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## 1. Introduction

### 1.1 Scope of the study

- syntax and diachronic evolution of two alternations *qua* directionality of complementation in the lower part of the Latin clause, viz. (i) OV/VO (1) and (ii) VPAux/AuxVP (2):

- (1) a. Caesar exercitum reduxit. **(S)OV**  
       Caesar.NOM army.ACC led.back.PF.3.SG  
       'Caesar led back his army.' (= Caes. Gal. 3.29)
- b. Pater accepit beneficium. **(S)VO**  
       father.NOM receive.PF.3.SG benefit.ACC  
       'The father received the benefit.' (Sen. Ben. 5.19.8)
- (2) a. Atque illo tempore huius auus Lentuli uir **AuxVP**  
       and that.ABL time.ABL this.GEN grandfather.NOM Lentulus.GEN man.NOM  
       clarissimus armatus Gracchum est persecutus.  
       very.famous.NOM armed.NOM Gracchus.ACC be.PR.3.SG followed.NOM  
       'And at that time this Lentulus' famous grandfather attacked Gracchus with armed forces.'  
       (= Cic. Cat. 4.13)
- b. qui pabulatores persecuti erant. **VPAux**  
       who.NOM foragers.ACC followed.NOM be.IMPF.3.PL  
       'who had followed the foragers.' (= Front. Strat. 2.5.31)

- the Aux's considered: (i) **BE-auxiliaries** with a deponent past participle as a complement, or (ii) **modal auxiliaries** complemented by an infinitival V.

- with the term 'object' I will refer to all complements of non-finite verbs which (i) are not unambiguously left-peripheral and (ii) which are realized by either (a) a clausal or (b) infinitival

complement or (c) a case-marked noun phrase (DP) or pronoun, regardless of whether this element bears accusative (1), genitive (3)a), dative (3)b) or (3)c) ablative morphology. A'-moved complements and PP-complements are not taken into account.

- (3) a. qui [paupertatis suae] oblitus est  
 who.NOM poverty.GEN his.GEN forgotten.NOM be.PR.3.SG  
 'who has forgotten his own poverty.' (Sen. Ben. 1.7.1-3)
- b. qui regi insidiati essent  
 who.NOM king.DAT ambushed.NOM be.SUBJ.IMPF.3.PL  
 'who had ambushed the king.' (= Q. Curt. Hist. 6.11.18-21)
- c. qui improbe [credita pecunia] usus est  
 who shameless.ADV loaned.ABL money.ABL used.NOM be.PR.3.SG  
 'who made improper use of loaned money.' (= Cic. Rab. Post. 7)

## 1.2 Corpus work

### 1.2.1 Sources

- morphosyntactically annotated database: **LASLA** (Laboratoire d'Analyse Statistique des Langues Anciennes, Université de Liège); contains information about:

- 1/ parts of speech
- 2/ case, gender and number of nominals; tense, diathesis, mood of verb forms
- 3/ word order

- current project 'LatSynt': add information on syntactic boundaries to the database; soon to come: the entire database searchable with TMX ('Translation Memory eXchange').

- for other (esp. late) texts and some early technical treatises (i.e. non-literary texts)), I used the online text editions available at **www.brepolis.net**.

### 1.2.2 Texts included in the study

- basic corpus:

|     | Author (work(s))                                                                  | Period     | # words | Source    |
|-----|-----------------------------------------------------------------------------------|------------|---------|-----------|
| 1.  | Cato ( <i>De Agricultura</i> )                                                    | ca. 160 BC | 16026   | Hyperbase |
| 2.  | Cicero (selection of speeches)                                                    | ca. 60 BC  | TBD     | Hyperbase |
| 3.  | Caesar ( <i>De bello ciuili, De bello Gallico</i> 1-7)                            | ca. 50 BC  | 79058   | Hyperbase |
| 4.  | Varro ( <i>Res rustica; De lingua Latina</i> )                                    | 45 BC      | 75619   | Brepolis  |
| 5.  | Hyginus ( <i>Astronomia</i> )                                                     | ca. 20 BC  | 22288   | Brepolis  |
| 6.  | Vitruvius ( <i>De architectura</i> )                                              | 0 AD       | 58630   | Brepolis  |
| 7.  | Seneca ( <i>Epistulae ad Lucilium, Consolationes, Dialogi, Apocolocyntosis</i> )  | ca. 50 AD  | TBD     | Hyperbase |
| 8.  | Petronius ( <i>Satyricon reliquiae</i> )                                          | ca. 60 AD  | 31093   | Hyperbase |
| 9.  | Frontinus ( <i>Strategemata, De aquaeductu urbis Romae</i> )                      | ca. 90 AD  | 30391   | Brepolis  |
| 10. | Tacitus ( <i>Germania, Dialogus de oratoribus, Agricola; Historiae, Annales</i> ) | ca. 110 AD | 165345  | Brepolis  |
| 11. | Gaius ( <i>Institutiones</i> )                                                    | ca. 170 AD | 43676   | Brepolis  |

| NO/VERY FEW ATTESTATIONS |                                                                        |            |       |          |
|--------------------------|------------------------------------------------------------------------|------------|-------|----------|
| 12.                      | Palladius ( <i>De ueterinaria, De agricultura</i> )                    | ca. 350    | 50119 | Brepolis |
| 13.                      | <i>Itinerarium Egeriae</i>                                             | 381-384 AD | 17552 | Brepolis |
| 14.                      | <i>Gesta Conlationis Carthaginiensis</i>                               | 411 AD     | 55002 | Brepolis |
| 15.                      | Vegetius ( <i>Ep. rei militaris, Mulomedicina</i> )                    | ca. 420 AD | 73428 | Brepolis |
| 16.                      | Cassius Felix ( <i>De medicina</i> )                                   | 447 AD     | 29673 | Brepolis |
| 17.                      | Victor Vitensis ( <i>Historia persecutionis Africanae prouinciae</i> ) | ca. 490 AD | 19777 | Brepolis |
| 18.                      | Pompeius Maurus ( <i>Commentum Artis Donati</i> )                      | ca. 500 AD | 79364 | Brepolis |
| 19.                      | Caesarius Arelatensis ( <i>Sermones</i> 1-80)                          | ca. 520 AD | 91753 | Brepolis |
| 20.                      | Anthimus ( <i>De obseruatione ciborum</i> )                            | ca. 535 AD | 4479  | Brepolis |
| 21.                      | Iordanes ( <i>Getica, Romana</i> )                                     | ca. 550 AD | 38039 | Brepolis |

Table 1: description of the corpus used (Latin prose texts, ca. 160 BC - 550 AD).

- additional shorter/hard-to-date texts:

|    | Author (work(s))                                  | Period             | # words | Source    |
|----|---------------------------------------------------|--------------------|---------|-----------|
| 1. | Quintus Curtius ( <i>Historiae</i> )              | 2nd century AD (?) | 72656   | Hyperbase |
| 2. | Plinius minor ( <i>Panegyricus</i> )              | 101 AD             | 19715   | Hyperbase |
| 3. | Gargilius ( <i>Medicinae ex oleris et pomis</i> ) | ca. 250 AD (?)     | 8533    | Brepolis  |
| 4. | <i>Mulomedicina Chironis</i>                      | ???                | 65580   | Brepolis  |
| 5. | <i>De re coquinaria</i> ('Apicius')               | ca. 400 AD (?)     | 15649   | Brepolis  |
| 6. | <i>Itinerarium Antonini Placentini</i>            | ca. 570 AD (?)     | 11586   | Brepolis  |

Table 2: other prose texts, systematically investigated but not systematically reported on.

- Finally, 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, viz. Livy's *ab Urbe condita* (ca. 10 BC - 20 AD), Quintilian's *Institutio Oratoria* (ca. 95 AD), Pliny the Younger's *Epistulae* (ca. 95 - 110 AD), Suetonius' *Vitae Caesarum* (ca. 120 AD) and the collection of texts known as the *Historia Augusta* (ca. 320 AD(?)).

### 1.3 Main empirical findings (and thus *explananda*)

- General tendency: there is less word order variation in late Latin than in classical Latin.
- The frequency of the order VPAux declines through time (but it is not entirely obvious to diagnose this evolution)
- In contrast, the order OV remains the statistically predominant one even in late Latin (but this can only be diagnosed if one looks at the right data)
- The pattern VOAux is only available in classical Latin (and this tells us something about the nature of the VPAux order in both classical and late Latin).

### 1.4 On grammar and usage (and interpreting frequencies)

- In Dutch, past participles can (apparently freely) either precede or follow an auxiliary:

- (4) a. dat Jan <geslapen> heeft <geslapen>  
that Jan slept has  
'that Jan has slept'.

- distribution of the two orders: governed by a functional factors, like register, information structure, prosody. For instance, de Sutter (2009: 229) lists the following 9 factors that can influence the choice between one VAux and AuxV in Dutch embedded clauses:

- (i) distance between previous clause accent and participial accent (# of accented syllables),
- (ii) distance between following clause accent and participial accent (# of accented syllables),
- (iii) morphological structure of participle [ $\pm$  separable],
- (iv) presence vs. absence of extraposed constituent,
- (v) length of the middle field,
- (vi) definiteness of the last preverbal constituent,
- (vii) inherence of the last preverbal constituent,
- (viii) type of finite verb [ $\pm$  copular] and
- (ix) syntactic persistence [ $\pm$  previous VPAux]

- However, no matter how many of the conditions favouring the order AuxVP in Dutch are met, the grammar of German can never generate this structure. In other words, rules of German syntax clearly outrank the functional constraints listed above.

(5)    dass    Jan    <geschlafen>    hat    <\*geschlafen>  
         that    Jan    slept                has

- Later in this talk I will suggest that classical Latin is more like Dutch in that (i) the grammar makes available a number of options (ii) the ultimate choice between which is determined by a number of extra-grammatical factors, and that late Latin is more like German: More specifically, I will suggest that...

... there is converging evidence suggesting that the transition from a predominantly head-final TP and VP (classical Latin) to almost exclusive head-initiality proceeded through a stage of verb **cluster formation**, syntactically derived through head-movement (incorporation).

- it follows that, esp. in the earlier stages of the Latin language, it is very hard to determine what exactly the nature is of the variation observed. This problem might at least partially be solved by differentiating between different types of

- O (clause, DP, pronoun)
- V (participles vs. infinitives)
- Aux (BE-auxiliary, different types of modals)
- clause type and/or illocutionary force
- embedded vs. main clauses

and by taking into account language-external factors like register, genre and perhaps also geographic spread (for later Latin).

## 2. O's, V's and Aux's: a first look at the data

### 2.1 'Analytic monoclausality': where to look?

- Two contexts (i) which can safely be assumed to be monoclausal and (ii) where T and V can be told apart:

- clauses with an analytic verb form of a (semi-)deponent verb
- embedded declaratives with a future tense infinitive (and an overt BE-auxiliary)

### 2.1.1 Analytic deponents

- deponent verb =<sub>def</sub> morphologically passive without being endowed with the semantics and argument structure of passives (see Flobert (1975), Embick (2000), Xu, Aronoff & Anshen (2007), and other contributions in Baerman, Corbett, Brown & Hippisley (2007).

- Embick (2000): a synthetic-analytic alternation as the one illustrated in (6) does not reflect any deep syntactic difference between two sentences like (6)a) and (6)b):

- (6) a. imperium                      obtinuit  
       supreme.authority.ACC    obtain.PF.3.SG  
       'he obtained authority.' (= Liv. aUc 9.34.1)  
       b. imperium                      adeptus                      est  
       supreme.authority.ACC    obtained.NOM    be.PR.3.SG  
       'he obtained the empire.' (= Tac. Ann. 2.42.3)

- Instead, the difference between (6)a) and (6)b) presumably is one of lexicalization, or, in terms of the terminology of Hale & Keyser (1993), a matter of L-syntax rather than of S-syntax (and thus ultimately a lexical accident).

### 2.1.2 Future tense embedded declaratives

- one other type of clause which (i) can contain an O, a V and an Aux and (ii) can be argued to be monoclausal, namely future tense infinitival clauses in (i) the complement of a raising verb like *uideor* 'to seem' (7)a) or (ii) in an *accusatiuus cum infinitiuo*, (7)b). In the former, the participle comes with nominative morphology, in the latter with accusative case marking:

- (7) a. quod      uidebatur              is              te              **uisurus**              **esse**  
       because    seem.IMPF.3.SG    that.NOM    you.ACC    see.PART.FUT.NOM    be.PR.INF  
       'because it seemed that he would be seeing you' (= Cic. Att. 4.16.9)  
       b. [...], cum omnes una      prope uoce      in eo      ipso      uos  
               while all.NOM one.ABL almost voice.ABL in him.ABL self.ABL you.ACC  
       spem      **habituos**              **esse**      dixistis.  
       hope.ACC have.PART.FUT.ACC    be.PR.INF say.PF.2.PL  
       'while all of you have declared almost unanimously that you would place your hope in this  
       very man.' (= Cic. Leg. Man. 59)

- combinations of the *-urus* participle and a form of *esse* typically do not express pure futurity (see e.g. Vincent & Bentley 2001: 144). Rather, they usually express a notion of 'intentionality' or 'immediacy'. In contrast, this shade of meaning is absent in clauses with a simple future tense.

- (8) Monendus      autem erit              qui              uasa      **empturus**              **est**, [...]  
       warn.GER.NOM PRT      be.FUT.3.SG who.NOM    pots.ACC    buy.PART.FUT.NOM    be.PR.3.SG  
       'He who is planning to purchase pottery should be warned [...].' (= Col. Agr. 12.45.3)

- (9) quis ergo **emet** agros istos?  
 who.NOM PRT buy.FUT.3.SG pieces.of.land.ACC those.ACC  
 'Then who will buy these lands?' (= Cic. Leg. agr. 1.14)

- however, the structures involving such a periphrastic infinitive conveying pure futurity are characterized by massive auxiliary omission, as in (10):

- (10) a. in eos qui haec egerunt impetum facturus uidetur.  
 in them.ACC who.NOM these.ACC do.PF.3.PL attack.ACC make.PART.FUT.NOM seem.PR.3.SG  
 'It seems that he will launch an attack against those who did that.' (= Cic. Att. 2.22.1)  
 b. se [...] legatos ad eos missuros dixerunt.  
 REFL.ACC envoys.ACC to them.ACC send.PART.FUT.ACC say.PF.3.PL  
 'They said that they would send ambassadors to them.' (= Cor. Nep. Them. 6.4)

- all early (pre-200 AD) texts: only 630 full future infinitives attested, 362 of which with order VPAux. 173 of those contained a transitive predicate with an overt direct object. Of the remaining 268 AuxVP-clauses, 134 came with an overt object.

### 2.1.3 A note on placement of *sum*

- one particularly stubborn myth in the literature says that the Latin verb (auxiliary/copula) BE is or can be a clitic (Wackernagel 1892; Adams 1994; Devine & Stephens 2006: 179ff), presumably by (false) analogy with Greek εἶμῃ, which in its neutral use is a genuine clitic. Adams (1994): *sum* in second position in a 'colon' (i.e. a prosodic unit; cf. Fraenkel 1932-'33), in which the first constituent is a focus (11)-(13). *Sum* itself would then be a focus marker.

- (11) non **esse** amplius fortunam **temptaturos**  
 not be.PR.INF broad.ADV.COMP fortune.ACC try.PART.FUT.ACC.M.PL  
 'they would not further try tempt fortune.' (= Caes. Bel. Gal. 5.55.2)
- (12) Piso **est** a populo Romano **factus**, non iste Piso.  
 Piso.NOM be.PR.3.SG by people.ABL Roman.ABL made.NOM not that.NOM Piso.NOM  
 'It was Piso who was elected by the Roman people, not you, who bears the same time.'  
 (= Cic. Pis. 2)
- (13) quoniam in rem publicam **sum** pariter cum re publica  
 since in cause.ACC public.ACC be.PR.1.SG equal.ADV with cause.ABL public.ABL  
**restitutus**  
 restored.NOM  
 'as I was restored to the state together with the state.' (= Cic. Red. sen. 36)

- what has been overlooked in this debate is the observation that this particular behaviour is by no means a property of *sum*: for instance, other auxiliaries (like *possum* 'be able', *soleo* 'be used to', *debeo* 'have to' and *audeo* 'dare') exhibit very similar behaviour:

- (14) Neque **posse** principem sua scientia cuncta **complecti** [...].  
 nor be.able.to.PR.INF leader.ACC his.ABL knowledge.ABL all.ACC.N.PL embrace.PR.INF  
 'It was neither possible for the prince to embrace all facts with his on knowledge, [...].'  
 (= Tac. Ann. 3.69)

- (15) Quod qui quaerit scit non **solere** homines  
 because who.NOM ask.PR.3.SG know.PR.3.SG not be.used.to.PR.INF people.NOM  
 sibi ipsos **dare** beneficium.  
 REFL.DAT self.ACC.N.PL give.PR.INF benefit.ACC  
 'For whoever asks this question knows that people don't usually bestow benefits upon themselves.' (= Sen. Ben. 5.7.1)
- (16) Et ideo **debent** egredientes reliqui eis iam **praestare** secretum [...].  
 and therefore have.to.PR.3.PL exiting.NOM other.NOM them.DAT PRT grant.PR.INF audience.ACC  
 'And the other people who are leaving therefore have to grant them an audience.'  
 (= Gesta Conl. Carth. cogn. 1 cap. 216)
- (17) Multo minus **audebant** liberi nefas ultimum **admittere**  
 much.ADV less.ADV dare.IMPF.3.PL children.NOM offence.ACC utmost.ACC permit.PR.INF  
 quam diu sine lege crimen fuit.  
 then long.time.ADV without law.ABL crime.NOM be.PF.3.SG  
 'Children much less often dared to commit the supreme sin, as long as it was a crime not penalized by the law.' (Sen. Clem. 1.23.1)

=> no evidence that placement of *sum* is in any different than placement of any other auxiliary.

