Studying word order changes in Latin: some methodological remarks

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Abstract

The main aim of this contribution is to argue that a linear string of Latin words can correspond to more than one syntactic structure, and that this potential for structural ambiguity has important methodological consequences for the synchronic and diachronic study of Latin word order. On the basis of a detailed case study on the much-discussed OV/VO alternation in the history of Latin, it will be shown that whether or not one controls for structural ambiguity is not a theory-internal choice, but that it has important empirical consequences. The conclusion is that the quantitative results that emerge from a study that only takes into account syntactically non-ambiguous environments provide a more accurate picture of the syntactic changes that took place during the evolution from Latin towards the (early) Romance languages.

keywords: Latin, syntax, word order, structural ambiguity, OV/VO, diachrony.

1. Introduction

1.1 Aim and scope of the paper

The focus of this paper is a number of methodological issues concerning the study of Latin word order variation, with special reference to the often discussed alternation between the word orders OV and VO. Both orders are available throughout the entire history of the language, but only the latter is preserved in the present day Romance languages. To all likelihood, the alternation between OV and VO is governed by a number of factors, including information structure, weight and/or complexity of the object, and sociolinguistic factors like register and genre. This makes the alternation a complex and essentially 'multivariate' phenomenon, whose true nature is at this point not particularly well understood.

In this short contribution, I will of course not be able to offer fully fledged analysis of the relevant phenomenon. Instead, I will limit myself to addressing an important preliminary question which one has to address in order to offer an accurate description of the empirical facts, namely whether or not one has to assume that a linear string of words can be structurally ambiguous. This question has until now received very little attention in the literature on Latin word order. However, assuming that a correct description of a given phenomenon is a precondition for arriving at a convincing explanation of it, the question is an important one, and as I will argue below, the answer to it has potentially far-reaching consequences.

1.2 Linear word order and structural ambiguity

My empirical point of departure is a series of observations concerning object positions in Latin main clauses, as compared to object positions in embedded clauses.[1] Let us start with main clauses. As is well known, Latin direct objects can appear both to the right and to the left of the verb, yielding the orders VO and OV respectively. The following minimal pair from Livy

illustrates this alternation. The direct objects are highlighted in boldface, and the verbs are underscored:

(1) nec Hannibal detractauit **certamen**. SVO
and.not Hannibal.NOM evade.PF.3.SG battle.ACC
'and Hannibal did not avoid battle.' (= Liv. aUc 27.12.11)

(2) ibi Hannibal **castra** habebat. SOV
there Hannibal.NOM camp.ACC have.IMPF.3.SG
'there Hannibal held his army.' (= Liv. aUc 21.45.4)

However, the pattern in (2) is not the only possible linear OV order, as objects can also appear more leftward. Such is the case in (3), where the object *ceteros* 'the others' appears to the left of the pre-verbal subject *Hannibal*:

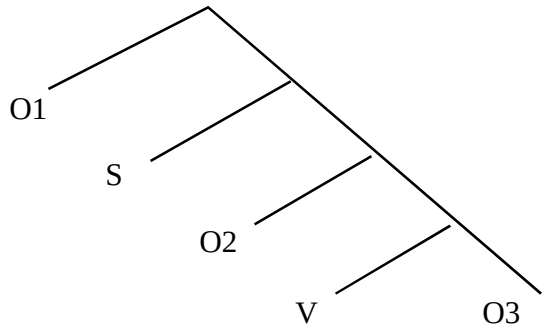
(3) **ceteros** Hannibal [...] in castra recepit. OSV
other.ACC.M.PL Hannibal.NOM in camp.ACC receive.PF.3.SG
'the others Hannibal received in his camp.' (= Liv. aUc 29.7.9)

Assuming that the position of the finite verb and the preverbal subject in (1)-(3) remains constant, we can conclude that in simple transitive clauses, direct objects can appear in one of at least three distinct structural positions. Given much recent (and less recent) work on Latin word order which has argued that different word orders correspond to (slightly) different meanings (see, among many others, Marouzeau 1922-49; Pinkster 1990; Devine & Stephens 2006; Spevak 2010), one

can hypothesize that the objects in these three different positions are all to be interpreted in a different way: for instance, it is quite likely that they differ with respect to their information status.

