STRUCTURAL VARIATION IN OLD ENGLISH ROOT CLAUSES

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Abstract

A standard observation concerning basic constituent order in Old English (OE) is that the position of finite verbs varies by clause type. In root clauses, the finite verb tends to occur towards the beginning of the clause and we frequently find Verb Second (V2) order. In contrast, in subordinate clauses finite verbs generally occur towards the end of the clause, and these clauses are frequently verb-final. In this article we challenge the traditional assumption that verb-final orders are, hence, the occurrence of the finite verb in a head-final structural position are rare in OE root clauses. We present new data demonstrating that the frequency of head-final structure in OE root clauses is much higher than previously acknowledged. We then explore some of the implications of this finding for the general structural analysis of OE.

1. Introduction

A standard observation concerning basic constituent order in Old English (henceforth OE) is that the position of finite verbs varies by clause type (cf. e.g. van Kemnade 1987; Mitchell 1985; Traugott 1992). In root clauses, the finite verb tends to occur towards the beginning of the clause and we frequently find Verb Second (V2) order. In contrast, in subordinate clauses finite verbs generally occur towards the end of the clause, and these clauses are frequently verb-final.

In line with these traditional observations, it is generally assumed that verb-final order can occasionally be found in OE root clauses but that it is a marginal phenomenon. Thus, Koopman (1995: 142) claims that "[t]he percentage of verb-final main clauses was low throughout the OE period". According to his Table 4 (1995: 139), the frequencies of verb-final order in root clauses range from 0.6% to 6.1%, depending upon the text. Similarly, Fischer, van Kemnade, Koopman and van der Wurff (2000: 122) confirm that "[t]he V-final pattern is a very minor one in root clauses". In structural terms, verb-final word orders means that the verb occupies a head position that follows its complement and the structure therefore contains a head-final projection. The low frequency of verb-final order suggests that head-final structure is rare in root clauses. Pintzuk (1993: 22, fn. 23) indeed observes that in the data she collected, "there are 252 independent (i.e. non-conjoined) main clauses ... and 16 of these (6.3 percent) are Infl-final", where Infl-final corresponds to head-final structure. This figure thus confirms Koopman's estimate.

In this article we challenge the traditional assumption that verb-final orders are, hence, the occurrence of the finite verb in a head-final structural position are rare in OE root clauses. We present new data demonstrating that the frequency of head-final structure in OE root clauses is much higher than previously acknowledged. We then explore some of the implications of this finding for the general structural analysis of OE. The article is structured as follows. In section 2, we outline our five basic assumptions about the structure of OE clauses. Section 3 shows how the position of particles, negative objects, stranded propositions and pronominal objects can be used as diagnostics for underlying clause structure. Section 4 measures and analyses the frequency of head-final constituent order in clauses with the four diagnostics. Section 5 presents conclusions and implications.
Given these observations, an analysis of OE corresponding to that of modern Germanic asymmetric V2 languages has generally been abandoned in the recent literature. Instead the following five assumptions (I) through (V) are made, which will be adopted here (cf. e.g. Fischer et al. 2000; Haebeli 2002b; Pintzuk 1999):

(I) The headiness of projections varies. In particular, the functional projection whose head is occupied by the finite verb may be either head-initial or head-final. The nature of this projection has given rise to some discussion in the literature. Here, we will simply label it IP but nothing will hinge on this assumption: the conclusions reached in this article remain the same even if a more complex split IP structure is adopted, as in the references cited above.

(II) Finite verbs categorically move from V to I, regardless of the position of I.

(III) In most root clauses, the finite verb stays in I. Clause-initial constituents, usually called (syntactic) topics, occupy [Spec,CP]. All DP subjects can remain in their VP-internal base position below I if they are not fronted to [Spec,CP]. As clitics or weak pronouns, pronominal subjects always move at least to [Spec,IP]. These assumptions account for the following types of root clause constituent orders.

(a) [cr God [p [ascunad] leasunga]]
   God hates lies
   'God hates lies'  
   (coalive,+ALS, [Eugenia]: 162.290)

(b) [cn wall hiss [p [ascunad] se recere suibe ryke]]
   all this arranges the ruler very rightly
   'The ruler arranges all this very rightly.'  
   (ecoura,CP:22.169.3.1145)

(c) [cr after his gebede [p he [j ashc] last eald up]]
   after his prayer he lifted the child up
   'After his prayer, he lifted the child up.'  
   (cocathom2,+ACHom,II, 2:14.70.320)

In all three clauses in (2), the finite verb has moved to I in a head-initial IP. (2a) is a subject-initial root clause, with the subject in [Spec,CP]. In (2b), a non-subject has been fronted to [Spec,CP], and the full DP subject remains in its base position below IP. This derives subject-verb inversion and, hence, a V2 pattern in (2b). In (2c), there is again a non-subject topic; here, however, the subject is a pronoun. Since subject pronouns move to the highest subject position in IP, we therefore obtain a V3 order in (2c).

(IV) In a restricted set of exceptional clause types, the finite verb moves further from I to C. Examples of these clause types are given in (3): an interrogative clause in (3a), and a clause with initial Jae 'then' in (3b).

(a) [cs On hwyleen hoewe steal [p he up]]
   In what form rose he up
   'In what form did he rise up?'  
   (coesue,Eluec,2 ([Warn,46]):40.21)

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b. [cr s[ andvewl] [p Eugenia] jysere olecunga]
   Then answered Eugenia this flattery
   'Then Eugenia responded to this flattery'

Because these clauses involve V movement to C, all types of subjects invert with the finite verb in these contexts, including pronominal subjects: compare (3a) with (1a).

(V) As for non-initial complements and adjuncts, their distributional properties suggest that both rightward movement (postposition) and some form of leftward movement (scrambling) must be assumed to be possible (cf. e.g. Pintzuk 1990). For the purposes of our study of the position of finite verbs and headness in root clauses, this observation is important, because the possibility of rightward and leftward movement of complements and adjuncts gives rise to potential ambiguity in the structural analysis of a clause. This is illustrated in (4):

(4) Ambiguity in SVO clauses

a. Head-initial IP, with leftward movement of the finite V to I
   God [p [ascuaed] [u leasunga in]]

b. Head-final IP, with rightward movement of the finite V to I and rightward movement of the postverbal constituent
   God [p [w eoe rv] [i ascuaed] [u leasunga]]

The example in (4) shows that since objects can move rightward, the structural analysis of a simple SVO clause cannot be unambiguously determined. SVO order can be derived from either head-initial or head-final structure. A similar type of ambiguity might also arise due to the possibility of leftward movement of constituents. Thus, some element may occur in a position preceding the finite verb either because it has undergone movement to the left of the verb in a head-initial structure or because the structure is head-final.

The points in (I) through (V) summarise the main theoretical assumptions we will make for our investigation of the status of head-final structure in OE root clauses in this article. However, before we can focus on the issue of headness, the consequences of point (V) have to be considered in more detail. What (V) and in particular example (4) mean is that a large number of clauses cannot be used to measure the frequency of head-initial and head-final structure because they are incompatible with both. In order to determine exactly how frequent head-final root clauses are, we have to restrict our database to clauses that can be assigned a unique structural analysis, either head-initial or head-final. The goal of the next section is to identify such a database.

3. Diagnostics for the headness of OE clauses

As discussed in the context of point (V) above, the distribution of arguments and adjuncts is generally not sufficiently restricted for them to be used as clear indicators of the directionality of the IP. In order to determine whether an underlying structure is unambiguously head-initial or head-final, we need elements that have a fixed position within the structure. If such fixed
elements exist, linear order provides direct evidence for the underlying directionality of the IP. When an element that can move neither rightward nor leftward follows the finite verb in I, it occupies this position only because the IP is head-initial: with a head-final IP, post-verbal complements and adjuncts are necessarily derived by leftward movement, as was illustrated in (4b). Similarly, when an element that can move neither rightward nor leftward precedes the finite verb in I, we can conclude that the IP is head-final; with a head-initial IP, pre-verbal complements and adjuncts are necessarily derived by leftward movement.\footnote{Picked elements that can be used as diagnostics for underlying structure do indeed exist in OE. As observed by Pintzuk (1999, 2002, 2005) in the context of subordinate clauses, particles, stranded prepositions, negative objects, and pronouns are generally much less mobile than adjuncts or other types of complements, and these elements can therefore be used as diagnostics for the headedness of IP as discussed above. In the following subsections, we will establish the suitability of these elements as structural diagnostics, first by presenting evidence that they do not undergo movement to the right and then by presenting evidence that, except for pronominal objects they do not move leftward.}

### 3.1. Constraints on rightward movement

Whether an element can undergo rightward movement or not can be determined on the basis of clauses that are clearly head-final. If the element can occur to the right of the finite verb in such clauses, we have to conclude that postposition is possible. If the element does not appear postverbally in head-final clauses, the conclusion must be that the element belongs to the V-structure. The question then arises what types of clauses can be considered as being clear cases of head-final IP structure. Two contexts will be included here: (a) clauses with ‘non-finite main verb—finite auxiliary’ constituent order, as illustrated in (5a); and (b) clauses with at least two full DP arguments preceding the finite main verb, as in (5b). Here Aux is the finite auxiliary verb, V is the non-finite main verb, and V’ is the finite main verb.

\begin{itemize}
  \item \textbf{a.} … V Aux
  \textit{be he de ri honan iuran woide}
  When he then again thence out-gone wanted
  When he wanted to go out again from there…
  \end{itemize}

\begin{itemize}
  \item \textbf{b.} DP1 DP2 … V’
  \textit{swa be sct schims hig his locc upe steath}
  so that the shining flame his locks up drew
  … so that the shining flame drew up his locks\footnote{CocconA-2h, ChronA_IP1[Plummer]905.8.1182}
  \end{itemize}

