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# When information structure exploits syntax: The relation between the loss of VO and scrambling in Dutch<sup>1</sup>

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This paper addresses the relation between two types of word order variation in two stages of Dutch: OV/VO variation in historical Dutch and scrambling in present-day Dutch. Information structural considerations influence both types of word order variation, and we demonstrate by means of a comprehensive corpus study that they have a comparable pattern: given objects tend to appear earlier in the sentence than new objects. We infer from this that the two types of word order variation are diachronically related. Our findings support an analysis of scrambling as object movement from a uniformly head-initial base via the specifier of VP to the specifier of *v*P. We argue that historical Dutch allows spell out of the object in its postverbal base position, but that this possibility was eventually lost. Consequently, the boundary between the given and new domains shifts from the verb to the adverbial.

**KEYWORDS:** copy theory of movement, Dutch, historical Dutch, information structure, OV/VO variation, scrambling

## 1. INTRODUCTION

The position of direct objects in Dutch clauses has always known a certain freedom. In Middle Dutch (1150–1500) and early New Dutch (1500–1700) (henceforth referred to collectively as historical Dutch), direct object DPs appear in postverbal (VO) or preverbal position (OV), illustrated in (1), both from the end of the

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thirteenth century. In (1a), the object *dat hues terhurst* ‘that Huis ter Horst (a castle)’ is placed to the right of the main verb *genomen* ‘taken’, and the object *dat riet* ‘that reed’ in (1b) is placed to the left of the main verb *ghemaect* ‘made’.<sup>2</sup>

(1) (a) *VO in historical Dutch*

dat ic hebbe genomen **dat hues terhurst** bi  
that I have taken that Huis ter.Horst by  
wille mijns heren  
will mine lord

‘that I have taken that Huis ter Horst by the will of my lord.’

Gysseling\_1502A\_1296

(b) *OV in historical Dutch*

die **dat** **riet** ghemaect hadde  
who that reed made had

‘who made that reed.’

Gysseling\_1340\_1294

The postverbal object position was lost from the Dutch language around the sixteenth century. However, Dutch still allows variation with respect to the position of the object vis-à-vis the position of adverbials. This phenomenon, known as *scrambling*, is illustrated in (2). The object *het boek* ‘the book’ may appear to the left or to the right of the clausal adverb *waarschijnlijk* ‘probably’.

- (2) dat Jan (**het boek**) waarschijnlijk (**het boek**) las.  
that Jan the book probably the book read  
‘...that Jan probably read the book.’

OV/VO variation and scrambling have both been argued to regulate the information structural partitioning of the clause. From very early on, grammarians have been aware that given information tends to precede new information (Weil 1844; Behaghel 1909). Dutch is no exception in this regard. Preverbal objects in historical Dutch and objects that appear in a position to the left of the adverbial (scrambled objects) in present-day Dutch are often claimed to convey given information, while postverbal objects and unscrambled objects, which appear to the right of the adverbial, are claimed to convey new information (cf. Burridge 1993; Coussé 2009 on OV/VO; Schoenmakers, Poortvliet & Schaeffer 2021 and sources cited there on scrambling).

This raises the question if, and if so, how, historical Dutch OV/VO variation and present-day scrambling are related. Based on a comprehensive corpus study of Dutch written between the thirteenth and nineteenth century, we demonstrate that OV/VO variation and scrambling serve a similar purpose, because in both

[2] The text references have the following format: Corpus\_DocumentID\_Year of publication. We refer the reader to Section 3 for details regarding the text selection and the Appendix for an overview of the texts included in this study.

cases the position of the object is (in part) dependent on information structure. However, while scrambling was already a syntactic option in historical Dutch, its information structural effect only emerges as the postverbal object position loses its productivity.

We demonstrate that new objects typically occur in postverbal position in earlier stages of Dutch, although they are attested in preverbal position as well. Given objects surface in preverbal position in the majority of the cases. There are no clear indications of information structural restrictions on scrambling as long as VO is a productive option in historical Dutch (until the sixteenth century). Once new objects start to appear in preverbal positions more frequently, scrambling becomes sensitive to information structure. The boundary between the information structural domains in which given and new information is expressed thus shifts from the verb to the adverbial in the so-called middle field of the clause. The loss of VO entails the loss of an important pragmatic marker, and we show that the syntax of Dutch allows enough flexibility to generate a new information structural division within the topological region to the left of the verb, with the adverbial as the novel boundary between information structural domains.

We present an analysis of Dutch object placement which allows a natural transition from a language that marks information structure by means of OV/VO variation to a strict OV language which does so by means of scrambling. We build on the antisymmetric analysis of Dutch scrambling proposed in Broekhuis (2008), and argue that OV/VO variation and scrambling both result from the same process. Specifically, we argue that objects are generated in postverbal position and consequently move to structurally higher positions in the extended projections of VP and vP to check structural features, leaving behind copies in each intermediate position. Which of these copies is spelled out depends on (discourse-pragmatic) interface conditions. The lowest, postverbal, spell out option is lost after the sixteenth century, restricting the variation in surface position of the object to the middle field.

The paper is organized as follows. Section 2 sets out the key issues and patterns that play a role in Dutch object placement, from a diachronic and a syntactic perspective. Section 3 presents our approach to the corpus data. The results are presented and discussed in Section 4. Section 5 presents our analysis of Dutch clause structure. Section 6 concludes.

## 2. VARIATION IN DUTCH OBJECT PLACEMENT

Present-day Dutch is generally considered an asymmetric SOV language, with obligatory V2 in the main clause. Koster (1975) was the first to argue, on the basis of a number of distributional tests, that the position of the finite verb in main clauses is derived from a clause-final position. Although the object follows the verb in main clauses with only a finite verb, Koster shows that this is a surface phenomenon. He demonstrates that verb particles are stranded in clause-final position (*hij belde het meisje op* ‘he calls the girl up’). In main clauses with more than one verb, the non-finite verb remains in clause-final position and the object is preverbal (*hij heeft het*

Prefield	Left bracket	Middle field	Right bracket	Postfield
<i>Hij</i> he	<i>moest</i> should	<i>inderdaad het paper</i> indeed the paper	<i>inleveren</i> submit	<i>op woensdagmiddag</i> on Wednesday afternoon
...	<i>dat</i> that	<i>hij inderdaad het paper</i> he indeed the paper	<i>moest inleveren</i> should submit	<i>op woensdagmiddag</i> on Wednesday afternoon

Table 1

Illustration of topological regions and the ‘brace’ construction in Dutch clauses.

*meisje opgebeld* ‘he has the girl up.called’). Since there is no V2 movement in subclauses, DP objects always precede the verb in these cases (*dat hij het meisje opbelt* ‘that he the girl up.calls’). From this perspective, Dutch is an SOV language. These observations do not preclude an antisymmetric (cf. Kayne 1994) approach to Dutch clause structure, however. In fact, in later work Koster argues that SOV-clauses in Dutch are derived from underlying SVO structure (Koster 1999; see also Zwart 1993, 1997).<sup>3</sup> We will pursue such an analysis in Section 5.

The syntax of both present-day and historical Dutch is frequently approached from the perspective of topological fields, or a so-called *tang* ‘brace’ construction, illustrated in Table 1 (first applied to Dutch by Paardekoooper 1955). In main clauses, the finite verb in V2 position marks the left bracket of the brace and the non-finite verb in clause-final position marks the right bracket. In subclauses, the complementizer serves as the left bracket and the verb(s) in clause-final position as the right bracket.

The assumption of a brace construction as a descriptive template allows differentiation between a prefield (material preceding the left bracket), a middle field (material between the left and the right bracket), and a postfield (material following the right bracket). The locus of variation in object placement in historical Dutch is between the middle field and postfield: direct objects appear in the middle field (preverbally) or in the postfield (postverbally). The locus of variation in present-day Dutch is in the middle field (scrambling). We will discuss both types of variation in turn.

## 2.1 OV/VO variation in historical Dutch

OV/VO variation is one of the main syntactic characteristics of older (West) Germanic language varieties and sparked a vigorous debate on word order typology as well as on the analysis of individual languages (see e.g. Van Kemenade 1987; Pintzuk 1999; Taylor & Pintzuk 2012; De Bastiani 2019; Struik & Van Kemenade

[3] However, Koster (2008) argues later for the return to the classical, pre-minimalist analysis of Dutch.

2020, 2022 on Old English; Petrova 2009; Sapp 2016 on Old High German; Sapp 2014 on Middle High German; Walkden 2014; Struik 2022b on Old Saxon and Middle Low German). This is also the case for historical Dutch, although traditional analyses often (implicitly) assume historical Dutch to be an OV language. VO order is usually accounted for by an extraposition rule, which is taken to be more liberal than in present-day Dutch, which only allows full clauses (CPs) and non-predicative PPs in postverbal position (see Zwart 2011).

