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Aims of the talk:

- Argue that the Latin passive perfect *amatus sum* 'I was loved' is not the ancestor of the Romance analytic passive present of the *sono amato* 'I am loved'-type.
- Reconstruct the genesis of the Romance analytic BE-passives
- Main evidence: word order.

1. Introduction: the basic data

1.1 The Classical Latin verb system: I and P

- I(nfectum) vs. P(erfectum); synthetic vs. analytic

	ACTIVE		PASSIVE	
	<i>infectum</i>	<i>perfectum</i>	<i>infectum</i>	<i>perfectum</i>
Infinitive	amare	amauisse	amari	amatus esse
Indicative, present	amo	amaui	amor	amatus sum
Indicative, past	amabam	amaueram	amabar	amatus eram
Indicative, future	amabo	amauro	amabor	amatus ero
Subjunctive, non-past	amem	amauerim	amer	amatus sim
Subjunctive, past	amarem	amauissem	amarer	amatus essem

Table 1: the Latin verbal system: infectum vs. perfectum, active vs. passive.

1.2 A diachronic evolution: E and F

- 'classical' pattern with forms of the BE-auxiliary built on the infectum stem (a-sentences) and the innovative periphrases with a form built on the perfectum (*fu-*) stem (b-sentences). Both can occur with passive (1) and deponent (2) past participles alike:

- (1) 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)
- (2) 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 **fuertis**
 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)

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

Table 2: E- and F-periphrases in passives.

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

Table 3: E- and F-periphrases with deponents.

1.3 An analogue of the E-to-F shift in the *infectum*: the *communis opinio*

- Winters (1984: 450-451): 'The central immediate cause of the shift [...] was the need to communicate temporal information. Within the analytic tenses, ambiguities were already present in C[lassical] L[atin], e.g. the dual meaning of the p. ptc. + ESSE: *amatus est* 'he is

loved, beloved' with the p. ptc. functioning as an adjective, and 'he has been loved' [sic(!), Id], a perfect passive expression [...]. It was the **ambiguity of tense within a single expression that motivated the change** [...].'

- Hewson (1997: 315): '[...] in analytic terms the whole formation [viz. a passive perfect like *laudatus est*, Id] was the equivalent of "he is praised", where [...] we see the **confusion between the perfect and the passive**. [...] a perfect passive with a present auxiliary may be interpreted as an ordinary present passive.
- de Melo (2012: 84): 'In Italian, Latin *amor* is replaced by *sono amato*, **from *amatus sum***, which has acquired present meaning.

- see also Harris (1978a: 188), among many others.

1.4 Roadmap

- Section 2: modals move towards more AuxVP, the BE-auxiliary does the opposite
- Section 3: the rise of the F-pattern
- Section 4: early analytic present tense passives
- Section 5: syntactic analysis: Aux-cliticization
- Section 6: conclusion

2. Background: VPAux vs. AuxVP in the history of Latin

2.1 A corpus study

- morphosyntactically annotated database: **LASLA** (Laboratoire d'Analyse Statistique des Langues Anciennes, Université de Liège); contains information about (i) parts of speech, (ii) case, gender and number of nominals; tense, diathesis, mood of verb forms and (iii) word order.

- 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**.

- Diachrony: comparing periods (that is, mean frequencies of a given phenomenon (T-tests)):

- **period I:** Early and Classical Latin (ca. 160 BC - 180 AD)
- **period II:** Late Latin (ca. 320 - 550 AD)
- Justification of this periodization: considerable gap in the attested records (roughly between 180 and 320 AD)

- Full description of the corpus (only prose texts, but different of genres, registers,...):

	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.	Livius (<i>Ab urbe condita</i>)*	ca. 10 AD	514371	Brepolis
8.	Seneca (<i>Epistulae ad Lucilium, Consolationes, Dialogi, Apocolocyntosis</i>)	ca. 50 AD	TBD	Hyperbase
9.	Petronius (<i>Satyricon reliquiae</i>)	ca. 60 AD	31093	Hyperbase
10.	Frontinus (<i>Strategemata, De aquaeductu urbis Romae</i>)	ca. 90 AD	30391	Brepolis
11.	Quintilianus (<i>Institutio Oratoria</i>)*	95 AD	174237	Brepolis
12.	Plinius minor (<i>Epistulae, Panegyricus</i>)	95-110 AD	85073	Brepolis/ Hyperbase
13.	Tacitus (<i>Germania, Dialogus de oratoribus, Agricola; Historiae, Annales</i>)	ca. 110 AD	165345	Hyperbase
14.	Suetonius (<i>Vitae Caesarum</i>)	119-120 AD	72000	Brepolis
15.	Gaius (<i>Institutiones</i>)	ca. 170 AD	43676	Brepolis
NO/VERY FEW ATTESTATIONS (here only Gargilius' <i>Medicinae ex oleribus et pomis</i> (ca. 250 AD, 8533 words, Brepolis) considered).				
16.	<i>Historia Augusta</i>	ca. 320 AD (?)	TBD	Brepolis
17.	Palladius (<i>De ueterinaria, De agricultura</i>)	ca. 350	50119	Brepolis
18.	<i>Itinerarium Egeriae</i>	381-384 AD	17552	Brepolis
19.	<i>De re coquinaria</i> ('Apicius')	ca. 400 AD (?)	15649	Brepolis
20.	<i>Gesta Conlotionis Carthaginiensis</i>	411 AD	55002	Brepolis
21.	Vegetius (<i>Ep. rei militaris, Mulomedicina</i>)	ca. 420 AD	73428	Brepolis
22.	Cassius Felix (<i>De medicina</i>)	447 AD	29673	Brepolis
23.	Victor Vitensis (<i>Historia persecutionis Africanae prouinciae</i>)	ca. 490 AD	19777	Brepolis
25.	Pompeius Maurus (<i>Commentum Artis Donati</i>)	ca. 500 AD	79364	Brepolis
26.	Caesarius Arelatensis (<i>Sermones</i> 1-80)	ca. 520 AD	91753	Brepolis
27.	Anthimus (<i>De obseruatione ciborum</i>)	ca. 535 AD	4479	Brepolis
28.	Iordanes (<i>Getica, Romana</i>)	ca. 550 AD	38039	Brepolis

Table 4: description of the corpus used (Latin prose texts, ca. 160 BC - 550 AD). Texts/authors marked with an *: only clauses with BE-auxiliaries and deponent past participles investigated, no passives (yet).