Both constituent orders are clearly head-final in subordinate clauses: because the complementiser is in C, the subject must be below CP, in [Spec,IP]. If the IP in these clauses were head-initial, there would be no obvious structural position that could be assigned to the other preverbal constituents (the adverbials and the non-finite main verb in (5a), the second DP in (5b)). Hence, only a head-final structure can account straightforwardly for the constituent orders (5a) and (5b) in subordinate clauses.\footnote{As for root clauses, the situation is slightly more complex because topicalisation (i.e., movement to the CP-domain) may be involved in root clause constituent orders. More structural positions are therefore potentially available to the left of a verb under a head-initial I in root clauses than in subordinate clauses. In particular, it is possible that two or more constituents can be moved to CP (multiple topicalisation), giving rise to a constituent order like ‘DP1 DP2 … V’ with a head-initial IP. However, our data suggest that such processes are sufficiently rare so as not to interfere with our findings (see Tables 1 through 4 below). We will therefore use the same criteria for head-final structure in root clauses as in subordinate clauses with the caveat, however, that the criteria may be slightly less clear-cut for root clauses.}

\subsection*{3.1.1. Rightward movement of particles}

Using the constituent orders in (5a) and (5b) as diagnostics for head-final structure, we can now consider whether particles, stranded prepositions, negative objects, and pronouns can follow the finite verb in these contexts, i.e., whether they can undergo rightward movement. We first examine the behaviour of particles with respect to postposition. However, not all particles are of interest for our purposes. As in modern Germanic OV languages, OE particles often precede the verbs they are associated with. If the particle in question is a verbal prefix which moves along with the verb, its position tells us nothing about the headness of projections, since the particle precedes the verb regardless of whether it is in a head-final or head-initial IP. Therefore, only particles that are systematically stranded by verb movement are of interest to us. Such particles occur to the right of the verb if the verb has moved to a head-initial I but to the left of the verb if the verb has moved to a head-final I. This is illustrated in (6).

\begin{itemize}
  \item \textbf{a.} Head-initial IP: [p w V] [w particle rj]
  \item \textbf{b.} Head-final IP: [w] [w particle rj] [w V]
\end{itemize}

But how can we tell whether a particle is systematically separated from its verb or not? Since all OE particles can typically be found in both ‘V-particle’ and ‘particle-V’ orders, we cannot in general determine whether the ‘particle-V’ order occurs because the particle optionally behaves like a prefix, moving with the verb to (head-initial or head-final) I, or because the particle has indeed been separated from the verb when the V moves to head-final I, since verb movement in head-final IP simply maintains the ‘particle-V’ order, as shown in (6b). V-to-C movement contexts are therefore not conclusive with respect to whether a particle is systematically stranded or not. However, another context is more revealing here. As observed with respect to example (5) above, certain types of root clauses involve V-movement to C. Since CP is always head-initial, the occurrence of a particle in a preverbal position in V-to-C movement contexts necessarily means that the particle is a prefix that has moved along with the verb to C. Such a particle is not one that is systematically stranded. Therefore, in order to avoid inclusion of such particles, we restricted our data in this section to those particles that are always stranded (i.e., occur to the right) when the finite main verb has moved to C: addn ‘down’, after ‘after’, away ‘away’, in ‘in’, under ‘under’, unborn ‘back’, up ‘up’, ut ‘out’. Let us now consider the distribution of these particles in contexts involving head-final IP. The examples in (5) above provide illustrations of cases where the particle precedes the verb in the two contexts we use as diagnostics for head-final structure. As shown in Table 1, we distinguish three clause types in this and other tables in this article: root clauses, conjoined (root) clauses and subordinate clauses. We treat root clauses and conjoined clauses as distinct because it has often been observed that conjoined clauses have subordinate clause constituent order more frequently than non-conjoined root clauses with respect to the position of the finite verb (cf. e.g. Mitchell 1985: 694; Traugott 1992: 277).
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b. pronoun movement:
\[
\text{past} \text{Dilhinc} \text{him} \quad \text{bone} \text{wool} \quad \text{from a} \text{a} \text{a} \text{e} \text{as} \\
\text{that} \text{God} \quad \text{him} \text{the} \text{disease} \text{from} \text{dispelled} \\
\text{...} \text{that} \text{God} \text{dispelled} \text{the} \text{disease} \text{from} \text{him} \ldots \\
\text{(cgrefgok, GDPRPref_and_3[C]:15.208.18.2759)}
\]

In both examples in (9), the stranded preposition precedes the main verb. The same observation can be made for nearly all the other cases of preposition standing in head-final contexts, as Table 2 shows.

<table>
<thead>
<tr>
<th>Preverbal</th>
<th>Postverbal</th>
<th>Total</th>
<th>% Postverbal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Root</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>... V Aux</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>DP1 DP2 ... Vf</td>
<td>13</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>Conjoined</td>
<td>9</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Subordinate</td>
<td>... V Aux</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>DP1 DP2 ... Vf</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>106</td>
<td>1</td>
<td>107</td>
</tr>
</tbody>
</table>

Table 2: Position of stranded prepositions in OE head-final clauses

Among the total of 232 examples, only three have the order 'verb - stranded preposition'. These three examples are given in (10).

10a. for bæn ðæs [auncenn m:n]; his agen dom cymb to h 
    because each man his own fate comes to 
    'because each man comes his own fate'  
    (cgrefgok, +AChom_1, l_17[A2p]:540.171.3303)

b. þæt [þæt] cuman wolde to e sosigandan her 
    that there come would to invading army 
    'that an invading army would come there'  
    (cgrefgok, +AChom_1, l_17[A2p]:540.171.3303)

c. þæ gehwæd þe hæo hweardan was mid þe 
    clothes that she wound was with 
    'the clothes in which she was wound'  
    (cgrefgok, +AChom_1, l_17[A2p]:540.171.3303)

The constituent order in (10a) is comparable to that of example (7) above. If we assume that topisation can, at least marginally, occur in subordinate clauses, it could be analysed along the same lines, with topisation of the initial DP from a head-initial IP, rather than postposition of the stranded preposition. For the two remaining examples, it is difficult to avoid the conclusion that the stranded preposition has been moved rightward.

Despite the three exceptions, the overall picture is clear. In head-final structures, stranded prepositions overwhelmingly precede the finite verb. Hence, we can conclude that
rightward movement of stranded prepositions is to a large extent excluded, if it occurs at all, it is only at a low frequency.

3.1.3. Rightward movement of negative objects
Negative objects behave like particles and stranded prepositions. In unambiguously head-final clauses, as illustrated in (11), they precede the finite verb. The relevant figures are given in Table 3.

(11) a. þæs gebedes eac swylice Zostinus ræn hing, onganian ne mhte (of the prayer) also thus Zostinus no thing understand NEG could 'And Zostinus could thus understand nothing of the prayer.' (comary,LS_53_Maryland/Egypt):264.179

b. þæt eower gleda þære byddan minumlicham un ne geðeð that your embers no heat my body NEG give '... that your embers give no heat to my body.' (coccasom,Jn+ACHom_I:29.425.213.5814)

<table>
<thead>
<tr>
<th>Root</th>
<th>Preverbal</th>
<th>Postverbal</th>
<th>Total</th>
<th>% Postverbal</th>
</tr>
</thead>
<tbody>
<tr>
<td>... V Aux</td>
<td>5</td>
<td>0</td>
<td>5</td>
<td>0.0%</td>
</tr>
<tr>
<td>Conjoined</td>
<td>15</td>
<td>0</td>
<td>15</td>
<td>0.0%</td>
</tr>
<tr>
<td>Subordinate</td>
<td>62</td>
<td>0</td>
<td>62</td>
<td>0.0%</td>
</tr>
<tr>
<td>Total</td>
<td>85</td>
<td>0</td>
<td>85</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

Table 3: Position of negative objects in OE head-final clauses

Given these data, the conclusion is once again that rightward movement is not possible. Note that this is in clear contrast to non-negative full DP objects which can undergo postposition, as the following examples involving head-final contexts show.11

(12) a. þæt he ofte ne wolde þære geæfællian ludei that he sly would the believing Jews '... that he would sly the believing Jews.' (coaslive,+ALS_[MacCabeus]:549.5191)

b. þæt ongian mon æðlæn , magne palæn hæne dænum that any man count-up can all the damage '... that any man can count up all the damage' (cocoscru,Or_28.52.6.998)

c. þæ sa ærendweapen eft Eadwine pægdon haeg w≪ letter Word When messengers again Eadwine said these words 'When messengers again said these words to Eadwin' (cobede,Bede_28.120.17.1143)

3.1.4. Rightward movement of pronounal objects
The last type of element to consider are pronounal objects. (13) gives examples with pronounal objects occurring in the two contexts that we use as diagnostics for head-final structure: 'V-Aux' in (13a) and 'DP1 DP2 Vf' in (13b).

(13) a. Nu ic in sceal ne meag Now I you-two reconcile NEG can 'Now I cannot reconcile the two of you' (cobblick,LS_32_PeterandPaul[BlHom_15]):181.167.2304

b. hwæðer æðlan in him meet hroðel whether any man him food brought '... whether any man brought him food' (cogwsop,Jn:4.33.6012)

In (13), the pronounal object precedes the finite verb. This also holds for nearly all the other head-final clauses that contain a pronounal object, as Table 4 shows.

<table>
<thead>
<tr>
<th>Root</th>
<th>Preverbal</th>
<th>Postverbal</th>
<th>Total</th>
<th>% Postverbal</th>
</tr>
</thead>
<tbody>
<tr>
<td>... V Aux</td>
<td>15</td>
<td>0</td>
<td>15</td>
<td>0.0%</td>
</tr>
<tr>
<td>Conjoined</td>
<td>13</td>
<td>0</td>
<td>13</td>
<td>0.0%</td>
</tr>
<tr>
<td>Subordinate</td>
<td>1205</td>
<td>0</td>
<td>1205</td>
<td>0.0%</td>
</tr>
<tr>
<td>Total</td>
<td>1406</td>
<td>2</td>
<td>1408</td>
<td>0.1%</td>
</tr>
</tbody>
</table>

Table 4: Position of pronounal objects in OE head-final clauses

The two head-final clauses with a postverbal pronounal object in Table 4 involve a single token that is repeated in the text.12

(14) gife ge yfel hyms biddes et minum halgan Faster now on minum names if you self something ask from my holy Father-you-REFL in my name '... if you yourself ask something from my holy Father in my name' (coccasom,+ACHom_8:20.1176), (cocasom,+ACHom_8:56.1197)

Despite the very large number of head-final clauses (1408), (14) is the only example where the pronounal object follows the finite verb. This suggests that rightward movement of pronounal objects is ruled out in OE or, at best, is very rare. Again, this is in contrast to non-negative full DP objects which, as shown in (12) above, do undergo rightward movement.