Burridge (1993: ch. 3) approaches OV/VO variation in Middle Dutch from a topological perspective, and employs the term ‘exbraciation’, that is, displacement of material to a position outside of the brace. Similarly, Neeleman & Weerman (1992: 189) assume VO structures to be ‘leakages in the older West-Germanic OV structures’. Most studies only give a descriptive overview of observed VO constructions and do not directly address the issue of underlying clause structure (e.g. Gerritsen 1978; De Meersman 1980; Van den Berg 1980). Gerritsen (1987), Blom (2002), and De Schutter (2003) are notable exceptions, and all conclude on the basis of frequency that Middle Dutch is an OV language. Gerritsen (1987) adds as evidence that pronouns are always OV and argues that, since Proto-Indo-European was considered an OV language, positing a change from OV to VO and then back to OV is conceptually undesirable. An argument for Blom (2002) to assume that OV is the base order in Middle Dutch is that VO is only available under specific conditions: it can only be used when the object contains a relative clause or when the object belongs to the focus of the clause.

Weerman (1987, 1989) is one of the few who provides a syntactic analysis of OV/VO variation in historical Dutch. He argues that languages allow both orders at D-structure (in government-binding terms), since theta roles are assigned hierarchically and not directionally. However, constituent orders must be licensed at S-structure, which is assigned directionally following Case Theory. Weerman argues that present-day Dutch assigns case exclusively to the left, which results in basic OV order. His analysis of VO orders rests on the assumption that constituents can escape Case assignment if they have their own licenser, which Weerman claims is, at earlier stages, morphological case. This means that in Middle Dutch, which distinguished four morphological cases, the choice between OV and VO is essentially free (from a syntactic perspective). However, Dutch (largely) lost morphological case marking, which according to Weerman (1987, 1989) means that a postverbal object can no longer be licensed. As a result, VO order is lost. A potential problem for such an analysis is the observation that German retained its inflections but, like Dutch, became more rigidly SOV. This suggests that more factors come into play in the process of word order change. We will come back to this point in Section 5.2.

Much of the discussion in (recent) literature on OV/VO variation in historical West Germanic revolves around the influence of information structure. The hypothesis that preverbal objects convey given information and postverbal objects new information has been explored for many (West) Germanic language varieties (see e.g. Burridge 1993; Bech 2001; Blom 2002; Coussé 2009; Petrova 2009, 2012;

Petrova & Speyer 2011; Taylor & Pintzuk 2012; Walkden 2014; De Bastiani 2019; Struik & Van Kemenade 2020, 2022). Understanding the nature of the variation helps to inform the syntactic analysis of a language. Struik & Van Kemenade (2020, 2022), for instance, show for historical English that objects in preverbal position predominantly express given information, while objects in postverbal position can be given or new. They take this as evidence for an analysis of historical English as a VO language, with leftward object movement that is driven by information structure.

The effect of information structure has also been explored in earlier studies of Middle Dutch. Burrige (1993: 107), for example, claims that ‘exbraciated material is likely to be non-topical material, i.e. usually unknown information, which cannot be understood from the context and which is not shared by speaker and hearer’. Burrige, however, is concerned with all types of sentence material that can be exbraciated, and bases her conclusions on general characteristics of grammatical categories, rather than on annotation of individual objects (e.g. objects are more likely to exbraciate than subjects, because they more frequently convey new information).

Blom (2002) notes that one of the factors responsible for VO order in Middle Dutch is that the object belongs to the focus of the clause as well.<sup>4</sup> Blom studies the characteristics of postverbal objects in three different text genres: official texts, religious texts, and narratives. She observes that objects of naming verbs, such as *noemen* ‘call’ and *heten* ‘call’, are always postverbal, and maintains that this is due to the fact that this information is never part of the common ground. She also observes that there is a large amount of VO structures in official texts, which she claims is because direct objects in these clauses ‘encode the item that is at the heart of the legal agreement’ (Blom 2002: 18). Similarly, Coussé (2009) uses the determiner as a proxy for information structure (following Givón 1988) and finds a relation between the definiteness of objects and their surface position: indefinite objects, which typically convey focused information, are more likely to appear postverbally than definite objects, which typically convey non-focused information.

## 2.2 *Scrambling in present-day Dutch*

VO word order is lost from the Dutch language around the sixteenth century (see Coussé 2009), which restricted variation in object placement to the middle field,

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[4] Focus (or non-topicality) and discourse-newness are related terms that are sometimes used interchangeably in the literature. However, the two terms do not refer to the same concepts. Foci are elements that express informative or contrary-to-expectation material (sometimes also called rheme or comment; see De Swart & De Hoop 2000). Although foci typically convey information that is new to the discourse, this is not necessarily the case, as evidenced by the discourse-given focus in (i).

- (i) Speaker A: Who does John’s wife love?  
Speaker B: John’s wife loves [JOHN]<sub>Focus</sub>.

as in (2). While experimental and corpus studies investigating this type of variation are scarce, various syntactic analyses have been proposed to account for scrambling in the theoretical literature (Verhagen 1986; Vanden Wyngaerd 1989; Zwart 1993; Neeleman 1994; De Hoop 1996, 2003; Neeleman & Reinhart 1998; Koster 1999, 2008; Schaeffer 2000; Broekhuis 2008; Neeleman & Van de Koot 2008; Schoenmakers 2020). There is a consensus that information structure also plays a crucial role in scrambling. The literature discusses topicality (or aboutness, see Reinhart 1981), discourse-anaphoricity (i.e. explicit mention in previous discourse), and presuppositionality (the level of activation of a referent in the common ground; cf. *accessibility* in Ariel 1990). Schoenmakers et al. (2021) find in a language production study that the topicality status and the discourse-anaphoricity of definite objects induce distinct effects on their position in the middle field. In general, however, scrambling follows the given-before-new pattern: given objects (topical or anaphoric) are most frequently produced to the left of the adverb (i.e. in scrambled position), while new objects (focused or non-anaphoric) are typically located to their right (i.e. in unscrambled position) (see also Verhagen 1986).

Such an information structural partitioning is supported by the fact that pronouns, which typically convey given information, appear in scrambled position almost obligatorily (but not if they receive contrastive stress, for example, see Bouma & De Hoop 2008), as illustrated in (3).

- (3) (a) #We moeten eerst **hem** voeren  
           we had.to first him feed  
       (b) We moeten **hem** eerst voeren  
           we had.to him first feed  
           ‘We had to feed him first.’

This contrast is reflected in the corpus data reported in Van Bergen & De Swart (2009, 2010), who investigate the scrambling behavior of different kinds of objects in spoken Dutch: 99% of pronouns in their dataset appear in scrambled position. Only 2% of indefinite objects, which typically convey new information, are scrambled. They find most variation with proper names (53% scrambled). Van Bergen & De Swart find only 12% of definite objects in scrambled position. This is surprising, given that, on the assumption that the determiner can be used as a proxy for information structure (Coussé 2009), definite objects are expected to convey given information and hence to appear in scrambled position. Even more striking is that the authors also annotate for anaphoricity and find that only 22% of anaphoric definite objects are located in scrambled position. This finding contradicts most theoretical literature where a strict discourse template is postulated in which given objects obligatorily occur in scrambled position (see Schoenmakers 2022; Broekhuis 2021 for discussion).

Van Bergen & De Swart (2009) note that speakers are more likely to use a pronoun instead of a full DP when the object is anaphoric. However, Schoenmakers & De Swart (2019) find in an experimental study, in which participants are forced to

use definite DP objects, that they are produced in scrambled position in 45% of the trials with a clause adverb. Schoenmakers et al. (2021) find in a follow-up study that definite objects which are anaphoric are produced in scrambled position from 42% to 57% (depending on the condition), whereas non-anaphoric (focused) definite objects are produced in scrambled position in only 34.5% of the trials. Even though the proportion of scrambled anaphoric definites is much higher than that in the corpus data reported in Van Bergen & De Swart (2009, 2010), the information structural partitioning in scrambling clauses in both studies is nowhere near categorical.

These data cannot readily be accounted for by most theoretical approaches to Dutch scrambling, which link the information structural effect to a post-syntactic mapping rule that maps a discourse-anaphoric interpretation onto the scrambled position (e.g. Neeleman & Van de Koot 2008), or to Cinque's (1993) NUCLEAR STRESS RULE: objects in unscrambled position typically carry the main stress of the clause, and given that stress corresponds with new information focus assignment (e.g. Chomsky 1971; Jackendoff 1972; Cinque 1993), objects in this position are interpreted as information that is new to the discourse (e.g. Neeleman & Reinhart 1998; Broekhuis 2008). Objects in scrambled position, by contrast, undergo a process of anaphoric destressing (Reinhart 2006) and convey information that is already available in the context set. Such analyses predict that given objects obligatorily occur in scrambled position and new objects in unscrambled position (but see Van der Does & De Hoop 1998; De Hoop 2003 for notable exceptions).

Little is known about the diachrony of scrambling in Dutch. To our knowledge, this phenomenon has never been addressed in the literature on historical Dutch syntax. It is easy to show, however, that it is at least a syntactic option: we find objects in a position immediately left-adjacent to the verb, as in (4a), but also in a position on the left of an adverbial, as in (4b).

- (4) (a) naedat sij op ten xviii. julij **haer legher te**  
 after they on the 18 july their army at  
**Heyloe** opgebroken hadden  
 Heiloo dissolve had  
 'after they had broken up their army stationed at Heiloo on 18 July.'  
 CLVN\_Nanning van Forest\_1573–83
- (b) dat diegene die dat bijer buten vueren  
 that the one who that beer outside carry  
 sellen **dat teyken daeraf**  
 will that proof thereof  
in den poerten toenen sellen  
 in the gates show will  
 'that the one who transports the beer out will show proof thereof at the gates.'