## 2.2 A full paradigm

- O, V and Aux: all 6 logically possible orders attested:

- (18) legati urbem ingressi sunt. **SOVAux**  
 ambassadors.NOM city.ACC entered.NOM be.PR.3.PL  
 'The ambassadors entered the city.' (= Liv. aUc. 45.2.3)
- (19) Nec tam insolita laus esset prosecuta **SAuxVO**  
 nor so unusual.NOM praise.NOM be.SUBJ.IMPF.3.SG accompanied.NOM  
 dicentem, [...].  
 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)
- (20) Sed istae artes non sunt magnitudinem animi professae. **SAuxOV**  
 but those.NOM arts.NOM not be.PR.3.PL greatness.ACC mind.GEN confessed.NOM  
 'But those types of art have not been indicative of a great mind.' (= Sen. Ep. 87.16)
- (21) Tot uadibus accusator uadatus est reum. **SVAuxO**  
 so.many sureties.ABL accuser.NOM accepted.sureties.from.NOM be.PR.3.SG accused.ACC  
 'With so many sureties the accuser admitted the accused to bail.' (= Liv. aUc. 3.13.8)
- (22) Baebius Phacium est adgressus. **SOAuxV**  
 Baebius.NOM Phacium.ACC be.PR.3.SG attacked.NOM  
 'Babius attacked Phacium.' (= Liv. aUc. 36.13.3)
- (23) [...] ne ante conspici posset a uulgo **SVOAux**  
 so.that.not before notice.PASS.INF.PR be.able.SUBJ.IMPF.3.SG by people.ABL  
 quam rex adlocutus milites esset.  
 than king.NOM addressed.NOM soldiers.ACC 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)

### Puzzle 1:

How come the pattern VOAux is grammatical in classical Latin, but not in late Latin and many other languages (Old and Middle English, present day Continental West Germanic languages,...)?

## 2.3 The OV/VO alternation

- Assumption: alternation between discourse neutral OV and discourse neutral VO to be explained in terms of (presence or absence) of roll-up movement of the type argued for in Biberauer, Holmberg & Roberts (2010).

- the movement triggerin feature  $\wedge$ , when associated with a c-selection feature, can 'spread' upwards, associating itself with the c-selection feature of heads in the Extended Projection of a lexical head => iterated L-movement. Importantly, this is subject to Relativized Minimality (Rizzi 1990): it cannot skip any head in the Extended Projection.

- The facts: 'clean' OV/VO = 'OVAux'/'AuxOV' and 'VOAux'/'AuxVO', i.e. those cases where it is likely that the direct object is in its VP-internal base position. 'Dirty' OV/VO: patterns 'OAuxV' (scrambling) and 'VAuxO' (extraposition) included.

| Author                   | Period | #<br>123 | #<br>132 | #<br>213 | #<br>312 | #<br>231 | #<br>321 | #<br>clusters | clean<br>VO | clean<br>OV | dirty<br>VO | dirty<br>OV |
|--------------------------|--------|----------|----------|----------|----------|----------|----------|---------------|-------------|-------------|-------------|-------------|
| Cicero                   | 55 BC  | 15       | 16       | 50       | 54       | 4        | 197      | 336           | 19          | 213         | 69          | 267         |
| Caesar                   | 50 BC  | 0        | 0        | 10       | 7        | 0        | 14       | 31            | 0           | 14          | 10          | 21          |
| Sallustius               | 20 BC  | 0        | 0        | 4        | 2        | 0        | 17       | 23            | 0           | 17          | 4           | 19          |
| Vitruvius                | 0 BC   | 2        | 2        | 2        | 12       | 0        | 4        | 22            | 2           | 6           | 4           | 18          |
| Livius                   | 10 AD  | 1        | 1        | 68       | 91       | 34       | 321      | 516           | 35          | 322         | 103         | 413         |
| Seneca                   | 60 AD  | 0        | 2        | 18       | 1        | 2        | 89       | 112           | 2           | 91          | 20          | 92          |
| Frontinus                | 90 AD  | 0        | 0        | 20       | 2        | 0        | 25       | 47            | 0           | 25          | 20          | 27          |
| Quintilianus             | 95 AD  | 8        | 5        | 15       | 28       | 0        | 49       | 105           | 8           | 54          | 23          | 82          |
| Plinius                  | 100 AD | 3        | 2        | 27       | 4        | 0        | 26       | 62            | 3           | 28          | 30          | 32          |
| Tacitus                  | 110 AD | 0        | 0        | 12       | 1        | 2        | 63       | 78            | 2           | 63          | 14          | 64          |
| Suetonius                | 120 AD | 1        | 0        | 21       | 3        | 1        | 125      | 151           | 2           | 125         | 23          | 128         |
| Gaius                    | 170 AD | 1        | 0        | 7        | 1        | 0        | 29       | 38            | 1           | 29          | 8           | 30          |
| NO/VERY FEW ATTESTATIONS |        |          |          |          |          |          |          |               |             |             |             |             |
| H. Aug.                  | 320 AD | 5        | 0        | 40       | 8        | 0        | 121      | 174           | 5           | 121         | 45          | 129         |
| Egeria                   | 385 AD | 0        | 1        | 12       | 0        | 0        | 10       | 23            | 0           | 11          | 12          | 11          |
| Gesta C.C.               | 411 AD | 0        | 0        | 18       | 3        | 0        | 24       | 45            | 0           | 24          | 18          | 27          |
| Caesarius                | 520 AD | 0        | 0        | 14       | 0        | 0        | 10       | 24            | 0           | 10          | 14          | 10          |
| Iordanes                 | 550 AD | 0        | 0        | 5        | 1        | 0        | 30       | 36            | 0           | 30          | 5           | 31          |
|                          | Total  | 39       | 29       | 383      | 244      | 45       | 1225     | 1965          | 84          | 1254        | 467         | 1498        |

Table 3: the OV/VO alternation in clauses with an analytic form of a transitive deponent verb: absolute figures.



| Author                   | Period | %<br>123 | %<br>132 | %<br>213 | %<br>312 | %<br>231 | %<br>321 | clean<br>VO | clean<br>OV | dirty<br>VO | dirty<br>OV |
|--------------------------|--------|----------|----------|----------|----------|----------|----------|-------------|-------------|-------------|-------------|
| Cicero                   | -60    | 4,46     | 4,76     | 14,88    | 16,07    | 1,19     | 58,63    | 8,19        | 91,81       | 20,54       | 79,46       |
| Caesar                   | -50    | 0        | 0        | 32,26    | 22,58    | 0        | 45,16    | 0           | 100         | 32,26       | 67,74       |
| Sallustius               | -20    | 0        | 0        | 17,39    | 8,7      | 0        | 73,91    | 0           | 100         | 17,39       | 82,61       |
| Vitruvius                | 0      | 9,09     | 9,09     | 9,09     | 54,55    | 0        | 18,18    | 25          | 75          | 18,18       | 81,82       |
| Livius                   | 10     | 0,19     | 0,19     | 13,18    | 17,64    | 6,59     | 62,21    | 9,8         | 90,2        | 19,96       | 80,04       |
| Seneca                   | 50     | 0        | 1,79     | 16,07    | 0,89     | 1,79     | 79,46    | 2,15        | 97,85       | 17,86       | 82,14       |
| Frontinus                | 90     | 0        | 0        | 42,55    | 4,26     | 0        | 53,19    | 0           | 100         | 42,55       | 57,45       |
| Quintilianus             | 95     | 7,62     | 4,76     | 14,29    | 26,67    | 0        | 46,67    | 12,9        | 87,1        | 21,9        | 78,1        |
| Plinius                  | 100    | 4,84     | 3,23     | 43,55    | 6,45     | 0        | 41,94    | 9,68        | 90,32       | 48,39       | 51,61       |
| Tacitus                  | 110    | 0        | 0        | 15,38    | 1,28     | 2,56     | 80,77    | 3,08        | 96,92       | 17,95       | 82,05       |
| Suetonius                | 120    | 0,66     | 0        | 13,91    | 1,99     | 0,66     | 82,78    | 1,57        | 98,43       | 15,23       | 84,77       |
| Gaius                    | 170    | 2,63     | 0        | 18,42    | 2,63     | 0        | 76,32    | 3,33        | 96,67       | 21,05       | 78,95       |
| NO/VERY FEW ATTESTATIONS |        |          |          |          |          |          |          |             |             |             |             |
| Hist. Aug.               | 320    | 2,87     | 0        | 22,99    | 4,6      | 0        | 69,54    | 3,97        | 96,03       | 25,86       | 74,14       |
| Egeria                   | 385    | 0        | 4,35     | 52,17    | 0        | 0        | 43,48    | 0           | 100         | 52,17       | 47,83       |
| Gesta C. Carth.          | 411    | 0        | 0        | 40       | 6,67     | 0        | 53,33    | 0           | 100         | 40          | 60          |
| Caesarius                | 520    | 0        | 0        | 58,33    | 0        | 0        | 41,67    | 0           | 100         | 58,33       | 41,67       |
| Iordanes                 | 550    | 0        | 0        | 13,89    | 2,78     | 0        | 83,33    | 0           | 100         | 13,89       | 86,11       |

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

- The average rate of 'clean' VO in clauses with an analytic form of a transitive deponent verb in the earlier period is **6,31%**, compared to **0,79%** 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 ( $U = 13$ ,  $p = .063$ ).

- However, as I will suggest below, it is not unlikely that at least some of the cases involving the surface pattern VAuxO involve a VP-internal object (despite appearances). Let's therefore have a look at the evolution of dirty VO.

- The average rate of 'dirty' VO in clauses with an analytic form of a transitive deponent verb in the earlier period is **24,44%**, compared to **38,05%** in the later period. If we compare these averages, it turns out that this difference is not statistically significant (t-test (independent samples),  $p = .072$ ; although it is intuitively clear that there seems to be at least some effect (cf. section 6.3 below)?

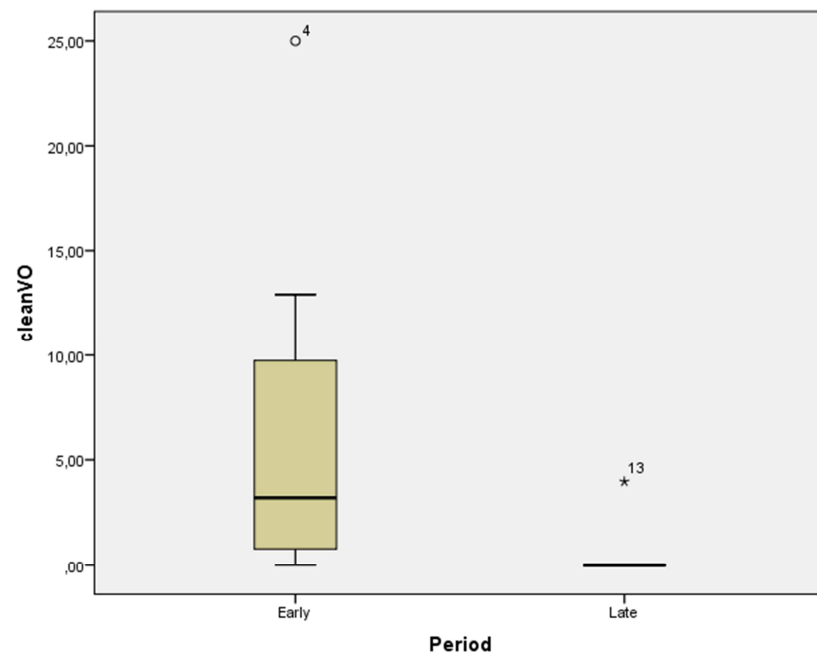


Figure 1: spread of the variation of the 'clean' VO frequencies.

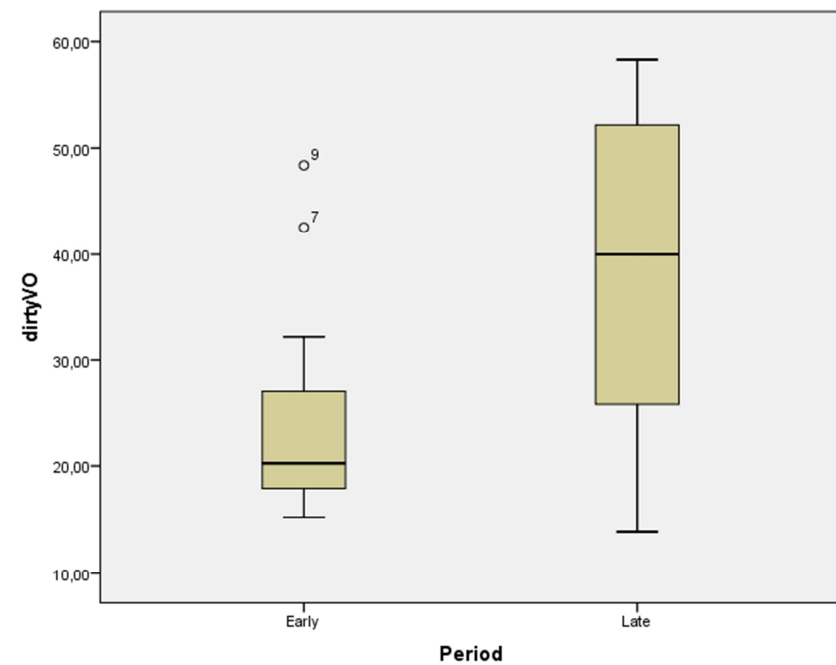


Figure 2: spread of the variation of the 'dirty' VO frequencies.

- In any event, the above results quite unexpected (under either scenario), as they goes against most of what is usually claimed in the literature. The data in Ledgeway (2012: ch. 5) suggest the following frequencies for the order VO:

| Text/Author                                   | OV/VO  |       |
|-----------------------------------------------|--------|-------|
| S.C. Bacch. (Álvarez Pedrosa 1988)            | 100.0% | 0.0%  |
| Leges 2-c. B.C. (Álvarez Pedrosa 1988)        | 96.2%  | 3.8%  |
| Pl. Capt. Adams (1976a: 94–5)                 | 57.7%  | 42.3% |
| Pl. Amph. 1–400 (Adams 1976a: 95)             | 64.6%  | 35.4% |
| Pl. Aul. 1–325 (Adams 1976a: 95)              | 58.3%  | 41.7% |
| Pl. Asin. 1–380 (Adams 1976a: 95)             | 66.7%  | 33.3% |
| Pl. Mil. 1–500 (Adams 1976a: 95)              | 43.8%  | 56.2% |
| Ter. (Moreno Hernández 1989)                  | 67.0%  | 33.0% |
| Cic. Cat. (Koll 1965: 246-7)                  | 67.0%  | 33.0% |
| Cic. Leg. (Koll 1965: 246-7)                  | 81.8%  | 18.2% |
| Cic. Att. 1 (Cabrillana 1993a)                | 81.0%  | 19.0% |
| Cic. S. Rosc. 1-34 (Adams 1976a)              | 95.9%  | 4.1%  |
| Cic. Deiot. (sects 1-34) (Adams 1976a)        | 85.7%  | 14.3% |
| Cic. philosophical writings (Bolkestein 1989) | 79.0%  | 21.0% |
| Cic. pro Mil. (Panchón 1986)                  | 63.1%  | 36.9% |
| Caes. B.G. 1 (Panchón 1986)                   | 82.3%  | 17.7% |
| Vitruvius 1.1–4 (Pinkster 1991: 72)           | 66.7%  | 33.3% |
| Ov. Met. (Amacker 1989) V+ 2 elements         | 55.7%  | 44.3% |
| Petr. Sat. 26–68 (Polo 2004: 378–9) O = NP    | 75.0%  | 25.0% |
| Celsus 1-6 (Pinkster 1991: 72)                | 85.7%  | 14.3% |
| Pompey Inscriptions (Ramat 1984)              | 64.2%  | 35.8% |
| Liv. (Amacker 1989) V+ 2 elements             | 78.0%  | 22.0% |
| NO/VERY FEW ATTESTATIONS                      |        |       |
| Cl. Terent. (Adams 1977: 68, 74–5)            | 28.1%  | 71.9% |
| Vetus, Ruth (Talavera 1981)                   | 9.8%:  | 90.2% |
| Per. Aeth. (Cabrillana 1999: 321) O = NP      | 37.0%: | 63.0% |
| Anon. Val. II (Adams 1976b: 136)              | 41.3%  | 58.7% |
| Vulgata (100 sentences; Pinkster 1991: 72)    | 65.2%  | 34.8% |

Table 5: Distribution of OV / VO across different Latin authors/texts, adapted from Ledgeway (2012: ch. 5, his table 5.3)

- the average rate of VO in the earlier period (ca. 100 BC – 100 AD, 22 text samples) is **26,6%**, compared to **63,7%** in the later period (ca. 350 – 450 AD, 5 text samples).

- The difference between those two average frequencies is statistically highly significant (T-test for independent samples,  $p < .001$ ).

### **Puzzle 2:**

How come no increase in the frequency of VO could be detected in my sample, whereas all earlier studies claimed that late Latin was predominantly of VO-language?