3.1.5. Conclusion
In the preceding subsections, we have identified four elements that do not move rightward in OE: particles, stranded prepositions, negative objects and pronounal objects.13 For the purposes of identifying clear criteria for headness in OE, this is an important finding: it means
3.2. Constraints on leftward movement

In the previous subsection, we showed that the occurrence of particles, stranded prepositions, negative objects and pronominal objects in postverbal position indicates head-initial structure. From the point of view of determining the frequency of head-initial and head-final structure, the crucial question that now arises is whether these diagnostic elements are always postverbal when IP is head-initial. In other words, we want to know whether diagnostic elements can move to the left of t, deriving the surface order “diagnostic element-V” from a head-initial structure, as shown in (15).

(15) a. $VP \{ [V \{ V \{ [V \{ X \{ t \} \} \} \} \} \}$
where $X =$ particle, stranded P, negative object, pronominal object

b. $Hi \{ [V \{ V \{ [V \{ X \{ v \} \} \} \} \}$
They NEG-have no body
‘They have no body’
(coeselhorn, AHom_12-24.1798)

(16) $VP \{ [V \{ v \} \{ t \} \} \}$
where $X =$ particle, stranded P, negative object, pronominal object

If this option is available in OE, the frequency of postverbal diagnostic elements in surface strings corresponds only to the lower limit of the frequency of head-initial structure (and hence the upper limit of head-final structure) and does not provide a precise measurement of the underlying frequencies. In contrast, if this type of leftward movement is generally impossible for our diagnostic elements, then they can be used as unambiguous surface manifestations of directness, with postverbal diagnostic elements corresponding to head-initial structure and preverbal diagnostic elements to head-final structure.

The question to be addressed then is whether our diagnostic elements can move to the left, or whether they are as resistant to leftward movement as they are to rightward movement. Different movement contexts and landing sites must be distinguished here: (a) movement above the (preverbal) subject, i.e. to the left periphery of the IP or higher; (b) clause internal leftward movement below the (preverbal) subject.

3.2.1. Leftward movement above the subject

For context (a), this type of movement is possible for particles, negative objects, and pronominal objects, as shown in the examples in (17); we have found no instances in the YCOR of stranded prepositions to the left of a subject.

(17) a. $\delta a$ us in gap wolde
when out he go would
‘when he would go out’
(cobede, Bede_5:5.396.29.3965)
3.2.2. Clause-internal leftward movement

While movement to the left of the subject can be dealt with in a straightforward way by simply excluding the relevant clauses, the clause-internal leftward movement of diagnostic elements to a position below the subject presents a more complex problem. Our assumption is that particles and objects are adjacent to their verbs in underlying structure, and therefore that non-adjacency indicates movement. Examples (20), (21) and (22) show that such leftward movement is possible for particles, negative objects and pronominal objects, since these elements can appear after the subject but separated from their governing verb.

(20) Particles
   a. *het he his lichuman up on gefersode on dam endlyftian geare his gecondunge that he his body up then placed in the eleventh year of his death ‘that he then placed his body up in the eleventh year of his death’ (cosevle,ALS[Lucy]:36.2189)
   b. *het he heone aweg hine asturian mage that he then away him move might ‘that he might then move him away’ (cosevle,ALS[SevenSleepers]:28.24)

(21) Negative objects
   a. *het ju name bruyduman næfre me no namige that you no bridgroom never (to) me NEG name ‘that you will never name to me a bridgroom’ (cosevle,ALS[Lucy]:36.2189)
   b. *het man gap pizâc forneah dam greven no milite buton smic amne that one no thing very-near there see NEG may but smoke alone ‘so that one could see nothing near there but smoke alone’ (cosevle,ALS[SevenSleepers]:28.24)

(22) Pronouns
   a. *afir from dam dege pe se hine niort drahboun ever since the day that you him first vexed ‘ever since the day that you first vexed him’ (cosevle,ALS[Julian_and_Basilissa]:155.1033)
   b. *and he pinn orsorhlice axian ognan and he him rashly ask began ‘and he rashly began to ask him’ (cosevle,ALS[Martin]:1364.6872)

In all of the examples above, the diagnostic elements are separated from their governing verbs by adverbials and other constituents. If the underlying position of these elements is adjacent to the verb, then we must conclude that they have undergone leftward movement. Table 6 shows the frequency of non-adjacency derived by leftward movement in three contexts: clauses with finite main verbs (S ... X (...) VF), clauses with non-finite main verbs (S ... Aux ... X (...) VF), and clauses with finite auxiliaries before the non-finite main verb (S ... Aux ... X (...) Vn). While the frequency of leftward movement for particles is low, it is high for negative and pronominal objects.

<table>
<thead>
<tr>
<th>Clause type</th>
<th>Particles N</th>
<th>Negative Objects N</th>
<th>Pronominal Objects N</th>
</tr>
</thead>
<tbody>
<tr>
<td>finite main verb</td>
<td>413</td>
<td>110</td>
<td>2278</td>
</tr>
<tr>
<td>S ... X (...) VF</td>
<td>28</td>
<td>27</td>
<td>253</td>
</tr>
<tr>
<td>non-finite main verb + aux</td>
<td>106</td>
<td>32</td>
<td>761</td>
</tr>
<tr>
<td>S ... X (...) Vn</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S ... Aux ... X (...) Vn</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6: Frequency of non-adjacency with main verb of three diagnostic elements (particles, negative objects and pronominal objects)

S = subject, X = diagnostic element, Aux = finite auxiliary, VF = finite main verb, Vn = non-finite main verb

The leftward movements illustrated in (20) through (22) do not necessarily interfere with our attempt to identify directionality frequencies, because these data do not constitute evidence that leftward movement goes beyond I. Instead, all the examples could involve a type of low scrambling which targets a position between I and V. This would mean that the landing site of the leftward movements in (20) through (22) is not high enough to derive a ‘diagnostic element-verb’ surface order from head-initial structure with V in I. Instead, if the landing site is below I, head-initial structure would still derive only ‘verb-diagnostic element’ orders and head-final structure would derive only ‘diagnostic element-verb’ orders, as illustrated in (23). Surface order would therefore still directly reflect directionality.

(23) a. *head-initial structure with low scrambling
   [S [V ] ... X ... [v to tv ] ]
   b. *head-final structure with low scrambling
   [S ... X ... [v to tv ] [v V ] ]

The only type of leftward movement that is problematic for a direct correspondence between surface constituent order and structure is movement to a position between the subject and the finite verb in a head-initial structure. In other words, the question is whether a constituent order like (24a) could be derived as shown in (24b), or more generally whether configurations like (24a) are possible in OE.

(24) a. we elles narum oðrum ne le Gefasfla we otherwise we other NEG selecte ‘otherwise we do not tolerate any other’ (cosevle,ALS[Martin]:1364.6872)
   b. we elles [ne narum oðrum] [ne geFasfla] [v to tv ]

The only type of leftward movement that is problematic for a direct correspondence between surface constituent order and structure is movement to a position between the subject and the finite verb in a head-initial structure. In other words, the question is whether a constituent order like (24a) could be derived as shown in (24b), or more generally whether configurations like (24a) are possible in OE.
c. YP X [V] [tv $ tv]
   where X = particle, stranded P, negative object, pronominal object

   From a theoretical point of view, it is by no means obvious what position X occupies in (24c). In a subordinate clause, where we assume that YP is the subject in [Spec,IP], X would have to occur between the specifier and the head of IP. Three options are available: (i) X is head-adjunct to I; (ii) X is I'-adjunct; (iii) X occupies an inner specifier in a multiple specifier configuration. Option (i) could only apply to a subset of the diagnostic elements, i.e., to elements that could be analyzed as heads (particles and pronominal objects), but not to phrases such as (most) negative objects. As for option (ii), an X'-adjuncted position is not standardly a possible landing site for movement. Finally, multiple specifiers required by (iii), have generally been adopted for contexts involving elements of a similar nature, e.g., arguments and associated expletives, wh-elements, negative constituents; cf. e.g. Chomsky (1995), Richards (1997). Particles and stranded prepositions are not plausible candidates for a multiple specifier configuration that also involves the subject.

   In summary, the structural analysis of a configuration like (24c) is formally problematic. Let us nevertheless suppose for the time being that a plausible structural analysis of (24c) could be devised. We must now consider whether there are empirical reasons for proposing such a configuration. Unfortunately, evidence bearing on this question is hard to find. For example, for (24a), there are no clear criteria that would determine unambiguously that it involves head-initial structure with leftward movement of the negative object rather than head-final structure with no leftward movement of the object.