CLVN\_ Utrecht\_1530–1539



It is not clear, however, whether scrambling was already information structurally motivated in historical Dutch in the same way as in present-day Dutch. This raises the question if, and how, scrambling is related to OV/VO variation.

### 2.3 *The relation between OV/VO variation and scrambling*

The discussion above shows that Dutch allows (at least) three object positions throughout its history: V-O, Adv-O-V, and O-Adv-V. The literature suggests that OV/VO variation in historical Dutch and scrambling in present-day Dutch serve a similar purpose; they differentiate the information structural domains of given and new information. This leads to the hypothesis that the two types of variation are diachronically related: the loss of VO entails the loss of an important pragmatic marker and hence entails a shift in the locus of information structure encoding.

The next sections report on a corpus study of historical Dutch in which we investigate how the relation between syntax and information structure develops over time. We hypothesize that there is an information structural effect on OV/VO in the earliest part of our dataset. More specifically, we expect to find given objects in preverbal position, while new objects surface in postverbal position. As long as VO is a productive option in Dutch, we do not expect an information structural effect of scrambling since we expect OV objects to be given. As the frequency of VO reduces, the verb loses its status as the boundary between information structural domains. Information structure then ‘exploits’ syntax to find a new way to distinguish between given and new information. Specifically, we expect that scrambling does not have a clear discourse-related function in the earlier stages of Dutch and only becomes information structurally distinctive around the sixteenth century when VO is no longer a productive syntactic option.

## 3. MATERIALS AND METHODOLOGY

We studied a comprehensive selection of historical Dutch texts to test the hypotheses introduced in the previous section. Relevant clauses were manually collected from various sources over the time period between 1250 and 1900. The online version of Corpus Gysseling (2021) was used for thirteenth century material and the Corpus Van Reenen–Mulder (CRM) (Van Reenen & Mulder 1993) for fourteenth century material. The majority of the texts in CRM are short charters, so we supplemented this material with several longer texts from the Corpus Laattmiddelen Vroegnieuwonderlands (CLVN) (Van der Sijs, Van Kemenade & Rem 2018). The CLVN was also the source for fifteenth, sixteenth, and seventeenth century material. We used the Compilatiecorpus Historisch Nederlands (CHN) (Coussé 2010) for narrative texts from the late sixteenth century onwards. From each corpus, a representative sample of texts was selected based on the localization of each text. We excluded texts from the (north-)eastern part of the Netherlands to avoid potential influence from German, Low Saxon, and Frisian. The main body of texts

originate from Holland, Utrecht, and Flanders. We supplemented the dataset with several religious texts to balance the overwhelmingly official nature of the earlier texts. This procedure resulted in a corpus of approximately 700,000 words. A complete overview of the material is given in Appendix A.

For each text in our selection, we manually selected all subclauses with a direct object, a finite verb (excluding forms of *zijn* ‘be’ to exclude passives), and a non-finite verb (excluding *te* ‘to’ infinitives). Selecting clauses with two verbs ensures that there is no effect of (finite) verb movement on the order of the main verb and the object. Indirect objects were excluded, because their behavior is not comparable to that of direct objects. Although indirect objects do appear in postverbal position in historical Dutch, it is unclear whether they are subject to the same constraints as direct objects. Burridge (1993) notes that indirect objects are not as likely to appear postverbally as direct objects, but this might be because they are mostly pronouns in her sample. Research on Old English indicates that there is no conclusive regularity in the placement of indirect objects (Koopman 1990) and that information structure does not seem to play a role (Struik & Van Kemenade 2020). We leave the behavior of indirect objects for future research. Further, we excluded pronominal objects, as these are categorically OV. While it might be argued that pronouns are always preverbal because they are prototypically given, their syntactic status is different from that of full DPs. Pronouns are prosodically light elements and might be analyzed as clitics (see Van Kemenade 1987; Van Bergen 2003; Pintzuk 2005 and the sources cited there for discussion of the status of pronouns in Old English; and Zwart 1996 for a discussion of Dutch weak pronouns as clitics). We also excluded clausal objects as these are categorically VO (cf. Gerritsen 1987; Burridge 1993).

After collecting relevant clauses, each object was manually annotated for INFORMATION STATUS. Our annotation is based on a simplified version of the Pentaset (Komen 2013) and follows the methodology in Struik & Van Kemenade (2020, 2022). The annotation is based on the referentiality and anaphoricity of each individual object in the discourse, and, crucially, not on the morphosyntactic properties of the object (e.g. as in Coussé 2009). The main reason for this is that the mapping between the morphosyntactic properties of an object and its information status is not one-to-one. For instance, we find definite objects in all categories of our annotation scheme, as definiteness may indicate anaphoricity, but also uniqueness and/or existence without an explicit antecedent. Second, the determiner system (and hence the way definiteness and information structure are marked) is not diachronically stable, yet it has received little attention in the literature on Middle Dutch (but see Van de Velde 2010). Studying the diachronic effect of information structure on word order variation using the definiteness system with synchronic assumptions as a proxy would confound our conclusions: the results would then reflect the effect on a changing determiner system on OV/VO variation and scrambling, but not the effect of information structure itself.

We annotate objects as GIVEN if they are mentioned in the preceding discourse (*Identity* in the Pentaset), as in (5a). The object *die vorseide kerke* ‘the

aforementioned church’ is mentioned in the preceding discourse, which is also indicated by the adjective *vorseide* ‘aforementioned’. Objects are also annotated as GIVEN if their referent can be inferred from previous discourse (*elaborating inferables* in Birner 2006; *Inferred* in the Pentaset). This is illustrated in (5b), where *zyn ambocht* ‘his trade’ can be inferred from *gildebrueder* ‘guild brother’ mentioned earlier in the text, since members of a guild all practice the same trade. Finally, objects are annotated as GIVEN if they can be assumed to be familiar to the audience (*Assumed* in the Pentaset), i.e. if they represent encyclopedic or world knowledge, such as *de brandende hel* ‘the burning hell’ in (5c).<sup>5</sup>

(5) (a) *Identity*

dat sie **die vorseide kerke** daer scadeloes  
 that they that aforementioned church there without.damage  
 ende vri souden houden  
 and free would keep  
 ‘that they would indemnify the aforementioned church.’

Gysseling\_0681\_1286

(b) *Inferred (elaborating)*

ende **zyn ambocht** binnen der stat van Vtrecht niet  
 and his trade within the city of Utrecht not  
 geleert en had  
 learned NEGhad  
 ‘and had not learned his trade within the city of Utrecht.’

CLVN\_Utrecht\_1470–79

(c) *Assumed*

als of ik **de brandende hel** met een stukje  
 as if I the burning hell with a piece-of  
 houtskool op graauw papier wilde schetsen  
 charcoal on gray paper wanted sketch  
 ‘As if I wanted to sketch the burning hell with a piece of charcoal  
 on gray paper.’

CHN\_paape\_1789

[5] An anonymous reviewer notes that collapsing the categories of Identity, Inferred, and Assumed into one category Given may gloss over semantico-pragmatic phenomena that interact with syntax differently, noting that Inferred and Assumed objects are different from Identity objects in that the former do not have an explicit textual referent. Schwarz (2009) demonstrates that these types of objects have different morphological reflexes in present-day German in the form of a weak and strong article to distinguish anaphoric definites from definites denoting uniqueness + existence. Our findings do not suggest that there is a syntactic difference between Identity objects, on the one hand, and Inferred and Assumed, on the other hand, nor that they are marked differently. Identity, Inferred, and Assumed objects occur in preverbal and scrambled position at comparable frequencies, especially compared to new objects – we thus feel it is justified to collate the three categories into one category Given (see also Taylor & Pintzuk 2014; Struik & Van Kemenade 2020, 2022 who arrive at the same conclusion for Old English).

Objects that are newly introduced in the discourse are annotated as *NEW*. For example, the object *Anthuenis Inffroot* in (6a) is not mentioned before and is new to the discourse. When the object is linked to an antecedent, but the relationship does not inherently follow, the object is also annotated as *NEW* (*bridging inferables* in Birner 2006). *Basilica* ‘basilica’ in (6b), for example, is linked to the preceding discourse by the adjective *naastgelegen* ‘adjacent’, which refers to a temple that has been mentioned before. However, the existence of a temple does not imply the existence of a basilica and, therefore, the object’s referent is new to the discourse.

(6) (a) *New*

dat Ferry Bertram, bailliu van  
 that Ferry Bertram, governor of  
 den Proosschen, of zijn dienaers als  
 the Proossche, or his servants as  
 ghisteren ghevanghen hadden **Anthuenis**  
 yesterday captured had Anthuenis  
**Inffroot**, poortere der voorsejde stede  
 Inffroot, citizen the.GEN aforementioned city  
 ‘that Ferry Bertram, governor of the Proossche, or his servants  
 captured Anthuenis Inffroot, citizen of the aforementioned city  
 yesterday.’

CLVN\_Brugge\_1510–1520

(b) *Inferred (bridging)*

Nadat men **de naastgelegen basilica** gezien  
 after they the adjacent basilica seen  
 had die echter den indruk van  
 had which however the impression of  
 Poseidoons tempel niet kan evenaren  
 Poseidon.GEN temple not could match  
 ‘After they had seen the adjacent basilica, which, however, could not  
 match the impression of Poseidon’s temple...’

