæder ne wolde him_i lætan [t_i waldan his eorldomes on Normandige]
 because his father NEG would him.dat (!) let govern his earldom in Normandy
 ‘because his father would not let him govern his earldom in Normandy’
 (Period_4: ChronD_[Classen-Harm]:1079.1.2510)
- b. & het hine_i [t_i gan to þam cyng] & [t_i bodian him rihtne geleafan]
 and order him.acc go to the king and preach him right belief
 ‘and [he] ordered him to go to the king and preach the true faith to him’
 (Period_1: ChronA_[Plummer]:616.5.284)
- c. & to þam Pentecosten wæs gesewen innan Barrucscire æt anan tune blod_i [t_i weallan of eorþan]
 and to the Pentecoste was seen within Berkshire at one village blood.nom well from earth
 ‘And blood was seen welling from the earth at Pentecost at a village in Berkshire’
 (Period_4: ChronE_[Plummer]:1100.4.3321)
- d. and [þes cyninges sunu Hetmundus]_i let Harold [t_i faran ham to Norweie mid alle þa scipe]
 and [of.the king son Edmund].acc let Harold go home to Norway with all the ships
 ‘And the King’s son, Edmund, Harold let go home to Norway with all the ships’
 (Period_4: ChronC_[Rositzke]:1066.70.2153)
- e. and se cyng hi_i let [t_i ham faran mid xxiiii scypum]
 and the king him.acc let home go with 24 ships
 ‘and the king let him go home with 24 ships’
 (Period_3: ChronD_[Classen-Harm]:1066.34.2217)

Secondly, there are a large number of subject control predicates in the Chronicle. This means that a phonologically null, thematic PRO subject of the non-finite complement as in (31a) and (31b) or of a (usually purposive) adverbial clause as in (31c) is co-referential with the subject of the matrix predicate. Some “auxiliary-like” matrix verbs may be thought of as subject raising predicates. That means that the matrix verb is intransitive, subcategorizing exclusively for a non-finite clausal THEME, whose subject then shows up as the subject of the higher clause, e.g. for “ought to” constructions (31d) or after *-ginnan* verbs (31e). However, it is hard to come by conclusive evidence for their status as subject raising rather than subject control predicates.

- (31)a. [whilc man swa]_i haued behaten [PRO_i to faren to Rome]
 which man so had promised to go to Rome
 ‘whatever man may have promised to go to Rome’
 (Period_4: ChronE_[Plummer]:675.30.543)
- b. and [eal folc]_i gearu wæs [PRO_i him on to fonne]
 and all people ready was him on to fall
 ‘and all the people were ready to fall upon them’
 (Period_2: ChronC_[Rositzke]:1009.34.1459)

- c. & in ðas tid wæren ærendracen_i gesend of Rome [...] to ænglalande [PRO_i to niwianne þone geleafan]
and in that time were messengers sent from Rome [...] to England to re-new the belief
'at that time messenger were sent from Rome to England by Pope Adrian (in order) to restore the faith'
(Period_4: ChronE_[Plummer]:785.4.862)
- d. hwilce gerihtæ he_i ahte [t_i/PRO_i to habbanne to xii monþum of ðære scire]
which dues he ought to have to 12 months from that shire
'what dues he ought to have by the year from the shire'
(Period_4: ChronE_[Plummer]:1085.26.2812)
- e. ða ongan [se æpeling Eadmund]_i [t_i/PRO_i to gaderigenne fyrde]
then began the prince Edmund to gather troops
'Then, Prince Edmund began to gather an army'
(Period_2: ChronC_[Rositzke]:1016.4.1637)

Finally, there are various object control predicates in the Chronicle. That means that a thematic object of the matrix predicate is co-referential with a phonologically null, thematic PRO subject of the embedded non-finite complement clause as in (32a) and (32b) or adverbial clause as in (32c).