2.2 A directionality alternation

- In all documented stages of the Latin languages, BE-auxiliaries that are part of an analytic verb form (i.e. in a 'compound' tense) can both follow and precede their dependent (past) participles:

- (3) cum esset **perductus**
when be.IMPF.SUBJ.3.SG brought.NOM.M.SG
'when he had been brought.' (= Cic., Pro rege Dei. 32)
- (4) nisi in rem praesentem **perductus** est
unless in cause.ACC present.ACC brought.NOM.M.SG be.PR.3.SG
'unless he was brought into this present state.' (= Sen. Ep. 66.33)

- this alternation can also be observed in the case of modal verbs and dependent infinitives:

(5) qui uero iudicem rapere et in quem uellet
 who.NOM PRT judge.ACC overwhelm.INF and in which.ACC want. IMPF.SUBJ.3.SG
 habitum animi posset perducere, [...].
 position.ACC mind.GEN be.able.IMPF.SUBJ.3.SG bring.INF
 'he who can overwhelm the judge and lead him to any disposition of mind he wants.'
 (= Quint. I.O. 6.2.3)

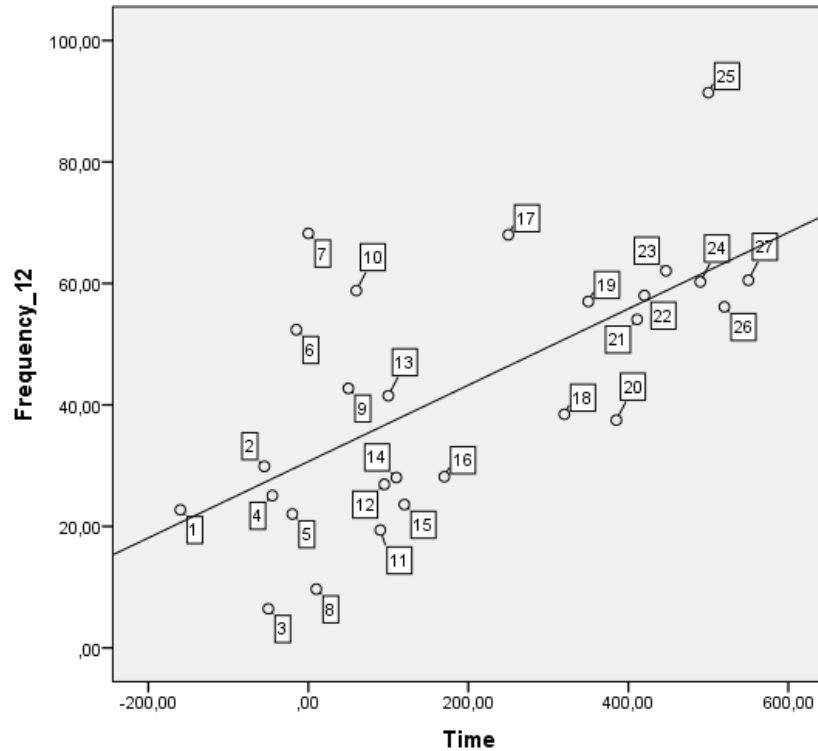
(6) quod magno labore fabri normam facientes
 which.ACC great.ABL effort.ABL carpenters.NOM set-square.ACC making.NOM.M.PL
 uix ad uerum perducere possunt, [...].
 hardly to true.ACC.N.SG bring.INF be.able.PR.3.PL
 'which craftsmen, putting a lot of effort in making a set-square, can hardly carry out correctly.' (= Vitruv. Arch 9.Praef.6)

2.3 The diachrony of the alternation with modal auxiliaries

2.3.1 *possum*

Author	Date (approx.)	# 12	# 21	# clauses	%12	%21
Cato	160 BC	10	34	44	22,73	77,27
Cicero	55 BC	527	1237	1764	29,88	70,12
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
Livius	10 AD	131	1224	1355	9,67	90,33
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	80,6
Quintilianus	95 AD	200	543	743	26,92	73,08
Plinius	100 AD	115	162	277	41,52	58,48
Tacitus	110 AD	60	154	214	28,04	71,96
Suetonius	120 AD	21	68	89	23,60	76,4
Gaius	170 AD	109	278	387	28,17	71,83
NO/VERY FEW ATTESTATIONS						
Gargilius	250 AD(??)	17	8	25	68,00	32,00
Historia Augusta	320 AD	115	184	299	38,46	61,54
Palladius	350 AD	150	113	263	57,03	42,97
Itinerarium Egeriae	385 AD	15	25	40	37,50	62,5
Gesta C. Carth.	411 AD	152	129	281	54,09	45,91
Vegetius	420 AD	141	102	243	58,02	41,98
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	411	321	732	56,15	43,85
Iordanes	550 AD	23	15	38	60,53	39,47

Table 5: word order in clauses with the modal auxiliary *possum* complemented by an infinitive.



Graph 1: diachrony of the VPAux-AuxVP alternation in clauses with *possum* and an infinitival VP. Case numbers: 1 = Cato, 2 = Cicero, 3 = Caesar, 4 = Varro, 5 = Sallustius, 6 = Hyginus, 7 = Vitruvius, 8 = Livius, 9 = Seneca, 10 = Petronius, 11 = Frontinus, 12 = Quintilianus, 13 = Plinius, 14 = Tacitus, 15 = Suetonius, 16 = Gaius, 17 = Gargilius, 18 = Historia Augusta, 19 = Palladius, 20 = Itinerarium Egeriae, 21 = Gesta Conlat. Carthag., 22 = Vegetius, 23 = Cassius Felix, 24 = Victor Vitensis, 25 = Pompeius Maurus, 26 = Caesarius Arelatensis, 27 = Iordanes.