CHN\_Vosmaer\_1880

In some cases, objects are non-referential, because they are abstract, quantified or negated, part of a fixed expression, or for some other reason do not refer to a real-world referent. These objects are annotated as *INERT* and were discarded prior to statistical analysis. The category of Inert objects is diverse, and contains objects which may have different syntactic statuses. The object in (7) is Inert, because it is part of the fixed expression *twist maken* ‘argue’ (lit: ‘battle make’) and which may be a case of pseudo-incorporation (Booij 2008). The Inert object in (8) is non-referential because it denotes a quantity and does not establish a specific discourse referent. Its syntactic status is different from the object from (7) in that it cannot (pseudo-)incorporate with the verb, but it is unclear whether the syntactic status of quantified objects is the same as that of referential objects. In Old English,

quantified and negated objects behave differently from referential objects (Pintzuk & Taylor 2006), although they do operate within the same syntactic model independently of information status (Van der Wurff 1997; Ingham 2007; Struik & Van Kemenade 2022).

(7) *Inert*

jof	die	<b>tuist</b>	hadde	gemaect
If	they	battle	had	made

'if they argued.'

Gysseling\_0009AA\_1253

(8) *Inert*

dat	elc	ambocht	mach	sniden	buter	halle	<b>al</b>	<b>dat</b>
that	each	craftsman	may	cut	outside.the	hall	all	that
<b>hie</b>	<b>wille</b>	<b>sniden</b>	tusschen	.i.	d	ende	xxxv1/2	d!
he	wants	cut	between	1	denarius	and	35.5	denarius

'that each craftsman may cut outside the hall everything that wants to cut between 1 and 35.5 denarius.'

(Gysseling\_0438\_1282)

Because of the heterogeneity of the *Inert* category, and its independence of information structure, we leave a more detailed investigation of these objects for future research.

SCRAMBLING is annotated by documenting the position of the object relative to an adverbial in the middle field. We take adverbials as a diagnostic for scrambling in the broad sense of the word: we not only include adverbs, but any adjunct (such as DP adverbs and PPs). Adverbs and other (structurally more complex) adjuncts occupy the same position in the clause; they are both adjuncts to VP or some higher maximal projection. Including any adjunct as a diagnostic scrambling should therefore not make a difference on syntactic grounds. Objects which are not adjacent to the non-finite verb, but have an intervening adverbial are annotated as SCRAMBLED; objects that are preceded by an adverbial, but followed by another are also annotated as SCRAMBLED. Objects adjacent to the verb and preceded by an adverbial are annotated as UNSCRAMBLED. In case no adverbial is present in the middle field, the sentence is recorded as AMBIGUOUS, since in those cases the surface order does not provide evidence for or against scrambling.

## 4. RESULTS

This section discusses the results of our corpus study. Section 4.1 discusses the relation between information structure and OV/VO variation in historical Dutch; Section 4.2 discusses the relation between information structure and scrambling in historical Dutch. We discuss our findings and their implications in Section 4.3.

#### 4.1 *Information structure and OV/VO variation*

We collected 2,245 analyzable subclauses with a finite verb, non-finite verb, and an object. Of these sentences, 1,419 contain a referential object. The distribution of new and given objects across OV and VO word orders per century is given in [Table 2](#).

The data in [Table 2](#) show a gradual reduction in the overall frequency of VO objects; in the thirteenth century 30.3% of the objects occur in VO order, which gradually reduces to 0.7% in the eighteenth century, and is lost altogether in the nineteenth century. However, the diachronic pattern is different for given and new objects. There is a consistent strong preference for given objects to occur in OV word order throughout the centuries. While given objects occur in VO order with some frequency in the thirteenth and fourteenth century, VO with given objects is very infrequent by the fifteenth century already. New objects occur in postverbal position at higher frequencies and for a longer period of time: although gradually declining, VO with new objects is productive until the sixteenth century, but its occurrence is reduced dramatically after that. Let us also note that in any given century, the postverbal position is more commonly occupied by new objects than by given objects, even though the overall number of new objects is much lower. These findings demonstrate that given objects are strongly associated with OV word order throughout the history of Dutch. New objects also surface in OV word order, but could also surface freely in VO order pre-sixteenth century.

To test the statistical validity of these observations we fitted a binary logistic regression within a generalized mixed model using the generalized linear mixed-effects model (`glmer`) function from the `lme4` package (Bates et al. 2015) in R (v4.0.3). We take `WORD ORDER` (OV or VO) as the dependent variable, with VO as the reference category. The fixed factors included in the model are `INFORMATION STATUS` (given or new), `LENGTH` (of the object, measured as the logarithm of the number of letters), and the interaction between `INFORMATION STATUS` and `CENTURY`. The addition of the interaction term controls for the diachronic reduction of the VO order and for the reduction of the influence of the object's information status. Before entering the variables into the model, we applied a non-linear transformation to the variable `CENTURY` by subtracting 13 from each data point, thereby anchoring the value 0 to the first century in our dataset. Furthermore, we centered the variable `LENGTH` around the mean. `INFORMATION STATUS` was treatment coded (contrasts of 0, 1). We added varying intercepts for `TEXTID` (the specific text an item was extracted from) to the random structure of the model. This lets the model evaluate the effect of the fixed factors while taking into consideration the variation between individual texts.

We find significant main effects of `LENGTH` ( $\beta = -1.016$ ;  $SE = 0.110$ ;  $z = -9.251$ ;  $p < 0.001$ ) and `INFORMATION STATUS` ( $\beta = -2.224$ ;  $SE = 0.287$ ;  $z = -7.764$ ;  $p < 0.001$ ) on the surface word order. Shorter objects are more likely to be placed in preverbal position than longer objects, and given objects are placed in preverbal position more frequently than new objects. The coefficients of the two levels of `INFORMATION STRUCTURE` in interaction with the effect of `CENTURY` represent a significant rise in the use of preverbal objects as time progresses for both new objects

		13 <sup>th</sup> C.		14 <sup>th</sup> C.		15 <sup>th</sup> C.		16 <sup>th</sup> C.		17 <sup>th</sup> C.		18 <sup>th</sup> C.		19 <sup>th</sup> C.	
		OV	VO	OV	VO	OV	VO	OV	VO	OV	VO	OV	VO	OV	VO
New		38	71	16	27	25	24	32	23	41	6	51	1	49	0
	Total	109		43		49		55		47		52		49	
	%VO	65.1%		62.8%		49.0%		41.8%		12.8%		1.9%		0%	
Given		250	54	111	13	147	11	166	12	114	1	83	0	53	0
	Total	304		124		158		178		115		83		53	
	%VO	17.8%		10.5%		7.0%		6.7%		0.9%		0%		0%	
Total		288	125	127	40	172	35	198	35	155	7	134	1	10	0
	Total	413		167		207		233		162		135		102	
	%VO	30.3%		24.0%		16.9%		15.0%		4.3%		0.7%		0%	

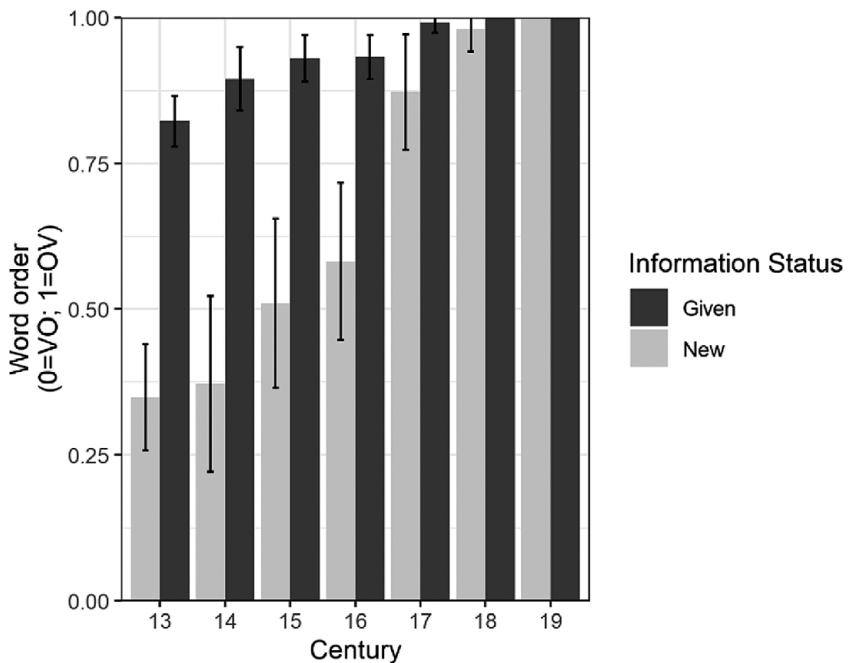
*Table 2*  
Distribution of new and given objects across OV and VO word orders per century.

Model term	Odds ratio	95% CI for odds ratio	
		Lower	Upper
Intercept	0.595	0.417	0.773
Length	2.761	2.246	3.462
Information status	9.244	5.374	16.637
Information status (new) * century	0.440	0.354	0.530
Information status (given) * century	0.515	0.414	0.624

*Table 3*

Odds ratios and confidence intervals of the fixed effects which explain the distribution of objects relative to the verb in our corpus data.