   An additional clause type may seem relevant here: clauses with finite auxiliaries before non-finite main verbs. In these clauses, our diagnostic elements occur most frequently below the auxiliary, either before the non-finite main verb or after it, as shown in (25) and (26). But diagnostic elements also occur between the subject and the finite auxiliary, as shown in (27):

(25) a. Isaiah se witega was agw faranda
   Isaiah the prophet was going away
   'The prophet Isaiah was going away'
   (coexist,ALS_[Book_of_Rings];421.359)

b. hast he no m'ke naa goli dan
   that he neg can no good do
   'that he can not do any good'
   (coexist,ALS_[Memory_of_Saints];295.3490)

c. Ac pa redan deo no dersano hi repaan
   But the wild animals neg dared them touch
   'But the wild animals didn’t dare to touch them'
   (coexist,ALS_[Julian_and_Basilian];405.1194)

(26) a. hast hi seceldon julian adure
    that they must fall down
    'that they must fall down'
    (coexist,2+,ACHom_H_I,15:226.197)
concord, and scramble out of the verb projection before it is raised. They suggest that negative objects in OE behave in the same way. Similarly, Wurmbrand (2005) shows that pronominal objects in verb clustering languages do not usually remain within the raised projection; in contrast, particles are more tightly bound to the non-finite verb and may remain in preverbal position. We will therefore assume that clauses like those in (27) do not provide conclusive evidence for leftward movement of diagnostic elements to a position before I in head-initial structure.

Nevertheless, there are some rare contexts that do allow us to test whether movement to the left as in (24c) can be found with our diagnostic elements. What we need is a diagnostic element occurring in a context which is clearly head-initial. And in section 3 we have identified such a context: clauses with a diagnostic element occurring to the right of the finite verb. In other words, we need clauses containing two of our diagnostic elements. One of them must be preverbal, thereby indicating head-initial structure. For the second element, it has to be post-verbal as well if it cannot undergo leftward movement of the type shown in (24c). If a diagnostic element can undergo leftward movement, however, then we would expect cases where one of the elements is preverbal and the other one is postverbal.

Let us therefore consider the distribution of the diagnostic elements in clauses containing two such elements. There are three possibilities (X1 = first diagnostic element; X2 = second diagnostic element): (i) V-X1-X2; (ii) X1-X2-V; (iii) X1-V-X2. All of these orders can be found in OE. Examples are given in (28). In (28a), the diagnostic elements are both postverbal. In (28b) they are both preverbal. Finally, in (28c), one of them is preverbal and the other is postverbal.

(28) a. & ʒa apostolus tuugon hit up and the apostles pulled them up.
   ‘And the apostles pulled them up.’
   (cobbick:LS_20_[AssumptMor[BHHom_13]]:143.104.1759)

b. hit land ... ʒa hit us to sendest
   The land ... that you us to send
   ‘The land ... that you sent us to’
   (coaelhom,+AHom_21:153.3156)

c. and by hit vugon ʒa ut and they it cast then out
   ‘And then they cast it out’
   (coaelhom,+AHom_15:19.2147)

Table 8 provides quantitative data for the different orders in clauses with two diagnostic elements in the YCQE. Column 1 lists the category of the first diagnostic element (X1) and column 2 the category of the second one (X2). Constituent orders like those in (28a) are listed in column 3, those corresponding to (28b) in column 4, and those corresponding to (28c) in columns 5 and 6. In the discussion that follows, we will refer to particular cells in Table 8 by a combination of column (1-7) and row (a-j), e.g. 7i for the total of all clauses.

<table>
<thead>
<tr>
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<th>4</th>
<th>5</th>
<th>6</th>
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<tr>
<td>A</td>
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<td>Both after X1</td>
<td>V</td>
<td>X2</td>
<td>X2</td>
</tr>
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<td>-</td>
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</tr>
<tr>
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<td>0</td>
<td>0</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td></td>
</tr>
<tr>
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<td>neg obj</td>
<td>33</td>
<td>6</td>
<td>7</td>
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<td>0</td>
<td>0</td>
<td>52</td>
</tr>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
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<td>1</td>
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<td>12</td>
</tr>
<tr>
<td>i</td>
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<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
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<td>20</td>
<td>50</td>
<td>2</td>
<td>370</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 8: Position of diagnostic elements in OE clauses with finite main verbs and more than one diagnostic element.

In the large majority of clauses, the two diagnostic elements are in preverbal position: 298 out of 370 = 82.5% (51 and 70). These are not relevant for the issue of leftward movement discussed in this section. For this issue, it is the 72 cases in columns 4 to 6 that are crucial, i.e. clauses with at least one postverbal element; according to our conclusions in section 3, these 72 clauses all have head-initial structure. 52 of them (those in columns 5 and 6) have diagnostic elements on both sides of the verb. This suggests at first blush that movement to the left of a head-initial I as shown in (24c) is indeed possible in OE. Notice, however, that 30 of the 52 clauses (all of those in column 5) involve pronominal objects preceding the finite verb. We can therefore conclude that pronominal objects productively undergo movement to the left of a head-initial I. Furthermore, this movement is very frequent. In unambiguously head-initial clauses with two pronominal objects, one of them always moves to the left of the verb (4a and 5a, 30 out of 30 clauses). In unambiguously head-initial clauses with one pronominal object and another diagnostic element, leftward movement of the pronom occurs in 20 (5c + 5d + 5e) out of 39 cases (4c + 5c + 4d + 5d + 4e + 5e). Leftward movement of pronominal objects was illustrated in example (23c), where a particle to the right of the verb indicates head-initial structure. Two additional examples involving two pronouns are given in (29).

(29) a. ic be forgo ve hi
   I you forgive them
   ‘I forgive you for them.’
   (cocest,Josh:8.18.5391)

b. ges hit second cow
   if it is say you
   ‘if we say it to you.’
   (coiwstan1,+ALet_2[Wulfstan_1]:155.219)

Therefore the first conclusion that we draw from the data in Table 8 is that pronominal objects can be used as surface diagnostics only for head-initial structure (cf. section 3) but not for head-final structure. When they follow the finite verb, they indicate head-initial structure, but when they precede the finite verb, they may appear there due to leftward movement within a head-initial structure or else due to head-final structure. Pronominal objects therefore do not allow us to precisely determine the frequency of head-final structure in OE. Instead, the position of pronominal objects with respect to the finite verb can only provide us with an indication of the upper limit of the frequency of head-final structure.
Let us now consider the status of the other diagnostic elements according to the data in Table 8. Negative objects occur 14 times in unambiguously head-initial clauses with two diagnostic elements (4b + 3b + 6b + 4c + 5c + 6c + 4f + 5f + 6f + 4g + 5g + 6g), and they never precede the verb in these clauses. Most revealing are the seven examples with two postverbal elements (4h + 4c + 4f + 4g). These would still have been identified as head-initial even if the negative object had undergone leftward movement. But leftward movement has occurred in none of these. This suggests that the structure in (24e) is ruled out for negative objects, although this conclusion must be somewhat tentative because of the small number of relevant examples in our data.

The problem of low numbers arises even more sharply with the stranded preposition data. Among the clauses with head-initial structure in Table 8, only two contain a stranded preposition (4e + 4f + 5e + 4g + 5f + 6g + 4h + 5h + 6h). Neither of the two has the stranded preposition to the left of the verb. Thus, as with negative objects, there is no evidence for leftward movement of the type shown in (24c) within the limited amount of data that is available to us.

Let us finally consider particles. In Table 8, there are 28 head-initial clauses containing a particle (4d + 5d + 4d + 4f + 5f + 6f + 4h + 5h + 6h). Two of them (6d + 6h) have the particle in preverbal position; the clauses are given in (30). Note that both clauses contain the preverbal particle *ut*.

(30) a. & ņa *beletar* hina ona, with whom he outdrove him into their center, and when he drove him out into their center' (cowosgop, kdn, [WSCP]: 135.3868)

b. Tirrenum, *je Tiber sio ea ut *stie, on Tyrhenium, which Tiber the river out flows into ‘... Tyrhenian, which the river Tiber flows into’ (coosroin, tr 1:121.44.424)

The data in (30) could be interpreted in two ways: either they could involve leftward movement of the particle in a head-initial structure along the lines of (24c), or they could involve rightward movement of the pronoun in (30a) and of the stranded particle in (30b) in a head-final structure.

The leftward movement analysis may be more plausible for (30a). As observed in section 3.1.4 on the basis of a considerable amount of data (1408 clauses), rightward movement of pronominal objects seems to be to a large extent excluded in OE. For (30b), the situation is less clear. In section 3.1.2, we found 3 cases out of 232 where a stranded preposition could have been postponed (1.3%). This frequency is similar to what we would find in Table 8 if (30b) indeed involved postponement of the stranded preposition. Table 8 lists 63 cases of stranded prepositions in head-final structure (3e + 3h). If the one postverbal stranded preposition (10b, 4g) were derived by postponement, the frequency of postponement for stranded prepositions in Table 8 would be one out of 64 = 1.6%. However, given the low frequency, we cannot conclusively treat (30b) as an instance of head-final structure with postponement. Instead, leftward movement of the particle in a head-initial structure remains an option, particularly since this seems to be a plausible analysis for (30a).

Although we are dealing here with only one or two potential cases of leftward movement of a particle, the examples in (30a) cannot be dismissed as insignificant. As pointed out above, Table 8 contains only 28 instances of head-initial structures with particles (4d + 5d + 4d + 4f + 5f + 6f + 4h + 5h + 6h). One or two examples therefore comprise 3.6% or 7.1% of the data. And if leftward movement of particles is possible, then some of the 100 clauses with a preverbal particle and a preverbal pronoun (3d) could have been derived from head-initial structure by leftward movement of both diagnostic elements. Thus, on the basis of the particle data in Table 8 we cannot exclude the possibility that movement of particles to the left of head-initial I can occur in OE, either as the result of independent leftward movement of the particle or as the result of "parasitic" movement as a prefix of the verb to I. However, evidence for this type of movement is restricted to the particle ut.

3.3. Conclusions

In this section we have presented the evidence for our claim that particles, stranded prepositions, and negative objects can be used as diagnostic elements for the headedness of clauses with finite main verbs. We have shown that there are almost no cases of rightward movement of these elements in head-final clauses (Tables 1 through 4) and that if rightward movement occurs at all in OE, it is at a very low frequency. Therefore, we concluded that when the diagnostic elements are postverbal, the IF must be head-initial — in other words, the 'verb-diagnostic element' surface order directly reflects head-initial underlying structure. This conclusion was drawn on the basis of substantial amounts of data: 107 head-final clauses with particles, 232 with stranded prepositions, 85 with negative objects, and 1408 with pronominal objects.