## 2.4 The AuxVP/VPAux alternation

### 2.4.1 An important *excursus*: deriving VPAux in classical Latin

- very strong generalization: \*V<sub>highest</sub> *non*. Most often, *non* is left adjacent to main verb (24), but it can also occur more to the left (25)-(26), all other things remaining equal:

- (24) Romanus equitatus [ipsum quidem regem] Elatiae **OVNegAux**  
 Roman.NOM cavalry.NOM self.ACC PRT king.ACC Elatia.LOC  
 adsecutus non est.  
 reached.NOM not be.PR.3.SG  
 'The roman cavalry did not manage to find the king himself in Elatia.' (= Liv. aUc. 36.19.10)

- (25) qui uicinos suos non cohortatus est [...] **ONegVAux**  
 who.NOM neighbours.ACC his.ACC not incited.NOM be.PR.3.SG  
 'who did not encourage his neighbours.' (= Cic. Phil. 7.24)

- (26) Cur non Habiti exemplo usus es [...] **NegOVAux**  
 why not Habitus.GEN example.ABL used.NOM be.PR.2.SG  
 'Why didn't you follow the example of Habitus?' (= Cic. Clu. 172)

- NOT: '\*V<sub>fin</sub> non'. Evidence: non-finite clauses, like ablative absolutes (as in (27)-(28)) and *accusatiui cum infinitiuo* (infinitival embedded declaratives, (29)-(30)):

- (27) a. interiore parte humorem non requirente  
 inner.ABL part.ABL moist.ACC not require.PART.PR.ABL.F.SG  
 'while the inside art does not require fluid.' (= Cels. Med. 3.4.5)  
 b. \* <requirente> interiore parte <requirente> humorem non requirente
- (28) a. plerisque extremas syllabas non perferentibus  
 most.ABL last.ACC syllables.ACC not pronounce.PART.PR.ABL.M.PL  
 'as most people don't pronounce the last syllables.' (= Quint. I.O. 11.3.33)  
 b. \* <perferentibus> plerisque <perferentibus> extremas syllabas non perferentibus
- (29) a. credo igitur hunc me non amare.  
 believe.PR.1.SG PRT that.ACC.M.SG I.ACC not like.PR.INF  
 'So I believe that he doesn't like my performance.' (=Cic. Att. 9.18.1)  
 b. \*credo igitur <amare> hunc <amare> me non amare.
- (30) a. miratur [te non habuisse rationem huius  
 be.surprised.PR.3.SG you.ACC not have.PF.INF consideration.ACC that.GEN  
 publicae difficultatis].  
 public.GEN difficulty.GEN  
 'he is surprised that you failed to appreciate the overall importance of this matter.'  
 (= Cic. Att. 7.18.4)  
 b. \*miratur [te habuisse non rationem huius publicae difficultatis].

- Explanation: Head Movement Constraint (Travis 1984), or (any of) its Relativized Minimality based successors. Question: how come participles and infinitives (arguable also X°s) can freely occur to the left of *non*? Solution: phrasal movement across *non*.

- NO (repeated) local roll-up: assuming a base structure with preverbal negation (Zanuttini 1997), roll-up repeated 'all the way' yields a pattern with clause-final negation (31)b) (never attested in Latin), and a derivation with only roll-up of VP to Spec,TP would not move VP past Neg (31)c):

- (31) a. Neg > Mod/T > VP  
 b. VP > Mod/T > Neg **full roll-up**  
 c. Neg > VP > Mod/T **partial roll-up**

- Placement of functional adverbs (Cinque 1999): sample of **2788 VPAux clauses** (from Cato, Cicero, Sallustius, Vitruvius, Livius, Petronius, Quintilianus, Quintus Curtius, Plinius minor, Suetonius and Historia Augusta) with a BE-auxiliary and a deponent participle, to see whether adverbs precede or follow the PaPa.<sup>1</sup> This yielded 143 sentences. The results are as follows:

| # pre-V adverbs | # V-Adv-Aux | # post-Aux adverbs |
|-----------------|-------------|--------------------|
| 134 (93,70%)    | 5 (3,50%)   | 4 (2,80%)          |

Table 6: adverb positions in VPAux clauses with a BE-auxiliary and a deponent participle.

- (32) mors ob oculos saepe uersata est. **pre-V adverb**  
 death.NOM before eyes.ACC often circled.NOM be.PR.3.SG  
 'Death was often before his eyes.' (= Cic. Rab. post. 39)
- (33) altero **usus** necessario est [...]. **V-Adv-Aux**  
 other.ABL used.NOM necessarily.ADV he.is  
 'He necessarily has used the other one.' (= Cic. Pro Sestio 92)
- (34) **Profectus est** aliquando tandem in Hispaniam. **post-Aux adverb**  
 left.NOM be.PR.3.SG once finally to Spain.ACC  
 'At some point he finally left for Spain.' (= Cic. Phil. 2.75)

=> order Adv-Part-Aux seems to be the neutral one. In other words, Latin behaves like Continental West Germanic languages like Dutch (35) and German:

<sup>1</sup> I searched this sample for the following 66 adverbs: *adhuc* 'until now', *aliquamdiu* 'quite a long while', *aliquando* 'once (in earlier times)', *antiquitus* 'formerly', *aperte* 'openly', *breuiter* 'shortly', *celeriter* 'quickly', *certe* 'certainly', *certo* 'certainly', *cito* 'quickly', *clam* 'hidden', *confestim* 'immediately', *continuo* 'continuously', *diserte* 'competently', *diu* 'a long time', *diutius* 'quite a long time', *diutissime* 'a very long time', *docte* 'wisely', *dubie* 'doubtfully', *extemplo* 'at once', *fere* 'maybe', *fortasse* 'maybe', *forte* 'maybe', *forsitan* 'maybe', *frequenter* 'frequently', *frustra* 'in vain', *furtim* 'unnoticed', *gradatim* 'gradually', *iam* 'already', *ilico* 'there', *improviso* 'unexpectedly', *interdum* 'in the mean while', *iterum* 'again', *lente* 'slowly', *libenter* 'gladly', *male* 'badly', *merito* 'deservedly', *multifariam* 'in many ways', *necessario* 'necassarily', *nequiquam* 'in vain', *olim* 'once, in earlier times', *omnino* 'altogether', *paene* 'almost', *palam* 'openly', *perraro* 'very rarely', *plerumque* 'most often', *profecto* 'certainly', *prope* 'almost', *propemodum* 'almost', *prudenter* 'carefully', *prudenterissime* 'very carefully', *quondam* 'once (at some point)', *raro* 'rarely', *repente* 'suddenly', *saepe* 'often', *sane* 'certainly', *sapienter* 'wisely', *semel* 'once (one (single) time)', *semper* 'always', *statim* 'at once', *stulte* 'stupidly', *tarde* 'late', *temere* 'in vain', *uix* 'hardly', *utcumque* 'in any casee' and *uulgo* 'widely'.

- (35) dat Jan waarschijnlijk vaak snel zijn huiswerk **zou willen kunnen maken**.  
 that Jan probably often quickly his homework would want.INF be.able.INF make.INF  
 'that Jan probably often quickly would want to make his homework.'

=> first indication that (classical) Latin exhibits some properties commonly associated with verb clustering languages. However, if it is indeed that there are such clustering effects, word order inside those clusters is remarkably flexible.

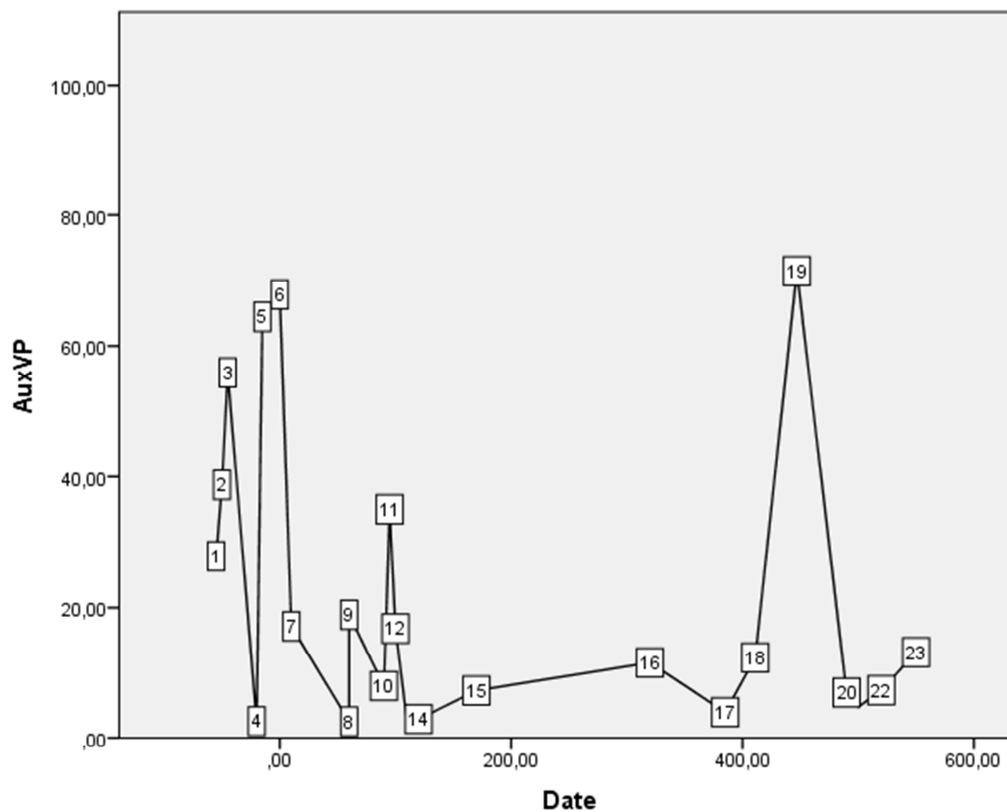
- In any event, these facts cast doubt on the hypothesis on the trigger of VP movement put forward in Danckaert 2012 (based on Biberauer & Roberts 2005), which said that VP movement was driven by an EPP-requirement of a functional head in the higher functional domain.

#### 2.4.2 An unexpected evolution, and one remarkable outlier

- the following table gives the frequencies of the AuxVP and VPAux orders (only authors/texts in which at least 20 clauses with a BE-auxiliary combined with a deponent past participle were found):

| Author                   | Date      | # AuxVP | # VPAux | # clauses | % AuxVP | % VPAux |
|--------------------------|-----------|---------|---------|-----------|---------|---------|
| Cicero                   | 55 BC     | 216     | 559     | 775       | 27,87   | 72,13   |
| Caesar                   | 50 BC     | 31      | 49      | 80        | 38,75   | 61,25   |
| Varro                    | 45 BC     | 33      | 26      | 59        | 55,93   | 44,07   |
| Sallustius               | 20 BC     | 1       | 38      | 39        | 2,56    | 97,44   |
| Hyginus                  | 15 BC     | 29      | 16      | 45        | 64,44   | 35,56   |
| Vitruvius                | 0 BC      | 38      | 18      | 56        | 67,86   | 32,14   |
| Livius                   | 10 AD     | 180     | 869     | 1049      | 17,16   | 82,84   |
| Seneca                   | 60 AD     | 5       | 193     | 198       | 2,53    | 97,47   |
| Petronius                | 60 AD     | 7       | 30      | 37        | 18,92   | 81,08   |
| Frontinus                | 90 AD     | 6       | 69      | 75        | 8,00    | 92,00   |
| Quintilianus             | 95 AD     | 83      | 154     | 237       | 35,02   | 64,98   |
| Plinius                  | 100 AD    | 18      | 89      | 107       | 16,82   | 83,18   |
| Tacitus                  | 110 AD    | 3       | 121     | 124       | 2,42    | 97,58   |
| Suetonius                | 120 AD    | 7       | 235     | 242       | 2,89    | 97,11   |
| Gaius                    | 170 AD    | 7       | 89      | 96        | 7,29    | 92,71   |
| NO/VERY FEW ATTESTATIONS |           |         |         |           |         |         |
| Historia Augusta         | 320 AD(?) | 38      | 290     | 328       | 11,59   | 88,41   |
| Egeria                   | 385 AD    | 3       | 73      | 76        | 3,95    | 96,05   |
| Gesta CC                 | 411 AD    | 11      | 78      | 89        | 12,36   | 87,64   |
| Cassius F.               | 447 AD    | 15      | 6       | 21        | 71,43   | 28,57   |
| Victor V.                | 490 AD    | 3       | 40      | 43        | 6,98    | 93,02   |
| Pompeius                 | 500 AD    | 3       | 60      | 63        | 4,76    | 95,24   |
| Caesarius                | 520 AD    | 8       | 101     | 109       | 7,34    | 92,66   |
| Iordanes                 | 550 AD    | 12      | 79      | 91        | 13,19   | 86,81   |
| <b>Total</b>             |           | 756     | 3363    | 4119      |         |         |

Table 7: Diachronic evolution of the order AuxVP in clauses with a BE-auxiliary and deponent past participle: absolute figures and percentages.



Graph 1: Diachronic evolution of the order AuxVP in clauses with a BE-auxiliary and deponent past participle.  
 1= Cicero, 2= Caesar, 3= Varro, 4= Sallustius, 5= Hyginus, 6= Vitruvius, 7= Livius, 8= Seneca, 9= Petronius, 10= Frontinus, 11= Quintilianus, 12= Plinius, 13= Tacitus, 14= Suetonius, 15= Gaius, 16= *Historia Augusta*, 17= *Itinerarium Egeriae*, 18= *Gesta Conlatonis Carthaginensis*, 19= Cassius Felix, 20= Victor Vitensis, 21= Pompeius Maurus, 22= Caesarius Arelatensis, 23= Jordanes

- even if we leave out Cassius Felix, we cannot demonstrate that the difference between the average rates of AuxVP in the two periods (viz. 24,56% in the early period, compared to 8,60% in the later period) is statistically significant (Mann-Whitney U test:  $U = 35$ ;  $p = .217$ ).

### Puzzle 3:

How come there is no trace in late Latin of the rise of the order AuxVP in clauses with a BE-auxiliary, which is to be generalized in all the Romance languages (presumably as a common inheritance)?

- and what about the values observed for Cassius Felix (who by the way can be dated with sufficient confidence halfway the fifth century (Langslow 2000: 56)) deserves further attention: are they due to the relatively small sample size (21 clauses), or is there something more interesting going on?

### Puzzle 3':

How come Cassius Felix' *De medicina* is the only late Latin text in which the (expected) order AuxVP is (strongly) preferred?

### 3. Broadening the picture

#### 3.1 Modal verbs and their infinitival complements: decline of VPAux, persistence of OV

##### 3.1.1 *possum*

- evolution of the AuxVP/VPAux (Table 8) and OV/VO (Table 9) alternations:

| Author                   | Period    | # 12 | # 21 | # clauses | %12   | %21   |
|--------------------------|-----------|------|------|-----------|-------|-------|
| Cato                     | 160 BC    | 10   | 34   | 44        | 22,73 | 77,27 |
| Cicero                   | 55 BC     | 528  | 1237 | 1765      | 29,92 | 70,08 |
| Caesar                   | 50 BC     | 26   | 378  | 404       | 6,44  | 93,56 |
| Varro                    | 45 BC     | 82   | 245  | 327       | 25,08 | 74,92 |
| Sallustius               | 20 BC     | 13   | 46   | 59        | 22,03 | 77,97 |
| Hyginus                  | 15 BC     | 44   | 40   | 84        | 52,38 | 47,62 |
| Vitruvius                | 0 BC      | 202  | 94   | 296       | 68,24 | 31,76 |
| Seneca                   | 50 AD     | 635  | 851  | 1486      | 42,73 | 57,27 |
| Petronius                | 60 AD     | 50   | 35   | 85        | 58,82 | 41,18 |
| Frontinus                | 90 AD     | 13   | 54   | 67        | 19,40 | 80,60 |
| Plinius                  | 100 AD    | 12   | 47   | 59        | 20,34 | 79,66 |
| Tacitus                  | 110 AD    | 60   | 154  | 214       | 28,04 | 71,96 |
| Gaius                    | 170 AD    | 109  | 278  | 387       | 28,17 | 71,83 |
| NO/VERY FEW ATTESTATIONS |           |      |      |           |       |       |
| Gargilius                | 250 AD(?) | 17   | 8    | 25        | 68,00 | 32,00 |
| Palladius                | 350 AD    | 150  | 113  | 263       | 57,03 | 42,97 |
| Itinerarium Egeriae      | 385 AD    | 15   | 25   | 40        | 37,50 | 62,50 |
| Gesta C. Carth.          | 411 AD    | 152  | 129  | 281       | 54,09 | 45,91 |
| Vegetius                 | 420 AD    | 142  | 103  | 245       | 57,96 | 42,04 |
| Cassius Felix            | 447 AD    | 18   | 11   | 29        | 62,07 | 37,93 |
| Victor Vitensis          | 490 AD    | 47   | 31   | 78        | 60,26 | 39,74 |
| Pompeius Maurus          | 500 AD    | 627  | 59   | 686       | 91,40 | 8,60  |
| Caesarius Ar.            | 520 AD    | 410  | 322  | 732       | 56,01 | 43,99 |
| Iordanes                 | 550 AD    | 23   | 15   | 38        | 80,00 | 20,00 |

Table 8: *possum* complemented by an(y) infinitive: absolute figures and percentages.