( $\beta = 0.822$ ;  $SE = 0.102$ ;  $z = 8.045$ ;  $p < 0.001$ ) and given objects ( $\beta = 0.664$ ;  $SE = 0.104$ ;  $z = 6.410$ ;  $p < 0.001$ ). **Table 3** presents the odds ratios and 95% confidence intervals for each of the fixed effects. These values represent the size of an effect and indicate whether the influence of a particular factor increases the odds of objects appearing in preverbal position (values below 1) or in postverbal position (values above 1).



*Figure 1*

Objects in pre- and postverbal position per INFORMATION STATUS and CENTURY (error bars represent the 95% confidence intervals for the means).



The odds ratio for LENGTH indicates that with each one unit increase in object length, the chances that this object appears in postverbal position are 2.76 times larger. The odds ratio for the variable INFORMATION STATUS indicates that new objects are 9.24 times more likely to appear in postverbal position than given objects. Notice that the odds ratios for the interactions between INFORMATION STRUCTURE and CENTURY are below 1, which confirms that the chances for given and new objects to appear in preverbal position increase over time. Figure 1 visualizes the effects of INFORMATION STRUCTURE and CENTURY ON WORD ORDER.

#### 4.2 Information structure and scrambling

In our dataset, 610 out of 1176 referential preverbal objects contain an adverbial which provides unambiguous evidence for scrambling. The data are presented in Table 4.

The data in Table 4 show an overall reduction in the frequency of scrambling. In the thirteenth through fifteenth centuries around 80% of the objects scramble, but this number gradually decreases. However, the effect is stronger for new objects than for given objects. Given objects scramble at a consistent high rate throughout the history of Dutch. Scrambling with new objects is also frequent in the earlier centuries, but the overall number of new items in preverbal position is low as new objects frequently appear in VO order (see the previous section). New objects show a distinct preference for the unscrambled position from the sixteenth century onwards (i.e. after the postverbal position was lost). That is, as the overall number of new objects in preverbal position increases over time, the proportion of new objects in scrambled position reduces.

To test the statistical validity of these observations we fitted a binary logistic regression within a generalized mixed model using the glmer function from the lme4 package (Bates et al. 2015) in R (v4.0.3), similar to the model presented in the previous subsection. Here, we take WORD ORDER (scrambled or unscrambled) as the dependent variable, with the unscrambled order as the reference category. The fixed factors included are INFORMATION STATUS (given or new) and the interaction between INFORMATION STATUS and CENTURY. Adding the (log-transformed) variable LENGTH to the model did not result in a significant main effect on the outcome variable or in a significant improvement of the overall model ( $\chi^2(1) = 0.720$ ,  $p = 0.396$ ). We consequently excluded this variable for reasons of parsimony. INFORMATION STATUS was treatment coded, and the same non-linear transformation was applied to CENTURY as in Section 4.1. We added varying intercepts for TEXTID to the random structure of the model.

We did not find a significant main effect of INFORMATION STATUS ( $\beta = -0.896$ ; SE = 0.478;  $z = -1.875$ ;  $p = 0.061$ ), which indicates that there is no evidence for a difference between given and new objects in terms of their overall placement relative to the adverbial. The interaction effect between INFORMATION STATUS(GIVEN) and CENTURY did not reach significance ( $\beta = -0.115$ ; SE = 0.067;  $z = -1.708$ ;  $p = 0.088$ ). Thus, the surface position of given objects in the Dutch middle field did not

		13 <sup>th</sup> C.		14 <sup>th</sup> C.		15 <sup>th</sup> C.		16 <sup>th</sup> C.		17 <sup>th</sup> C.		18 <sup>th</sup> C.		19 <sup>th</sup> C.	
		OA	AO	OA	AO	OA	AO	OA	AO	OA	AO	OA	AO	OA	AO
New	Total	9	4	5	3	8	7	5	11	8	18	7	29	5	22
	%OA	13 69.2%		8 62.5%		15 53.3.0%		16 31.3%		26 30.8%		36 19.4%		27 18.5%	
Given	Total	66	16	39	9	60	7	79	24	53	16	47	18	24	11
	%OA	82 80.5%		48 81.3%		67 89.6%		103 76.7%		69 76.8%		65 72.3%		35 68.6%	
Total	Total	75	20	44	12	68	14	84	35	61	34	54	47	29	33
	%OA	95 78.9%		56 83.0%		82 82.9%		119 70.6%		95 64.2%		101 53.5%		62 46.5%	

*Table 4*  
Distribution of new and given objects across scrambled (OA) and unscrambled (AO) word orders per century.

Model term	Odds ratio	95% CI for odds ratio	
		Lower	Upper
Intercept	3.472	2.167	5.77
Information status	0.408	0.159	1.06
Information status (new) * century	0.658	0.526	0.81
Information status (given) * century	0.891	0.782	1.02

Table 5

Odds ratios and confidence intervals of the fixed effects which explain the distribution of objects relative to the adverbial in our corpus data.

change significantly over time. We did find a significant interaction effect between INFORMATION STATUS(NEW) and CENTURY ( $\beta = -0.419$ ;  $SE = 0.109$ ;  $z = -3.841$ ;  $p < 0.001$ ), indicating that the scrambling behavior of new objects changes over time. The odds ratios can be found in Table 5. The odds ratio of the interaction between INFORMATION STATUS(NEW) and CENTURY is below 1 (0.658), which indicates that new objects become more likely to surface in unscrambled position as the centuries pass. The effect of INFORMATION STATUS and CENTURY ON WORD ORDER is visualized in Figure 2.

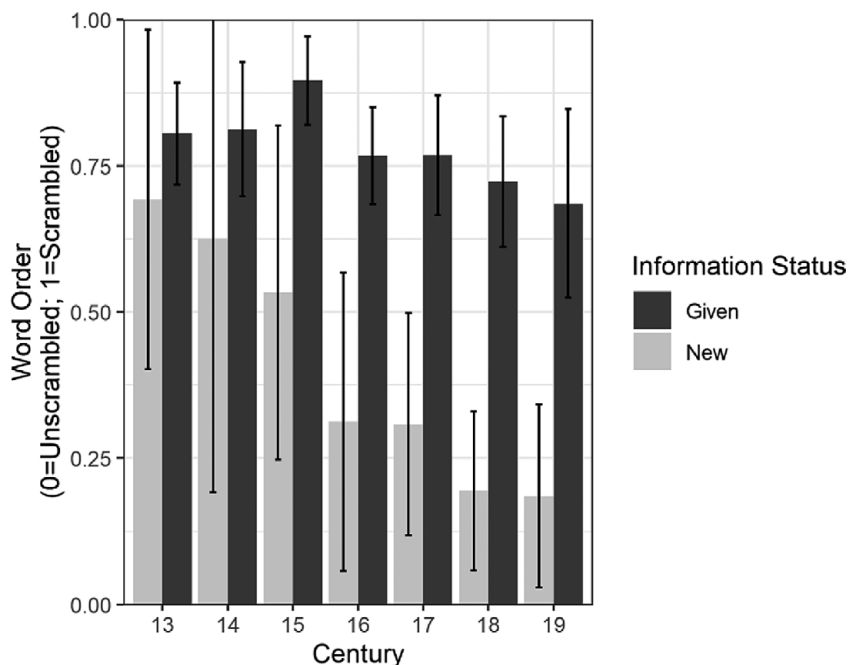


Figure 2

Objects in unscrambled and scrambled position per INFORMATION STATUS and CENTURY (error bars represent the 95% confidence intervals for the means).

### 4.3 Discussion

The results presented in Sections 4.1 and 4.2 demonstrate that object placement in Dutch has relied heavily on information structure throughout the history of the language. However, the locus of variation seems to change over time. The position of new objects plays a key role in this observation.

When VO was a productive word order in the language, the alternation with OV was (at least partially) governed by information structure. Given objects show a strong preference for the preverbal position throughout the entire period. New objects, in contrast, show a preference for the postverbal position – until this position is lost after the sixteenth century, after a period of gradual reduction. At this point, the verb can no longer function as the boundary between information structural domains, since new objects must now appear preverbally as well. The option to place preverbal objects before or after the adverbial (scrambling) already existed in the early stages of Dutch. Our corpus data indicate that the scrambled position was the preferred object position in pre-fifteenth century Dutch, regardless of information status (although the overall number of preverbal new objects was relatively small in this period). As the frequency of VO reduces, new objects increasingly surface in unscrambled position. This shift is visualized in Figure 3, which demonstrates the development of objects in terms of OV/VO variation and scrambling, based on the frequencies and percentages from Table 2 and Table 4 for new and given objects, respectively. Given objects show a consistent preference for the preverbal, scrambled position. However, as new objects start to occur in preverbal position MORE frequently (OV), they start to occur in scrambled position LESS frequently (scrambling). This suggests that there is a relation between the loss of VO and the emergence of scrambling as an information structurally meaningful operation.