- (32)a. And he betæhte þurcille_i [PRO_i Denemearcan and his sunu to healdenne]
and he committed Thurkyll Denmark and his son to hold
'And he committed Thurkyll to hold Denmark and his son'
(Period_2: ChronC_[Rositzke]:1023.2.1761)
- b. swa þæt us_i sceamað hit nu [PRO_i mare to tellanne]
so that us shames it now more to tell
'so that it disgraces us now to say more'
(Period_4: ChronD_[Classen-Harm]:1050.47.1905)
- c. Mellitum_i he sende [PRO_i to bodiende East Seaxum fulluht]
Mellitus he sent to preach to East-Saxons baptism
'Mellitus, he sent (in order) to preach baptism to the East-Saxons'
(Period_1: ChronA_[Plummer]:604.3.259)

Table 8 presents the frequencies of non-finite clauses with arbitrary PRO subjects as in (29) versus all other types of subjects, i.e. non-finite clauses with subject-to-object raising (30), subject control (or subject raising) (31) and object control (32) predicates.

Period	Arbitrary PRO	Other	% Arbitrary PRO
1	20	2	90.9
2	22	10	68.8
1&2	42	12	77.8
3	23	16	59.0
4	63	44	58.9
3&4	86	60	58.9

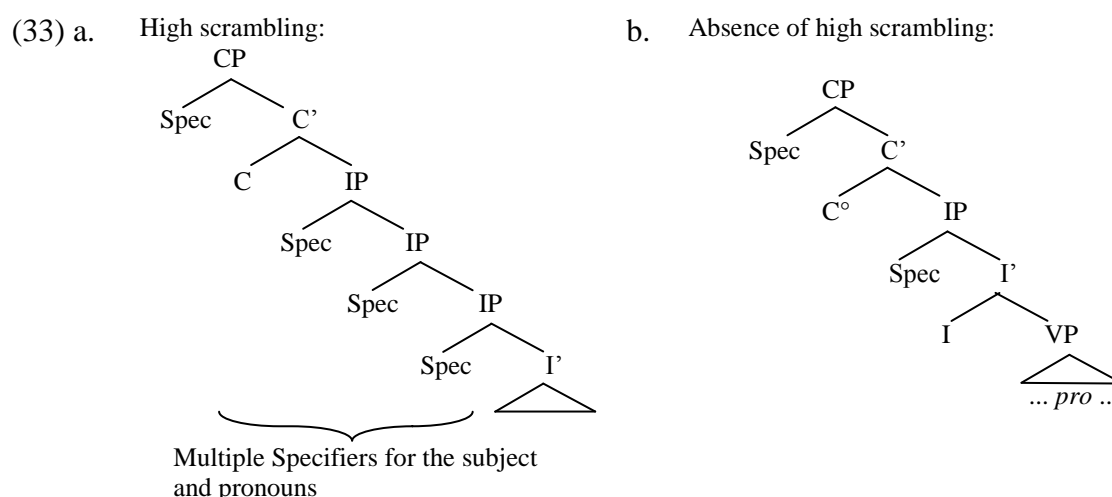
Table 8: *Frequency of non-finite clauses with arbitrary PRO subjects in the ASC by period and clause type*

As expected, the proportion of non-finite clauses with an arbitrary PRO subject declines from 77.8% in the earlier to 58.9% in the later periods of the ASC. Furthermore the decline is relatively uniform across the four sub-periods, albeit only very slight for the last two stages (90.9%-68.8%-59%-58.9%). These findings suggest that non-finite clauses with an arbitrary PRO subject are not simply one option among many, but are in fact the predominant argument structural configuration in early English non-finite clauses. However, the difference in the frequency of arbitrary PRO subjects between the earlier and later periods is not statistically significant¹⁵. Nevertheless the coherence of the decline in arbitrary PRO subjects can be interpreted as support for the proposed periodisation of the ASC.

2.5. Pronominal scrambling

Non-subject pronouns frequently scramble into the clausal left periphery in Old English (sometimes analyzed as cliticization) (e.g., Behaghel 1932, Kemenade 1987, Pintzuk 1996). I will refer to this phenomenon as “high (pronominal) scrambling”. However, non-subject pronouns can also stay in a lower position in the clause as in Modern English. One can therefore hypothesize that the frequency of high scrambling decreases over the course of the time that the ASC was recorded.

Technically, I will assume that high scrambling is movement of a non-subject pronoun to a specifier of the IP-domain while its absence means that a non-subject pronoun either remains in situ or scrambles only within the VP, but not high. This analysis is sketched in (33) below.