There are various ways in which this availability of multiple object positions can be represented: this can be done by means of a hierarchically organized tree structure (4), or with a linear template consisting ordered slots (which can but need not be filled overtly) (5):

(4)



(5) O1 S O2 V O3

For the present purposes, nothing hinges on the choice between these two representations. For the sake of simplicity, I will use the second in the remainder of this paper.

Let us then look at object positions in embedded clauses, introduced by an overt subordinating conjunction. Apart from the expected OV/VO alternation to the right of the subject (cf. (6) and (7)), we also see that an object position to the left of the subject but to the right of the subordinating conjunction (C) is available (8):

(6) cum consul Romanus [...] intulit **signa** CSVO

when consul.NOM Roman.NOM bring.in.PF.3.SG signs.ACC

'when the Roman consul launched an attack.' (= Liv. aUc 3.60.9)

(7) cum Poenus **collem** teneret CSOV

when Carthaginian.NOM hill.ACC hold.IMPF.SUBJ.3.SG

'when the Carthaginians occupied the hill.' (= Liv. aUc 27.2.4)

(8) cum [**claustra portus**] hostis COSV

because gateway.ACC harbour.GEN enemy.NOM

haberet.

hold.IMPF.SUBJ.3.SG

'because the enemy controlled the gateway to the harbour.' (= Liv. aUc 25.11.15)

In addition, one more object position can be distinguished in embedded clauses, viz. one in which the object appears to the left of the conjunction, i.e. in the absolute clause-initial position:

(9) [**Eas arcas**] cum [...] dominus OCSV

these.ACC chests.ACC when master.NOM

aperuisset.

open.PLQPF.SUBJ.3.SG

'when the master had opened these chests.' (= Liv. aUc 40.29.5)

From the latter set of examples, we can conclude that in a Latin embedded clause, at least four object positions were available. This is summarized in (10):

(10) O1 C O2 S O3 V O4

Furthermore, as there is no reason to believe that less positions are available in main clauses than in embedded clauses, I will assume that in main clauses as well, four rather than three (cf. (5)) object positions need to be postulated. Crucially however, given the absence of a subordinating conjunction like *cum* 'when' or *si* 'if', it is impossible to tell whether in a clause like (3), the object surfaces the first (O1) or in the second (O2) object position identified in (10).

Whenever such positional uncertainty can be diagnosed, I will say that the linear string under investigation is 'structurally ambiguous'. In some cases, it might be possible that the surrounding context and the discourse interpretation of the constituent whose structural position is uncertain provides us with clues as to which possible structure is likely to be the correct one, but given our altogether poor understanding of which interpretive factors have an influence on Latin word order, it is fair to say that this approach would not be completely waterproof.

Having established that structural ambiguity is a factor to be taken into account when studying Latin word order, I now proceed to show that it is even more pervasively present in the language system than might be thought on the basis of the data discussed in this introduction.

2. The OV/VO alternation

2.1 More object positions

In this section, I will show that the empirical picture sketched in 0 is still too simple. More specifically, the data suggest that four rather than two object positions to the right of non-pronominal preverbal subjects need to be assumed. The strategy that I will adopt to diagnose these additional object positions is the same as before. Recall that the two leftmost object positions identified thus far could only be distinguished by virtue of the presence of a functional category, viz. a subordinating conjunction. In order to arrive at a more fine-grained picture of object positions in the middle field, I will also use clauses with additional functional material, viz. auxiliaries complemented by a verb phrase (VP) consisting of a non-finite lexical verb (an infinitive or a past participle) and, when the latter is transitive, a direct object.

Let us first have a look at object positions in clauses where the verb phrase (bracketed in the below examples) precedes the auxiliary but follows the subject NP. As shown in the examples in (11) and (12), the direct object (again in boldface) can either appear to the left or to the right of the lexical verb (underscored):

(11) ne ante conspici posset SVOAux
so.that.not before notice.PASS.INF.PR be.able.SUBJ.IMPF.3.SG
a uulgo quam rex [<u>adlocutus</u> **milites**]
by people.ABL than king.NOM addressed.NOM soldiers.ACC
esset.
be.SUBJ.IMPF.3.SG
'so that he could not be noticed by the people before the king had spoken to the soldiers.' (= Q. Curt. Hist. 6.8.24)

(12) si uir consularis [**aurum et margaritas** SOVAux

if man.NOM consular.NOM gold.ACC and pearls.ACC

osculatus] est.