In the next section, we propose a syntactic analysis of the variation in object placement in the history of Dutch, which allows for a natural transition from one

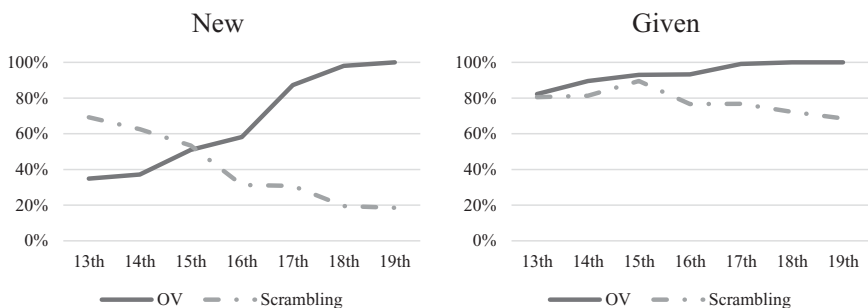


Figure 3  
Development of new and given objects in terms of scrambling and OV/VO variation.

locus of variation (the verb) to another (the adverb). We show that this can be achieved in an antisymmetric model in which information structure is not directly encoded but follows from interface conditions.

## 5. AN ANALYSIS OF (HISTORICAL) DUTCH OBJECT PLACEMENT

The previous section has shown that OV/VO variation in historical Dutch and scrambling in present-day Dutch have a similar function and seem to be diachronically related; both variations mark the information status of direct objects. Given objects are consistently preverbal throughout the history of Dutch and scramble at a high rate. The surface position of new objects, however, gradually shifts from a (largely) postverbal position to a preverbal position to the right of an adverbial (i.e. unscrambled position). A syntactic analysis of object placement should therefore not only comprise a synchronic analysis of OV/VO variation and scrambling; it should also bring out the diachronic relatedness between the two phenomena. We propose that an antisymmetric account with object movement from a postverbal base position, building on Broekhuis (2008), and with multiple spell out options, accounts for the facts presented in the previous section.

### 5.1 *An antisymmetric account of object placement*

We present an account of scrambling in present-day Dutch that involves movement of the object (following Vanden Wyngaerd 1989; Schaeffer 2000; Broekhuis 2008) and we generally follow the analysis presented in Broekhuis (2008).<sup>6</sup> Broekhuis adopts Kayne's (1994) theory of antisymmetry, which claims that linguistic structure universally follows the same specifier–head–complement order. Under this view, the underlying structure of Dutch is VO. OV surface order in complex main clauses and subclauses results from leftward object movement motivated by structural factors.

Crucial to Broekhuis's (2008) antisymmetric analysis is that scrambling is not a single movement, but a process that involves two movement steps (see Schaeffer 2000 for a similar analysis). Consider the clause structure in (9), adapted from Broekhuis (2008: 61).

(9) [<sub>VP</sub> OBJ<sub>3</sub> v [<sub>VP</sub> OBJ<sub>2</sub> [<sub>VP</sub> V OBJ<sub>1</sub>]]]

The base position of objects is postverbal (OBJ<sub>1</sub>), but they must move into a specifier position in the extended projection of the verb to check the phi-features on V (cf. AgrP in Pollock 1989; Grimshaw 1997); that is, objects must move from

[6] While there have not been many formal attempts at deriving historical Dutch OV/VO variation, there have been several (competing) proposals within the larger context of West Germanic OV/VO variation. Space restrictions prevent a detailed discussion of the validity of each individual proposal, so we refer the reader to Struik (2022a) for a summary and discussion.

OBJ<sub>1</sub> to OBJ<sub>2</sub>. Objects can move further into the extended projection of *v* (i.e. from OBJ<sub>2</sub> to OBJ<sub>3</sub>).

Broekhuis (2008) argues that this last movement step is related to case. He supports this assumption with the observation that complement PP objects, unlike DP objects, cannot scramble over PP adverbials (cf. Vikner 1994, 2006). This is illustrated in (10). Since DPs, but not PPs, are subject to the Case Filter (Chomsky 1981), case is a likely trigger for scrambling.

- (10) (a) Jan heeft tijdens de vergadering **naar zijn baas** geluisterd  
 Jan has during the meeting to his boss listened  
 ‘Jan listened to his boss during the meeting.’  
 (b) \*Jan heeft **naar zijn baas** tijdens de vergadering geluisterd  
 Jan has to his boss during the meeting listened

However, the assumption that case is a formal syntactic feature is questioned in recent (minimalist) literature and it has been suggested that the (morphological) expression of case is merely a ‘by-product’ of agreement of phi-features (see Bobaljik & Wurmbrand 2008; Sigurðsson 2012; Polinsky & Preminger 2014; Preminger, in press, and sources cited there for arguments and discussion). This questions the assumption that case is the trigger for object movement to *v*, and we leave open the possibility that it is a more general agreement feature that attracts the object. The crucial point here is that the object is licensed by formal syntactic operations in two steps, which, as we will argue below, yield several potential spell out positions.

As the object moves to a higher position in the clause, it may cross predicate adverbs adjoined to VP and clause adverbs adjoined to *v*P (*VP*- and *S-adverbs* in Jackendoff 1972).<sup>7</sup> We follow Broekhuis’s (2008) assumption that merger of the adverb and movement of the object is essentially free (as far as the syntax is concerned),<sup>8</sup> because the required modification does not depend on a particular position of the adverb within the extended projection of the modified phrase. The object moves before an adverb is adjoined to VP or *v*P (depending on its type), leading to ADV–OBJ order, or the adverb is adjoined before the object moves, leading to OBJ–ADV order. This optionality is illustrated in (11) for adverbs adjoined to VP and (12) for adverbs adjoined to *v*P, which are both simplified versions of the structures in Broekhuis (2011: 21).

[7] Experimental support for a distinction between the two movement steps in scrambling, using adverb type as a proxy, can be found in Schoenmakers & De Swart (2019). In the absence of linguistic context, there was a distinct preference to produce definite objects to the left of predicate adverbs (71%) which was absent in sentences with a clause adverb (45%).

[8] This idea is reminiscent of Neeleman & Van de Koot (2008), who argue that the order in which adverbs and objects are merged is syntactically free. Their analysis differs from Broekhuis’s (2008) in that the optionality in the order of merger in the latter does not concern lexical material, but functional material in the extended projection of the verb. That is, the difference is whether scrambling results from internal or external merge (Chomsky 2001).

- (11) (a) [<sub>VP</sub> O [<sub>VP</sub> adverb [<sub>VP</sub> V t<sub>O</sub>]]]  
(Merge VP adverb > Move object)  
(b) [<sub>VP</sub> adverb [<sub>VP</sub> O [<sub>VP</sub> V t<sub>O</sub>]]]  
(Move object > Merge VP adverb)
- (12) (a) [<sub>IP</sub> S ... [<sub>VP</sub> O [<sub>VP</sub> adverb [<sub>VP</sub> t<sub>S</sub> v [<sub>VP</sub> t<sub>O</sub> [<sub>VP</sub> V t<sub>O</sub>]]]]]]]  
(Merge vP adverb > Move object)  
(b) [<sub>IP</sub> S ... [<sub>VP</sub> adverb [<sub>VP</sub> O [<sub>VP</sub> t<sub>S</sub> v [<sub>VP</sub> t<sub>O</sub> [<sub>VP</sub> V t<sub>O</sub>]]]]]]]  
(Move object > Merge vP adverb)

A crucial difference between the movement steps from OBJ<sub>1</sub> to OBJ<sub>2</sub> and from OBJ<sub>2</sub> to OBJ<sub>3</sub> in Broekhuis (2008) is that the latter syntactically optional, regulated by information structure.<sup>9</sup> The rationale behind this assumption is the claim that (prosodically unmarked) new information foci must appear in the rightmost position of the clause (cf. Cinque 1993; see also Neeleman & Reinhart 1998). Broekhuis proposes that, in Dutch, this interface constraint is ranked higher than the economy constraint EPP (case), i.e. the requirement to check case on v LOCALLY. New objects consequently do not have to move to check case features on v; these features are instead checked at a distance under an AGREE relation (Chomsky 2000). Thus, object movement from OBJ<sub>2</sub> to OBJ<sub>3</sub> is blocked for new objects, and only given objects are predicted to appear in OBJ<sub>3</sub>.

Our analysis is in many ways compatible with the general proposal in Broekhuis (2008), but we do not rely on OT constraints and hence two different ways of checking case to derive the surface variation. We take movement as an operation that copies and pastes elements in the syntactic structure, following the copy theory of movement (see Chomsky 1995; Nunes 2004). The copy theory of movement claims that copies of displaced elements are not removed from the derivation, but remain available, thereby allowing for flexibility in their spell out positions. For Dutch clauses, this means the object is generated in OBJ<sub>1</sub> and obligatorily moves via OBJ<sub>2</sub> to OBJ<sub>3</sub>, leaving behind copies in each intermediate position.

The position in which the object is spelled out is governed by an interplay of interface conditions (similar to Broekhuis's LF and PF constraints). Assuming that these conditions are independent of obligatory syntactic operations allows us to also integrate the various (discourse-)semantic and prosodic factors that have been argued to play a role in scrambling and OV/VO variation. These factors together

[9] Broekhuis (2008) advances the so-called Derivations & Evaluations framework, which seeks to combine certain aspects from the Minimalist program and from optimality theory (see also Broekhuis & Dekkers 2000; Broekhuis & Woolford 2013). In this framework, the 'generator' creates a candidate set of syntactic derivations, the size of which is restricted by operations of the computational system. Each candidate from this set is evaluated against a number of universal violable economy and interface constraints, which are ranked in a language-specific order (hence allowing for language-specific properties). An input form is then mapped onto the most appropriate, or 'optimal', output form. It is important to note that the syntax does not have to have access to the post-syntactic interfaces in this analysis, i.e. movement is not TRIGGERED by information structure (see Haider 2020).

determine which of the object positions made available by the syntax are felicitous in a particular context, which may in fact be more than one. Information structure exploits the available positions to express discourse relations, and is hence not a cue for differential movement, but for differential pronunciation (see also Haider 2020).