Unambiguous evidence for high scrambling comes from sentences that include a non-postposing element, such as particles, pronouns or stranded prepositions etc., in post-verbal

¹⁵ Periods 1&2 vs. 3&4 : $\chi^2 = 1.01$, $df=1$, $p = 0.3149$.

position. This element functions as an indicator of leftward verb-movement to head-initial I° and consequently pre-verbal non-subject pronouns must have moved over the finite verb into the IP domain. An example is given in (34), where the post-verbal particle, *to*, is underlined and the pre-verbal non-subject pronoun, *hit*, is given in bold print.

(34) a. & **hit** let to eal Malculme Scotta cyninge
 and it let to all Malcolm of.Scots king
 ‘and let it (=the land) all to Malcolm, king of the Scots’
 (Period_1: ChronA_[Plummer]:945.1.1369)

b. & [IP [DP hit]_i [I' let to [t_i eal] Malculme Scotta cyninge]]

Unfortunately, unequivocal examples of high scrambling such as (34) are much too rare in the ASC to form the basis for a successful diachronic analysis. I therefore devised a novel methodology to investigate the development of high pronominal scrambling: The overwhelming majority of clauses with a non-subject pronoun are ambiguous; they can be syntactically parsed in multiple ways. Some of these parses may involve high scrambling while others may not. It is possible to calculate the percentage of parses with high scrambling out of all possible parses. I will refer to this percentage as the “scrambling value” of a clause. While one cannot directly conclude the probability of high scrambling from the scrambling value, clauses which have a high scrambling value can still be regarded as better representatives of this process than those that have a low scrambling value. Therefore, one can diachronically compare the former with the latter to study the development of high pronominal scrambling.

Obviously, the scrambling value will strongly depend on the underlying Old English phrase structural assumptions, which in turn determine the nature of the parses. In what follows, I will briefly list the structural features that I presupposed for this study. Firstly, I assume that full subjects can remain in situ in Spec,vP, move to Spec,IP or, for matrix clauses only, to Spec,CP. Prenominal subjects, including the indefinite pronoun *man* (Bergen 2003), are supposed to be placed in Spec,IP unvaryingly. Secondly, for subordinate clauses, the finite verb is always placed in the head of IP, whose directionality is variable between an initial and a final setting. Additionally, the finite verb may move higher to C° in matrix clauses, optionally for verb-initial clauses, obligatorily after the operator adverbs *Pa*, *Ponne* and *nu*, but never after topics in Spec,CP. Thirdly, there is an optional extraposition rule that affects subjects, complements, adjuncts, non-finite verbs or the entire VP and right-adjoins these constituents to IP. Non-post-posing elements such as particles, stranded prepositions, negative objects etc., cannot undergo this extraposition rule. Fourthly, a topicalisation rule may move

subjects, complements or adjuncts to Spec,CP in matrix clauses. Fifth, adjuncts may be left-adjoined to CP or right- or left-adjoined to *v*P and VP, extrapose or topicalize. Sixth, complements can remain in situ, i.e. within the VP, whose directionality varies between a final and an initial setting, scramble within the VP, extrapose or topicalize. Seventh, complementizers and other subordinators are invariably placed in C°. Conjunctions are variably placed within C° or left adjoined to CP in order to model the lower frequency of verb-second and higher frequency of verb-final clauses in conjoined main than in non-conjoined main clauses. Finally, non-subject pronouns behave like complements but can be placed, additionally, in Spec,IP, i.e. undergo high scrambling.

I ignored what appeared to be I'-adjuncts (Pintzuk 1996, Fuß & Trips 2009), as in (35) below, in order to reduce the substantial structural ambiguity in relation to adjuncts.

(35) a. Hy þa sendan heom mare fultum
 they then sent them more help
 'Then, they sent more help to them'
 (cochronA-8,ChronA_[Plummer]:449.7.142)

b. [IP Hy [I'(?) þa [I' [I sendan] heom mare fultum]]]

Note that under these assumptions, Old English sentences usually exhibit a very high degree of syntactic ambiguity. On average, clauses in the ASC with a non-subject pronoun allow for 24.4 different parses. As an example, consider the sentence in (36a) – even this simple “subject – object pronoun – finite verb” pattern is ambiguous in ten ways, as demonstrated in (36b)-(37k).