kissed.NOM be.PR.3.SG

'if the consular has kissed gold and pearls.' (= Sen. Ben. 2.12.1)

The same can be observed in clauses where the verb phrase follows the selecting auxiliary:

(13) Sed istae artes non sunt [**magnitudinem** SAuxOV

but those.NOM arts.NOM not be.PR.3.PL greatness.ACC

animi professae].

mind.GEN confessed.NOM

'But those types of art have not been indicative of a great mind.' (= Sen. Ep. 87.16)

(14) Nec tam insolita laus esset SAuxVO

nor so unusual.NOM praise.NOM be.SUBJ.IMPF.3.SG

[prosecuta **dicentem**], [...].

accompanied.NOM say.PART.PR.ACC.M.SG

'And no such unusual praise would have been the part of the speaker.' (= Quint. I.O. 8.3.4)

In other words, the familiar OV/VO alternation can also be observed in non-finite contexts, like participial complements of BE-auxiliaries, regardless of the position of this complement with respect to its selecting verb. All this means that the picture in (10) now needs to be enriched with two additional object positions, yielding the following template:

(15) O1 C O2 S [O3 V1 O4] Aux [O5 V2 O6]

Importantly, I assume that all these positions are available in clauses with or without an auxiliary (with the proviso that positions 3 and 4 are only available in VPAux-clauses, and positions 5 and 6 only in AuxVP-clauses). This assumption seems justified given that perfective analytic deponent verbs (i.e. the analytic forms with the BE-auxiliary that were used to illustrate the additional object positions in (11)-(14)) alternate with synthetic deponent verbs in the present tense as well as with synthetic perfects of non-deponents, without there being any reason to assume that the analytic character of these verbs is indicative of the host clause being endowed with a richer functional structure and thus with potentially more argument positions (see Embick 2000 for additional motivation of this particular point).

The carry-home message at this point is that positions 3 and 4 on the one hand, and positions 5 and 6 on the other can only be told apart in clauses with an auxiliary. It follows that clauses with a single synthetic lexical verb and an overt direct object (like 0 and 0) are structurally ambiguous (in the sense defined above), as we have no means to tell in which one of the two VP-internal positions the direct objects in such examples is located.

2.2 A hypothesis

At this point it is useful to address the question whether the complementation behaviour of lexical verbs is different when the latter is finite from when it is non-finite. There is reason to

assume that such is not the case. Consider for instance a prototypical VO language like English. In an English clause with a single transitive verb, the object appears right adjacent to the verb:

(16) a. John sees Mary.

b. * John Mary sees. (with John = S and Mary = O)

Similarly, in clauses with a temporal or aspectual auxiliary (like the present perfect auxiliary have), in which the lexical verb appears as a past participle, the object also follows the lexical verb:

(17) a. John has seen Mary.

b. * John has Mary seen.

Exactly the same facts can be observed in another non-finite environment, viz. in clauses with a modal auxiliary and an infinitival lexical verb:

(18) a. John can see Mary.

b. * John can Mary see.

(19) a. John has to see Mary.

b. * John has to Mary see.

In other words, in English the position of the direct object with respect to the lexical verb is not conditioned by the presence or absence of an auxiliary (cf. (16) vs. (17)-(18)), nor by the nature of the auxiliary (temporal (17) or modal (18)-(19)).

Similar facts can be observed in German embedded clauses, a consistent OV language. In this language, non-clausal direct objects are also linearized to the left of the lexical verb, regardless of whether the latter is accompanied by an auxiliary or not, and regardless of the nature of this auxiliary. This is (succinctly) summarized in (20):

(20) a. … dass der Jungen <das Mädchen> sieht <*das Mädchen>

b. … dass der Jungen <das Mädchen> gesehen <*das Mädchen> hat <*das Mädchen>

c. … dass der Jungen <das Mädchen> sehen <*das Mädchen> kann <*das Mädchen>

d. … dass der Jungen <das Mädchen> sehen <*das Mädchen> muss <*das Mädchen>

Again we see that directionality of complementation of lexical verbs remains constant across environments in which this lexical verb is finite, and various environments where it is non-finite.[2]