Our analysis is also in line with Struckmeier's (2017: 21) 'subtractive grammatical architecture'. Struckmeier argues that the semantic interface determines which structures are semantically interpretable and subtracts any structure that does not adhere to the semantic requirements of a language. He shows for German that scrambling has clear semantic effects in some cases, but not in others. The same facts hold for Dutch: scrambling feeds binding (Vanden Wyngaerd 1989; Neeleman 1994), see (13), and 'triggers all possible strong readings' (De Hoop 1996: 51) in terms of referentiality, partitivity, and genericity. For instance, scrambling of indefinites yields interpretive effects related to specificity of the object (see Unsworth 2005: 63–66), see (14). These effects are absent if the object is a definite DP (see Van der Does & De Hoop 1998).<sup>10</sup>

- (13) (a) \*Piet heeft met elkaars hamer **die mensen** vermoord  
 Piet has with each.other's hammer those people murdered  
 (b) Piet heeft **die mensen** met elkaars hamer vermoord  
 Piet has those people with each.other's hammer murdered  
 'Piet murdered those people with each other's hammer.'
- (14) (a) Cécile heeft waarschijnlijk een roos geplant  
 Cécile has probably a rose planted  
 'Cécile probably planted a(ny) rose.'  
 (b) Cécile heeft **een roos** waarschijnlijk geplant  
 Cécile had a roos probably planted  
 'Cécile probably planted a (certain) rose.'

Struckmeier (2017) argues that such semantic effects are expected to occur after movement, on the assumption that (optional) movement must have an effect on the outcome (Chomsky 2001). The word order changes yield new binding options or interpretations, thereby directly fulfilling the effect-on-the-output condition.<sup>11</sup> Struckmeier argues that the moved elements do not need to have a designated target location; rather, the relational output configuration of the elements is evaluated. He proposes that, since German and Dutch are scope-rigid (or scope-transparent)

[10] An anonymous reviewer wonders whether these effects are already present in historical Dutch. The number of examples in our dataset which adhere to the conditions in (13) and (14) is too low to draw definitive conclusions. Note, however, that there is nothing in our analysis which prevents the semantics interface from restricting spell out in the middle field in historical Dutch. We leave a more detailed investigation of the semantic restrictions on scrambling in historical Dutch for future work.

[11] As noted, there are also 'asemantic' cases of scrambling, i.e. cases without a clear semantic effect on the outcome (e.g. when definite objects scramble). Struckmeier (2017) notes that these cases cannot be instances of optional internal merge (cf. Chomsky 2001) and calls upon another mode of structure building with semantically vacuous movement (see Struckmeier 2014 for details).



languages in which scope relations are computed according to surface order, objects are interpreted in the position in which they are spelled out. The semantic interface rules out any order which results in a position-meaning mismatch.

The phonetics interface similarly determines which structures are phonologically well formed (potentially obscuring semantic transparency) and further restricts word order options. For instance, low spell out of prosodically unmarked pronouns is ruled out (cf. (3), repeated here as (15), cf. Bouma & De Hoop 2008).

- (15) (a) #We moesten eerst **hem** voeren  
           we had.to first him feed  
       (b) We moesten **hem** eerst voeren  
           we had.to him first feed  
           ‘We had to feed him first.’

The syntax thus makes various spell out positions for the object available, which are subjected to conditions at the semantics and phonetics interfaces. Speakers may have preferences for particular spell out options (out of the remaining felicitous candidates), based on, we argue, pragmatic principles such as given-before-new or short-before-long (Wasow 1997). Our conception of the pragmatic interface is that the principles at play are violable; pragmatic constraints are ‘soft’ (see Keller 2000). That is, they are not as strict as those imposed by syntax, semantics, or phonology. Thus, scrambling is influenced, but not determined, by information structural preferences (cf. Schoenmakers et al. 2021).

Adopting the copy theory of movement permits a uniform analysis of OV/VO variation in historical Dutch and scrambling in present-day Dutch, and allows for a natural transition from a clause structure with the verb as the boundary between information structural domains to a clause structure in which the adverb serves this function in the middle field. When we relate the object positions outlined in this section to the results presented in Section 4, we arrive at the schematic representation of spell out positions and information structural domains in (16).<sup>12</sup>

- |      |                   |                 |                  |                  |                  |                 |   |                  |         |
|------|-------------------|-----------------|------------------|------------------|------------------|-----------------|---|------------------|---------|
| (16) |                   | [ <sub>VP</sub> | OBJ <sub>3</sub> | v[ <sub>VP</sub> | OBJ <sub>2</sub> | [ <sub>VP</sub> | V | OBJ <sub>1</sub> | ]]      |
|      | Historical Dutch  |                 | [-Given-]        |                  |                  |                 |   |                  | [-New-] |
|      | Present-day Dutch |                 | [-Given-]        |                  | [-New-]          |                 |   |                  |         |

We showed that objects in postverbal position were typically new to the discourse (or heavy) in historical Dutch, but that there are no clear indications of an information structural constraint on scrambling. Rather, the scrambled position (OBJ<sub>3</sub>) is preferred for all objects in the middle field, regardless of their information status (although the number of preverbal new objects is low). The most important

[12] Note that the relation between the position of the object and its information status is not one-to-one, and that there is additional variation in surface order as the result of variation in the order of internal merge of the object and the external merge of the adverb (cf. the discussion on (11) and (12)).

spell out positions in historical Dutch are therefore OBJ<sub>3</sub> and OBJ<sub>1</sub>. While OBJ<sub>2</sub> is also available as a syntactic and hence spell out position, it does not seem to serve an independent information structural function. The verb thus marks the boundary between the domains in which given and new information is expressed in historical Dutch. The postverbal object position (OBJ<sub>1</sub>) became increasingly restricted as a spell out position, until it was lost as a regular position for objects in the sixteenth century. As a result, the verb no longer separates the domains in which given and new information is expressed. This is when the middle field starts to show a division between information structural domains, with OBJ<sub>3</sub> for given objects and OBJ<sub>2</sub> for new objects, and the boundary between these domains shifts to the adverbial.

### 5.2 *Shifting the border between information structural domains*

One question that we have not addressed thus far is why VO was lost, and how the middle field became the locus of information structure encoding. The data presented in Section 4 indicate that the loss of VO and the establishment of an information structurally functional middle field proceed in tandem. While the number of VO structures with new objects declines, scrambling becomes sensitive to information structure. This leads to the question whether VO order was reduced and the middle field became the locus of variation as a consequence, or whether word order in the middle field became information structurally motivated first and VO was lost as a result. If our analysis is on the right track, the loss of VO likely prompted the establishment of the middle field as the locus of information structure encoding. It is not clear from the literature what triggered the loss of VO, but it seems unlikely that this is the result of a single factor. It is more likely that VO was lost as the result of a series of internal and external changes. As a full-fledged multifactorial analysis is beyond the scope of this paper, we here present a broad-brush sketch of the factors that may have played a role in the loss of VO and how this may have resulted in an information structurally motivated middle field.

One way of formalizing this idea is by using the parametric hierarchies approach outlined in Roberts (2019), which divides linguistic variation into various levels. The highest level of linguistic variable is the Macroparameter. Macroparameters are (a) typologically pervasive; for example, all languages have to determine in which order the verb and object may appear, (b) salient in the primary linguistic data (PLD), i.e. linearization of the object and verb takes place in many of the utterances an acquirer is exposed to, and (c) diachronically stable. The lower-level meso- or microparameters, however, are (a) typologically parochial, i.e. they may be language specific, (b) not pervasive in the PLD, and (c) diachronically unstable.<sup>13</sup>

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[13] Roberts (2019) argues that word order in Dutch and German is in fact a mesoparameter, i.e. a parameter between macro- and microparameters, because these languages are not fully head-initial or head-final, but allow variation between phrases of different types. In the analysis that we put forward here, Dutch is uniformly head-initial, which makes the linearization of the object and the verb a macroparameter. Regardless of one's classification of the word order parameter,

Changes at the macroparametric level are possible, but this is usually the effect of (profound) changes in (a combination of) lower-level microparameters to the point that a language acquirer no longer receives enough input to acquire the old variant (see Westergaard 2010 for a similar idea).

Historical Dutch underwent several lower-level syntactic changes which may have played a role in the loss of VO. First of all, loss of inflection in general and, more specifically, the loss of overt morphological case marking on nouns (with the exception of pronouns and genitive -s) reduces the possibility to infer the relation between constituents from morphology, which may have prompted a more rigid word order (see Weerman 1987, 1989). That this cannot be the single reason for the loss of VO becomes evident when Dutch is compared to German. German also lost VO word order, but retains its case system. A second factor that may have played a role in the loss of OV/VO variation in Dutch is the grammaticalization of the definite determiner. Proto-Germanic did not have a determiner (Lehmann 1994). As in Old English and Old High German, the emergence of the determiner as a grammatical category was an Old Dutch innovation, but this was not yet fully consolidated by Middle Dutch (Van de Velde 2010). Changes in the determiner system of a language also imply changes in the reference system (see Piotrowska & Skrzypek 2021 for the diachronic relation between definiteness marking and referentiality in North Germanic). This, in turn, may have consequences for other means of expressing information structure, such as word order.