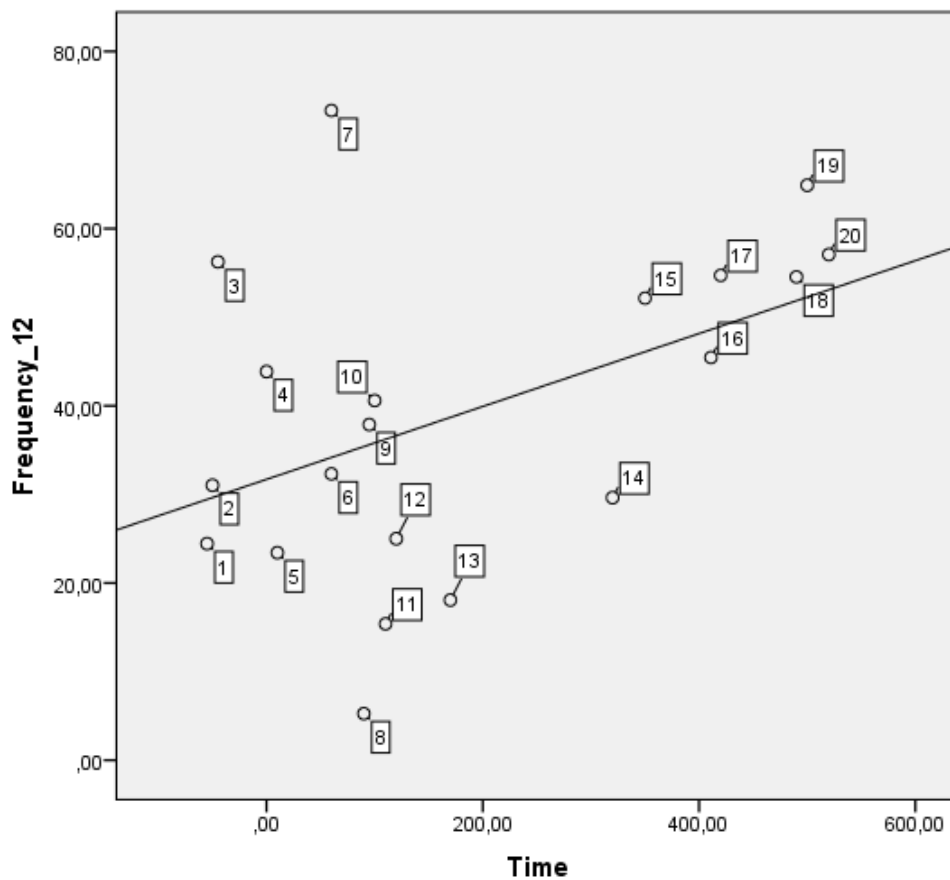
- The frequency of the AuxVP order in clauses with the modal auxiliary *possum* is **31,60%** in the earlier period, compared to **58,50%** in the later period. This difference is statistically highly significant (Independent samples T-test, $p=.000$).

2.3.2 *debeo*

Author	Date (approx.)	# 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
Livius	10 AD	26	85	111	23,42	76,58
Seneca	60 AD	105	220	325	32,31	67,69
Petronius	60 AD	11	4	15	73,33	26,67
Frontinus	90 AD	1	18	19	5,26	94,74
Quintilianus	95 AD	75	123	198	37,88	62,12
Plinius	100 AD	41	60	101	40,59	59,41
Tacitus	110 AD	2	11	13	15,38	84,62
Suetonius	120 AD	3	9	12	25,00	75,00
Gaius	170 AD	15	68	83	18,07	81,93
NO/VERY FEW ATTESTATIONS						

Historia Augusta	320 AD	16	38	54	29,63	70,37
Palladius	350 AD	85	78	163	52,15	47,85
Gesta Conlat. Carthag.	411 AD	65	78	143	45,45	54,55
Vegetius	420 AD	58	48	106	54,72	45,28
Victor Vitensis	490 AD	6	5	11	54,55	45,45
Pompeius Maurus	500 AD	268	145	413	64,89	35,11
Caesarius Arelatensis	520 AD	137	103	240	57,08	42,92

Table 6: word order in clauses with the modal auxiliary *debeo* complemented by an infinitive: absolute figures and percentages.



Graph 2: diachrony of the VPAux-AuxVP alternation in clauses with *debeo* and an infinitival VP. Case numbers: 1 = Cicero, 2 = Caesar, 3 = Varro, 4 = Vitruvius, 5 = Livius, 6 = Seneca, 7 = Petronius, 8 = Frontinus, 9 = Quintilianus, 10 = Plinius, 11 = Tacitus, 12 = Suetonius, 13 = Gaius, 14 = Historia Augusta, 15 = Palladius, 16 = Gesta Conlat. Carthag., 17 = Vegetius, 18 = Victor Vitensis, 19 = Pompeius Maurus, 20 = Caesarius Arelatensis.

- The frequency of the AuxVP order in clauses with the modal auxiliary *debeo* is **32,83%** in the earlier period, compared to **51,21%** in the later period. This difference is statistically significant (Independent samples T-test, $p=.025$).