(36)a. þeodor biscep hine gehalgode
 Theodor bishop him hallowed
 'Bishop Theodor consecrated him'
 (Period_1: ChronA_[Plummer]:670.1.367)

b. *Subject in Spec,vP; pronoun in situ, head-final IP:*

[CP [IP [I' [vP þeodor biscep [v' [VP hine t_i]]] [I gehalgode]_i]]]

c. *Subject in Spec,vP; pronoun scrambled within VP, head-final IP:*

[CP [IP [I' [vP þeodor biscep [v' [VP [hine]_j [VP t_j t_i]]] [I gehalgode]_i]]]

d. *Subject in Spec,IP; pronoun in situ, head-final IP:*

[CP [IP [þeodor biscep]_j [I' [vP t_j [v' [VP hine t_i]]] [I gehalgode]_i]]]

e. *Subject in Spec,IP; pronoun scrambled within VP, head-final IP:*

[CP [IP [þeodor biscep]_k [I' [vP t_k [v' [VP [hine]_j [VP t_j t_i]]] [I gehalgode]_i]]]

f. *Subject in Spec,IP; pronoun high scrambling, head-final IP:*

[CP [IP [þeodor biscep]_k [IP [hine]_j [I' [vP t_k t_j t_i] [I gehalgode]_i]]]]]

g. *Subject in Spec,IP; pronoun high scrambling, head-initial IP:*

[CP [IP [þeodor biscep]_k [IP [hine]_j [I' [I gehalgode]_i t_k t_j t_i]]]]]

h. *Subject in Spec,CP; pronoun in situ, head-final IP:*

[CP [þeodor biscep]_j [IP t_j [I' [vP t_j [v' t_i [VP hine t_i]]] [I gehalgode]_i]]]

i. *Subject in Spec,CP; pronoun scrambled within VP, head-final IP:*

[CP [þeodor biscep]_k [IP t_k [I' [vP t_k [v' t_i [VP [hine]_j [VP t_j t_i]]] [I gehalgode]_i]]]]]

j. *Subject in Spec,CP; pronoun high scrambling, head-final IP:*

[CP [þeodor biscep]_k [IP t_k [IP [hine]_j [I' [vP t_k t_j t_i] [I gehalgode]_i]]]]]

k. *Subject in Spec,CP; pronoun high scrambling, head-initial IP:*

[CP [þeodor biscep]_k [IP t_k [IP [hine]_j [I' [I gehalgode]_i t_k t_j t_i]]]]]

I implemented the phrase structural assumptions using the grammar engineering software Xerox Linguistic Environment (XLE)¹⁶. Next, I recorded the surface strings of all the clauses in the ASC that include a non-subject pronoun (798 examples). No two identical elements (objects, adjuncts etc.) were allowed to occur in sequence since they would not contribute a lot of disambiguating information but create a lot of additional ambiguity. All clauses were then parsed automatically. I registered the overall number of parses as well as the number of parses that involve high scrambling of the non-subject pronoun. Using those figures, I then calculated the scrambling value for each clause. Examples are given below with the non-subject pronouns in bold print:

(37)a. *2 out of 2 parses involve high scrambling: scrambling value = 1.0*

... þæt **him** grið betweenon beon sceolde
 ...that them peace between be should
 ‘...that there should be peace between them’
 (Period_2: ChronC_[Rositzke]:1006.39.1419)

¹⁶ In point of fact, XLE was designed for the construction of Lexical-Functional Grammars. However, with some minor modifications, the program can be employed very conveniently for the purpose of this study.

b. *12 out of 16 parses involve high scrambling: scrambling value = 0.75*

ac **hine** hafað his heofonlica fæder swiðe gewrecen
but him had his heavenly father very avenged
'but his heavenly Father avenged him greatly'
(Period_4: ChronE_[Plummer]:979.11.1485)

c. *18 out of 34 parses involve high scrambling: scrambling value = 0.58*

þa under þam þa bestæl he **hine** on niht on weg
then meanwhile then stole-away he himself at night away
'In the meantime he stole away in the night'
(Period_1: ChronA_[Plummer]:901.12.1168)

d. *4 out of 10 parses involve high scrambling: scrambling value = 0.40*

& **hi** þam Casere forgeaf
and her the emperor gave
'and gave her to the emperor'
(Period_4: ChronE_[Plummer]:1110.5.3483)

e. *1 out of 7 parses involves high scrambling: scrambling value = 0.14*

... for þan þa þegenas **heom** geswicon hæfdon
... because the thanes them betrayed had
'...because the thanes had betrayed them'
(Period_3: ChronD_[Classen-Harm]:1067.6.2269)

f. *0 out of 14 parses involves high scrambling: scrambling value = 0.0 writing*

man getealde **him** þæt nigonðe for þan heðenscipe
one counted him that ninth for the heathendom
'The ninth year was assigned to him because of the heathendom'
(Period_4: ChronE_[Plummer]:634.6.332)