For head-final structure, the correspondence between surface order and underlying structure is not as clear, for three reasons. First, there is evidence that pronominal objects can preposit before 1 in head-initial clauses, and therefore that preverbal pronominal objects cannot be used as a diagnostic for head-final structure. Second, we have found two examples of preverbal particles in head-initial clauses (30a-b); they may be in this position either because they have moved leftward from postverbal position to the position before 1 or because they have moved with the finite verb to I. While two clear cases may seem an insignificant number, their existence meant that the frequency of leftward movement of particles is difficult to calculate, because the total number of relevant clauses is very small. Third, although there are no clear cases of preverbal negative objects or stranded prepositions in head-initial clauses, again the total number of relevant clauses is very small. The problem here is the limited size of our dataset, a problem for which there is no solution. Our conclusion is that the frequency of preverbal diagnostic elements represents an upper limit to the frequency of head-final structure.

4. Measuring the frequency of head-final structure in root clauses

Having established that certain elements can be used as diagnostics for the headedness of the syntactic structure in OE, we can now return to our initial question of the frequency of head-initial and head-final structure in OE root clauses. In each of the following subsections, we will consider one diagnostic element and determine the frequency of head-final constituent order on the basis of the element’s distribution with respect to the finite verb. For these data, we use only clauses with finite main verbs and overt subjects preceding the verbs. These restrictions guarantee that the data are the "normal" type of OE V2 clauses like those in (2a), with the verb in I and not in C. As noted in section 3.3 above, the frequency of head-final constituent order may represent only an upper limit of the frequency of head-final clause structure. However, given that we have identified only marginal potential interference by the leftward movement of diagnostic elements, the actual frequency of head-final structure should
not deviate substantially from this upper limit. This issue will be discussed further in section 4.5.

4.1. Head-final constituent order in clauses with particles

Since particles do not move to the right of a verb occupying the head position of a head-final IP, and since movement to the left of a verb occupying the head position of a head-initial IP is limited, the surface distribution of particles can be used to estimate the upper limit of the frequency of head-final structure. When the particle follows the finite main verb, the structure must be head-initial, as in (31a), whereas it may be head-final when the particle precedes the finite main verb, as in (31b).

(31) a. Head-initial IP:

Hi sodon pa ealle at
They went then all out
"Then they all went out"

(coaslive, ALIS(Ager); 199.1846)

(32) b. Head-final IP:

Apollonius pa ut socket
Apollonius then out went
"Then Apollonius went out"

(copollop, APT: 16.26.326)

The numbers and frequencies of ‘particle-finite main verb’ orders in different types of clauses (root, conjoined root, subordinate) in the YCOE are given in Table 9. The data are divided into two groups: early OE texts and late OE texts, with 950 used as the date dividing the two periods.

<table>
<thead>
<tr>
<th></th>
<th>Early</th>
<th></th>
<th>Late</th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
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<td>Root</td>
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<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td>Conjoined</td>
<td>39</td>
<td>67</td>
<td>58.2%</td>
<td>72</td>
<td>129</td>
</tr>
<tr>
<td>Subordinate</td>
<td>233</td>
<td>47</td>
<td>50.3%</td>
<td>267</td>
<td>302</td>
</tr>
</tbody>
</table>

Total: 311, 377, 82.5%, 436, 597, 73.9%, 766, 994, 77.1%

Table 9: Position of particles in OE clauses with the overt subject before the finite main verb, by period (early = before 950, late = after 950)

Three main observations can be made with respect to Table 9. The most striking fact from the point of view of earlier work on headness in OE is that there is a very high frequency of head-final constituent order in root clauses with a finite main verb and a particle. More than half of the root clauses containing a particle exhibit head-final order (56.8%). The other two main findings confirm observations made in earlier work. First, there is a decrease in head-final order from early OE to late OE in all contexts. And secondly, the frequency of head-final order differs depending on the clause type. It is higher in subordinate clauses than in conjoined root clauses, and higher in conjoined root clauses than in non-conjoined root clauses.

4.2. Head-final order in clauses with stranded prepositions

As observed in section 3, the distribution of stranded prepositions can also be used as a diagnostic for the headness of IP. This is illustrated in (32):

(32) a. Head-final IP:

Drihten [him], pa to e swido
Lord him then to spoke.
"The Lord then spoke to him"


b. Head-initial IP:

Se Haelend [byre], cænap to h
The Lord her said to
"The Lord said to her"

(copolcem, AHT: 6.89.924)

Looking at clauses with a finite main verb and a stranded preposition in the YCOE, we obtain the results shown in Table 10.

<table>
<thead>
<tr>
<th></th>
<th>Early</th>
<th></th>
<th>Late</th>
<th></th>
<th>Total</th>
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<td></td>
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<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
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</tr>
<tr>
<td>Conjoined</td>
<td>15</td>
<td>30</td>
<td>50.0%</td>
<td>15</td>
<td>64</td>
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<tr>
<td>Subordinate</td>
<td>325</td>
<td>345</td>
<td>94.2%</td>
<td>394</td>
<td>416</td>
</tr>
</tbody>
</table>

Total: 348, 394, 88.3%, 421, 584, 72.1%, 807, 984, 82.0%

Table 10: Position of stranded prepositions in OE clauses with the overt subject before the finite main verb, by period (early = before 950, late = after 950)

Subordinate clauses have the highest frequency of head-final constituent order, followed by conjoined root clauses, which in turn are followed by non-conjoined root clauses. Furthermore, the frequencies decrease from early OE to late OE, with the exception of subordinate clauses where the rate of head-final constituent order remains stable. Focusing on root clauses, we observe an average frequency of 16.3% of head-final constituent order over the OE period. This frequency is still much higher than the previous estimates of head-final structure presented in the literature, which did not go beyond 6.3% (cf. the estimate of Pintzuk 1993 in section 1 above). However, the frequency is also considerably lower than the frequency measured for root clauses with particles in the previous subsection (56.8%). This difference will be discussed further in section 4.5.

4.3. Head-final constituent order in clauses with negative objects

The third diagnostic for head-final structure that we identified in section 3 is the distribution of negative objects. A negative object occurs pronominally in head-final structure and postverbally in head-initial structure.
(33) a. Head-final IP:
we elles *num otrzym ne_agepaf
we otherwise to other NEG tolerate
‘otherwise we do not tolerate any other’
(coessentialBenR:71.130.15.1258)

b. Head-initial IP:
M1 nabilu sahu Inghaman
They NEG-have no body
‘They don’t have a body’
(coessential,+AHom_12.24.1798)

The frequencies of head-final IP constituent order with negative objects in the YCOE are shown in Table 11.

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<tr>
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<th>% OVF</th>
<th>OVF</th>
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</thead>
<tbody>
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<td>14</td>
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<td>10</td>
<td>39</td>
<td>25.6%</td>
<td>17</td>
<td>54</td>
<td>31.5%</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Conjoined</td>
<td>24</td>
<td>35</td>
<td>64.9%</td>
<td>56</td>
<td>108</td>
<td>51.9%</td>
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<td>149</td>
<td>55.7%</td>
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<tr>
<td>Subordinate</td>
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<td>172</td>
<td>68.0%</td>
<td>257</td>
<td>344</td>
<td>74.7%</td>
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<tr>
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<td>76.1%</td>
<td>183</td>
<td>319</td>
<td>57.4%</td>
<td>357</td>
<td>547</td>
<td>65.3%</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 11: Position of negative objects in OE clauses with the overt subject before the finite main verb, by period (early = before 950, late = after 950)

Once again, we can observe the same general patterns as before. Head-final constituent order is most frequent in subordinate clauses and least frequent in root clauses, with conjoined root clauses being situated between the two. Diachronically, there is a decrease in head-final structure in all clause types. As for constituent order in root clauses, we again observe a high frequency of head-final clauses. The frequency of 31.5% is higher than that found with stranded prepositions but lower than that observed with particles.

4.4. Head-final constituent order in clauses with pronominal objects

As observed in section 3, pronominal objects do not have the same status as a diagnostic for headlessness as particles, stranded prepositions and negative objects. We showed in section 3.1.4 that they do not move to the right, and they therefore identify clauses with a postverb pronoun as unambiguously head-initial, as in (34).

(34) Head-initial IP:
He [to b[cild]] [vr eac him iN]  
He blamed moreover him
‘Moreover he blamed him’
(coessential,+AHom_1.2.4.66.466)

However, as we have seen in section 3.2, pronominal objects do undergo leftward movement at a substantial frequency (see Table 8). Therefore surface ‘pronoun-verb’ constituent order, as in (35a), cannot be used as an indication of head-final structure. A pronominal object may occur in pronominal position either because the IP is head-final, as in (35b), or because the IP is head-initial and the pronoun has moved to the left of I, as in (35c).

(35) a. Head-final IP:
Hwæt 09a Eugenia hi_gebelesode  
Lo then Eugenia herself blessed
‘Lo, then Eugenia blessed herself’
(coessential,+ALS tweaking_Eugenia:171.259)

b. Head-initial IP:
Hwæt 09a Eugenia [vr hi iN] [i gebelesode]  
(coessential,+ALS tweaking_Eugenia)

c. Head-initial IP:
Hwæt 09a Eugenia hi_[i gebelesode] [i tweaking_iN]  
Given the ambiguity in (34), surface constituent order only allows us to determine the upper limit of the frequency of head-final clauses. The upper limit would be attained if all clauses of the type shown in (34a) were head-final. However, since a certain number of these may be head-initial, the actual frequency of head-final IP is most likely to be lower than the frequency of occurrence of constituent orders like (34a). Hence, we cannot give a precise estimate of the frequency of head-final structure on the basis of surface constituent orders involving pronominal objects. Instead, the distributional frequencies in the YCOE shown in Table 12 provide an upper limit for head-final IP.