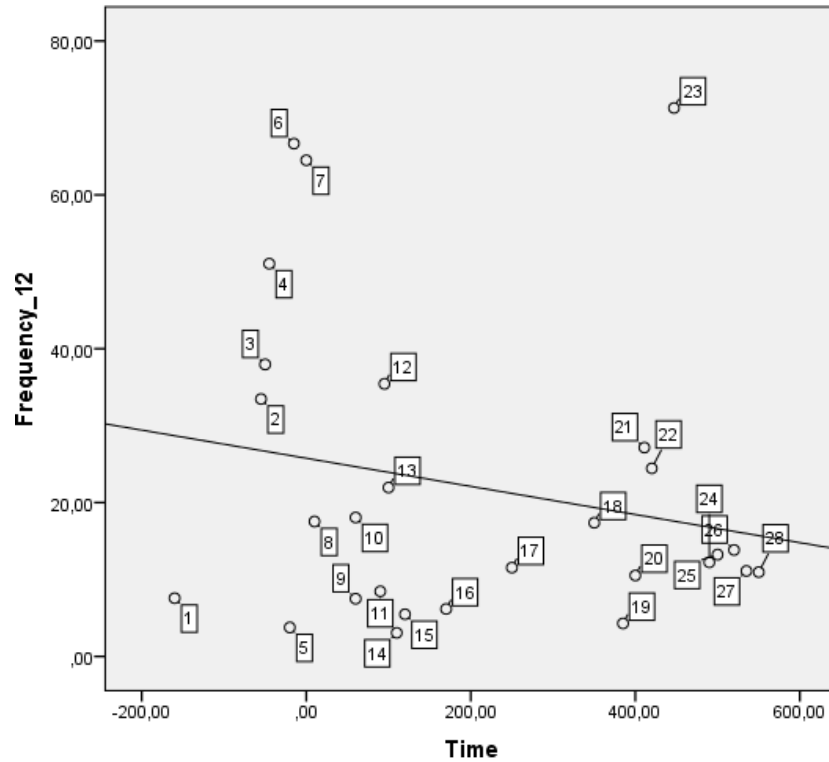
2.4 The BE-auxiliary: a different picture, and one remarkable outlier

- the figures:

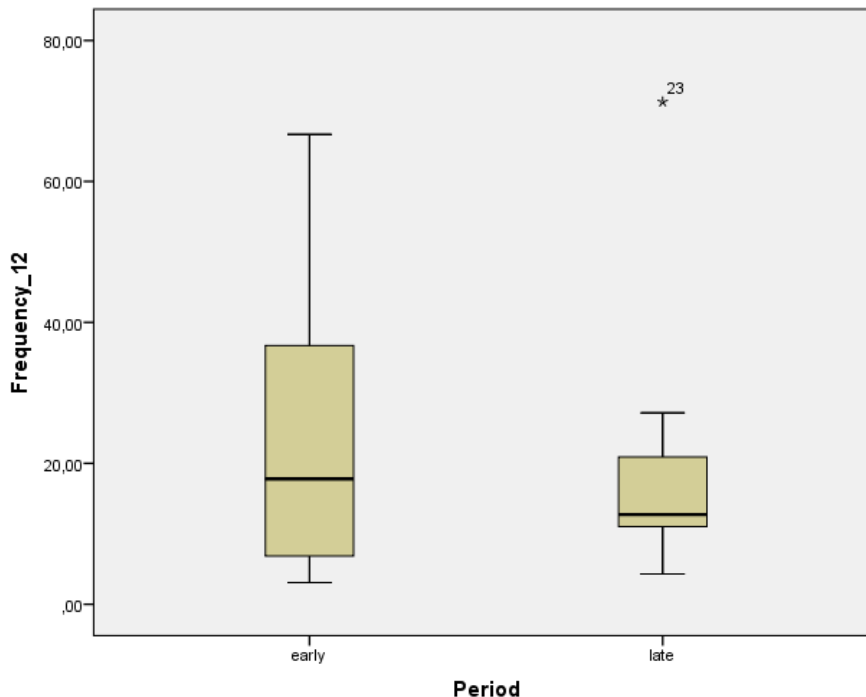
Author	Date (approx.)	# 12	# 21	# clauses	%12	%21
Cato	160 BC	5	61	66	7,58	92,42
Cicero	55 BC	1150	2287	3437	33,46	66,54
Caesar	50 BC	82	134	216	37,96	62,04
Varro	45 BC	242	232	474	51,05	48,95
Sallustius	20 BC	4	102	106	3,77	96,23
Hyginus	15 BC	140	70	210	66,67	33,33
Vitruvius	0 BC	487	268	755	64,5	35,5
Livius*	10 AD	184	865	1049	17,54	82,46
Seneca	60 AD	76	938	1014	7,5	92,5
Petronius	60 AD	13	59	72	18,06	81,94
Frontinus	90 AD	22	238	260	8,46	91,54
Quintilianus*	95 AD	84	153	237	35,44	64,56
Plinius	100 AD	90	320	410	21,95	78,05
Tacitus	110 AD	9	284	293	3,07	96,93
Suetonius	120 AD	33	569	602	5,48	94,52
Gaius	170 AD	46	699	745	6,17	93,83
NO/VERY FEW ATTESTATIONS						
Gargilius	250 AD	6	46	52	11,54	88,46
Palladius	350 AD	29	138	167	17,37	82,63
Itinerarium Egeriae	385 AD	12	268	280	4,29	95,71
De re coquinaria ('Apicius')	400 AD	4	34	38	10,53	89,47
Gesta Conlat. Carthag;	411 AD	174	467	641	27,15	72,85
Vegetius	420 AD	67	207	274	24,45	75,55
Cassius Felix	447 AD	72	29	101	71,29	28,71
Victor Vitensis	490 AD	23	165	188	12,23	87,77
Pompeius Maurus	500 AD	69	452	521	13,24	86,76
Caesarius Arelatensis	520 AD	93	579	672	13,84	86,16
Anthimus	535 AD	3	24	27	11,11	88,89
Iordanes	550 AD	37	301	338	10,95	89,05

Table 7: word order in clauses with a BE-auxiliary complemented by a past participle: absolute figures and percentages.

- and some graphs:



Graph 3: diachrony of the VPAux-AuxVP alternation in clauses with a BE-auxiliary and a participial VP. Case numbers: 1 = Cato, 2 = Cicero, 3 = Caesar, 4 = Varro, 5 = Sallustius, 6 = Hyginus, 7 = Vitruvius, 8 = Livius, 9 = Seneca, 10 = Petronius, 11 = Frontinus, 12 = Quintilianus, 13 = Plinius, 14 = Tacitus, 15 = Suetonius, 16 = Gaius, 17 = Gargilius, 18 = Palladius, 19 = Itin. Egeriae, 20 = Apicius, 21 = Gesta Conlat. Carthag., 22 = Vegetius, 23 = Cassius Felix, 24 = Victor Vitensis, 25 = Pompeius Maurus, 26 = Caesarius Ar., 27 = Anthimus, 28 = Iordanes.