Finally, I compared the number of clauses with a scrambling value of at least 0.7 as a break-off point for structures involving high scrambling with the number of clauses that have a scrambling value of less than 0.3 as an indicator of structures without high pronominal scrambling across the four subperiods of the ASC. As before, I differentiated between main clauses, conjoined main clauses and subordinate clauses. The results of this inquiry are shown below in table 9:

Period	Main clauses			Conjoined main clauses			Subordinate clauses		
	high scrambling	no high scrambling	% high scrambling	high scrambling	no high scrambling	% high scrambling	high scrambling	no high scrambling	% high scrambling
1	4	10	28.57	13	24	35.14	10	9	52.63
2	1	1	50.00	19	33	36.54	9	16	36.00
1&2	5	11	31.25	32	57	35.96	19	25	43.18
3	1	4	20.00	16	29	35.56	9	11	45.00
4	5	15	25.00	16	87	15.53	9	36	20.00
3&4	6	19	24.00	32	116	21.62	18	47	27.69

Table 9: Frequency of clauses with high pronominal scrambling (scrambling value ≥ 0.8) and without high pronominal scrambling (scrambling value ≤ 0.25) in the ASC by period and clause type

The results in table 9 show, firstly, a coherent decline in high pronominal scrambling from the earlier to the later periods across all clause types: from 31%-24% for main clauses, from 36%-21% for conjoined main clauses and from 43%-28% for subordinate clauses. The difference is statistically significant only when all clauses are grouped together¹⁷. However, consistency can be argued to be more important evidence for the reliability of the data than statistical significance of the individual clause types. Secondly, table 9 may also reveal a clause type effect – root clauses show a lower frequency of high scrambling than subordinate clauses. In fact, conjoined main clauses may fall in between the two extremes but on account of the overall low number of examples, this hypothesis cannot be tested. The effect is neither statistically significant for the earlier nor for the later periods but for the former less so than for the latter¹⁸, which may indicate a gradual convergence of the syntax of the three clause types. Furthermore, this finding is yet another example of the observation that syntactic innovations are more dominant in root than in dependent clauses. In short, the data is systematically structured in accordance with the hypothesis that high scrambling declines and thus supports the appropriateness of the periodisation of the Chronicle.

2.6. Headedness of PPs

The last syntactic change I investigated is the headedness of PPs. While prepositions usually precede full nominal complements, there appears to be relatively free variation between P-initial and P-final structures where the prepositional complement is a pronoun (Mitchell, 1978, Taylor 2008). Examples of this variation are given in (38) and (39) below:

¹⁷ All clauses : $\chi^2 = 4.28$, $df=1$, $p = 0.0385$. Main clauses: Fisher's Exact Test: $p=0.4788$. Conjoined main clauses: $\chi^2 = 2.75$, $df=1$, $p=0.0972$. Subordinate clauses: $\chi^2 = 0.95$, $df=1$, $p=0.3297$.

¹⁸ Root clauses vs. Subordinate clauses: Earlier periods (1&2): $\chi^2 = 1.72$, $df=1$, $p = 0.1897$. Later periods (3&4): $\chi^2 = 0.01$, $df=1$, $p = 0.9203$.

(38)a. preposition *to* ‘to’

... þæt he efeostlice scolde **to him** cuman
... that he quickly should to him come
‘...that he should come to him quickly’
(Period_4: ChronE_[Plummer]:1114.21.3538)

b. postposition *to* ‘to’

... þæt eall folc **him to** gebogen wæs
... that all people him to subjugated was
‘...that the entire people was subject to him’
(Period_2: ChronC_[Rositzke]:1013.9.1557)

(39)a. preposition *ongean* ‘against’

and man oft fyrde **ongean hi** gaderede
and one often army against them gathered
‘and an army was often collected against them’
(Period_2: ChronC_[Rositzke]:998.1.1287)

b. postposition *ongean* ‘against’

& þa Wyliscean **him ongean** coman
and the Welsh him against came
‘and the Welsh came against him’
(Period_4: ChronE_[Plummer]:1121.8.3639)

It is conceivable that the directionality of PPs is determined by factors other than chronology, namely the specific preposition involved and the type of pronoun. In order to estimate the impact of these three factor groups, I conducted a multivariate analysis using Goldvarb (Tagliamonte et al. 2001). The results of this study are shown in table 10 (application value = occurrence of postposition).