On the basis of these facts, and in the light of recent work on Latin word order, we can now formulate two hypotheses about word order in languages which display variable OV and VO ordering, like Latin. Under the assumption that in the synchronic system of for instance Classical Latin, the choice for one of the possible orders is influenced by a variety of (usage-based) factors, like information structure (given-new or topic-focus articulations, cf. Devine & Stephens 2006: 125-136; Spevak 2010), weight and complexity of the object and the like, it is predicted that the

factor [± finite lexical verb] should not have any major influence on the syntactic position of direct objects. Second, given the discussion in section 2.1, we also have reason to assume that quantitative data based on structurally non-ambiguous material (*in casu* clauses with a non-finite lexical verb) stand a higher chance of yielding a more accurate picture of object placement in Latin. It follows that, when comparing results of studies that control for structural ambiguity with results from studies that don't, two scenarios can be imagined: either the results are (more or less) similar, or they aren't. In the first scenario, there is no problem. In the second, we will have to assume that the results from the study/studies that did control for structural ambiguity are more accurate.

Such a comparison is what I will carry out in the following section. The empirical focus is the diachrony of the OV/VO alternation, which has received a fair amount of attention in the literature. I will start by summarizing older studies which did not control for structural ambiguity, by looking at clauses with synthetic and analytic verb forms alike. Next, I will present the results of my own work which only take into account structurally non-ambiguous material.

3. VO order in the history of Latin: reconsidering the facts

It is standardly assumed that the transition from a predominantly OV grammar (Classical Latin) towards an almost completely generalized VO grammar (modern Romance languages) was a gradual process, of which Late Latin (say Latin from the 4th and 5th centuries AD) represents an

intermediate stage, with more VO than in Classical Latin, but less than in the Romance languages (see especially Bauer (1995) and references cited there).[3]

3.1 OV/VO without controlling for structural ambiguity

Ledgeway (2012: 228-229) provides a summary of earlier studies, most of which looked at the proportions of the orders OV and VO in single authors or texts. Their findings are listed in Table 1:[4]

Text/Author	**Period**	**% OV/VO**	
SC de Bacchanalibus (Álvarez Pedrosa 1988)	186 BC	100,0	0,0
Leges 2nd century B.C. (Álvarez Pedrosa 1988)	200-100 BC	96,2	3,8
Plautus *Captiui* (Adams 1976a: 94-95)	ca. 225-190 BC	57,7	42,3
Plautus *Amphitruon* 1-400 (Adams 1976a: 95)		64,6	35,4
Plautus *Aulularia* 1-325 (Adams 1976a: 95)		58,3	41,7
Plautus *Asinaria* 1-380 (Adams 1976a: 95)		66,7	33,3
Plautus *Miles gloriosus* 1-500 (Adams 1976a: 95)		43,8	56,2
Terentius (Moreno Hernández 1989)	166-160 BC	67,0	33,0
Cicero *Cato* (Koll 1965: 246-7)	ca. 60 BC	67,0	33,0
Cicero *Leges* (Koll 1965: 246-7)		81,8	18,2
Cicero *ad Atticum* 1 (Cabrillana 1993a)		81,0	19,0
Cicero S. Rosc. 1-34 (Adams 1976a)		95,9	4,1

Cicero Deiot. 1-34 (Adams 1976a)		85,7	14,3
Cicero philosophical writings (Bolkestein 1989)		79,0	21,0
Cicero *pro Milone* (Panchón 1986)		63,1	36,9
Caesar *de bello Gallico* 1 (Panchón 1986)	ca. 50 BC	82,3	17,7
Vitruvius 1.1-4 (Pinkster 1991: 72)	0 AD	66,7	33,3
Livius 1.1-25 (Amacker 1989) V+ 2 elements	ca. 10 BC-20 AD	78,0	22,0
Celsus 1-6 (Pinkster 1991: 72)	ca. 20-40 AD	85,7	14,3
Petronius *Satyricon* 26-68 (Polo 2004: 378-379) O = NP	ca. 60 AD	75,0	25,0
Pompey inscriptions (Ramat 1984)	ca. 75 AD	64,2	35,8
Claudius Terentianus (Adams 1977: 68, 74-75)	ca. 120 AD	28,1	71,9
ca. 170-320 AD: NO/VERY FEW ATTESTATIONS.			
Vetus, *Ruth* (Talavera 1981)	ca. 350(?)	9,8	90,2
Peregrinatio Aetheriae (Cabrillana 1999: 321) O = NP	381-384 AD	37,0	63,0
Anonymus Valesianus II (Adams 1976b: 136)	ca. 540 AD	41,3	58,7
Vulgata (100 sentences; Pinkster 1991: 72)	ca. 390-405 AD	65,2	34,8