Graph 4: an outlier in Late Latin (Cassius Felix).

- The frequency of the AuxVP order in clauses with a BE-auxiliary is **24,29%** in the earlier period, compared to **19,00%** in the later period. This difference is not statistically significant (Independent samples T-test, $p=.494$).

Main *explananda* for the upcoming sections:

- discrepancy between modals and BE; up first:
- strange behaviour of BE-auxiliaries in Cassius Felix

3. Syntactic change in the passive *perfectum*: the rise of the F-pattern

3.1 An observation about Cassius Felix

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

3.2 Diachrony of the F-pattern

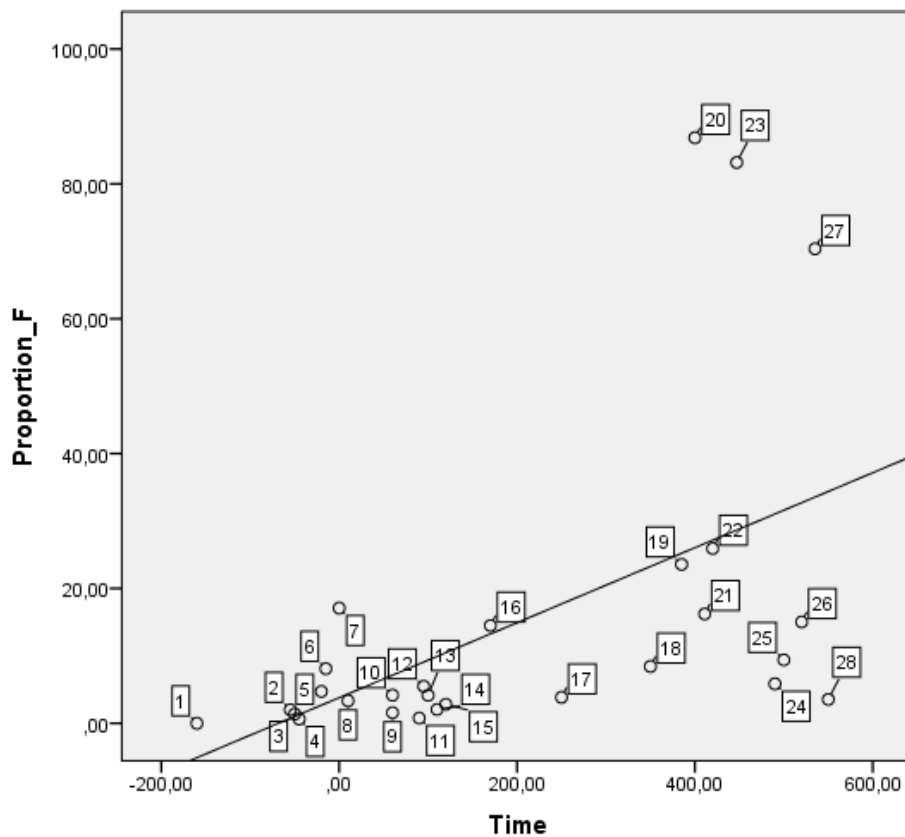
3.2.1 Proportion of F, compared to E

- the figures show an upward trend, but especially in the later period, there is a lot of (ill-understood) variation:

Author/Text	Date	# E	# F	# All	Proportion F (%)
Cato	160 BC	66	0	66	0
Cicero	55 BC	3368	69	3437	2,01
Caesar	50 BC	213	3	216	1,39
Varro	45 BC	213	3	216	0,63
Sallustius	20 BC	101	5	106	4,72
Hyginus	15 BC	193	17	210	8,1
Vitruvius	0 BC	626	129	755	17,09
Livius*	10 AD	1014	35	1049	3,34
Seneca	60 AD	998	16	1014	1,58
Petronius	60 AD	69	3	72	4,17
Frontinus	90 AD	258	2	260	0,77
Quintilianus*	95 AD	224	13	237	5,49
Plinius	100 AD	134	5	139	4,15
Tacitus	110 AD	287	6	293	2,05
Suetonius	120 AD	585	17	602	2,82
Gaius	170 AD	637	108	745	14,5
NO/VERY FEW ATTESTATIONS					

Gargilius	250 AD	50	2	52	3,85
Palladius	350 AD	152	14	166	8,43
Itinerarium Egeriae	385 AD	214	66	280	23,57
De re coquinaria ('Apicius')	400 AD	5	33	38	86,84
Gesta Conl. Carthaginiensis	411 AD	537	104	641	16,22
Vegetius	420 AD	203	71	274	25,91
Cassius Felix	447 AD	17	84	101	83,17
Victor Vitensis	490 AD	177	11	188	5,85
Pompeius Maurus	500 AD	472	49	521	9,4
Caesarius Arelatensis	520 AD	571	101	672	15,03
Anthimus	535 AD	8	19	27	70,37
Iordanes	550 AD	326	12	338	3,55