<table>
<thead>
<tr>
<th></th>
<th>OVF</th>
<th>N</th>
<th>% OVF</th>
<th>OVF</th>
<th>N</th>
<th>% OVF</th>
<th>OVF</th>
<th>N</th>
<th>% OVF</th>
<th>Total</th>
<th>N</th>
<th>% OVF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Root</td>
<td>734</td>
<td>332</td>
<td>82.8%</td>
<td>1335</td>
<td>2039</td>
<td>65.6%</td>
<td>2215</td>
<td>5025</td>
<td>73.2%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conjoined</td>
<td>678</td>
<td>743</td>
<td>91.3%</td>
<td>1167</td>
<td>1626</td>
<td>71.8%</td>
<td>1942</td>
<td>2476</td>
<td>78.4%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subordinate</td>
<td>2200</td>
<td>2245</td>
<td>98.0%</td>
<td>3004</td>
<td>3280</td>
<td>91.6%</td>
<td>5431</td>
<td>5755</td>
<td>94.4%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3612</td>
<td>3829</td>
<td>96.4%</td>
<td>5506</td>
<td>6945</td>
<td>79.3%</td>
<td>9588</td>
<td>11256</td>
<td>83.2%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 12: Position of pronominal objects in OE clauses with the overt subject before the finite main verb, by period (early = before 950, late = after 950)

The data in Table 12 suggest that the average frequency of head-final structure in OE root clauses is not higher than 73.2%. This figure is compatible with the frequencies obtained in sections 4.1 to 4.4 for the other three diagnostics, which ranged between 56.8% and 16.7%. Note also that, although the figures in Table 12 do not provide exact estimates of head-final structure, they nevertheless confirm the general trends observed earlier among the different subgroups in our data. The upper limit of head-final structure is highest in subordinate clauses and lowest in root clauses and it decreases from early OE to late OE.

4.5. Variation among diagnostics

Table 13 summarizes our findings with respect to the frequency of head-final constituent order in root clauses containing different diagnostic elements for headlessness in OE.
Two main observations can be made with respect to the data in Table 13. First, as discussed in previous subsections, the frequencies suggest that head-final IP in OE root clauses is much more common than generally thought. Earlier studies concluded that head-final root clause structure is a very marginal phenomenon, with frequencies up to 6.3% only. The results obtained for each of the different diagnostic tests in Table 13 are well above this figure, with the lowest average frequency (16.7% for stranded Ps) being more than two and a half times higher than 6.3%.

The second observation that can be made on the basis of Table 13 is that the frequency of head-final constituent order varies considerably with the different diagnostic elements. Thus, the frequency of head-final constituent order with particles is more than three times higher than the frequency with stranded prepositions, with negative objects in between. The frequency of head-final constituent order with pronouns is even higher than that for particles, but we have seen that pronouns move leftward in head-initial structure. The variation among diagnostic elements seems surprising at first sight.Assuming that OE was a period of grammatical competition between head-final and head-initial IP constituent order, we might expect that head-final constituent order is used at a certain frequency and that this frequency, with minor variation, should show up regardless of what subset of the data we are considering. The conclusion that clauses containing particles have a frequency of head-final structure that is three times higher than that found in clauses with stranded prepositions may therefore be problematic.

There are several explanations that might account for this unexpected variation. First, the phenomena that we have been looking at here are relatively low frequency phenomena. Hence, it could be argued that the numbers are too low to be representative for the use of head-final structure in general and that there may be a certain degree of randomness in the results, leading to the variation observed in Table 13. However, this conclusion seems implausible, since the data is quite systematic. We have shown that there are two general trends for all three diagnostic elements: early texts have a higher frequency of head-final structure than late texts in all clauses types; and for each period, the frequency of head-final constituent order is higher in subordinate clauses than in conjunctive root clauses, and higher in conjunctive root clauses than in non-conjunctive root clauses. If there were a certain degree of randomness in the results, it would be surprising that this randomness does not interfere with these systematic trends.

A second explanation is that certain independent factors may contribute to an increase or a decrease in the frequency of head-final constituent order for one or more diagnostic elements. We have not taken into account factors such as text genre, author, influence of translation from Latin, and others that have been shown to have an effect on constituent order (see, for example, Pintzuk and Taylor 2006). We will not pursue this possible explanation further, but rather leave it as an area for future research.

Let us consider the role of leftward movement of diagnostic elements in head-initial structure. We have evidence that pronominal objects move leftward. Moreover, we saw in section 3.2.2 (Table 8) that particles are involved in the two additional counterexamples to our expectation that, when there are two diagnostic elements in a sentence, they should occur on the same side of the finite verb. In both of these counterexamples, the particle precedes the finite verb. This could mean that particles can undergo leftward movement. Although the frequency of this process may be low, its viability nevertheless implies that explanations of head-final constituent order is not straightforward here. If some of the cases of head-final constituent order are derived from head-initial structure (either by independent leftward movement of the particle or movement of the particle with the verb to I), then our estimate of 50.6% head-final structure is too high.

Let us then investigate the hypothesis that leftward movement can significantly interfere with our measurement of head-final vs. head-initial structure, and see whether we can adjust for leftward movement using the data in Table 5. Although the number of relevant clauses with particles is too low, the number of clauses with pronominal objects and a second diagnostic element is larger. In Table 8, there are 355 examples in which a pronominal object co-occurs with another diagnostic element (rows a, c, d, and e). In 69 of these examples, a diagnostic element (a second pronominal object, a negative object or a particle) follows the verb (4c + 4d + 5a + 5e + 5d). These 69 clauses are therefore clear cases of head-initial structure. We want to estimate the frequency of leftward movement of pronouns based on these clauses, taking into account the fact that the clauses in cell 5a contain two pronouns, one of which has moved, the other of which has remained in situ in postverbal position. In these 69 clauses, 50 pronouns (5a + 5e + 5d) have moved leftward, while 49 (3a + 4c + 5d) have remained in situ. According to these data, the rate of leftward movement of pronominal objects in head-initial structure is therefore 50/99 = 50.5%, and the rate of in situ objects is 49.5%. If we now adjust the data in Table 12 for the rate of leftward movement, we obtain the results shown in Table 14:

<table>
<thead>
<tr>
<th>head-final</th>
<th>head-initial</th>
<th>N</th>
<th>% head-final</th>
</tr>
</thead>
<tbody>
<tr>
<td>Root</td>
<td>1309</td>
<td>1696</td>
<td>3105</td>
</tr>
<tr>
<td>Conjoined</td>
<td>1307</td>
<td>1079</td>
<td>2476</td>
</tr>
<tr>
<td>Subordinate</td>
<td>5100</td>
<td>655</td>
<td>5755</td>
</tr>
<tr>
<td>Total</td>
<td>7886</td>
<td>3370</td>
<td>11256</td>
</tr>
</tbody>
</table>

Table 14: Estimated frequency of head-final structure in OE clauses with pronominal objects, adjusted for leftward movement

The frequency of head-final structure calculated here for the three clause types are close to the frequencies shown for clauses with particles in Table 9, even given the limited amount of data which the frequency of leftward movement of pronominal objects must be based. Since the high frequency of head-final structure does not vanish when the frequency of leftward movement is taken into account, and since the regular pattern of frequencies among clause types is maintained, these calculations serve to verify our previous findings in sections 4.1.4.3.

As for the question of why head-final structure is considerably less frequent in clauses with stranded prepositions than in clauses with other diagnostic elements, the following observations may be relevant. Consider first the early OE period. As was shown in Table 13, clauses with stranded prepositions have almost exactly the same frequency of head-final structure as clauses with negative objects (42.1% vs. 42.9%) in early OE. Thus the apparently distinctive behaviour of clauses with stranded prepositions is entirely due to a large drop in the frequency of head-final structure from the early to the late period, much larger than for clauses with particles or negative objects. So the main issue in connection with stranded prepositions is why the rate of head-final structure is unexpectedly low in late OE. In Table 13, there are 104 clauses with stranded prepositions in the late OE period, and 92 of them
(88.5% of 104) have the head-initial order 'VF'—stranded P'. A closer look at these 92 clauses is revealing, since more than half are of a very specific type by the same author: Elfric, in his Lives of Saints, Supplemental Homilies, and Catholic Homilies I and II, uses the construction 'Subject-Object(pronoun)-say-to' Direct speech' 38 times. Two examples are given in (36):

(36) a. Se Hælend lyre owæð to, La hu ne swaðe i hæt...
The Lord her said to how NEG said I you
'The Lord said to her: Look, did I not tell you...'
(coelcHom,+AHom_6:89.924)

b. Basilias him swæð to, ne beo hæt æfyrht
Basilias him said to NEG be you frightened
'Basilias said to him: Don't be frightened '
(coelclice,+ALS_[Basil].427.751)

The structure illustrated in (36) seems to be a formulaic expression introducing direct speech, and its repeated occurrence (with no occurrence of a corresponding sentence with head-final structure) may lead to a non-representative increase in the frequency of head-initial structure in our data set. If structures like (36) are omitted from our counts, the frequency of head-final structure in clauses with stranded prepositions is again very much in line with what we find for negative objects in the late OE period: 12/46 = 26.1% for stranded prepositions, compared to 25.5% for negative objects. The variation observed with stranded prepositions may therefore simply be an artefact of the data that is available to us.

5. Conclusions and Implications

In this article, we have examined the position of particles, stranded prepositions, negative objects, and pronominal objects with respect to the finite main verb in OE clauses. The quantitative patterns are very regular: late OE texts have a lower frequency of head-final constituent order than early OE texts; root clauses have a lower frequency than conjoined clauses, which in turn have a lower frequency than subordinate clauses. We have provided clear evidence that these elements do not postpone in head-final structure; and for particles, stranded prepositions and negative objects, we have shown that the frequency of postponing from postverbal position in head-initial structure, if it does occur, is low. We conclude that the frequency of head-final constituent order is comparable to head-final structure, although not identical to it: it seems likely that the frequency of head-final constituent order is somewhat higher than the frequency of head-final structure, although it is difficult to quantify this difference, given the small amount of data. Notice that the position of the finite verb is a reflection of the headedness of the clause (however that is interpreted, either head-final vs. head-initial underlying structure or overt movement vs. its lack within a uniform head-initial structure), the quantitative difference between the early and late texts can be viewed as a type of grammatical competition. Regardless of how it is analysed, it is very clear that the frequency of head-final structure in root clauses (and, in fact, in the other two clause types) is much higher than has previously been assumed or demonstrated.