Total N= 279			Corrected mean: 0.237
	Factor weight	% of postposition	N
Period			
1	0.588	44.4	45
2	0.605	35.3	51
3	0.614	36.7	60
4	0.370	22.0	123
<i>RANGE</i>	24		
Pre/Postposition			
foran	0.994	66.7	3
ongean	0.870	54.5	11
wiþ	0.840	40.6	32
togenes	0.781	64.3	14
on	0.716	38.5	13
fram	0.715	50.0	4
to	0.673	53.2	47
beæftan	0.561	50.0	2
be	0.500	20.0	5
of	0.320	14.3	14
æfter	0.234	12.9	31
mid	0.185	11.8	76
other	0.511	29.6	27
<i>RANGE</i>	81		
Pronominal Object			
him, heom	0.638	35.2	236
hie, hi, hy	0.026	15.4	13
other	0.054	6.7	30
<i>RANGE</i>	61		

Table 10: Factors significant to the occurrence of head-final PPs with pronominal complements in the Anglo-Saxon Chronicle

The low corrected mean (0.237) shows that prepositions are generally favoured in the ASC regardless of time or linguistic variables. However, all three factor groups – the type of pronoun, the pre/postposition involved as well as period – have a significant effect on the overall distribution of pre- and postpositional structures. The masculine / neuter singular and plural dative pronoun *him*, later: *heom* are more likely to occur in head-final PPs than the feminine singular accusative and plural nominative / accusative pronoun *hie*, *hi* later: *hy* or other pronouns. Similarly certain prepositions with a high factor weight, such as *foran* ‘before’, *ongean* ‘against’ or *wiþ* ‘against, with’ are more likely to occur with the pronominal complement to the left than prepositions with a low factor weight, such as *æfter* ‘after’, *mid* ‘with’ or *of* ‘from, of’. The frequency of head-final PPs declines from 44.4% in the first period to 22.0% in the last period. The data fits the model of variation best if it is assumed that head-final PPs are favoured only slightly in the first three periods (factor weight >0.5) but disfavoured in the last period (factor weight = 0.37). Despite significant contributions to the dependent variable by other factors, the variation in PP headedness is primarily due to a diachronic change. Thus, the decline in conservative head-final structures at the expense of

the innovative head-initial configuration is therefore yet another example of a syntactic change that supports the proposed periodisation of the ASC.

3. Conclusion

In this paper, I divided the syntactically annotated and parsed text files of the ASC provided by the YCOE into four chronologically ordered periods such that duplicate content was avoided and proved the appropriateness of this periodisation by means of six quantitatively measurable syntactic changes. Indeed, the empirical studies presented here revealed more straight-forward, unvarying grammatical developments over the course of the composition of the Chronicle than any previous study of its syntax (e.g. Bean 1983). This may be due, in part, to innovative methodologies, such as calculating from structurally ambiguous clauses the percentage of parses with a particular syntactic feature, as well as to the precise formulations of research questions informed by generative linguistic theory.

The findings of this paper open up potential for future research. Firstly, I only used a relatively small, albeit important and well-studied, selection of syntactic changes. It stands to reason that other changes that fall in the OE period will have visible reflexes in the ASC as well. Secondly, it would be worthwhile following up the six changes examined here in the Middle English part of the Chronicle, i.e. the years 1122-1154 of the [E] manuscript. One would expect a continuation of the trends found but perhaps also interference from Middle English syntactic innovations. Thirdly, the development of phonological, morphological and lexical linguistic variables could be traced across the suggested subperiods of the Chronicle. As a preliminary study, I investigated the frequencies of the older pronouns *him*, *hie/hi* as opposed to the later forms *heom*, *hy/hig*, which clearly further corroborated the suggested periodisation of the ASC. Finally, it would be helpful to include independent variables concerning discourse information to discover factors other than diachronic variation that cause systematic word order differences.