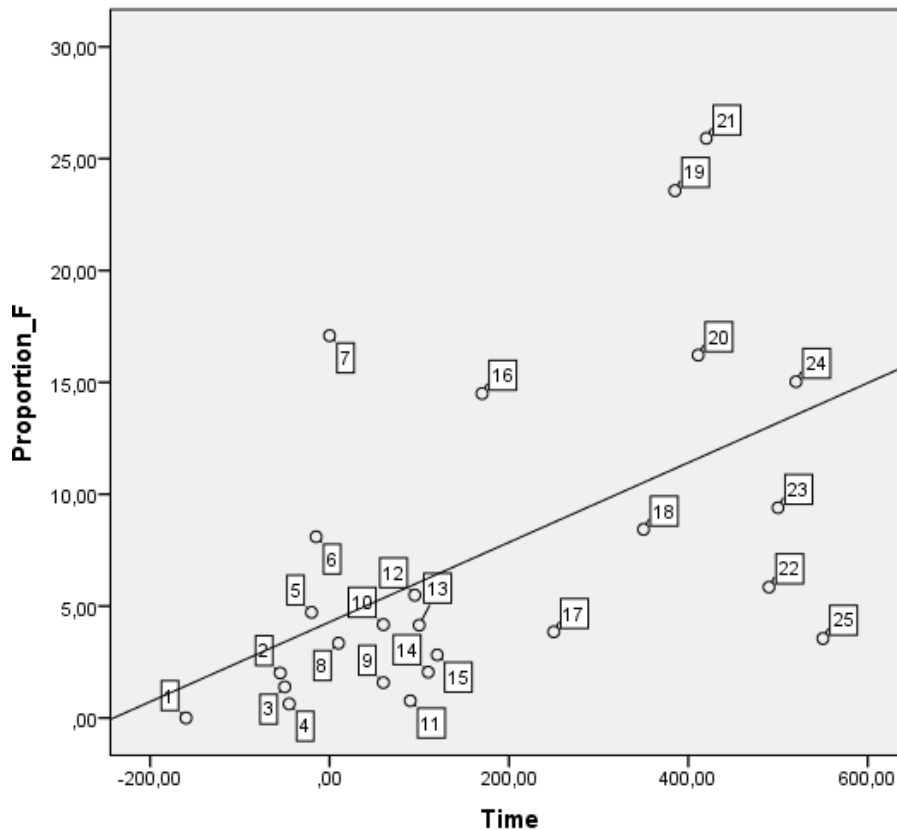
Table 9: Proportion of the F-periphrasis through time.



Graph 5: Diachronic evolution of the proportion of F-periphrases. Case numbers: 1 = Cato, 2 = Cicero, 3 = Caesar, 4 = Varro, 5 = Sallustius, 6 = Hyginus, 7 = Vitruvius, 8 = Livius, 9 = Seneca, 10 = Petronius, 11 = Frontinus, 12 = Quintilianus, 13 = Plinius, 14 = Tacitus, 15 = Suetonius, 16 = Gaius, 17 = Gargilius, 18 = Palladius, 19 = Itinerarium Egeriae, 20 = Apicius, 21 = Gesta Conl. Carthaginiensis, 22 = Vegetius, 23 = Cassius Felix, 24 = Victor Vitensis, 25 = Pompeius Maurus, 26 = Caesarius Arelatensis, 27 = Anthimus, 28 = Iordanes.

- The mean proportion of the F-periphrases is **4,55%** in the earlier period, compared to **29,35%** in the later (Gargilius included). This difference is highly statistically significant (Independent samples T-test (logaritmnic transformation), $p=.000$).

- However, one could object that it is likely that the three Late Latin data points with extremely high proportions of the F-periphrasis influence this result. This is not true:



Graph 6: Diachronic evolution of the proportion of F-periphrases without Late Latin outliers (Apicius, Cassius Felix and Anthimus). Case numbers: 1 = Cato, 2 = Cicero, 3 = Caesar, 4 = Varro, 5 = Sallustius, 6 = Hyginus, 7 = Vitruvius, 8 = Livius, 9 = Seneca, 10 = Petronius, 11 = Frontinus, 12 = Quintilianus, 13 = Plinius, 14 = Tacitus, 15 = Suetonius, 16 = Gaius, 17 = Gargilius, 18 = Palladius, 19 = Itinerarium Egeriae, 20 = Gesta Conl. Carthaginiensis, 21 = Vegetius, 22 = Victor Vitensis, 23 = Pompeius Maurus, 24 = Caesarius Arelatensis, 25 = Iordanes.

- The mean proportion of the F-periphrases in this new dataset is **4,55%** in the earlier period, compared to **12,42%** in the later (Gargilius included). This difference is statistically significant (Independent samples T-test (square root transformation), $p=.006$).

3.2.2 Word order in E and F

- In order to compare the word orders of the E- and the F-pattern, I retained only the data of those authors for which the available textual material contains at least 10 tokens of both patterns (to avoid issues with (really) small sample sizes). The raw figures are given in Table 9:

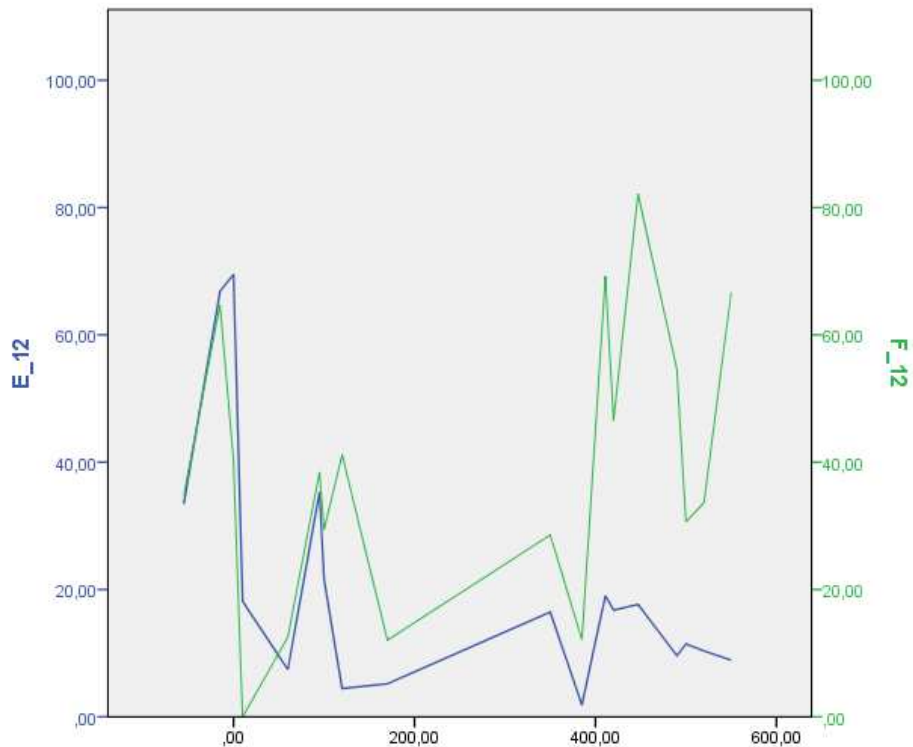
Author	E 12	E 21	E Total	F 12	F 21	F Total
Cicero	1126	2242	3368	24	45	69
Hyginus	129	64	193	11	6	17
Vitruvius	435	191	626	52	77	129
Livius*	184	830	1014	0	35	35
Seneca	74	924	998	2	14	16
Quintilianus*	79	145	224	5	8	13
Plinius minor	85	308	393	5	12	17
Suetonius	26	559	585	7	10	17
Gaius	33	604	637	13	95	108
Palladius	25	128	153	4	10	14
Itinerarium Egeriae	4	210	214	8	58	66
Gesta Conl. Carthaginiensis	102	435	537	72	32	104
Vegetius	34	169	203	33	38	71
Cassius Felix	3	14	17	69	15	84
Victor Vitensis	17	160	177	6	5	11
Pompeius Maurus	54	418	472	15	34	49
Caesarius Arelatensis	59	512	571	34	67	101
Iordanes	29	297	326	8	4	12