| Author                   | Date   | # 123 | # 132 | # 213 | # 312 | # 231 | # 321 | # clusters | # VO | # OV |
|--------------------------|--------|-------|-------|-------|-------|-------|-------|------------|------|------|
| Cicero                   | 55 BC  | 46    | 95    | 48    | 82    | 42    | 301   | 614        | 88   | 396  |
| Caesar                   | 50 BC  | 0     | 3     | 3     | 3     | 4     | 106   | 119        | 4    | 109  |
| Varro                    | 45 BC  | 12    | 5     | 17    | 4     | 4     | 41    | 83         | 16   | 46   |
| Sallustius               | 20 BC  | 1     | 4     | 2     | 2     | 4     | 9     | 22         | 5    | 13   |
| Hyginus                  | 15 BC  | 6     | 4     | 2     | 13    | 1     | 10    | 36         | 7    | 14   |
| Vitruvius                | 0 BC   | 23    | 24    | 9     | 35    | 3     | 20    | 114        | 26   | 44   |
| Seneca                   | 60 AD  | 62    | 82    | 13    | 46    | 75    | 115   | 393        | 137  | 197  |
| Petronius                | 60 AD  | 3     | 13    | 0     | 11    | 3     | 10    | 40         | 6    | 23   |
| Frontinus                | 90 AD  | 0     | 0     | 0     | 3     | 4     | 14    | 21         | 4    | 14   |
| Tacitus                  | 110 AD | 1     | 8     | 0     | 0     | 15    | 16    | 40         | 16   | 24   |
| Gaius                    | 170 AD | 11    | 32    | 4     | 4     | 4     | 59    | 114        | 15   | 91   |
| NO/VERY FEW ATTESTATIONS |        |       |       |       |       |       |       |            |      |      |



|               |        |     |    |    |     |   |     |     |     |     |
|---------------|--------|-----|----|----|-----|---|-----|-----|-----|-----|
| Palladius     | 350 AD | 10  | 5  | 2  | 22  | 2 | 16  | 57  | 12  | 21  |
| Gesta C. C.   | 411 AD | 17  | 16 | 5  | 26  | 1 | 20  | 85  | 18  | 36  |
| Vegetius      | 420 AD | 9   | 7  | 3  | 20  | 2 | 26  | 67  | 11  | 33  |
| Victor V.     | 490 AD | 4   | 3  | 2  | 12  | 0 | 7   | 28  | 4   | 10  |
| Pompeius M.   | 500 AD | 192 | 38 | 4  | 32  | 0 | 5   | 271 | 192 | 43  |
| Caesarius Ar. | 520 AD | 64  | 67 | 17 | 113 | 8 | 111 | 380 | 72  | 178 |

Table 9: *possum* complemented by a(n active or deponent) transitive infinitive and an overt object: absolute figures.

| Author                   | Date   | % 123 | % 132 | % 213 | % 312 | % 231 | % 321 | % VO  | % OV  |
|--------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|
| Cicero                   | 55 BC  | 7,49  | 15,47 | 7,82  | 13,36 | 6,84  | 49,02 | 18,18 | 81,82 |
| Caesar                   | 50 BC  | 0     | 2,52  | 2,52  | 2,52  | 3,36  | 89,08 | 3,54  | 96,46 |
| Varro                    | 45 BC  | 14,46 | 6,02  | 20,48 | 4,82  | 4,82  | 49,40 | 25,81 | 74,19 |
| Sallustius               | 20 BC  | 4,55  | 18,18 | 9,09  | 9,09  | 18,18 | 40,91 | 27,78 | 72,22 |
| Hyginus                  | 15 BC  | 16,67 | 11,11 | 5,56  | 36,11 | 2,78  | 27,78 | 33,33 | 66,67 |
| Vitruvius                | 0 BC   | 20,18 | 21,05 | 7,89  | 30,70 | 2,63  | 17,54 | 37,14 | 62,86 |
| Seneca                   | 60 AD  | 15,78 | 20,87 | 3,31  | 11,70 | 19,08 | 29,26 | 41,02 | 58,98 |
| Petronius                | 60 AD  | 7,50  | 32,50 | 0     | 27,50 | 7,50  | 25,00 | 20,69 | 79,31 |
| Frontinus                | 90 AD  | 0     | 0     | 0     | 14,29 | 19,05 | 66,67 | 22,22 | 77,78 |
| Tacitus                  | 110 AD | 2,50  | 20,00 | 0     | 0     | 37,50 | 40,00 | 40,00 | 60,00 |
| Gaius                    | 170 AD | 9,65  | 28,07 | 3,51  | 3,51  | 3,51  | 51,75 | 14,15 | 85,85 |
| NO/VERY FEW ATTESTATIONS |        |       |       |       |       |       |       |       |       |
| Palladius                | 350 AD | 17,54 | 8,77  | 3,51  | 38,6  | 3,51  | 28,07 | 36,36 | 63,64 |
| Gesta C. Carth.          | 411 AD | 20,00 | 18,82 | 5,88  | 30,59 | 1,18  | 23,53 | 33,33 | 66,67 |
| Vegetius                 | 420 AD | 13,43 | 10,45 | 4,48  | 29,85 | 2,99  | 38,81 | 25,00 | 75,00 |
| Victor Vitensis          | 490 AD | 14,29 | 10,71 | 7,14  | 42,86 | 0     | 25,00 | 28,57 | 71,43 |
| Pompeius M.              | 500 AD | 70,85 | 14,02 | 1,48  | 11,81 | 0     | 1,85  | 81,70 | 18,30 |
| Caesarius Ar.            | 520 AD | 16,84 | 17,63 | 4,47  | 29,74 | 2,11  | 29,21 | 28,80 | 71,20 |

Table 10: *possum* complemented by a(n active or deponent) transitive infinitive and an overt object: percentages.

- the average rate of AuxVP in clauses with the modal verb *possum* in the earlier period is **32,64%**, compared to **62,43%** in the later period. If we compare these averages, it turns out that the rate of AuxVP is significantly higher in the later period than in the earlier one (t-test (independent samples),  $p = .000$ ).

- the average rate of VO in clauses with the modal verb *possum* in the earlier period is **25,81%**, compared to **38,69%** in the later period. If we compare these averages, it turns out that this difference is not statistically significant (t-test (independent samples),  $p = .116$ ).

- the fact that this difference - despite being apparently substantial in absolute terms, is not statistically significant is presumable due to the very high standard deviation in the later period (21,31, compared to 11,62 in the early period). Observe also that the relatively high average rate of VO in the later period is presumably mainly to be ascribed to the one very influential outlier (viz. Pompeius *grammaticus*, in whose text I counted over 80% of VO).

### 3.1.2 *debeo*

- evolution of the AuxVP/VPAux alternation:

| Author                   | Date   | # 12 | # 21 | # clauses | %12   | %21   |
|--------------------------|--------|------|------|-----------|-------|-------|
| Cicero                   | 55 BC  | 131  | 405  | 536       | 24,44 | 75,56 |
| Caesar                   | 50 BC  | 9    | 20   | 29        | 31,03 | 68,97 |
| Varro                    | 45 BC  | 72   | 56   | 128       | 56,25 | 43,75 |
| Vitruvius                | 0 BC   | 25   | 32   | 57        | 43,86 | 56,14 |
| Seneca                   | 60 AD  | 105  | 220  | 325       | 32,31 | 67,69 |
| Gaius                    | 170 AD | 15   | 68   | 83        | 18,07 | 81,93 |
| NO/VERY FEW ATTESTATIONS |        |      |      |           |       |       |
| Palladius                | 350 AD | 85   | 78   | 163       | 52,15 | 47,85 |
| Gesta C. Carth.          | 411 AD | 65   | 78   | 143       | 45,45 | 54,55 |
| Vegetius                 | 420 AD | 58   | 48   | 106       | 54,72 | 45,28 |
| Pompeius M.              | 500 AD | 275  | 138  | 413       | 66,59 | 33,41 |
| Caesarius Ar.            | 520 AD | 137  | 103  | 240       | 57,08 | 42,92 |

Table 11: *debeo* complemented by an(y) infinitive: absolute figures and percentages.

- the average rate of AuxVP in clauses with the modal verb *debeo* in the earlier period is **34,33%**, compared to **55,20%** in the later period. If we compare these averages, it turns out that the rate of AuxVP is significantly higher in the later period than in the earlier one (t-test (independent samples),  $p = .015$ ).

- evolution of the OV/VO alternation:

| Period                   | Date   | # 123 | # 132 | # 213 | # 312 | # 231 | # 321 | # clusters | # VO | # OV |
|--------------------------|--------|-------|-------|-------|-------|-------|-------|------------|------|------|
| Cicero                   | 55 BC  | 6     | 20    | 22    | 22    | 15    | 101   | 186        | 21   | 121  |
| Varro                    | 45 BC  | 8     | 1     | 1     | 2     | 1     | 14    | 27         | 9    | 15   |
| Seneca                   | 60 AD  | 8     | 13    | 17    | 12    | 8     | 35    | 93         | 16   | 48   |
| Gaius                    | 170 AD | 2     | 4     | 10    | 0     | 3     | 12    | 31         | 5    | 16   |
| NO/VERY FEW ATTESTATIONS |        |       |       |       |       |       |       |            |      |      |
| Palladius                | 350 AD | 1     | 3     | 3     | 27    | 1     | 21    | 56         | 2    | 24   |
| Gesta C. Carth.          | 411 AD | 8     | 1     | 3     | 1     | 3     | 20    | 36         | 11   | 21   |
| Vegetius                 | 420 AD | 2     | 2     | 5     | 28    | 0     | 12    | 49         | 2    | 14   |
| Pompeius M.              | 500 AD | 86    | 40    | 80    | 40    | 0     | 29    | 275        | 86   | 69   |
| Caesarius Ar.            | 520 AD | 17    | 17    | 18    | 35    | 2     | 27    | 116        | 19   | 44   |

Table 12: *debeo* complemented by a(n active or deponent) transitive infinitive and an overt object: absolute figures.

| Period                   | Date   | # 123 | # 132 | # 213 | # 312 | # 231 | # 321 | # VO  | # OV  |
|--------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|
| Cicero                   | 55 BC  | 3,23  | 10,75 | 11,83 | 11,83 | 8,06  | 54,30 | 14,79 | 85,21 |
| Varro                    | 45 BC  | 29,63 | 3,70  | 3,70  | 7,41  | 3,70  | 51,85 | 37,50 | 62,50 |
| Seneca                   | 60 AD  | 8,60  | 13,98 | 18,28 | 12,90 | 8,60  | 37,63 | 25,00 | 75,00 |
| Gaius                    | 170 AD | 6,45  | 12,90 | 32,26 | 0     | 9,68  | 38,71 | 23,81 | 76,19 |
| NO/VERY FEW ATTESTATIONS |        |       |       |       |       |       |       |       |       |
| Palladius                | 350 AD | 1,79  | 5,36  | 5,36  | 48,21 | 1,79  | 37,5  | 7,69  | 92,31 |
| Gesta C. Carth.          | 411 AD | 22,22 | 2,78  | 8,33  | 2,78  | 8,33  | 55,56 | 34,38 | 65,63 |
| Vegetius                 | 420 AD | 4,08  | 4,08  | 10,20 | 57,14 | 0     | 24,49 | 12,50 | 87,50 |
| Pompeius M.              | 500 AD | 31,27 | 14,55 | 29,09 | 14,55 | 0     | 10,55 | 55,48 | 44,52 |
| Caesarius Ar.            | 520 AD | 14,66 | 14,66 | 15,52 | 30,17 | 1,72  | 23,28 | 30,16 | 69,84 |

Table 13: *possum* complemented by a(n) active transitive infinitive and an overt object: percentages.

- the average rate of VO in clauses with the modal verb *debeo* in the earlier period is **25,28%**, compared to **28,04%** in the later period. If we compare these averages, it turns out that this difference is not statistically significant (t-test (independent samples),  $p = .800$ ; homogeneity of variances respected (with a .202 p-value for Levene's test).

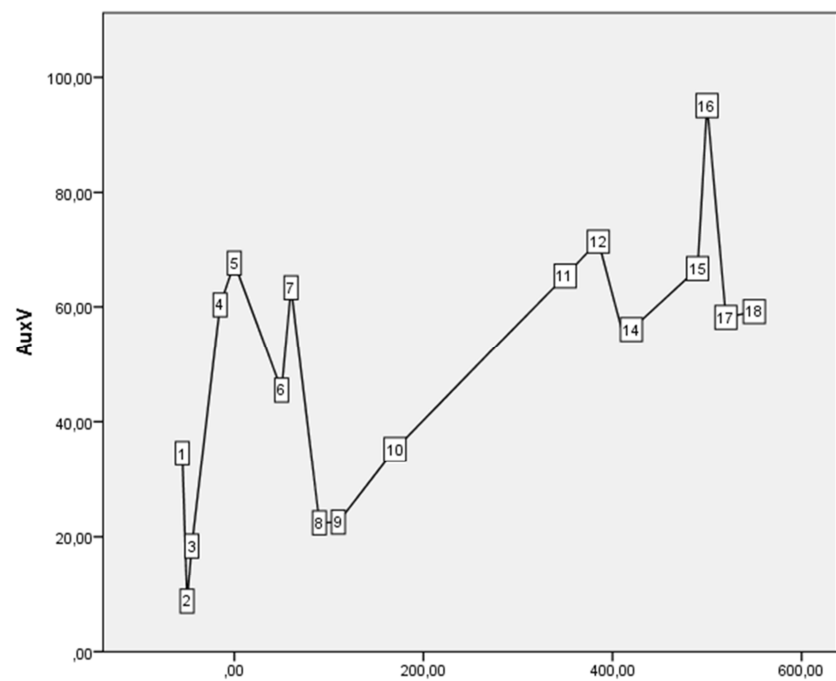
### 3.1.3 A detailed diachronic picture

- Which data entered the sample?

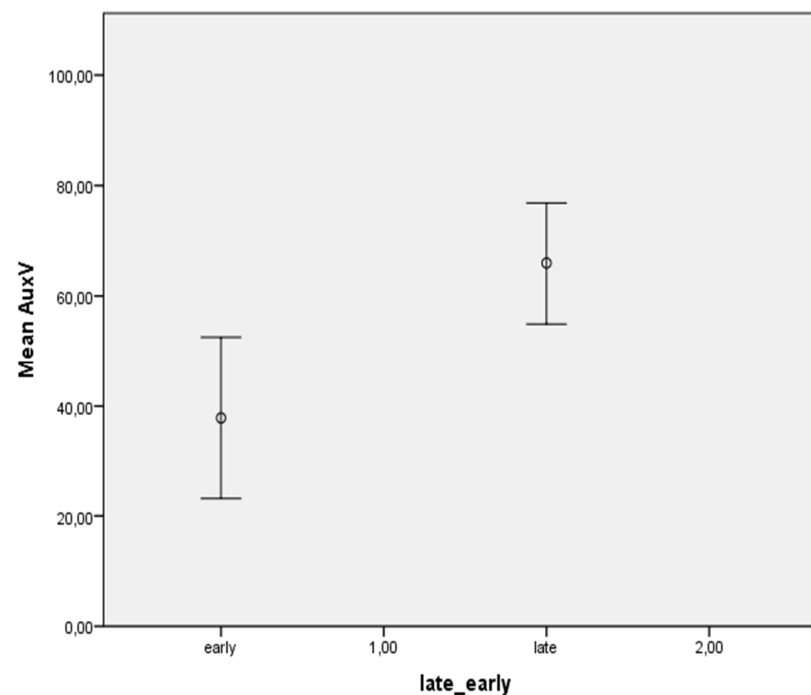
|     | <b>Author (work(s))</b>                                                                                           | <b>Auxiliaries</b>                                                                                                                                   |
|-----|-------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.  | Cicero (selection of speeches)                                                                                    | <i>possum</i> and <i>debeo</i>                                                                                                                       |
| 2.  | Caesar ( <i>De bello ciuili</i> , <i>De bello Gallico</i> 1-7)                                                    | <i>possum</i> , <i>debeo</i>                                                                                                                         |
| 3.  | Varro ( <i>Res rustica</i> ; <i>De lingua Latina</i> )                                                            | <i>possum</i> , <i>debeo</i>                                                                                                                         |
| 4.  | Hyginus ( <i>Astronomia</i> )                                                                                     | <i>possum</i> , <i>debeo</i>                                                                                                                         |
| 5.  | Vitruvius ( <i>De architectura</i> )                                                                              | <i>possum</i> , <i>debeo</i>                                                                                                                         |
| 6.  | Seneca ( <i>Epistulae ad Lucilium</i> , <i>Consolationes</i> , <i>Dialogi</i> , <i>Apocolocyntosis</i> )          | <i>possum</i> , <i>debeo</i>                                                                                                                         |
| 7.  | Petronius ( <i>Satyricon reliquiae</i> )                                                                          | <i>possum</i> , <i>debeo</i>                                                                                                                         |
| 8.  | Frontinus ( <i>Strategemata</i> , <i>De aquaeductu urbis Romae</i> )                                              | <i>possum</i> , <i>debeo</i>                                                                                                                         |
| 9.  | Tacitus ( <i>Germania</i> , <i>Dialogus de oratoribus</i> , <i>Agricola</i> ; <i>Historiae</i> , <i>Annales</i> ) | <i>possum</i> , <i>debeo</i>                                                                                                                         |
| 10. | Gaius ( <i>Institutiones</i> )                                                                                    | <i>possum</i> , <i>debeo</i>                                                                                                                         |
| 11. | Palladius ( <i>De veterinaria medicina</i> , <i>De agricultura</i> )                                              | <i>possum</i> , <i>debeo</i>                                                                                                                         |
| 12. | <i>Itinerarium Egeriae</i>                                                                                        | <i>possum</i> , <i>debeo</i> , <i>uolo</i> , <i>soleo</i> , <i>incipio</i> , <i>nolo</i> , <i>desino</i> , <i>audeo</i> , <i>conor</i> , <i>malo</i> |
| 13. | <i>Gesta Conlationis Carthaginiensis</i>                                                                          | <i>possum</i> , <i>debeo</i>                                                                                                                         |
| 14. | Vegetius ( <i>Epitoma rei militaris</i> , <i>Mulomedicina</i> )                                                   | <i>possum</i> , <i>debeo</i>                                                                                                                         |
| 15. | Victor Vitensis ( <i>Historia persecutionis Africanae prouinciae</i> )                                            | <i>possum</i> , <i>debeo</i> , <i>uolo</i> , <i>soleo</i> , <i>incipio</i> , <i>nolo</i> , <i>desino</i> , <i>audeo</i> , <i>conor</i> , <i>malo</i> |
| 16. | Pompeius Maurus ( <i>Commentum Artis Donati</i> )                                                                 | <i>possum</i> , <i>debeo</i>                                                                                                                         |
| 17. | Caesarius Arelatensis ( <i>Sermones</i> 1-80)                                                                     | <i>possum</i> , <i>debeo</i>                                                                                                                         |
| 18. | Iordanes ( <i>Getica</i> , <i>Romana</i> )                                                                        | <i>possum</i> , <i>debeo</i> , <i>uolo</i> , <i>soleo</i> , <i>incipio</i> , <i>nolo</i> , <i>desino</i> , <i>audeo</i> , <i>conor</i> , <i>malo</i> |

Table 14: description of the 'enriched' corpus.