Table 1: Distribution of OV and VO across different Latin authors/texts, adapted from Ledgeway (2012: 228-229, his table 5.3)

As can be seen, this corpus can naturally be divided into two subperiods, as a result of the scarcity of textual attestations in the third and early fourth centuries AD. In what follows I will systematically compare the average rates of VO (and OV) for the period before this time gap

(which I will refer to as the 'early period') with the corresponding values for the period after the gap (the 'late period').

From the data in Table 1, a clear picture emerges, in the sense that a significant rise of the order VO can be observed. More specifically, in the earlier period, VO is attested in 27,83% of the cases. In the later period, this figure rises to 61,68%. The difference between these two values is statistically significant (T-test, independent samples, $p = .002$).[5] These findings comply with the above-mentioned *communis opinio*, which says that Late Latin constitutes an intermediate stage in the development towards a (quasi-)generalized VO-grammar.

Recall however that the studies whose conclusions are summarized in Table 1 did not control for structural ambiguity, in the sense that they did not try to make a distinction between the different object positions identified above (cf. the template in 0). At this point we can wonder whether these results can be repeated in a study that only looks at structurally non-ambiguous environments.

3.2 OV/VO revisited, with structural ambiguity controlled for

3.2.1 A corpus study

The quantitative results to be presented in the remainder of this section are based on a large-scale corpus study, with texts ranging from Early Latin (Cato, ca. 160 BC) until Late Latin (Iordanes, ca. 550 AD). A full description of the corpus that I investigated is given in Table 2:

Author (work(s))	**Period**	**# words**	**Source**

1.	Cato (*De Agricultura*)	ca. 160 BC	16026	Hyperbase
2.	Cicero (selection of speeches)	ca. 60 BC	ca. 300000	Hyperbase
3.	Caesar (*De bello ciuili*, *De bello Gallico* 1-7)	ca. 50 BC	79058	Hyperbase
4.	Varro (*Res rustica*; *De lingua Latina*)	45 BC	75619	Brepolis
5.	Hyginus (*Astronomia*)	ca. 20 BC	22288	Brepolis
6.	Vitruvius (*De architectura*)	0 AD	58630	Brepolis
7.	Seneca (*Epistulae ad Lucilium*, *Consolationes*, *Dialogi*, *Apocolocyntosis*)	ca. 50 AD	ca. 200000	Hyperbase
8.	Petronius (*Satyricon reliquiae*)	ca. 60 AD	31093	Hyperbase
9.	Frontinus (*Strategemata*, *De aquaeductu urbis Romae*)	ca. 90 AD	30391	Brepolis
10.	Tacitus (*Germania*, *Dialogus de oratoribus*, *Agricola*; *Historiae*, *Annales*)	ca. 110 AD	165345	Brepolis
11.	Gaius (*Institutiones*)	ca. 170 AD	43676	Brepolis
ca. 170-320 AD: NO/VERY FEW ATTESTATIONS				
12.	Palladius (*De ueterinaria*, *De agricultura*)	ca. 350	50119	Brepolis
13.	*Itinerarium Egeriae*	381-384 AD	17552	Brepolis
14.	*Gesta Conlationis Carthaginiensis*	411 AD	55002	Brepolis
15.	Vegetius (*Ep. rei militaris*, *Mulomedicina*)	ca. 420 AD	73428	Brepolis
16.	Cassius Felix (*De medicina*)	447 AD	29673	Brepolis
17.	Victor Vitensis (*Historia persecutionis Africanae prouinciae*)	ca. 490 AD	19777	Brepolis
18.	Pompeius Maurus (*Commentum Artis Donati*)	ca. 500 AD	79364	Brepolis

19.	Caesarius Arelatensis (*Sermones* 1-80)	ca. 520 AD	91753	Brepolis
20.	Anthimus (*De obseruatione ciborum*)	ca. 535 AD	4479	Brepolis
21.	Iordanes (*Getica, Romana*)	ca. 550 AD	38039	Brepolis

Table 2: description of the corpus used (Latin prose texts, ca. 85 BC - 550 AD).