By using the compiled version of the Chronicle proposed here, it is now possible to make use of all four, syntactically annotated and parsed ASC manuscripts of the YCOE in a coherent and chronologically classifiable way. The files can be used alone – Period_1 in particular may be one of the most conservative surviving OE prose text available and worth studying independently – or along with other OE texts – periods 1&2 and 3&4 for instance could be grouped into early and late OE respectively, a distinction that commonly underlies diachronic studies of OE (Pintzuk & Taylor 2006). It is hoped that the novel periodisation of the ASC suggested here will thus benefit the study of OE syntax in general.

References

Baker, P. (2000). *The Anglo-Saxon Chronicle: A Collaborative Edition, MS F*. Cambridge: Routledge.

Bately, J. M. (1986). *The Anglo-Saxon Chronicle: A Collaborative Edition, MS A*. Cambridge: Brewer.

Bately, J.M. (2003). 'Manuscript Layout and the Anglo-Saxon Chronicle.' In: Scragg, D. (ed.) *Textual and Material Culture in Anglo-Saxon England: Thomas Nothcote Tollen the Toller Memorial lectures*. Cambridge: Antony Rowe. 1-22.

Bean, M. C. (1983) *The Development of Word Order Patterns in Old English*. London: Croom Helm.

Behaghel, O. (1932). *Deutsche Syntax IV*. Heidelberg: Winters.

Bergen, L. van (2003). *Pronouns and Word Order in Old English: With Particular Reference to the Indefinite Pronouns Man*. New York: Routledge.

Biberauer, T., Holmberg, A. & Roberts, I. (2007). 'Disharmonic Word-Order Systems and the Final-Over-Final Constraint (FOFC).' In: Bisetto, A. & Barbieri, F. (eds.) *Proceedings of the XXXIII Incontro di Grammatica Generativa Proceedings of the Incontro di Grammatica Generativa*.

Callaway, M. (1913). *The infinitive in Anglo-Saxon*. Washington D.C.: Carnegie Institution of Washington.

Classen, E. & Harmer, F.E. (1926). *An Anglo-Saxon Chronicle*. Manchester: Manchester University Press.

Denison, D. (1993) *English Historical Syntax: Verbal Constructions*. New York: Longman.

Dumville, D.N. (1992). *Wessex and England from Alfred to Edgar: Six Essays on Political, Cultural and Ecclesiastical Revival*. Woodbridge: Boydell Press.

Fischer, O. (1991). 'The Rise of the Passive Infinitive in English.' In: Kastovsky, D. (ed.) *Historical English Syntax*. Berlin: Gruyter.

Fischer, O., Kemenade, A. van, Koopman, W. & Wurff, W. van der (2001). *The Syntax of Early English*. Cambridge: Cambridge University Press.

Fuß, E. & Trips, C. (2009). 'The syntax and semantics of the temporal anaphor 'then' in Old and Middle English.' In: McFaddan, T. & Schäfer, F. (eds.) *Proceedings of CGSW 21+22*. Amsterdam: John Benjamins. 171-95.

Haeberli, E. (2000). 'Adjuncts and the Syntax of Subjects in Old and Middle English.' In: Pintzuk, S, Tsoulas, G. and Warner, A. (eds.) *Diachronic Syntax: Models and Mechanisms*. Oxford: Oxford University Press. 109-131.