- Average rates of AuxVP:
  - earlier period : 37,85%
  - later period: 65,92%
- Statistically significant difference? Yes (Independent samples t-test,  $p = .004$ ).

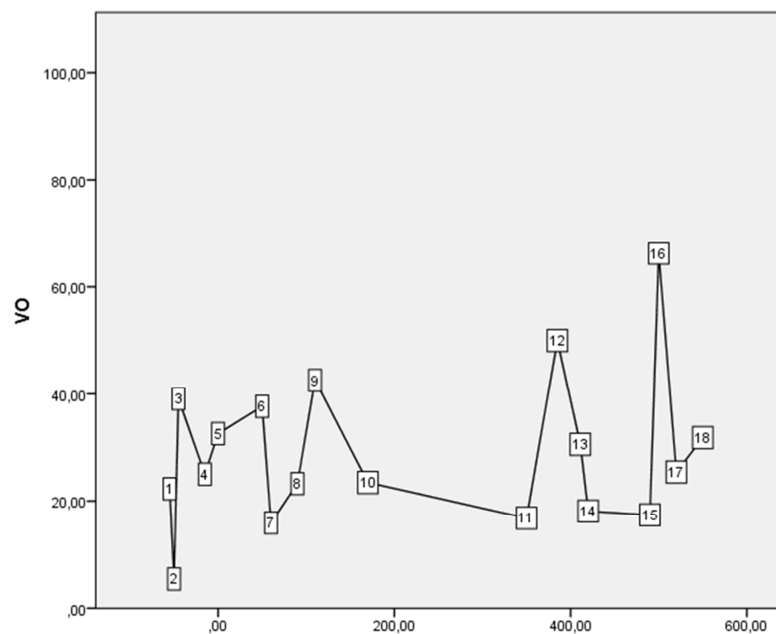


Graph 3a: Diachronic frequency of AuxVP in clauses with a modal auxiliary; Case numbers: 1 = Cicero; 2 = Caesar; 3 = Varro; 4 = Hyginus; 5 = Vitruvius; 6 = Seneca; 7 = Petronius; 8 = Frontinus; 9 = Tacitus; 10 = Gaius; 11 = Palladius; 12 = *Itinerarium Egeriae*; 13 = *Gesta Conlotionis Carthaginensis*; 14 = Vegetius; 15 = Victor Vitensis; 16 = Pompeius Maurus; 17 = Caesarius Arelatensis; 18 = Iordanes.

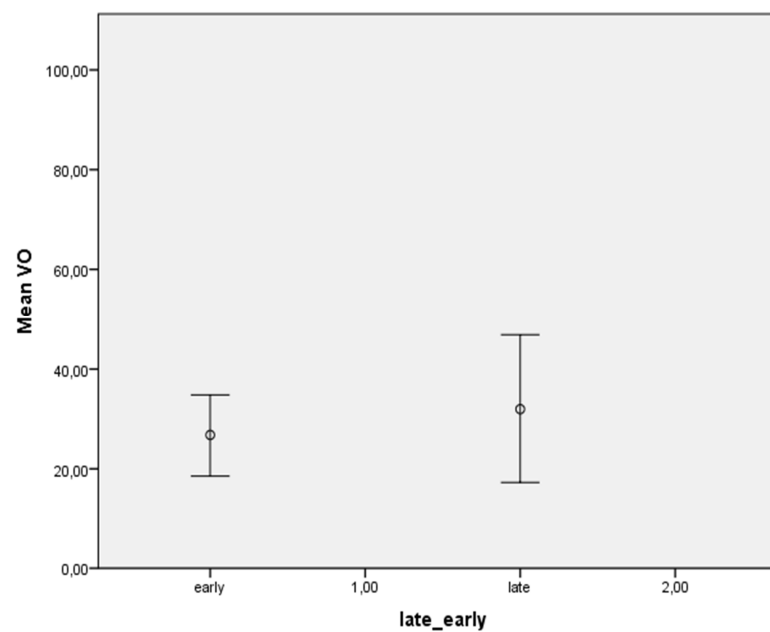


Graph 3b: Error bar graph of mean average frequency of VPAux in clauses with a modal auxiliary, classical Latin compared to late Latin.

- Average rates of VO:
  - earlier period : 26,72%,
  - later period: 32,05%
- Statistically significant difference? No (Independent samples t-test,  $p = .449$ ).



Graph 4a: Diachronic frequency of the order VO in three element verb clusters; Case numbers: 1 = Cicero; 2 = Caesar; 3 = Varro; 4 = Hyginus; 5 = Vitruvius; 6 = Seneca; 7 = Petronius; 8 = Frontinus; 9 = Tacitus; 10 = Gaius; 11 = Palladius; 12 = *Itinerarium Egeriae*; 13 = *Gesta Conlotionis Carthaginiensis*; 14 = Vegetius; 15 = Victor Vitensis; 16 = Pompeius Maurus; 17 = Caesarius Arelatensis; 18 = Iordanes.

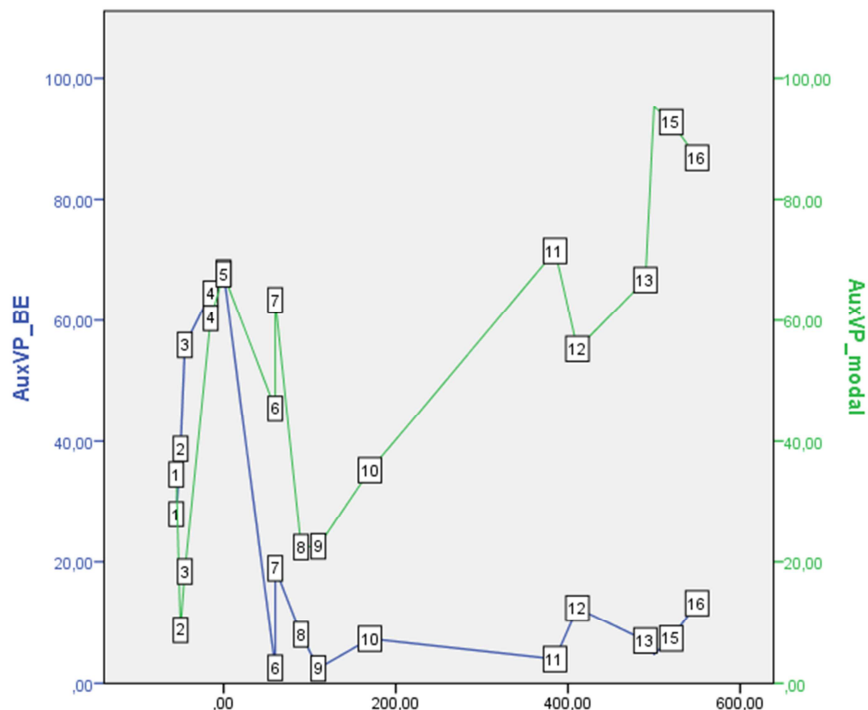


Graph 4b: Error bar graph of mean average frequency of VO in clauses with a modal auxiliary, classical Latin compared to late Latin.

- Comparing the frequency of AuxVP in authors for which my samples yielded a sufficiently high amount of tokens for both BE-auxiliaries modal => clear contrast:

| nr.                      | Author                    | Date   | % AuxVP BE | % AuxVP modal |
|--------------------------|---------------------------|--------|------------|---------------|
| 1.                       | Cicero                    | 55 BC  | 27,87      | 34,49         |
| 2.                       | Caesar                    | 50 BC  | 38,75      | 8,74          |
| 3.                       | Varro                     | 45 BC  | 55,93      | 18,4          |
| 4.                       | Hyginus                   | 15 BC  | 64,44      | 60,34         |
| 5.                       | Vitruvius                 | 0      | 67,86      | 67,61         |
| 6.                       | Seneca                    | 60 AD  | 2,53       | 45,44         |
| 7.                       | Petronius                 | 60 AD  | 18,92      | 63,33         |
| 8.                       | Frontinus                 | 90 AD  | 8,00       | 22,41         |
| 9.                       | Tacitus                   | 110 AD | 2,42       | 22,54         |
| 10.                      | Gaius                     | 170 AD | 7,29       | 35,2          |
| NO/VERY FEW ATTESTATIONS |                           |        |            |               |
| 11.                      | <i>Itinarium Egeriae</i>  | 385 AD | 3,95       | 71,43         |
| 12.                      | <i>Gesta Conl. Carth.</i> | 411 AD | 12,36      | 55,29         |
| 13.                      | Victor Vitensis           | 490 AD | 6,98       | 66,67         |
| 14.                      | Pompeius Maurus           | 500 AD | 4,76       | 95,24         |
| 15.                      | Caesarius Ar.             | 520 AD | 7,34       | 92,66         |
| 16.                      | Iordanes                  | 550 AD | 13,19      | 86,81         |

Table 15: Comparing the rate of AuxVP in (i) two periods and (ii) across clauses with two types of auxiliaries.



Graph 5: Comparing the diachronic evolution of word order patterns in clauses with a modal auxiliary (darker line, top left to bottom right) and clauses with a BE-auxiliary (lighter line, bottom left to top right). Identity of the case-numbers: see Table 15 (column 1).

- as expected upon visual inspection, the rate of VPAux in the later period is significantly different in clauses with a BE-auxiliary (8,10%) than in clauses with a modal auxiliary (78,02%) (Independent samples T-test, square root transformation,  $p = .000$ ).

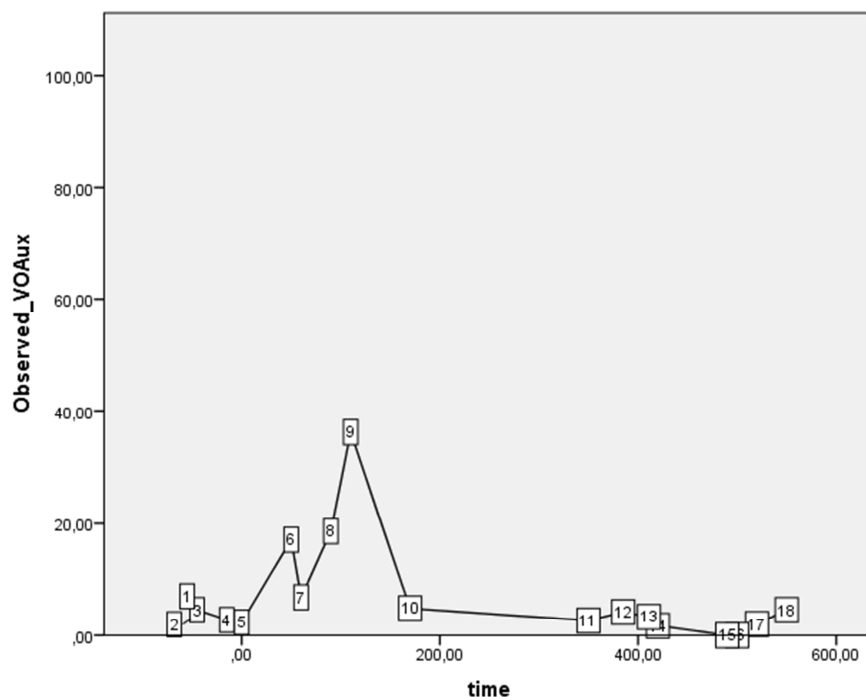
- No such effect could be detected in the earlier period: the average rate of VPAux is 29,40% in clauses with a BE-auxiliary, and 37,50% in clauses with a modal. This difference is not statistically significant (Independent samples T-test,  $p = .429$ ).

#### **Puzzle 4:**

How come modal auxiliaries behave differently from the BE-auxiliary, in that the former do and the latter doesn't show signs of increasing head-initiality?

### 3.2 A brief aside: even more VOAux with modals

- The diachronic evolution of VOAux:



Graph 5: diachronic evolution of frequency of three-member verb clusters exhibiting the string VOAux Case numbers: 1 = Cicero; 2 = Caesar; 3 = Varro; 4 = Hyginus; 5 = Vitruvius; 6 = Seneca; 7 = Petronius; 8 = Frontinus; 9 = Tacitus; 10 = Gaius; 11 = Palladius; 12 = *Itinerarium Egeriae*; 13 = *Gesta Conlotionis Carthaginiensis*; 14 = Vegetius; 15 = Victor Vitensis; 16 = Pompeius Maurus; 17 = Caesarius Arelatensis; 18 = Iordanes.

- Question: is it legitimate to assume that (i) the VOAux pattern in clauses with a modal auxiliary is the same as in clauses with a BE-auxiliary and (ii) that the presence of VOAux in clauses with a modal auxiliary is in any sense special or unexpected (cf. biclausality)?

- the strongest type of empirical evidence in favour of the claim that VOAux should not be a possible linear order comes from languages in which (i) both the order VO and the order VPAux are independently available but (ii) not in one and the same clause. (Varieties of Old) and Middle English seems to be such languages.

- Interestingly, \*VOAux holds across clauses with all types of auxiliaries, regardless of lexical (Lightfoot 1979; Roberts 1985)/functional nature of the latter. Moreover, OE control verbs like *durran* 'dare' (tagged as a modal in the YCOE) and forms of *ginnan* (*onginnan*, *beginnan*, *aginnan*) (Susan Pintzuk p.c.) don't ever take a leftward VO-complement.

### 3.3 To sum up

- **Puzzle 1:** How come the pattern VOAux was grammatical in classical Latin (section 4)?
- **Puzzle 2:** How come it seems to be the case that OV persists in late Latin, despite what is claimed in the literature (section 5)?
- **Puzzle 3:** How come late Latin BE-auxiliaries - in the overwhelming majority of the cases - unexpectedly (cf. diachronic evolution) follow their participial complement (section 6)?
- **Puzzle 3':** But what about the exception of Cassius Felix (section 6)?
- **Puzzle 4:** How come BE-auxiliaries and modals show strongly different word order preferences (section 6)?