In addition, for the study of deponent verbs, I also included a number of texts which were systematically investigated by Flobert (1975) but are not part of the corpus described in Table 1:

	Author (work(s))	**Period**	**# words**	**Source**
1.	Livius (*Ab urbe condita*)	10 BC-20 AD	514372	Brepolis
2.	Quintilianus (*Institutio oratoria*)	95 AD	174237	Brepolis
3.	Plinius minor (*Epistulae*)	95 - 110 AD	85073	Brepolis
ca. 170-320 AD: NO/VERY FEW ATTESTATIONS				
4.	*Historia Augusta*	ca. 320 AD (?)	TBD	Brepolis

Table 3: texts only used for the study of deponent verbs (based on Flobert 1975).

As indicated in the rightmost column, the texts were either drawn from the CD-ROM Hyperbase (Brunet & Mellet n.d.) or from the online database Brepolis (www.brepolis.net). From the corpus, I have collected all clauses containing a form of the modal auxiliaries *possum* 'be able' and *debeo* 'have to' complemented by an infinitival non-finite verb, as well as all clauses containing an analytic form of a deponent verb, consisting of a BE-auxiliary and a past participle.[6] The statistics on the OV/VO alternation given below are based on those clauses in

which the non-finite verb is transitive and accompanied by an overt direct object.[7] All structures involving the orders VOAux and AuxVO were classified as VO, and all OVAux and AuxOV clauses as OV. In other words, I did not take into account clauses with the orders OAuxV and VAuxO, representing what one could call 'object shift' (or 'object scrambling') and 'object extraposition' respectively. In these structures, the direct object arguably does not surface in a position inside the verb phrase (which I take to be the locus of the OV/VO alternation under investigation) but rather in a derived position. By this token, OAuxV and VAuxO-clauses do not directly teach us anything about the diachrony of the VO-order.

3.2.2 Results

I will now present the results of my own corpus study. I only included data from the individual texts listed in Table 1 when a threshold of 20 clauses was reached (i.e. when I counted at least 20 clauses with an auxiliary, a transitive non-finite verb and an overt direct object), in order to be sure that the calculation of the average values of VO and OV is based on a sufficient amount of tokens and thus able to provide a reliable estimate of the actual rates.

Let us start with clauses with analytic deponent verbs, which I take to be the most unambiguous case of a monoclausal structure in which the different VP-internal object positions can be told apart. As it turns out, the figures are rather surprising: not only is VO strongly dispreferred in the earlier period, it is even rarer in the late period:

Author	**Date**	**# AuxVO**	**# AuxOV**	**# VOAux**	**# OVAux**	**Total # of clauses**	**# VO**	**# OV**	**% VO**	**% OV**
Cicero	55 BC	15	16	4	197	232	19	213	8,19	91,81
Livius	10 AD	1	1	34	321	357	35	322	9,8	90,2
Seneca	60 AD	0	2	2	89	93	2	91	2,15	97,85
Frontinus	90 AD	0	0	0	25	25	0	25	0	100
Quintilianus	95 AD	8	5	0	49	62	8	54	12,9	87,1
Plinius	100 AD	3	2	0	26	31	3	28	9,68	90,32
Tacitus	110 AD	0	0	2	63	65	2	63	3,08	96,92
Suetonius	120 AD	1	0	1	125	127	2	125	1,57	98,43
Gaius	170 AD	1	0	0	29	30	1	29	3,33	96,67
ca. 170-320 AD: NO/VERY FEW ATTESTATIONS.										
Historia Augusta	320 AD	5	0	0	121	126	5	121	3,97	96,03
Gesta Conl. Carthaginiensis	411 AD	0	0	0	24	24	0	24	0	100
Iordanes	550 AD	0	0	0	30	30	0	30	0	100

Total	34	26	43	1099	1202	77	1125	/	/

Table 4: the OV/VO alternation in clauses with an analytic form of a transitive deponent verb

The average rate of VO in clauses with an analytic form of a transitive deponent verb in the earlier period is 5,63%, compared to 1,32% in the later period. Given the virtual lack of variability in the later period, it is far from obvious to evaluate these figures. The results of a Mann-Whitney U test suggest that we cannot reject the null hypothesis that there is no difference between the average rates of VO in the two periods (U = 6,000; p = .209).