Table 10: the VPAux/AuxVP alternation in the E- and in the F-pattern: absolute figures.

- the relative frequencies reveal a very interesting picture, whereby the E- and the F-periphrases are clearly differentiated in terms of word order, but only in later texts:

Author	Date	E 12	F 12	Significant?	
Cicero	55 BC	33,43	34,78	NO	χ^2 , p=.814
Hyginus	15 BC	66,84	64,71	NO	χ^2 , p=.858
Vitruvius	0	69,49	40,31	YES	χ^2 , p=.000
Livius*	10 AD	18,15	0	YES	χ^2 (Yates correction), p=.011
Seneca	60 AD	7,41	12,5	NO	χ^2 (Yates correction), p=.733
Quintilianus*	95 AD	35,27	38,46	NO	χ^2 , p=.858
Plinius minor	100 AD	21,63	29,41	NO	χ^2 , p=.448
Suetonius	120 AD	4,44	41,18	YES	χ^2 , p=.000
Gaius	170 AD	5,18	12,04	YES	χ^2 , p=.006
Palladius	350 AD	16,34	28,57	NO	χ^2 (Yates correction), p=.431
Itinerarium Egeriae	385 AD	1,87	12,12	YES	χ^2 (Yates correction), p=.001
Gesta Conl. Carth.	411 AD	18,99	69,23	YES	χ^2 , p=.000
Vegetius	420 AD	16,75	46,48	YES	χ^2 , p=.000
Cassius Felix	447 AD	17,65	82,14	YES	χ^2 (Yates correction), p=.000
Victor Vitensis	490 AD	9,6	54,55	YES	χ^2 , p=.000
Pompeius Maurus	500 AD	11,44	30,61	YES	χ^2 , p=.000
Caesarius Arel.	520 AD	10,33	33,66	YES	χ^2 , p=.000
Iordanes	550 AD	8,9	66,67	YES	χ^2 (Yates correction), p=.000

Table 11: the VPAux/AuxVP alternation in the E- and in the F-pattern: absolute figures.



Graph 7: the VPAux/AuxVP alternation in the E- and in the F-pattern compared. From ca. 150 AD onwards, the line representing the values for the innovative F-pattern consistently lies higher than the (darker) line of the E-pattern.

- statistical evaluation:

		E	F	Statistically significant?
Frequency AuxVP	Early	29,03%	30,38%	NO (Independent samples T-test, p=.905)
	Late	12,43%	47,11%	YES (Independent samples T-test (logaritmic transformation), p=.000).

Table 12: the VPAux/AuxVP alternation in the E- and in the F-pattern statistically compared.

- by the way:

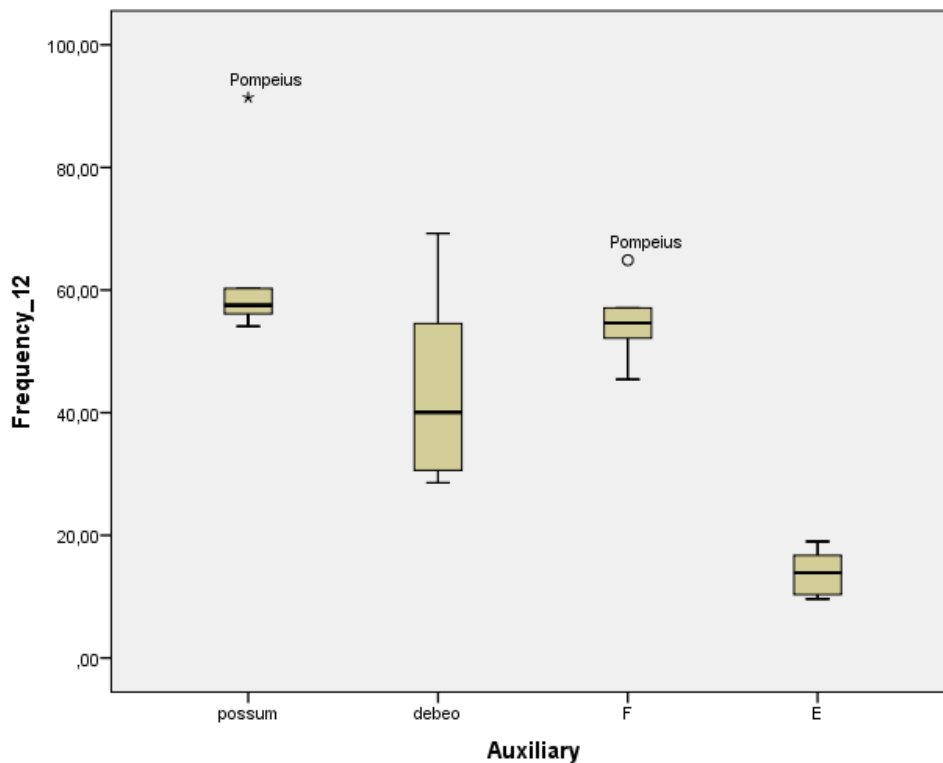
		Early	Late	Statistically significant?
Frequency AuxVP	E	29,03%	12,43%	NO (Independent samples T-test (logaritmic transformation), p=.176)
	F	30,38%	47,11%	NO (Independent samples T-test, p=.114).