## 4. The VOAux-pattern: An apparent violation of the 'Final Over Final Constraint'

### 4.1 Getting to know Latin VOAux (aka [[VO]Aux])

- in the VOAux pattern, O can be of any type, incl. CP (an *accusatiuus cum infinitiuo*, i.e. a non-finite embedded declarative in (36), or a tensed clause with an overt complementizer in (37)):

- (36) [...] tamen eundem<sub>i</sub>,        ut dixi,        nisi talis        consul        esset,  
           PRT    same.ACC.M.SG   as say.PF.3.SG   unless such.NOM   consul.NOM   be.IMP.F.SUBJ.3.SG  
 negare        [t<sub>i</sub> esse        consulem]    audeam.  
 deny.PR.INF   be.PR.INF   consul.ACC   dare.IMP.F.SUBJ.1.SG  
 'Still, as I said, I wouldn't day to deny that this same man is a consul if he weren't such a consul.' (= Cic. Phil. 8.6)

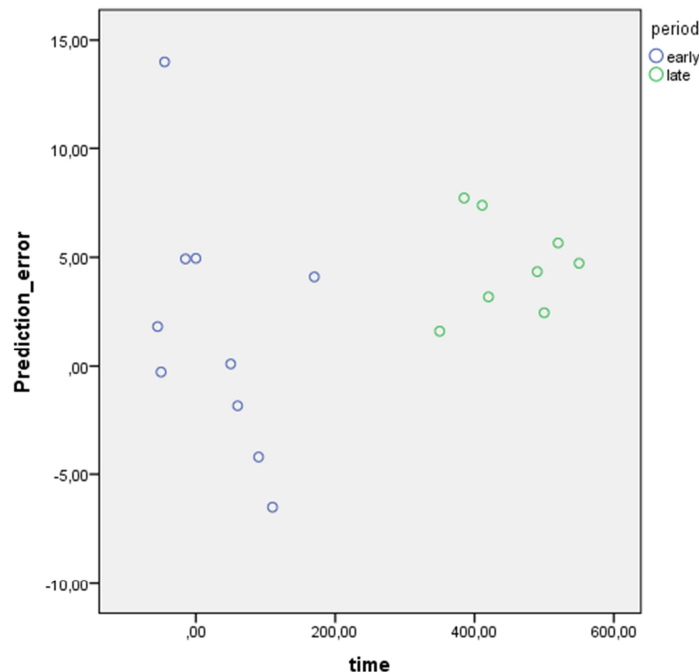
- (37) His        persuaderi        [ut diutius        morarentur  
 these.DAT.PL   convince.PASS.INF.PR   that long.COMP.ADV   stay.IMP.F.SUBJ.3.PL  
 neque suis        auxilium ferrent]        non    poterat.  
 nor    their.DAT.M.PL   help.ACC   bring.IMP.F.SUBJ.3.PL   not   be.able.IMP.F.3.SG  
 'The could not be convinced to stay longer and help their people.' (= Caes. B.G. 2.10.5)

- If we assume that 'VOAux = VPAux + VO', we predict that we can give an accurate estimate of the number of verb clusters exhibiting the order VOAux by combining the rate of VO and the rate of AuxVP (the estimated VOAux is the product of the rate of VO and the rate of VPAux). The predicted and the observed values are given in Table 3. In the third column the 'prediction error' is given, i.e. the difference between the observed and the predicted values: the closer this prediction error to zero, the more accurate the estimate.



| Author                | Period | %VPAux | %VO   | Observed VOAux | Predicted VOAux | Prediction error |
|-----------------------|--------|--------|-------|----------------|-----------------|------------------|
| Cicero                | 55 BC  | 65,51  | 13,52 | 7,01           | 8,856952        | 1,85             |
| Caesar                | 50 BC  | 91,26  | 3,1   | 3,1            | 2,82906         | -0,27            |
| Varro                 | 45 BC  | 81,6   | 22,73 | 4,55           | 18,54768        | 14,00            |
| Hyginus               | 15 BC  | 39,66  | 19,45 | 2,78           | 7,71387         | 4,93             |
| Vitruvius             | 0      | 32,39  | 22,49 | 2,33           | 7,284511        | 4,95             |
| Seneca                | 50 AD  | 54,56  | 31,48 | 17,08          | 17,17549        | 0,10             |
| Petronius             | 60 AD  | 36,67  | 13,64 | 6,82           | 5,001788        | -1,82            |
| Frontinus             | 90 AD  | 77,59  | 18,6  | 18,6           | 14,43174        | -4,17            |
| Tacitus               | 110 AD | 77,46  | 38,3  | 36,17          | 29,66718        | -6,50            |
| Gaius                 | 170 AD | 64,8   | 13,8  | 4,83           | 8,9424          | 4,11             |
| Palladius             | 350 AD | 34,62  | 12,38 | 2,65           | 4,285956        | 1,64             |
| Itinerarium Egeriae   | 385 AD | 28,57  | 41,67 | 4,17           | 11,90512        | 7,74             |
| Gesta Conl. Carth.    | 411 AD | 44,71  | 23,97 | 3,31           | 10,71699        | 7,41             |
| Vegetius              | 420 AD | 43,94  | 11,2  | 1,72           | 4,92128         | 3,20             |
| Victor Vitensis       | 490 AD | 33,33  | 13,04 | 0              | 4,346232        | 4,35             |
| Pompeius Maurus       | 500 AD | 4,87   | 50,92 | 0              | 2,479804        | 2,48             |
| Caesarius Arelatensis | 520 AD | 41,82  | 18,35 | 2,02           | 7,67397         | 5,65             |
| Iordanes              | 550 AD | 40,82  | 22,73 | 4,55           | 9,278386        | 4,73             |

Table 16: Observed vs. estimated rate of VOAux.



Graph 6: Diachronic accuracy of predicting the rate of VOAux on the basis of independent rates of VO and VPAux: prediction error vs. time.

- At first sight, the estimates seem to be not accurate at all, as most prediction errors are quite different from 0. However, an interesting pattern arises if we plot the prediction errors against

time: we see that the prediction errors for the early period show a very different picture than those of the later period:

- (i) In the early period: estimates are very inaccurate. Variation seems to be random.
- (ii) In the later period: estimates are still not very accurate, but the prediction errors (i) are all quite similar (close to one another on the scatter plot) and (ii) they consistently overpredict (i.e. they are all positive).

- Conclusion:

1. In the early period:

- (i) the alternations VPAux/AuxVP and OV/VO were independent of each other: the grammar could generate either order without any restriction.
- (ii) the choice between the different possibilities was to a large extent governed by functional constraints/usage-based factors.

2. In the later period:

- (i) the alternations VPAux/AuxVP and OV/VO were not independent of each other.
- (ii) the usage-based factors at work in the earlier period are now outranked by a syntactic constraint on linearization => more accurate estimations of frequencies

- the following graphs and figures confirm that in the early but not in the late period the distribution of the VO-pattern did not depend on the VPAux or AuxVP character of the clause:

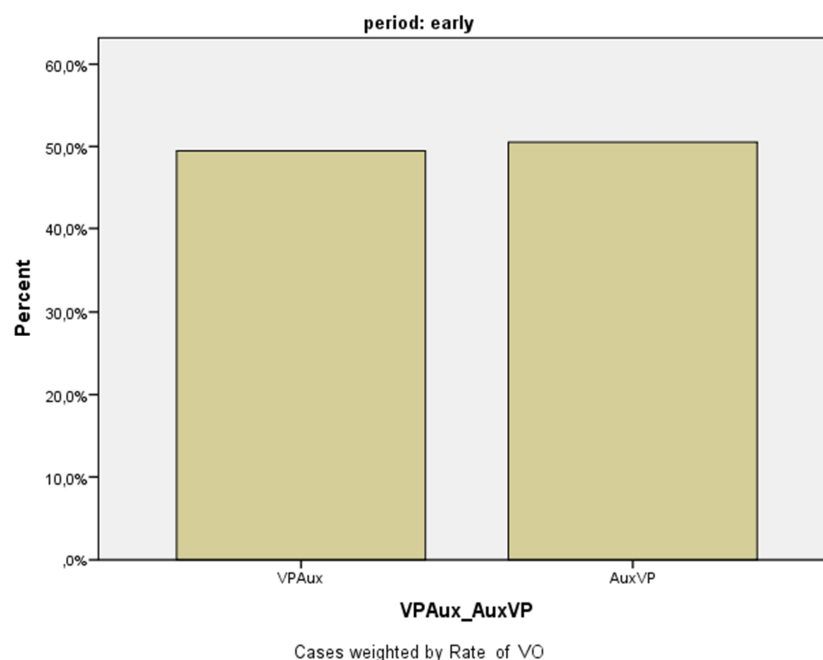


Figure 3: The rate of VO in three-member verb clusters in early Latin: VPAux compared to AuxVP-clauses.

- In the entire early period, the average rate of VOAux clauses is 49,5%, compared to 50,5% for the AuxVO pattern.

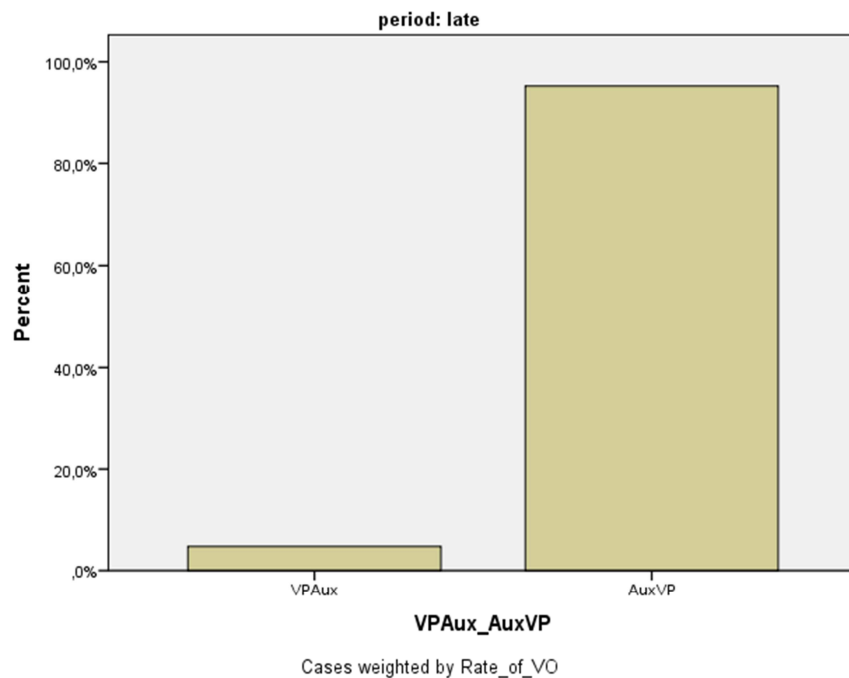


Figure 4: The rate of VO in three-member verb clusters in late Latin: VPAux compared to AuxVP-clauses.

- Importantly, I assume the string VO to form a constituent to the exclusion of the rightward auxiliary and the subject and C-elements their left. Evidence: coordination facts (assuming that coordination is a reliable diagnostic for constituenthood), as illustrated in (38)-(39) for VOAux:

- (38) Nec ullis aut gloria maior aut augustior honor primum apud  
 nor any.DAT.PL or glory.NOM greater.NOM or more.solemn.NOM honour.NOM first with  
 deos [quorum [&P [<sub>VP</sub> **proferre** responsa] [&° et [<sub>VP</sub> **interesse** epulis]]]  
 gods.ACC.PL who.GEN.PL pronounce.INF response.ACC and take.part.INF meal.DAT.PL  
**ferebantur** [...]].  
 say.PASS.IMPF.3.PL  
 'Upon nobody greater glory or more solemn honour was bestowed, especially by the gods,  
 whose oracles they were said to communicate and in whose meals they were said to take  
 part.' (= Tac. Dial. de Or. 12.1-4)

- (39) [ Quibus [&P [<sub>VP</sub> **opperiri** auxilia] [&° et [<sub>VP</sub> **trahere** bellum]]] **uidebatur** [...]],  
 who.DAT await.INF extra.troops.ACC and extend.INF war.ACC seem.IMPF.3.SG  
 Germanicarum legionum uim famamque extollebant.  
 Germanic.GEN.PL legion.GEN.PL force.ACC fame.ACC=and praise.IMPF.3.PL  
 'Those who wanted to wait for extra troops and wanted to let the war last longer, praised the  
 force and reputation of the Germanic legions.' (= Tac. Hist. 3.1)

#### 4.2 What '(C)(S)VOAux' is not

##### 4.2.1 The position of the VP-constituent is not left-peripheral

- verbal categories could undergo A'-movement in Latin, but in embedded clauses, movement of this type targets a position to the left of a subordinating conjunction (unlike many of the VOAux cases given above, where the participle occurs to the right of a C-element). An example of a left-peripheral participle:

- (40) [...] quanto iustius queror, [factus [cum iam  
how.much.ABL just.COMP.ADV complain.PR.1.SG become.NOM because PRT  
sum alius infelix, alia patiens]]!  
be.PR.1.SG other.NOM unhappy.NOM other.ACC.PL suffering.NOM  
'how rightful is my complaint, since in some respects I am unhappy, in others suffering.'  
(= ps.-Quint. Declam. mai. 14.10)

- in other cases a transitive lexical verb (i.c. an infinitive) is displaced along with its direct object:

- (41) P. Seruilius quinquennium exercitui cum praeesset et ista  
P. Seruilius.NOM 5.years.ACC army.DAT when be.in.charge.SUBJ.IMPF.3.SG and that.ABL  
ratione [[ innumerabilem pecuniam facere] [cum posset]], [...]  
reason.ABL immense.ACC money.ACC make.INF when be.able.SUBJ.IMPF.3.SG  
'As Publius Servilius was in charge of the army for a period of five years and therefore could make  
an awful lot of money,... .' (= Cic. Ver. act. sec. 3.211)

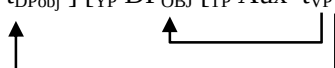
#### 4.2.2 No Stylistic Fronting

- SF = fronting of a past participle in clauses containing a subject gap (Maling 1980; Holmberg 2006). Although some cases of Latin VOAux appear in the required environment (see (42)-(43), both in a relative clause introduced by a subject relative pronoun), most examples don't.

- (42) [...] damnetur is [qui [fabricatus gladium] est  
condemn.PR.SUBJ.PASS.3.SG that.NOM who.NOM manufactured.NOM sword.ACC be.PR.3.SG  
et uendidit] non is qui illo gladio ciuem aliquem interemit.  
and sell.PF.3.SG not that.NOM who.NOM that.ABL sword.ABL citizen.ACC some.ACC kill.PF.3.SG  
'He should be condemned who manufactured the sword it and sold it, not he who killed a  
citizen with it.' (= Cic. Rab. 7)
- (43) [...] non inueniebam exemplum eius [qui [consolatus suos]  
not find.IMPF.1.SG example.ACC that.GEN.SG who.NOM consolated.NOM his.ACC.M.PL  
esset] [...].  
be.IMPF.SUBJ.3.SG  
'I couldn't find an example of somebody who consolated his family.' (= Sen. Cons. Helv. 1.2)

#### 4.2.3 No scrambling/object shift + remnant VP-movement

- An alternative derivation that also yields the surface strings 'lexical verb-internal argument-auxiliary' consists of (i) scrambling of the internal argument out of VP and subsequent (ii) remnant movement of the VP. Such a derivation would look like (44):

- (44) [ZP [VP V t<sub>DPobj</sub>] [YP DP<sub>OBJ</sub> [TP Aux t<sub>VP</sub> ]]]
- 

- However: object scrambling constrained by specificity/D-linking condition (see among many others Diesing (1992) (German); Koster (1994) (Dutch); Karimi (2005) (Persian). No such specificity restriction seems to be imposed on the internal argument in the Latin VOAux pattern. For instance, the indefinite *gratiam* 'favour, gratitude' in (45) cannot plausibly be interpreted as specific, nor can the bare quantifier *multa* 'a lot (lit. 'lots of things')' in (46):

- (45) et quomodo **referre** gratiam potero?  
 and how return.INF favour.ACC be.able.FUT.1.SG  
 'And how will I be able to return him a favour?' (= Sen. Ben. 2.35.3)
- (46) a me qui neque excogitare neque **pronuntiare** multa possum.  
 by me.ABL who.NOM neither think.INF nor pronounce.INF many.ACC.PL be.able.PR.1.SG  
 'by me, who can neither think of nor say a lot.' (= Cic. pro Quinctio 34)

- bare negative quantifiers are also known to be non-specific (cf. Cinque 1986):

- (47) etiam si ultra **facere** nil potest.  
 even if furthermore do.INF nothing.ACC be.able.PR.3.SG  
 'even if there is nothing else he can do.' (= Sen. Ben. 4.21.2)

#### 4.2.4 'Long Head Movement': harder to exclude

- The phenomenon: fronting of (non-adjectival) participles, reported mainly for Slavic and Old Romance languages (see among others Lema & Rivero 1989a,b, 2000; Rivero 1991, 1993; Roberts 1994; Embick & Izvorski 1995; Fontana 1996; Broekhuis & Migdalski 2003). Examples from Bulgarian (Broekhuis & Migdalski 2003: 1, their (1)):

- (48) a. Paulina e pročela kniga=ta.  
 Paulina be.3.SG read.F.SG book=the  
 'Paulina has read the book.'  
 b. Pročela e kniga=ta.  
 read.F.SG be.3.SG book=the  
 'She has read the book.'

- how leftward can past participles and infinitives appear in Latin? Which arguments can intervene between the participle and the auxiliary? Crucially, it seems to be possible for the external argument to appear in between the lexical verb and the auxiliary, as in (49):

- (49) **Contemnere** aliquis omnia potest; omnia habere  
 despise.INF someone.NOM all.ACC.N.PL be.able.PR.3.SG all.ACC.N.PL have.INF  
 nemo potest.  
 nobody.NOM be.able.PR.3.SG  
 'It is possible that somebody .' (Sen. Epi. 62.1-3)

- problematic example; the infinitive *contemnere* 'despise' has undergone either (i) long X° movement (hard to account for under standard assumption in current syntactic theory) or (ii) remnant XP movement past the external argument *aliquis* 'someone' (but cf. non-specificity and concomitant reduced syntactic mobility of the internal argument *omnia*, a bare quantifier).

### 4.3 How the grammar can generate VOAux

- solution: exact formulation of the 'Final-Over-Final Constraint'; do we need to assume that the internal structure of A-moved phrases is subject to FOFC, as proposed in Biberauer, Holmberg & Roberts (2010):

(50) **The Final-Over-Final-Constraint (FOFC):**

If  $\alpha$  is a head-initial phrase and  $\beta$  is a phrase immediately dominating  $\alpha$ , then  $\beta$  must be head-initial. If  $\alpha$  is a head-final phrase, and  $\beta$  is a phrase immediately dominating  $\alpha$ , then  $\beta$  can be head-initial or head-final, where:

- (i)  $\alpha$  and  $\beta$  are in the same Extended Projection
- (ii)  $\alpha$ P has not been A'-moved to Spec, $\beta$ P

- According to (50), both L- and A-movement feed into FOFC. I will not adopt this particular version of FOFC, assuming that only L-moved phrases are subject to FOFC, thus maintaining the generalization that all violations of FOFC are due to a Minimality violation arising when percolation of the L-movement triggering feature skips a head in a given Extended Projection.

- Assuming that classical Latin VP movement is A movement, or at least not local L-movement, it follows that the order VOAux should be grammatical.

### 4.4 The loss of VOAux

#### 4.4.1 Neg incorporation

- Jespersen's cycle (Jespersen 1966<sup>2</sup> [1917]; see also (among many others) Horn (2001<sup>2</sup>: 452-462), van Gelderen (2008, 2011: ch. 8) and the contributions in Larrivé & Ingham (2011). Particularly on Romance, see Schwegler (1983, 1988).