One obvious question to ask is why the high frequency of head-final structure in OE root clauses has not been noticed before. Why, for example, do Fischer et al. (2000), Koopman (1995) and Pintzuk (1993) (all cited in the second paragraph of this article) claim that the frequency of head-final structure is very low? We believe this is due to the fact that many instances of V2 constituent order in OE are derived from head-final structure by other proc-

(37) V-to-C movement:

a. [cP On lwyclen heowene astæð [w he up tv ]] In what form rose he up
'What form did he rise up?'
(coelc2Elac_2_[Warn_46].40.31)

(38) a. Verb raising

[cr Sætan [w reg tv [mægan ] ] [waræxiæan ] ]
'Stones can give-way'

b. Verb projection raising

[cr Ælþælþyg [w reg tv [wæla ] ] [w æsa wæla worldlægnes forlætan ]
Ælþælþyg would then all worldly-goods abandon
'Then Ælþælþyg wanted to abandon all worldly goods'
(coelcive,+ALS[Agatha].26.2029)

(39) Postposition:

[cr God [w [w tv tv ]] [assættæð ] ] [for leasægan ]
God hates lies
'God hates lies'
(coelcive,+ALS[Am_Wed].128.2768)

There is some evidence to show that the frequency of these processes is higher than has been previously acknowledged. First, consider V-to-C movement. Pintzuk (1999) demonstrates that in clauses with pronominal subjects, the subject always follows the finite verb in V-to-C clauses; in clauses without V-to-C movement, the subject always precedes the finite verb, regardless of which constituent has been topicalised. The examples in (37a) above, repeated as (40a), and (40b) sketch the accepted analysis:

(40) a. V-to-C movement:

[cr On lwyclen heowene astæð [w he up tv ]] In what form rose he up
'What form did he rise up?'
(coelc2Elac_2_[Warn_46].40.31)
b. No V-to-C movement:

\[ \text{[or after his gebode [he related] he laid it up]} \]

'After his prayer, he lifted the child up.'

(cocothorn2@AChom_II, 2:14.70.320)

Thus the position of pronounal subjects can be used as a diagnostic for V-to-C movement. Table 15 shows the position of pronounal subjects with respect to the finite verb in non-conjoined root clauses. The frequency of inversion, and therefore the frequency of V-to-C movement, is much higher in negated clauses than in non-negated clauses; but in all clause types and with all verb types, the frequency of V-to-C movement is greater than 25%.

<table>
<thead>
<tr>
<th>Type of finite verb</th>
<th>V-Subject</th>
<th>Subject (-) Vf</th>
<th>N</th>
<th>% Vf-Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>auxiliary</td>
<td>808</td>
<td>2283</td>
<td>3091</td>
<td>26.1%</td>
</tr>
<tr>
<td>negated auxiliary</td>
<td>504</td>
<td>182</td>
<td>685</td>
<td>73.5%</td>
</tr>
<tr>
<td>main verb</td>
<td>4489</td>
<td>10642</td>
<td>15131</td>
<td>29.7%</td>
</tr>
<tr>
<td>negated main verb</td>
<td>1454</td>
<td>332</td>
<td>1786</td>
<td>81.4%</td>
</tr>
</tbody>
</table>

Table 15: The position of pronounal subjects with respect to the finite verb in root clauses

Second, consider the frequency of verb (projection) raising (V(P)R), illustrated in (37) above. Pintzuk (1999), on the basis of a small corpus of 1242 subordinate clauses, estimated the frequency of verb raising (VR) in OE to be 11.8%, and the frequency of verb projection raising (V(P)R) to be 7.1%. In contrast, Haeberr and Pintzuk (2006), using the YCOE, estimated the frequency of V(P)R in subordinate clauses to be 30% to 36%, depending upon the analysis and diagnostic used. If we apply the same analyses and diagnostics to root clauses, we obtain an estimate for the frequency of V(P)R of 74% to 81%. This observation helps to explain why the findings reported in earlier work differ from those in this article, since earlier estimates of head-final structure are often based on clauses with auxiliaries and, therefore, on clauses where V(P)R may interfere.

We can see that the relatively high frequency of these two movements, V-to-C movement and V(P)R, derives a large number of root clauses with the finite verb as the second constituent, even though the initial structure was head-final. Thus it is not surprising that linguists who analyse OE texts have the strong impression that OE is a V2 language, or at least that it is head-initial.

Our finding that OE root clauses exhibit head-final structure much more frequently than previously assumed means that both qualitative and quantitative analyses of many aspects of OE clausal syntax must be revisited and almost certainly revised. In particular, the status of OE as a V2 language should once again be re-examined in light of this new information about its structure. In the history of generative research in this area, we have travelled from Aikhenvald (1980), who suggested that V2 was optional in OE, to van Kemenade (1987), who claimed that OE was an asymmetric V2 language like Modern German or Dutch but with clitic pronouns, to Pintzuk (1999), who claimed that OE was a symmetric V2 language like Icelandic but with a low frequency of head-final structure in root clauses. Finally, it has sometimes been pointed out (cf. e.g. Haeberrli 2002a) that OE differs from typical V2 languages in that there is a non-negligible number of clauses where the heavy constituent precedes the finite verb. In particular, in contexts where some non-subject XP is in initial position (except XPs of the type shown in example (36) above, which trigger V-to-C), the absence of subject-verb inversion with non-pronounal subjects (i.e. V3) is not uncommon. The data discussed in Haeberrli (2002a: 250) suggest that V3 of this type occurred in approximately 30% of the cases where some non-subject constituent is in initial position.

The findings presented in this paper could now lead us to the following hypothesis: OE is fundamentally a V2 language, and the regular violations of V2 order are simply due to the relatively high frequency of head-final structure identified in this article. In other words, if we consider V2 as a configuration in which some initial constituent is in a specifier position X, the verb in a head position Y, and Y linearly immediately follows X, it could be argued that non-V2 orders are not the consequence of some fundamental violation of the basic structural configuration but simply due to the fact that Y can take its complement to the right rather than to the left. Thus instead of having the order 'X-Y-Z' (V2), we get 'X-Z-Y' (V3) due to head-final structure. However, such a proposal would make the following prediction. In cases where V2 is violated, the diagnostic elements we have identified in section 3 should always occur to the left of the finite verb: they cannot undergo rightward movement, and therefore this is the only position in which they can occur in head-final clauses. This prediction is not borne out, as the examples in (41) show.

(41) a. Þane se gestawed hit in That one the goatherd lets in
'That one, the goatherd lets in.'

(cogasgosp,Jn [WSCp]:10.3.6596)

b. Witodliche þes namer namer Hộires to his agnum byrce
'Truly this NEG-owned nothing other to his own gain'
'Truly, this owed nothing other to his own gain'

(cogasgDc,GDrPref and_3 [C]:26.229.11.3175)

c. nu þin cyngen ðæs caedfæt now your king you go to gentle
'Now your king, gentle comes to you'

(cogasgosp,Mt [WSCp]:21.5.1391)

d. Ætter þan se þi gilit bibe hilm forgifnis
'After that he who guilty is asks him forgiveness'
'After that, the guilty one asks him for forgiveness.'

(cocothorn1,CroD:1:16.36.321)

These clauses must be head-initial, because diagnostic elements do not postpose. Nevertheless, the finite verb remains after the subject, in spite of the fact that a non-pronounal constituent has been fronted to the normal topic position. Pintzuk (1999) has suggested that some elements, particularly temporal adverbs, can appear in a high position outside the clausal structure, but our current view is that these elements are in the CP domain but do not trigger movement of the finite verb above the full DP subject. Table 16 shows the distribution of diagnostic elements in root clauses where a non-pronounal constituent has been fronted before the non-pronounal subject.

<table>
<thead>
<tr>
<th>Preverbal</th>
<th>Postverbal</th>
<th>Total</th>
<th>% Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particles</td>
<td>5</td>
<td>510</td>
<td>50.0%</td>
</tr>
<tr>
<td>Stranded propositions</td>
<td>0</td>
<td>1</td>
<td>100.0%</td>
</tr>
<tr>
<td>Negative objects</td>
<td>2</td>
<td>6</td>
<td>66.7%</td>
</tr>
<tr>
<td>Pronominal objects</td>
<td>67</td>
<td>15</td>
<td>83.3%</td>
</tr>
</tbody>
</table>

Table 16: Position of diagnostic elements in OE root clauses with XP - subject - finite verb constituent order
Although the number of clauses in Table 16 is small, the fact that diagnostic elements appear in both preverbal and postverbal position shows that the occurrence of V=2 orders cannot simply be related to head-final clause structure. Instead, OE exhibits word orders that are genuine violations of V2 even in head-initial contexts.

The picture of OE root clause syntax that we obtain then is one that removes OE considerably further from the modern Germanic languages than was previously thought in much generative work. Our findings suggest that (1) OE had a large number of root clauses in which the finite verb occupies the head of a head-final projection, a phenomenon which cannot be found in modern Germanic; (2) OE does not behave like a V2 language, contrary to most of the modern Germanic languages with the exception of English.

The conclusions reached in this article also have implications for the analysis of the transition from OE to Middle English (ME). Whereas in early generative work, the structural changes between these two periods were considered as very substantial and abrupt, more recent work (e.g. Pintzuk 1999; Pintzuk and Taylor 2006) suggested a slightly smoother transition: there was already considerable variation in head-final/head-initial structure in OE, and ME simply represented the end point of a gradual increase in head-initial structure. However, the results presented here seem to open the gap between OE and ME once again since the drop in the frequency of head-final structure must have been rather substantial, not only in subordinate clauses but also in root clauses: Kroch and Taylor (2000) find very little evidence for head-final clausal structure in Early Middle English.