The analysis that we propose, in which the object is licensed in two movement steps resulting in three spell out positions, may also be relevant for the loss of VO. We argue that object movement to the highest object position in Spec, $\nu$ P is obligatory and that this is also the default position where given objects are spelled out. New objects, however, are by default (but not necessarily) spelled out in the lowest object position, i.e. VO position. Because object movement proceeds in two steps, the intermediate object position in Spec,VP does not have a clear pragmatic or semantic function, as in (16). The loss of VO may be motivated, in combination with other microparametric changes such as those outlined above, by internal pressure to reduce redundancy and a need for a more parsimonious syntactic system. The reason why Dutch (and also German) converged on OV word order and not VO may lie in the functionally motivated status of VO: only new and heavy objects appear freely in VO word order, but new and heavy objects also appear in OV order. Given objects, however, strongly prefer OV. A scenario in which a language converges on VO after a period of mixed OV/VO is equally likely: this is the case in English. However, a crucial difference between Dutch and English is that OV is information structurally marked in Old and Early Middle English, while Dutch and English are similar in that both developed a definite article and both lost (most of) their case marking (Struik & Van Kemenade 2022).

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however, the crucial point for this discussion is that the linearization of the object and the verb is a higher order parameter than a microparameter.

Another factor that should be taken into consideration is the frequency of VO in everyday language use, especially directed to language acquirers. One may wonder how frequent VO orders are in the input of an acquirer of pre-1700 historical Dutch. Our data set suggests a very strong genre effect: while VO structures occur in all text genres and contexts, they are most frequent in official documents detailing transactions (see also Blom 2002), as illustrated in (17).

- (17) bouden dien dat die voerseide pieter sal effen **derente**  
 provided that the aforementioned Pieter will charge the.interest  
**vanden huusen**  
 of.the house  
 ‘on the condition that the aforementioned Pieter will charge interest on the house.’

Gysseling\_1552\_1296

The grammatical object in such constructions is frequently the object of a transaction, either physically or monetarily. Approximately half of the referential VO objects in our sample are transactions. This is a very specific use, which presumably did not occur frequently in child-directed speech, nor would it have been part of everyday conversation. Note, however, that while these transactions might inflate the number of VO in historical Dutch, we find new objects in non-transaction readings as well, as in (18).

- (18) Dat wi hebben ghemakt **ene vorworde vor die wet**  
 That we have made a introduction for that law  
 ‘That we made an introduction to that law.’

Gysseling\_0124\_1272

The occurrence of VO structures cannot be attributed to a genre effect alone, but the relatively low input frequency of non-formulaic VO structures, the microparametric changes that were taking place around the same time, the obligatory feature-checking in preverbal position, combined with the internal pressure of the language to reduce the redundant optionality in spell out positions may have caused acquirers to disfavor the postverbal object position (see Westergaard 2010). As a result, the grammar of the language changed: the postverbal spell out position is lost over time. The loss of this position entails that the verb can no longer mark the boundary between the given and new domains; however, the middle field is already equipped with elements which might take up the task: adverbials.

An adverbial, however, is not the ideal boundary between the given and new domain, because it is an optional element. Adverbials will not always be present to demarcate the given and new domain. Moreover, there is a distinction between (at least) predicate and clause adverbials (Jackendoff 1972; see also Cinque 1999), which may lead to variation in (or confusion about) the position of the information structure boundary. The verb, by contrast, is a clear boundary: it is obligatory and occupies a fixed position in the clause (in non-V2 contexts). The boundary shift

does not appear to be an efficient one from an information structural point of view. This suggests that the syntactic triggers responsible for movement are stronger than the need for clearly demarcated information structural domains. This is in line with the idea that information structure piggy-backs on the structure that is made available by the syntax (see also Haider 2020). Syntax forces objects to move from the postverbal domain and pragmatics will have to make do with the positions that remain available for spell out.

## 6. CONCLUSION

The aim of this paper was to bring together two types of word order variation in two stages of Dutch for which no relation had been previously assumed: OV/VO variation in historical Dutch and scrambling in present-day Dutch. We tested the hypothesis that both types of word order variation are functionally similar, i.e. they differentiate the information structural domains of given and new information. This was confirmed by our corpus data, which showed that the distribution is similar for OV/VO variation and scrambling: given objects tend to appear in earlier positions than new objects. In fact, the placement of given objects is rather consistent throughout the history of Dutch. They occur in preverbal and scrambled position at high frequencies between the thirteenth and nineteenth century. The position of new objects shifts from the postverbal to preverbal, unscrambled position, which suggests that the two types of variation are diachronically related.

We analyzed the diachrony of object placement as movement from a uniformly head-initial base via the specifier of VP to the specifier of *v*P. Historical Dutch allows spell out of the object in its postverbal base position, but this position was lost after the sixteenth century, which we argued is due to a composite of factors which together resulted in the loss of VO. Scrambling in the middle field was always a part of Dutch syntax, but in the earlier stages of the language it did not have an independent function in terms of information structure. The loss of VO entails the loss of the expression of discourse relations and, as a consequence, information structure ‘exploits’ syntax to find a new way to distinguish between given and new information. Thus, the boundary between the given and new domains shifts from the verb to the adverbial in the middle field.

## APPENDIX. OVERVIEW OF SOURCE MATERIAL

Our source material contains texts from the following corpora:

- Corpus Gysseling (2021)

The online Corpus Gysseling contains thirteenth century official documents, originally collected by Ghent linguist Martin Gysseling between 1977 and

1987, and is enriched with part of speech tagging and lemmatization. We included a selection of texts from the regions Flanders, Utrecht, and Holland.

Total number of texts in subset: 336

Total words in subset: 278,038.

- Corpus Van Reenen–Mulder (CRM14) (Van Reenen & Mulder 1993)

The CRM is a collection of fourteenth century official documents. The CRM contains over 3,800 documents which are all dated and localized. We included a random selection of texts from the regions of Flanders, Utrecht, and Holland.

Total number of texts in subset: 91

Total words in subset: 54,460

- Corpus Laatmiddel- en Vroegnieuwnerlands (CLVN) (Van der Sijs et al. 2018)

The CLVN contains over 2,700 official documents from the fifteenth, sixteenth and seventeenth centuries. The texts in this corpus frequently comprise several charters and hence appear longer in length than the texts from Gysseling or CRM. We included a random selection of texts from the regions of Flanders, Utrecht, and Holland. There is one exception; the corpus contains the diary of Christiaan Munsters, but this text is not localized. We included it to balance the predominantly official nature of the dataset.

Total number of texts in subset: 66

Total words in subset: 176,543

- Narrative section of the Compilatiecorpus Historisch Nederlands (CHN) (Coussé 2010)

The narrative subcorpus of the CHN contains a balanced selection of narrative prose texts written from the end of the sixteenth century onwards. The texts included in this subcorpus are all written in Holland.

Total number of texts in subset: 63

Total words in subset: 106,274

We used material from three religious primary sources to supplement the official documents included in the corpora mentioned above:

- Sermon 1, 20, 39, 41, and 42 of *De Limburgsche Sermoenen* (Kern 1895). The *Limburgsche Sermoenen* are the oldest recorded sermons in the Dutch language and were written in the thirteenth century. They originate in the

Source Region	13th century		14th century			15th century	16th century			17th century		18th century	19th century
	Gysseling	Sermons	CRM	CLVN	Psalmen	CLVN	CHN	CLVN	Peerle & Tempel	CHN	CLVN	CHN	CHN
Holland	58,428		18,577	2,087		21,216	12,247	35,699		48,894	6,284	45,133	56,229
East Flanders	77,875		8,917	1,016		3,426		552					
West Flanders	136,505		9,494	2,318		31,467		6,941			1,161		
Utrecht	5,230		17,472	4,389		29,806		7,387					
Other		15,408			5,009			23,894	10,558				
<b>Total</b>	<b>278,038</b>	<b>15,408</b>	<b>54,460</b>	<b>9,810</b>	<b>5,009</b>	<b>85,915</b>	<b>12,247</b>	<b>74,473</b>	<b>10,558</b>	<b>48,894</b>	<b>7,445</b>	<b>45,133</b>	<b>56,229</b>

*Table A1*

Distribution of source material across time and region.

southeast of the Netherlands, but they were added to the text selection to balance the official treatises from Corpus Gysseling.

Total words in subset: 15,408

- Translations of the first 18 Psalms (Bruin 1978). The Psalms were translated at the end of the fourteenth century. The author is unknown, so the text is not localized.

Total words in subset: 5,009

- *Den Tempel Onser Sielen* (Ampe 1968) and *Der Evangelische Peerle* (Ampe 1993) both written by the same beguine in the second half of the sixteenth century.

Total words in subset: 10,558

Total number of words in our dataset: 702,519. An overview of the distribution of material across time and region is given in Table A1.

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