The picture changes when we turn to clauses with a modal auxiliary. Let us start with clauses with the auxiliary *possum* 'be able', which of all the auxiliaries that can take a VP-complement with a transitive lexical verb, is (by far) the most frequently attested one. The results are summarized in Table 5:

Author	**Date**	**# AuxVO**	**# AuxOV**	**# VOAux**	**# OVAux**	**Total # of clauses**	**# VO**	**# OV**	**% VO**	**% OV**
Cicero	55 BC	46	95	42	301	484	88	396	18,18	81,82
Caesar	50 BC	0	3	4	106	113	4	109	3,54	96,46
Varro	45 BC	12	5	4	41	62	16	46	25,81	74,19
Hyginus	15 BC	6	4	1	10	21	7	14	33,33	66,67
Vitruvius	0 BC	23	24	3	20	70	26	44	37,14	62,86
Seneca	60 AD	62	82	75	115	334	137	197	41,02	58,98
Petronius	60 AD	3	13	3	10	29	6	23	20,69	79,31
Tacitus	110 AD	1	8	15	16	40	16	24	40,00	60,00
Gaius	170 AD	11	32	4	59	106	15	91	14,15	85,85
ca. 170-320 AD: NO/VERY FEW ATTESTATIONS.										
Palladius	350 AD	10	5	2	16	33	12	21	36,36	63,64
Gesta Conl. Carthaginiensis	411 AD	17	16	1	20	54	18	36	33,33	66,67
Vegetius	420 AD	9	7	2	26	44	11	33	25,00	75,00
Pompeius Maurus	500 AD	192	38	0	5	235	192	43	81,70	18,30

Caesarius Arelatensis	520 AD	64	67	8	111	250	72	178	28,80	71,20
Total		456	399	164	856	1875	620	1255	/	/

Table 5: *possum* complemented by a(n active or deponent) transitive infinitive and an overt object.

Period	**Date**	**# AuxVO**	**# AuxOV**	**# VOAux**	**# OVAux**	**Total # of clauses**	**# VO**	**# OV**	**% VO**	**% OV**
Cicero	55 BC	6	20	15	101	142	21	121	14,79	85,21
Varro	45 BC	8	1	1	14	24	9	15	37,50	62,50
Seneca	60 AD	8	13	8	35	64	16	48	25,00	75,00
Gaius	170 AD	2	4	3	12	21	5	16	23,81	76,19
ca. 170-320 AD: NO/VERY FEW ATTESTATIONS.										
Palladius	350 AD	1	3	1	21	26	2	24	7,69	92,31
Gesta Conl. Carthaginiensis	411 AD	8	1	3	20	32	11	21	34,38	65,63
Pompeius Maurus	500 AD	86	40	0	29	155	86	69	55,48	44,52
Caesarius Arelatensis	520 AD	17	17	2	27	63	19	44	30,16	69,84
Total		136	99	33	259	527	169	358	/	/

Table 6: *debeo* complemented by a(n active or deponent) transitive infinitive and an overt object.

In Table 5, we see that the average rate of VO in clauses with the modal verb *possum* in the earlier period is 25,98%, compared to 41,04% in the later period. If we compare these averages, it turns out that, despite there being a rather big difference in terms of absolute frequencies, this difference is not statistically significant (T-test, independent samples, p = .139). Observe that the apparently higher frequency of VO in the later period is largely due to the extremely high rate of VO in one author, viz. Pompeius Maurus, who produces VO in over 81% of all the structurally non-ambiguous environments.[viii]

Turning to the second group of clauses with a modal auxiliary (Table 6), we observe that the average rate of VO in clauses with *debeo* is 25,28% in the earlier period, compared to 31,39% in the later period. If we compare these averages, it once again turns out that this difference is not statistically significant (T-test, independent samples, p = .562).

3.3 Summary: continuity rather than change

Although it is clear that the three samples of structurally non-ambiguous environments investigated above are quite different from one another (with frequencies of VO ranging from 1% to 41%), one of the things they have in common is the fact that the values of VO do not come anywhere near the average of 61,68% that was found in the studies that did not control for potential confounds due to structurally ambiguous clauses entering the sample.