- A detailed structure of Jespersen's cycle (Breitbarth & Haegeman 2009: section 1.2, their (2)):

(51) **Stages in Jespersen's cycle:**

- stage 1 single (preverbal/clitic) negation marker
- stage 2 single (preverbal/clitic) negation marker plus optional phrasal emphaser
- stage 3 bipartite or embracing negation
- stage 4 bipartite or embracing negation with the original marker having become optional and the original emphaser having become the neutral negator
- stage 5 single (phrasal) negation marker grammaticalized from the original emphaser (stage 1' this marker becomes weakened to a clitic (preverbal) marker again)

- Hypothesis:

- pre-historical Latin represents stage 5, with a **phrasal negative adverb** *non* (which happens to be preverbal)
- classical Latin represents stage 1a, with preverbal *non* as **non-proclitic head**
- classical Latin represents a stage 1b, with preverbal ***non* as a proclitic**, forming a complex with the hierarchically highest verb (and clitic pronouns attached to this verb earlier in the derivation). The descendants of Latin *non* in present day languages still are preverbal

clitics (on French, see Kayne 1991; Rowlett 1998; on Italian, Zanuttini 1997; Manzini & Savoia 2011: ch. 4). See also Jäger (2008) on the history of German negation.

- formally, it takes the proclitization process to involve **head movement of the verb to Neg°**

- *non* set out as a phrasal negative adverb, and was gradually weakened. Note that early Latin *non* is a relatively young Latin-internal innovation, in any event young for its etymology to be transparent (sc. < *ne* 'not' and *oenom* 'one', the latter a so-called 'expression of minimal quantity').

- crucial ingredient: two kinds of 'weak' (i.e.  $X^0$ ) preverbal negation: an independent and a proclitic verbal head.

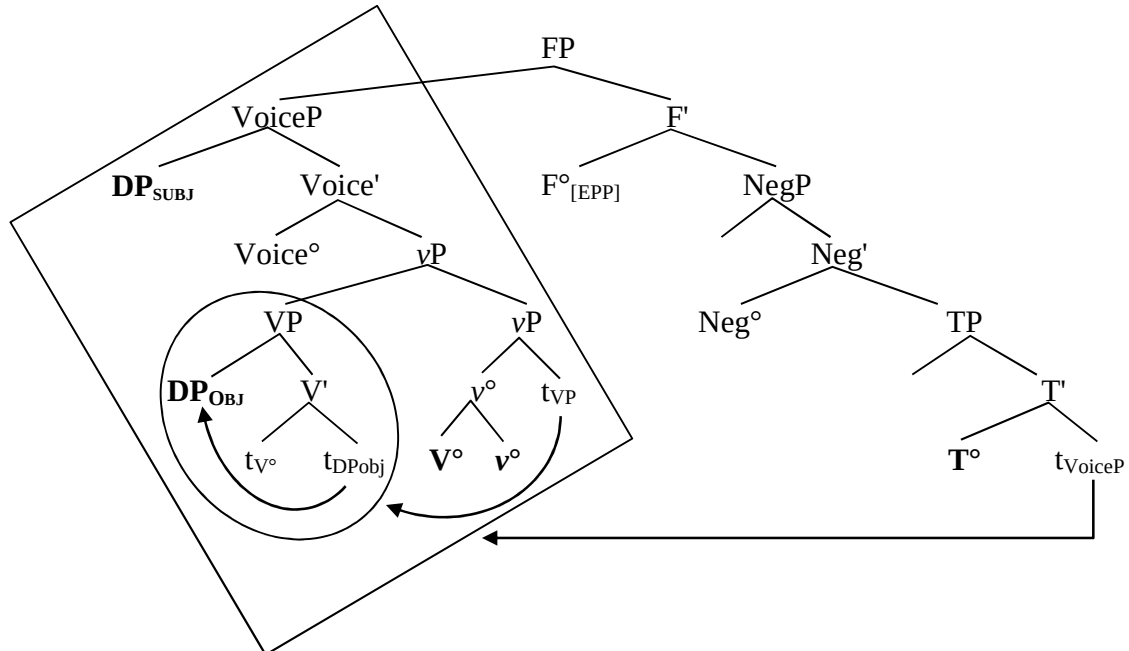
#### 4.4.2 Syntactic reanalysis

- the details of the proposed reanalysis process as in (52)a) earlier grammar and (52)b) (new grammar, with Neg-procliticization and reanalysis/rebracketing) (overt terminals in boldface):

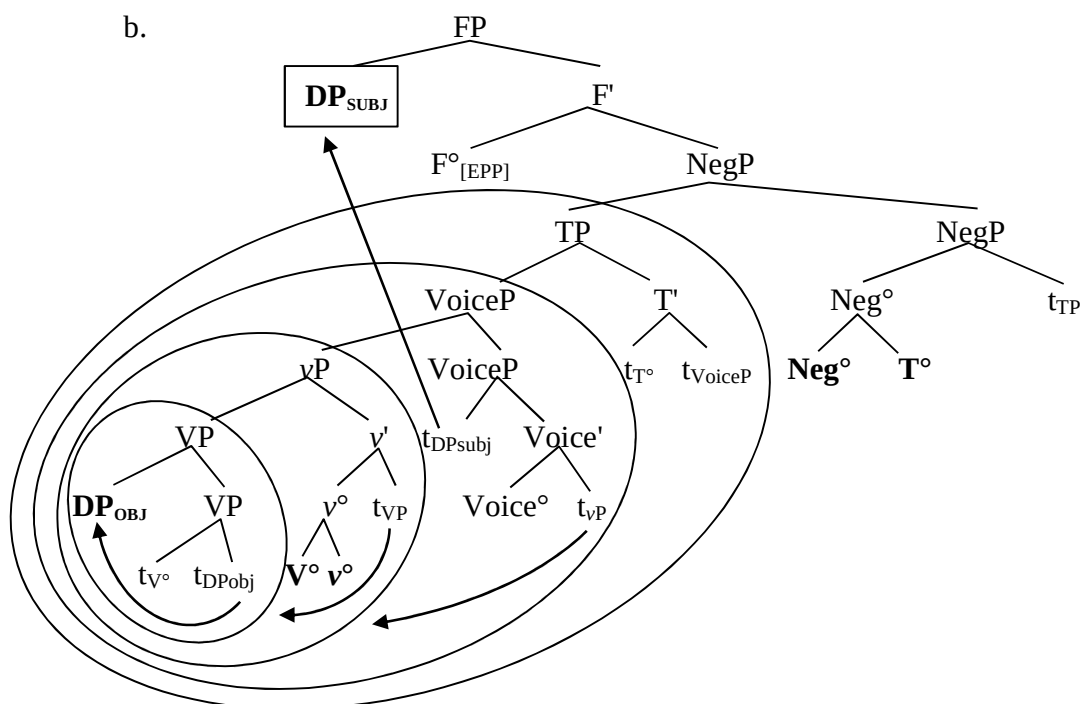
- (52) a.  $[_{FP} [_{EPP} [_{VP} \textbf{S O V}] [_{F^0[EPP]} [_{NegP} \textbf{Neg}^0 [_{TP} \textbf{T}^0 t_{VP} ]]]]] \rightarrow$   
 b.  $[_{FP} [_{EPP} \textbf{S} [_{F^0[EPP]} [_{NegP} [_{TP} [_{VP} t_S \textbf{O V}]] \textbf{Neg}^0/\textbf{T}^0 ] [t_{TP} t_{T^0} t_{VP} ]]]]]$

- (53) a. Romanus equitatus [ipsum quidem regem] Elatiae  
 Roman.NOM cavalry.NOM self.ACC PRT king.ACC Elatia.LOC  
 adsecutus non est.  
 reached.NOM not be.PR.3.SG  
 'The roman cavalry did not manage to find the king himself in Elatia.' (= Liv. aUc. 36.19.10)

b.



- (54) a. nisi pro gemmata fibula usus non est  
 unless jewelled.ABL brooch.ABL used.NOM not be.PR.3.SG  
 'unless he did not use a jewelled brooch.'  
 (= Hist. Aug. Carus, Carinus, Numerianus, 17.1 (Fl. Vopiscus Syracusius))



#### 4.5 Main consequences

- Early and Late Latin OVAux look the same, but aren't.
- The reduced word order flexibility in the new grammar can be taken to indicate that more **cluster formation** was going on than in the older grammar.
- The gradual loss of head-finality can now be explained in terms of one single change: viz. the gradual loss of percolation of the L-movement triggering feature
- This explains why changes *qua* directionality-of-complementation usually proceed in a top-down fashion, as they do in Latin.

### 5. Object positions and the study of the OV/VO alternation

#### 5.1 Multiple object positions in clauses with an auxiliary and a non-finite verb

##### 5.1.1 Object positions in VPAux-clauses

- Object positions in VAux-clauses with an analytic form of a transitive deponent verb and an overt subject (S), keeping the relative order of the elements V, S and Aux constant, but moving the object from right to left:

- (55) Consultus super eo Tiberius aspernatus est indicium. **SVAuxQ**  
 consulted.NOM on this.ABL Tiberius.NOM scorned.NOM be.PR.3.SG information.ACC  
 'When consulted on this matter, Tiberius did not take this information into account.'  
 (= Tac. Ann. 3.41.1)



- (56) ne ante conspici posset a uulgo **SVOAux**  
 so.that.not before notice.PASS.INF.PR be.able.IMPF.SUBJ.PR.3.SG by people.ABL  
 quam rex **adlocutus milites esset.**  
 than king.NOM addressed.NOM soldiers.ACC be.IMPF.SUBJ.PR.3.SG  
 'so that he wouldn't be noticed by the people before the king had addressed his soldiers.'  
 (= Q. Curt. Hist. 6.8.24)

- (57) [...] si uir consularis [aurum et margaritas] **osculatus est.** **SOVAux**  
 if man.NOM consular.NOM gold.ACC and pearls.ACC kissed.NOM be.PR.3.SG  
 'if the consular has kissed gold and pearls.' (= Sen. Ben. 2.12.1)

- (58) cum [aliquid noui] luxuria **commenta est [...]** **QSVAux**  
 when something.ACC new.GEN luxury.NOM lied.NOM be.PR.3.SG  
 'when luxury has worked out some new tricky device.' (= Sen. Ep. 86.8)

- the same with the modal *possum* 'be able':

- (59) Non enim [a uapore umor] **corrumpere poterit** **SVAuxQ**  
 not PRT from steam.ABL moisture.NOM affect.PR.INF be.able.FUT.3.SG  
 [materiem contignationis].  
 matter.ACC timbering.GEN  
 'For the moisture from the heat cannot affect the timbering.' (= Vit. Arch. 5.10.3)

- (60) [...], cum testamento [scriptus heres] **euincere** **SVOAux**  
 because testament.ABL written.NOM heir.NOM recover.PR.INF  
 hereditatem **possit.**  
 heritage.ACC be.able.SUBJ.3.SG  
 '... since the heir appointed in the testament can to recover the heritage.' (= Gai. Inst. 3.36)

- (61) Non est dubium quin seruus **beneficium dare** **SOVAux**  
 not be.PR.3.SG doubt.NOM that slave.NOM favour.ACC give.INF  
**possit [...].**  
 be.able.SUBJ.3.SG  
 'There is no doubt that a slave can do a favour.' (= Sen. Ben. 3.19.1)

- (62) [...] ut [nullam calamitatem] res publica **QSVAux**  
 so.that no.ACC disaster.ACC cause.NOM public.NOM  
 accipere **possit [...].**  
 receive.INF be.able.SUBJ.3.SG  
 'so that the state could not suffer any disaster.' (= Cic. Phil. 7.20)

- (63) (C) **O<sub>LS</sub>** S O V1 **O<sub>RO</sub>** Aux **O<sub>EP</sub>**  
 1 2 3 4

- 4 object positions:

- Position 1: long (i.e. past the subject) scrambled (LS) objects
- Position 2: ambiguous for the moment: not certain whether O in (64) or (scrambled) out of (65) VP:

|      |     |                            |   |                                                                                                                                         |   |    |                       |   |  |   |     |                            |
|------|-----|----------------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------|---|----|-----------------------|---|--|---|-----|----------------------------|
| (64) | (C) | <b>O<sub>LS</sub></b><br>1 | S | <table border="1"> <tr> <td>O</td> <td>V1</td> <td><b>O<sub>RO</sub></b></td> </tr> <tr> <td>2</td> <td></td> <td>3</td> </tr> </table> | O | V1 | <b>O<sub>RO</sub></b> | 2 |  | 3 | Aux | <b>O<sub>EP</sub></b><br>4 |
| O    | V1  | <b>O<sub>RO</sub></b>      |   |                                                                                                                                         |   |    |                       |   |  |   |     |                            |
| 2    |     | 3                          |   |                                                                                                                                         |   |    |                       |   |  |   |     |                            |

|      |     |                            |   |                                                                                                                                         |   |    |                       |   |  |   |     |                            |
|------|-----|----------------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------|---|----|-----------------------|---|--|---|-----|----------------------------|
| (65) | (C) | <b>O<sub>LS</sub></b><br>1 | S | <table border="1"> <tr> <td>O</td> <td>V1</td> <td><b>O<sub>RO</sub></b></td> </tr> <tr> <td>2</td> <td></td> <td>3</td> </tr> </table> | O | V1 | <b>O<sub>RO</sub></b> | 2 |  | 3 | Aux | <b>O<sub>EP</sub></b><br>4 |
| O    | V1  | <b>O<sub>RO</sub></b>      |   |                                                                                                                                         |   |    |                       |   |  |   |     |                            |
| 2    |     | 3                          |   |                                                                                                                                         |   |    |                       |   |  |   |     |                            |

- Position 3: VP-internal, without roll-up
- Position 4: extraposed (EP) (stranded) objects (whatever the exact analysis is)

### 5.1.2 Object positions in AuxVP-clauses

- Object positions in AuxV-clauses with an overt subject, *même jeu*:

- (66) non eo modo quo [Iunius Cordus] **est** **SAuxVO**  
not that.ABL way.ABL which.ABL Iunius.NOM Cordus.NOM be.PR.3.SG  
**persecutus omnia**, sed [...].  
pursued.NOM all.ACC.N.PL but  
'not in the way in which Iunius Cordus pursued everything.'  
(= Hist. Aug., *Maximus et Balbinus* 4.5 (Iulius Capitolinus))
- (67) [...] quod *imperator* **esset** *militibus* **minatus.** **SAuxQV**  
because commander.NOM be.IMPF.SUBJ.3.SG soldiers.DAT threatened.NOM  
'because the general had threatened the soldiers.' (= Liv. aUc. 4.50.2)
- (68) [omnisque noster equitatus] [eas cohortes] **est** **secutus.** **SOAuxV**  
entire.NOM=and our.NOM cavalry.NOM these.ACC cohorts.ACC be.PR.3.SG followed.NOM  
'and our entire cavalry followed these cohorts.' (= Caes. Bel. Civ. 3.68)
- (69) [...] illi Gothi, qui euaserant eo tempore **est** **persecutus.** **QSAuxV**  
these.NOM Goths.NOM who.NOM escape.PLQPF.3.PL that.ABL time.ABL  
quo *illos* *Marcianus* **est** **persecutus.**  
which.ABL these.ACC.M.PL Marcianus.NOM be.PR.3.SG hunted.down.NOM  
'those Goths which had escaped at the time when Marcianus chastised them.'  
(= Hist. Aug., *Claudius* 6.1 (Trebellius Pollio))

- and the same with *possum*:

- (70) [...], a quibus [nec uirtus ulla nec munimina] **possunt defendere bellatores.** **SAuxVO**  
from which.ABL.PL nor virtue.NOM any.NOM nor fortification.NOM.PL  
be.able.3.PL defend.INF warrior.ACC.PL  
'against which neither courage or fortifications can defend the warriors.'  
(= Vegetius, Ep. rei mil. 4.29.3)
- (71) Sunt autem nonnulli, qui negant *Eratosthenem* **potuisse** **colligere.** **SAuxQV**  
be.3.PL PRT some.NOM.M.PL who.NOM.M.PL deny.3.PL Eratosthenes.ACC  
be.able.INF.PF true.ACC measure.ACC circle.GEN earth.GEN capture.INF  
'Eratothstenes is able to measure the circumference of the earth.'  
(= Hist. Aug., *Eratosthenes* 1.1 (Strabo))

'Some people deny that Eratosthenes managed to calculate the correct measure of the earth.'  
(= Vit. Arch. 1.6.11)

- (72) [...], ne manu sua *elephans* [*bellatorem contra se* **SOAuxV**  
so.that.not trunk.ABL his.ABL elephant.NOM warrior.ACC against REFL.ACC  
*uenientem*] **posset** **adprehendere.**  
coming.ACC be.able.SUBJ.IMPF.3.SG seize.INF  
'so that the elephant cannot seize a soldier with his trunk when the latter approaches him.'  
(= Vegetius, Ep. rei mil. 3.24.9)

- (73) [...], ut [*amaritudinem morbi*] [*herbarum amaritudo*] [...] **QSAuxV**  
so.that bitterness.ACC disease.GEN herb.GEN.PL bitterness.NOM  
**possit** **expellere.**  
be.able.PR.SUBJ.3.SG expell.INF  
'so that the bitterness of the herbs may chase away the bitterness of the disease.'  
(= Veg. Mul. 1.13.5)

- (74) (C) **O<sub>LS</sub>** S **O<sub>SS</sub>** Aux **O<sub>RO</sub>** V2 O  
1 2 3 4

- 4 object positions:

- Position 1: long (i.e. past the subject) scrambled (LS) objects
- Position 2: short scrambled objects (below the subject)
- Position 3: VP-internal object with roll-up movement
- Position 4: ambiguous between (i) a VP-internal object which has not undergone roll-up movement and (ii) an extraposed object (both of which positions could unambiguously be defined in the VPAux clauses, cf. (63) above)

### 5.1.3 The full picture then

- enriching the two separate linear templates:

- (75) (C) **O<sub>LS</sub>** S **O<sub>RO</sub>** V1 **O<sub>RO</sub>** Aux **O<sub>EP</sub>**

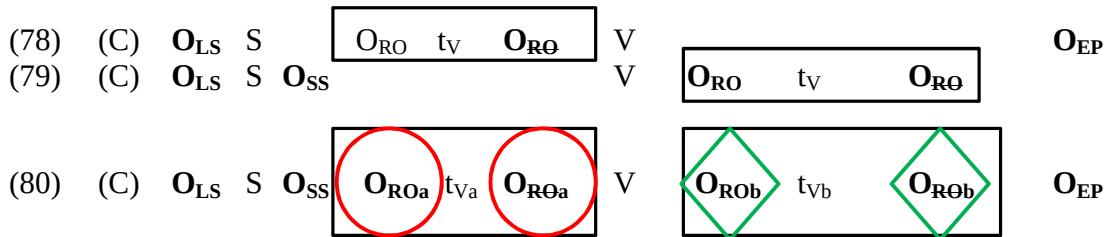
- (76) (C) **O<sub>LS</sub>** S **O<sub>SS</sub>** Aux **O<sub>RO</sub>** V2 **O<sub>RO</sub>**

=> and bringing them together:

- (77) (C) **O<sub>LS</sub>** S **O<sub>SS</sub>** **O<sub>ROa</sub>** V1 **O<sub>ROa</sub>** Aux **O<sub>ROb</sub>** V2 **O<sub>ROb</sub>** **O<sub>EP</sub>**  
1 2 3a 4a 3b 4b 5

### 5.2 Object positions in clauses with one 'synthetic' verb form only

- one step further: assume now that in clauses with synthetic verb forms, the lexical verb undergoes V-to-T movement, and that these clauses are identical to clauses with synthetic verb forms in all other respects. We then get:



=> main consequence: if taken up in a study that investigates OV/VO alternations, many cases of spurious OV and VO enter the sample, crucially at strongly differing rates.