- Haeberli, E. (2002). 'Observations on the loss of verb second in the history of English.' In: Zwart, J.-W. & Abraham, W. (eds.) *Studies in comparative Germanic syntax*. Amsterdam: John Benjamins. 245-272.
- Haeberli, E. (2005). 'Clause Type Asymmetries in Old English and the Syntax of Verb Movement.' In Batllori, M. & Roca, F. (eds.) *Grammaticalization and Parametric Variation*. Oxford: Oxford University Press. 267-283.
- Haeberli, E. & Pintzuk, S. To appear. 'Revisiting Verb (Projection) Raising in Old English.' In Jonas, D., Whitman, J., & Garrett, A. (eds.) *Grammatical Change: Origins, Nature, Outcomes*. Oxford: Oxford University Press.
- Irvine, S. (2004). *The Anglo-Saxon Chronicle. A Collaborative Edition: The E-Text*. Cambridge: Brewer.
- Kemenade, A. van (1987). *Syntactic case and morphological case in the history of English*. Dordrecht: Foris.
- Ker, N.R. (1957). *Catalogue of Manuscripts Containing Anglo-Saxon*. Oxford: Clarendon Press.
- Kiparsky, P. (1996). 'The shift to head-initial VP in Germanic.' In: Höskuldur, T., Epstein, S. & Peter, S. (eds.) *Studies in Comparative Germanic Syntax, 2*. Dordrecht: Kluwer. 140-179.
- Kroch, A. & Taylor, A. (2000). 'Verb-Object Order in Early Middle English.' In Pintzuk, S., Tsoulas, G. & Warner, A. (eds.) *Diachronic Syntax, Models and Mechanisms: Proceedings of DIGS 5*. Oxford: Oxford University Press.
- Lightfoot, D. (1991). *How to set parameters*. Cambridge, MA: MIT Press.
- Mitchell, B. (1964) 'Syntax and word-order in The Peterborough Chronicle, 1122-1154.' *Neuphilologische Mitteilungen* **65**: 113-44.
- Mitchell, B. (1978). 'Prepositions, adverbs, prepositional adverbs, postpositions, separable prefixes, or inseparable prefixes, in Old English.' *Neuphilologische Mitteilungen* **79**: 240-257.
- Ohkado, M. (2004) 'Coordinate Clauses in Old English, with Special Reference to Ælfric's Catholic Homilies.' *Folia Linguistica Historica* **25.1-2**: 155-176.
- Parkes, M.B. (1976). 'The Palaeography of the Parker Manuscript of the Chronicle, Laws and Sedulius, and Historiography at Winchester in the Late Ninth and Tenth Centuries.' *Anglo-Saxon England* **5**: 149-71.
- Pintzuk, S. (1996). 'Cliticization in Old English Clause Structure.' In: Halpern, A. & Zwicky, A. (eds.) *Second Position Clitics and Related Phenomena*. Stanford: CSLI Press. 375-409.
- Pintzuk, S. (1999). *Phrase Structures in Competition: Variation and Change in Old English Word Order*. New York: Garland.

- Pintzuk, S. (2005). 'The syntax of objects in Old English' In : Batllori, M. & Roca, F. (eds.) *Grammaticalization and parametric change*. Oxford: Oxford University Press. 251-266.
- Pintzuk, S. & Taylor, A. (2004). 'Objects in Old English: why and how early English isn't Icelandic.' *York Papers in Linguistics I*: 137-150.
- Pintzuk, S. & Taylor, A. (2006). 'The loss of OV order in the history of English.' In : Kemenade, A. van & Los, B. (eds.) *Blackwell handbook of the history of English*. Oxford: Blackwell.
- Plummer, C. (1965). *Two of the Saxon Chronicles Parallel*. Oxford: Clarendon Press.
- Rositzke, H.A. (1967). *The C-Text of the Old English Chronicles*. New York: Johnson Reprints.
- Smith, A. C. (1893). 'The order of words in Anglo-Saxon prose.' *Publications of the Modern Language Association of America* **8**: 210-44.
- Speyer, A. (2010). *Topicalization and Stress Clash Avoidance in the History of English*. New York: Gruyter.
- Swanton, M. (1996). *The Anglo-Saxon Chronicle*. New York: Routledge.
- Tagliamonte, S., Lawrence, H. & Robinson, J. (2001). *Goldvarb 2001*. York : University of York. <http://courses.essex.ac.uk/lg/lg654/GoldVarb2001forPCmanual.htm> (last accessed 20 August 2011)
- Taylor, A. (2008). 'Contact effects of translation: Distinguishing two kinds of influence in Old English.' *Language Variation and Change* **20**: 341-365.
- Taylor, A., Warner, A., Pintzuk, S. & Beths, F. (2003). *The York-Toronto-Helsinki Parsed Corpus of Old English Prose*. 1.5 million words of syntactically and morphologically annotated text. Available through the Oxford Text Archive.
- Traugott, E. C. (1992). 'Syntax', In : Hogg, R. (ed.) *The Cambridge Encyclopedia of the English Language. Vol. 1. The Beginning to 1066*. Cambridge: Cambridge University Press. 168-289.
- Trips, C. (1999). 'Scandinavian Characteristics in the Ormulum: Evidence for Scandinavian influence on the word order change in Early Middle English.' In: Czinglar, C. Köhler, K., Torre, E. J. van der & Zimmermann, M. (eds.) *Proceedings of ConSOLE 8*. Leiden: SOLE: 327-342.
- Trips, C. (2002). *From OV to VO in Early Middle English*, Amsterdam: John Benjamins.