	Type of environment	**Rate of VO**		**Statistically significant?**
		early period	**late period**	
1.	All clauses	27,83%	61,68%	YES

2.	Clauses with BE (analytic deponents)	5,63%	1,32%	NO
3.	Clauses with *possum* 'be able'	25,98%	41,04%	NO
4.	Clauses with *debeo* 'have to'	25,28%	31,39%	NO
5.	All structurally non-ambiguous environments (rows 2-4 together)	18,96%	24,58%	NO

Table 7: Diachrony of VO in structurally non-ambiguous environments: summary.

A second difference between this study and earlier ones is that when comparing the average frequencies of VO in the earlier and the later period, only the results of studies that looked at all types of clauses indiscriminately yield a statistically significant difference. No such effects could be observed in the case of the different samples of structurally non-ambiguous environments, nor for the totality of these samples (18,96% compared to 24,58%, independent samples T-test, p= .703), despite there being differences in absolute frequencies.

4. Conclusion and directions for future research

The main empirical conclusion of the above discussion is that the rise of VO as the predominant word order pattern for VP-internal direct objects is much slower than commonly assumed. What is more, the available data are such that no statistically significant rise of VO can be demonstrated in a period of about 600 years (1st century BC - 6th century AD), in strong contrast with what is commonly assumed. At the methodological level, it was claimed that given the

considerable flexibility of Latin word order, surface strings containing multiple lexical categories like single synthetic verbs and their arguments, but little or no functional material like an auxiliary or a subordinating conjunction are multiple ways structurally ambiguous, and are likely to distort quantitative data when taken up in a study on (synchronic or diachronic) word order variation.

It goes without saying that the results of the corpus work reported on in section 3.2 are in many respects preliminary, as many variables that arguably play a role in determining object positions were not taken into account: factors like information structure (old vs. new information, or topic vs. focus), weight and complexity of the direct object, and related to this, its categorial status (nominal, pronominal and clausal) presumably strongly influence the linear position of the object (although this influence is probably stronger at the synchronic than at the diachronic level, as many usage-based factors of this type tend to be stable through time). I leave it for future research to assess the role of these variables, in order to arrive at a more accurate picture of object placement in the history of Latin.

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[1] See also Danckaert (2012).

[2] It needs to be added that occasional exceptions to this generalization have been reported: see for instance Franks & Lavine (2006) on word order in Lithuanian infinitival clauses.

[3] In the light of the claim made earlier that the OV/VO alteration is a multivariate phenomenon (cf. section 1.1), one will have to assume that the factor 'time' is not the only variable in the equation. In addition, it is conceivable that the diachronic change that eventually took place is correlated with for instance socio-linguistic variation. For instance, it has been claimed that this rise of the order VO is foreshadowed in so-called 'vulgar' Latin texts which date from the first century AD and show influence from colloquial registers of Latin, like Petronius' *Satyricon* (Polo 2004) and Vitruvius' treatise *De architectura* (Pinkster 1991). See also Adams (1976a). However, the exact relationship between the diachrony and various synchronic factors remains to be explored in detail.

[4] For texts for which Ledgeway's overview reports the results of more than one study, I only included the one that looked at the largest text sample. I left out texts dating from later than 600 AD.

[5] The procedure with T-tests comparing the averages of the two periods identified above is admittedly coarse. In a more detailed study, one could evaluate the influence of the factor 'time' on the outcome variable 'average frequency of VO' by means of a (possible multivariate) regression model, which can be expected to yield a more accurate result.

[6] For the sake of the argument, I am making the simplifying assumption that all three of these auxiliaries lexicalize the same slot in the clause (say the T-node in a phrase marker). Although in a more detailed structural representation (in the spirit of Cinque 1999, 2006), there would presumably be minor differences between the positions of the three auxiliaries (and perhaps also between the positions occupied by the non-finite verbs they are complemented by), all three environments can be taken to qualify as monoclausal domains (see Cinque (2006), and specifically on Latin, Zennaro (2006) and Ledgeway (2012: 194-195) on Latin).

[7] Apart from noun phrases with accusative morphology, I also included accusative pronouns as well as (pro)nominal direct objects with genitive, dative and ablative morphology and clausal complements of different kinds. To all likelihood, differentiating between these different types of objects might reveal a good deal of variation *qua* object placement (e.g. clausal complements are expected to follow their selecting verb even in authors who strongly prefer OV), but controlling for these factors falls outside the scope of this preliminary study. In any event, I expect the factor 'object type' to give rise to synchronic variation rather than to diachronic variation.

[viii] Without Pompeius, the average of VO is only 30,87%.