Many questions remain unanswered. Until we reach a better understanding of why there is variation in the frequencies of head-final constituent order for clauses with particles, stranded prepositions and negative objects, and what syntactic/semantic/discourse factors significantly influenced the choice of head-initial vs. head-final structure for OE speakers, we will not be able to form a coherent picture of OE syntax and the change from OE to Middle English.

Acknowledgements

We would like to thank audiences at the 4th Holland-York Symposium on the History of English Syntax (University of Leiden, May 2005), the University of Konstanz (October 2005), the University of Ottawa (October 2005), the Syntax and Semantics Research Group (University of York, February 2006), Directions in English Language Studies (University of Manchester, April 2006), and the 9th Diachronic Generative Syntax Conference (University of Trieste, June 2006) for their comments and suggestions, and Ann Taylor for much helpful discussion. Any remaining errors are our own. The authors’ names are in reverse alphabetical order.

Notes

1 Throughout this article, we will assume the occurrence of head-final projections, contra Kayne (1994) and much subsequent work according to which synthetic structure is uniformly head-initial. As shown by Pintzuk (2002, 2005), no satisfactory Kayanian analysis has so far been proposed for OE, and it is preferable for our purposes not to introduce the additional derivational complexity that head-initial approaches require. However, the issue of whether head-final projections exist is not relevant for many of the points made in this article. The empirical findings reported here and their diachronic implications must be accounted for regardless of the structural analysis that is adopted.

2 The data in this article are taken from The York-Toronto-Helsinki Parsed Corpus of Old English Prose (Taylor, Warner, Pintzuk and Belts 2003, henceforth YCOE), a 1.5 million word syntactically annotated corpus, cited examples follow the referencing conventions of that corpus. In examples (1) through (3), the finite verb is underlined, and the subject is in italics.

3 We also assume that VPs can be either head-initial or head-final (see Pintzuk 2005), even though in the structures in this article most VPs are shown as underlyingly head-final.

4 See Haederli (2002b) for such an analysis, where pronominal subjects normally occupy [Spec,AgP] and full DP subjects normally occupy [Spec,TP].

5 Implicit here is the common assumption that, apart from a few specific exceptions, elements are generally not merged in IP or CP.

6 There is a third context that could be included: clauses with at least two full DP arguments preceding the finite auxiliary and non-finite main verb. These are verb (projection) raising clauses; see Haederli and Pintzuk (2006) for discussion. Our database contains only two examples of this type with diagnostic elements, so they will not be included in the data in Tables 1 through 4.

7 Context (4b) is restricted to two full DP arguments in preverbal position to avoid potential complications with pronominal arguments. Pronominal arguments of all types have been analysed as clitics or weak pronouns that can occupy structural positions that are not available to full DP arguments. For example, the placement of a pronominal object between a specifier and a head (e.g. through adjunction to the head) may not be entirely excluded; or they may occupy the specifier of their own projection. Hence, in order to weaken 'DP-VP...V' as a diagnostic for head-final IP, clauses with pronominal arguments have been excluded. It is not necessary that one of the two arguments be the subject of the clause, as long as both arguments are non-pronominal; this context includes, for example, relative clauses with subject gaps and two non-pronominal objects.

Similar considerations led us to exclude other constituent orders as well. For example, it could be argued that the order 'full DP subject - adjunct - VP' indicates head-final structure, since it is not obvious what structural positions the two preverbal constituents could occupy before I in head-initial IP. However, this context is not conclusive. Modern English sentences like You certainly should do that suggest that at least some adjuncts can be 1'-adjuncts. Other analyses of the Modern English data are of course possible, but such considerations shed doubt on the claim that 'full DP subject - adjunct - V' orders indicate head-final structure in OE, and we therefore did not include them for our analysis.

Note finally that the clause types considered here cannot be used to directly measure the frequency of head-final structure in OE. For example, although 'V-Aux' indicates head-final structure, the corresponding order 'Aux-V' does not necessarily indicate head-initial structure, because 'Aux-V' can also be derived from a head-final IP through rightward movement of the non-finite main verb or a projection containing it (Verb Raising or Verb Projection Raising, cf. Haederli & Pintzuk 2006). Similarly, although 'DP1 V DP2' indicates head-final structure, 'DP1 V DP2' is structurally ambiguous, as was shown in (4) above.

8 The figures in this table (and those given in later sections) do not include cases of the type shown in (2), where the particle immediately precedes a locative or directional PP, because particles like 'at' or 'out' in this example could be analysed as occupying the specifier position of the PP.
9 CP-recursion would permit topicalisation in subordinate clauses.

10 Note that (10a) and (10b) have unusual characteristics in addition to the post-verbal stranded preposition. In (10a), the preposition has been stranded by the full DP object alicem mena "each man" rather than by a pronoun object, and this does not frequently occur in OE: full DP objects normally remain immediately after their prepositions. In (10b), the DP that we have translated as the subject (congigand here "invading army") has also been postposed; postposition of subjects is possible in OE but again not very common. In addition, the participial adjective is case-marked dative rather than nominative. Skeat (1966: 255) translates this clause as "that there would come to it (some one) with an invading army", with an empty subject and an instrumentalative DP.

11 Pintzuk (2005) shows that non-negative objects postpose in 'V-Aux' clauses at a frequency of about 15%.

12 It is possible to interpret the postverbal pronoun in (14) as an emphatic appositive rather than a reflexive. It would then be excluded from these counts.

13 If these elements do move rightward, as might be argued on the basis of the few potential counterexamples shown in (8), (10) and (14), they do so at very low frequencies (up to 1.3%). For our purposes such a conclusion is sufficient. A low-frequency phenomenon would not interfere with our structural analysis of OE constituent order in a significant way, and we therefore can safely treat these elements as fixed with respect to rightward movement.

14 We assume that the frequency of head-final and head-initial structure in clauses with movement to the left of the subject, like those in (17), is the same as in clauses with diagnostic elements below the subject. There is no prior reason to think that directionality varies from one context to another.

15 We do not discuss leftward movement of stranded prepositions here, because it is difficult to determine their underlying position: since PPs may be either arguments or adjectives, they may be merged in different structural positions. Therefore separation of the stranded preposition from the verb does not necessarily indicate movement.

16 The data in Table 5 include clauses with overt subjects and diagnostic elements before the verb. The total N in each case is the sum of (1) the number of clauses with the diagnostic separated from the main verb and (2) the number of clauses with the diagnostic adjacent to the main verb where the clause contains at least one additional constituent over which the diagnostic element could have scrambled. The structure of double object constructions in OE is a topic of some debate (see Morgan 2005 for evidence that the underlying order of objects varies in OE). Therefore we assume that the two objects in double object constructions are equidistant from the verb, and adjacency for negative and pronominal objects in double object constructions is treated as follows: those objects are considered adjacent to the verb when they are separated from the verb by the second object; i.e. in (0), the object ne halw heano 'no heat' is considered adjacent to the verb ne godod 'NEG give'. Sentences like (i) where there is no additional constituent to the left across which the object could have scrambled are therefore not included in the total N for 'S,... X (...) VV' clauses with negative objects in Table 6. Similarly, clauses like (ii) are not included in the total N for 'S,... X (...) VV' clauses with negative objects, since it is not clear that the reverse order mensegum man pat cyde would be derived by scrambling rather than by an alternate underlying order.

17 Once again (cf. also section 3.1), an additional possibility is available in root clauses: multiple topicalisation of the preverbal elements to CP. However, as pointed out earlier, there is little evidence that this option is frequently used in OE.

18 With respect to the derivation of these examples, we will not attempt to determine the most appropriate analysis among those listed in (i) to (ii), after example (24) above (or possibly among other structural analyses of clitics or weak pronouns).

19 Recall that stranded prepositions did not occur in pre-subject position either (see Table 5).

20 Clauses of the type 'AUX (X2) VV (X2)' with two diagnostic elements, one of them postverbal, would provide additional information on whether diagnostic elements can move leftward. However, there are only three clauses of this type in the YCOE: one clause with two preverbal pronoun objects, one with a non-finite and one with a postverbal negative object. These clauses provide additional evidence that pronouns can move leftward, but do not help us with the other diagnostic elements, particularly particles.

21 See Pintzuk and Taylor (2006) for a discussion of the dating of OE texts. Note that all texts, including those that could not be dated, were included in the Totals, so that the numbers in this column are not always the sum of the numbers for the early and late texts.

22 Note that although Table 10 shows a small increase in the frequency of head-final order in subordinate clauses from the early period to the later period, the difference is not statistically significant by a chi-square test (chi-square = 0.027, p > 0.1).

23 It is interesting and may be relevant that both of our examples of clauses that seem to be derived by leftward movement of the particle (see (30)) are from texts that have been translated from Latin sources, Orvisia and the West-Saxon Gospels.

24 We assume that the rate of leftward movement of pronouns in head-initial structure is the same in all clause types. The method of calculating the results in Table 14 is as follows for root clauses: the total number of clear head-initial root clauses in Table 12 is N = the number of O-VV order, i.e. 3025 + 2315 = 3885. This number corresponds to 49.5% of the head-initial clauses, as the object has moved leftward in the remaining 50.5%. The actual number of head-initial clauses is therefore 810.495 = 1628 (rounded from 1636.36), and the actual number of head-final clauses is therefore 3025 - 1628 = 1397. We thus obtain a frequency of head-final structure in root clauses of 1397/3025 = 45.9%. The adjusted frequencies for conjoined and subordinate clauses are calculated in the same way.

25 This option was considered but then rejected in Haebler (2003: 250, 2002a: 90, fn. 1) mainly on the basis of the assumption (shown to be unjustified in this article) that head-final clauses are not sufficiently frequent in OE to account for all V-O orders.
References