- assume now that the loss of VP movement - as suggested by the evidence of the clauses with a modal auxiliary - also took place in clauses with a singly synthetic verb form, i.e. in clauses where the presence or absence cannot be diagnosed. If we then assume that there is less VP-movement in ALL late Latin clauses, it follows that in late Latin clauses with synthetic verbs, more objects would occur in the non-moved VP, and thus to the right of the surface position of V.

### 5.3 Conclusions

- The high frequency of 'surface VO' in late Latin texts often reported in the literature as an artefact of a confounding factor, viz. the gradual loss of VP-movement.
- Hypothesis that OV remained productive in late Latin is in line with recent work on early Romance (Poletto 2010 (Old Italian); Zaring 2010, 2011 (Old French)).
- Moreover, we now have an indirect piece of evidence that the alternation  $\pm$  VP-movement did not only affect clauses in which this alternation can be diagnosed (i.e. clauses where T and V are not realized on the same lexical item).
- In addition, we have reason to assume that the loss of VP-movement took place in all clauses, not just in clauses with a modal auxiliary.
- But what about clauses with a BE-auxiliary, where no such loss of VP-movement could be observed?

## 6. Late Latin 'Participle - BE' and the discrepancy between modals and the BE-auxiliary

### 6.1 Recapitulation: the *explananda*

- **Puzzle 3:** How come late Latin BE-auxiliaries - in the overwhelming majority of the cases - unexpectedly (cf. diachronic evolution) follow their participial complement (section 6)?
- **Puzzle 3':** But what about the exception of Cassius Felix (section 6)?
- **Puzzle 4:** How come BE-auxiliaries and modals show strongly different word order preferences (section 6)?

## 6.2 The curious case of Cassius Felix

### 6.2.1 Two paradigms of BE-periphrases

- the transition from classical to late Latin witnessed the rise of a paradigm of BE-periphrases with forms of BE built on the *perfectum*-stem, to the expense of periphrases with *infectum*-stem forms of BE (see de Melo (2012) and references cited there, table 17 is his table 6.3):

|                              | <i>infectum</i> (old):<br>E/S-stem | <i>perfectum</i> (new):<br>F-stem |
|------------------------------|------------------------------------|-----------------------------------|
| <b>Infinitive</b>            | <i>amatus esse</i>                 | <i>amatus fuisse</i>              |
| <b>Indicative, past</b>      | <i>amatus eram</i>                 | <i>amatus fueram</i>              |
| <b>Indicative, present</b>   | <i>amatus sum</i>                  | <i>amatus fui</i>                 |
| <b>Indicative, future</b>    | <i>amatus ero</i>                  | <i>amatus fuero</i>               |
| <b>Subjunctive, past</b>     | <i>amatus essem</i>                | <i>amatus fuissem</i>             |
| <b>Subjunctive, non-past</b> | <i>amatus sim</i>                  | <i>amatus fuerim</i>              |

Table 17: two paradigms of BE-periphrases in late Latin.

- this change affected analytic passives and analytic deponents alike:

| <b>Old pattern</b><br><b>(<i>infectum</i> (E/S-)stem)</b> |                    | <b>New pattern</b><br><b>(<i>perfectum</i> (F-)stem)</b> |                      |
|-----------------------------------------------------------|--------------------|----------------------------------------------------------|----------------------|
| <b>deponent</b>                                           | <b>passive</b>     | <b>deponent</b>                                          | <b>passive</b>       |
| <i>hortatus sum</i>                                       | <i>amatus sum</i>  | <i>hortatus fui</i>                                      | <i>amatus fui</i>    |
| <i>hortatus es</i>                                        | <i>amatus es</i>   | <i>hortatus fuisti</i>                                   | <i>amatus fuisti</i> |
| <i>hortatus est</i>                                       | <i>amatus est</i>  | <i>hortatus fuit</i>                                     | <i>amatus fuit</i>   |
| <i>hortati sumus</i>                                      | <i>amati sumus</i> | <i>hortati fuimus</i>                                    | <i>amati fuimus</i>  |
| <i>hortati estis</i>                                      | <i>amati estis</i> | <i>hortati fuistis</i>                                   | <i>amati fuistis</i> |
| <i>hortati sunt</i>                                       | <i>amati sunt</i>  | <i>hortati fuerunt</i>                                   | <i>amati fuerunt</i> |

Table 18: two paradigms of perfect indicative BE-periphrases in late Latin (passive and deponent).

### 6.2.2 The evidence from Cassius Felix' *De medicina* (ca. 447)

- In Cassius' text, we find both the 'classical' pattern with forms of the BE-auxiliary built on the *infectum* stem (81) and the innovative periphrases with a form built on the *perfectum* (*fu-*) stem (82). Both can occur with deponent (a-sentences) and passive (b-sentences) past participles alike:

- (81) a. [...], quo **usus est** Galenus ad uniuersas tusses et dyspnias.  
           which.ABL used.NOM be.PR.3.SG Galenus.NOM to all.ACC coughs.ACC and dyspneas.ACC  
           'which Galenus used in all cases of coughing and shortness of breath.' (= Cass. Fel. Med. 41)
- b. et sanguinem detrahes quantum causae sufficere **fueris**  
           and blood.ACC draw.off.FUT.2.SG as.much.as case.DAT suffice.PR.INF be.FUT.EX.2.SG  
**arbitratus.**  
           judged.NOM  
           'and draw as much blood as you will think suffices for this case.' (= Cass. Fel. Med. 21)

- (82) a. si forte aliquid **laesum** **erit**  
 if by.chance something.NOM damaged.NOM be.PR.3.SG  
 'if by chance something will be damaged.' (= Cass. Fel. Med. 29)
- b. postquam eruptio **fuert** **facta**  
 after outburst.NOM be.FUT.EX.3.SG made.NOM  
 'after an outburst will have taken place.' (= Cass. Fel. Med. 21)

- Strongly differing word order preferences:

| Pattern        | #12 | #21 | Total | %12   | %21   |
|----------------|-----|-----|-------|-------|-------|
| Old (E/S-stem) | 3   | 14  | 17    | 17,65 | 82,35 |
| New (F-stem)   | 69  | 15  | 84    | 82,14 | 17,86 |
| Total          | 72  | 29  | 101   |       |       |

Table 18: word order vs. type of BE-periphrasis  
 in Cassius Felix' *De medicina* (447 AD).

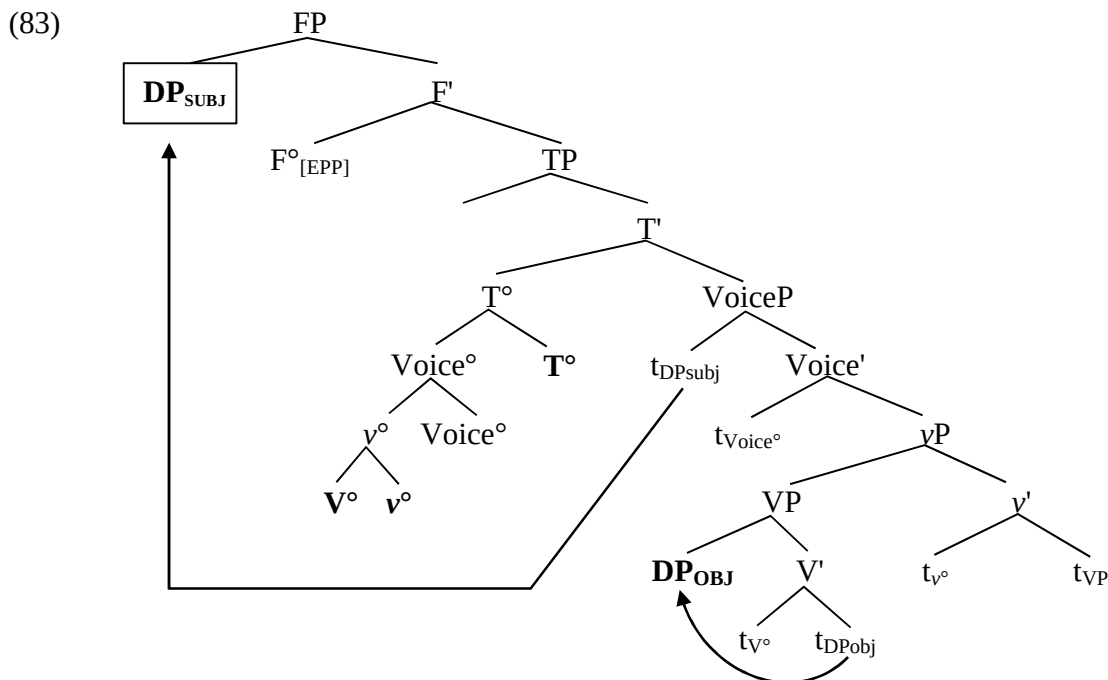
- the older paradigm strongly favours the order 'Participle-Auxiliary', whereas the innovative one most frequently comes in the order 'Auxiliary-Participle'. The distribution of the two patterns across the two word orders is highly statistically significant ( $\chi^2$  with Yates correction,  $p < .0001$ ).

### 6.3 Verb incorporation: more cluster formation

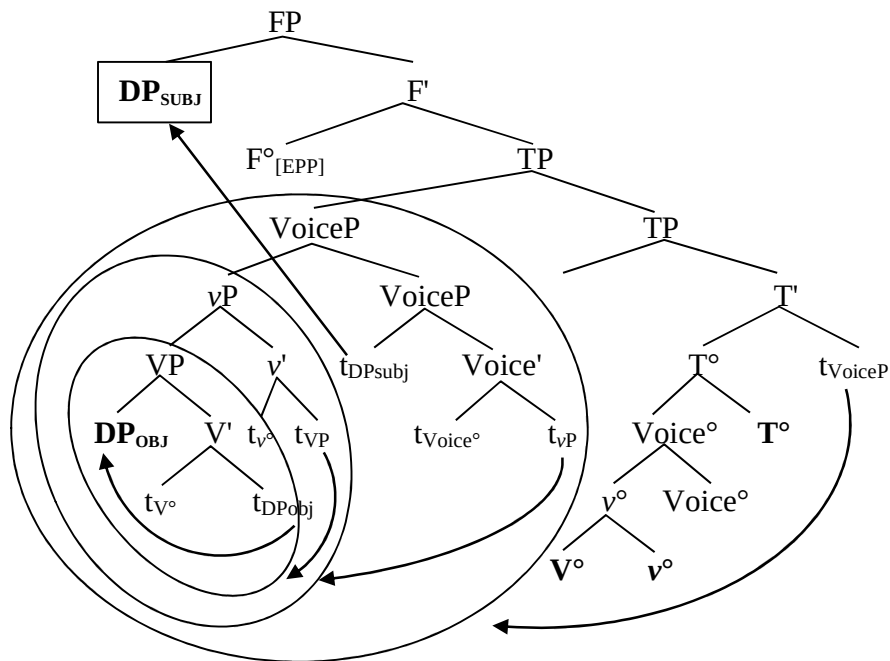
#### 6.3.1 'Participle - BE' $\neq$ VPAux

- Hypothesis: late Latin 'Participle - BE' = incorporation of the PaPa into the BE-auxiliary in  $T^\circ$ , n VP-movement. Assumption: only T(ense)-heads incorporated finite verbs, not modal heads.

- The innovative structure would look like in (83) (without (much) roll-up, and thus with surface VO) or (84) (with roll-up, and thus with surface OV) (overt terminals in boldface).



(84)



- possible intervener for head movement past BE: negation (cf. *hortatus non sum*). But...

### 6.3.2 An interesting parallel: the creation of the Romance synthetic future

- (see Valesio (1968, 1970); Coleman (1971, 1976); Pinkster (1985); Adams (1991); Roberts (1992), among many many others).

- first attestation of the fully-synthetic future ((85), ca. 650) => (i) the change (i.e. the incorporation) must have taken place early and quickly, (ii) in a period where the preverbal position for the (by hypothesis incorporated) negator was still the neutral position.

(85) et ille respondebat: 'non dabo'. Iustinianus dicebat: 'daras'.  
 and he.NOM answer.IMP.3.SG not give.FUT.3.SG Iustinianus.NOM say.IMP.3.SG give.FUT.3.SG  
 'And he answered: 'I will not give'. // Iustinianus said: 'you will give.'  
 (= Fredegarius scholasticus, MGH, *Scripta Rerum Merovingorum* 2.2.62 (p.85 l.32) )

- whatever explanation will account for the fact that a form like *daras* could be derived from the string *dare habes* in a period in which the negation of the latter would have been *dare non habes*, will also allow us to account for why incorporation of the participle could proceed even if it had to cross Neg°.

- the parallel between the passive/deponent 'Participle+BE' sequences and the newly formed synthetic futures is not complete however: the former seemed to have died out (replaced by the 'FU- + participle' periphrases), whereas the latter are until today widely spread across the Romance languages.

### 6.3.3 Late Latin object positions revisited

=> consequence of the analysis: loss of VP movement also affects clauses with a BE-auxiliary, but this is perhaps disguised by verb incorporation. Evidence?

- recall the following figures (where 'clean VO' means 'all VOAux + all AuxVO' (i.e. 'extraposed' objects not included), and 'dirty VO' 'all VOAux + all AuxVO + all VAuxO' (i.e. 'extraposed' objects included):

|                        | % clean VO | % dirty VO |
|------------------------|------------|------------|
| <b>classical Latin</b> | 6,31       | 24,44      |
| <b>late Latin</b>      | 0,79       | 38,05      |

Table 19: Frequency of VO in clauses with a BE-auxiliary and a deponent past participle

- although the absolute increase of VO is not statistically significant, these observed figures still might tell us something, esp. given that the proportion of clausal complements in the 'dirty VO' cases is higher in the classical period (45,12% of the 'extraposed' O's being CPs) than in the late period (25,47% clauses).

=> Suggestion: the higher frequency of 'dirty VO' in late Latin is to be ascribed to there being less roll-up type VP-movement (cf. the Puzzle 2 facts).

### 6.4 The innovative paradigm is different, and so are modals

- final piece of the puzzle: why don't (i) modal auxiliaries and (ii) FU-auxiliaries in the new BE-periphrases incorporate their infinitival complements? Note that the explanation cannot lie in the categorial status of the latter, as infinitival complements of the 'grammaticalized' HAVE-auxiliary could indeed incorporate.

- Solution: weakening of Tense-heads (BE (passive/deponent) and HAVE (future tense)), up to the point that they became affixal, thus in need of a (phonological) host. The new FU-auxiliaries and the modals were not affected by this process.

## 7. Conclusions

- Large-scale corpus studies and thorough data analysis can yield valuable insights in the syntactic development of old languages
- Convergent evidence suggests that the evolution of head-finality-with-phrasal-roll-up (classical Latin) towards harmonic head-initiality (present day Romance) proceeded through a stage of X°-movement style cluster formation (late Latin):
  - West Germanic style adverb placement (already in the earlier grammar)
  - reduced word order flexibility (loss of VOAux) due to Neg-incorporation
  - persistence of (apparent) head-finality in clauses with a BE-auxiliary
- To do: look at (i) (agentive) external arguments and (ii) derived subjects in passive clauses to test hypotheses on EPP-checking



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