Table 13: Diachrony of the frequency of head-initiality E- and F-periphrases statistically compared.

3.3 Late F patterns with late modals, late E patterns don't

Author/text	% AuxVP			
	<i>possum</i>	<i>debeo</i>	E	F
Palladius	57,03	28,57	52,15	16,34
Gesta Conlat. Carthaginiensis	54,09	69,23	45,45	18,99
Vegetius	58,02	46,48	54,72	16,75
Victor Vitensis	60,26	54,55	54,55	9,6
Pompeius Maurus	91,4	30,61	64,89	11,44
Caesarius Arelatensis	56,15	33,66	57,08	10,33
Average:	62,83	43,85	54,81	13,91

Table 14: VPAux/AuxVP: Late Latin auxiliaries compared.



Graph 8: VPAux/AuxVP: Late Latin auxiliaries compared.

- the results of a mixed model ANOVA with 'auxiliary' as a fixed and 'author/text' as a random factor (normality assumed) teach us that the factor 'auxiliary' significantly influences the rate of head-initiality ($p = .000$), as expected upon visual inspection of the boxplots. In contrast, the random factor does not come out as significant ($p = .767$).

- Interestingly, multiple comparisons (Scheffé Test) of the four auxiliary groups demonstrate that the E-pattern differs significantly from all three other groups (*possum*, $p = .000$; *debeo*, $p = .006$; F, $p = .000$), but that these three groups do not differ significantly from one another: they form a homogeneous subset to the exclusion of the E-group.

3.4 Intermediate conclusion

- Not all BE-periphrases are alike, neither formally, nor in terms of diachrony (proportionally), nor in terms of word order
- The F-pattern gradually gains ground, be it rather slowly
- Still to be addressed: unexpected word order behaviour of the E-periphrases (section 5)
- First: brief excursion on early evidence for analytic periphrases in the passive *infectum*

4. Periphrases in the passive *infectum*?

4.1 Yes. Some examples.

- some convincing examples can be found, but they are not numerous:

- (7) [...] tantus rugitus et mugitus totius populi est
so.big.NOM roaring.NOM and bellowing.NOM entire.GEN people.GEN be.PR.3.SG
cum fletu, [ut forsitan porro ad ciuitatem gemitus
with crying.ABL so.that perhaps further to city.ACC moaning.NOM
populi omnis **auditus sit**].
people.GEN entire.GEN heard.NOM.M.SG be.PR.SUBJ.3.SG
'Such was the roaring and bellowing, moaning and crying of the entire people, that their moaning could perhaps be heard in the city.' (= Itin. Eg. 36.3)

- compare:

- (8) Disputante autem episcopo singula et narrante tante
discussing.ABL PRT bishop.ABL single.ACC.N.PL and telling.ABL so.many.NOM
uoces sunt collaudantium, [ut porro foras ecclesia
voices.NOM be.PR.3.PL praising.GEN.PL that further.away outside.of church.ABL
audiantur uoces eorum].
hear.PASS.PR.SUBJ.3.PL voices.NOM they.GEN
'But when the bishop was discussing and narrating these items, so many voices arose of people praising him, that they could be heard outside of the church.' (= Itin. Eg. 47.2)

- contrast between (7) and a Classical Latin example with a similar combination of a present subjective of BE with a past participle (9). In this last example, the action described in the consecutive clause clearly clearly is anterior to the moment of utterance, as is the case in (10), which features as synthetic (and thus unambiguous) perfect subjunctive:

- (9) Tuae res gestae ita notae sunt [ut trans
your.NOM.F.PL things.NOM done.NOM.F.PL so known.NOM.F.PL be.PR.3.PL that over
montem Taurum etiam de Matrino **sit auditum**].
mountain.ACC Taurus.ACC also about Matrinius be.PR.SUBJ.3.SG heard.NOM.N.SG
'Your actions are so famous that even at the other side of Mount Taurus the name of Matrinius has been heard off.' (= Cic. ad Fam. 2.15.5)

- (10) Qui locus eius modi est [ut ante Syracusani
 which.NOM place.NOM that.GEN manner.GEN BE.PR.3.SG that before.ADV Syracusians.NOM
 in moenibus suis, in urbe, in foro hostem armatum ac
 in walls.ABL their.ABL in city.ABL in market.ABL enemy.ACC armed.ACC and
 uictorem quam in portu ullam hostium nauem **uiderint**].
 victorious.ACC than in harbour.ABL any.ACC enemies.GEN ship.ACC see.SUBJ.PF.3.PL
 'This place is such that the people from Syracuse would see an armed and already
 victorious enemy earlier inside the city walls, in the town centre or even in the market
 square, than they would have spotted any hostile ship in the harbour.'
 (Cic. Ver. act. sec. 5.97)

- Svennung (1936: 456-458) provides similar examples from Palladius, also 4th century (even a bit earlier than Egeria):

- (11) **Sint** a se **discretae** pedibus quindecim uel uiginti.
 be.PR.SUBJ.3.PL from REFL.ABL separated.NOM.F.PL feet.ABL fifteen or twenty
 'They should be separated from each other by fifteen to twenty feet.' (= Pall. Agr. 3.18.2)
- (12) sed **electae** [...] nutrices gallinae **sint** [...].
 but chosen.NOM.F.PL breeding.NOM.PL hens.NOM be.PR.SUBJ.3.PL
 'Breeding hens are to be chosen.' (= Pall. Agr. 1.28.3)

- compare a very similar but older example from Columella (ca. 50 AD), who uses a synthetic passive present subjunctive to tell us which chickens to choose:

- (13) sed ueteres maximae quaeque gallinae uernaculi
 but old.NOM.F.PL biggest.NOM.F.PL each.NOM.F.PL hens.NOM domestic.GEN
 generis **ellegantur**, [...].
 kind.GEN choose.PASS.PR.SUBJ.3.PL
 'but the biggest of the veteran hens of our native breed should be chosen.'
 (= Col. Agr. 8.11.11)

- In Palladius, we also find isolated examples of indicative E-periphrasis without any meaning connotation of past tense or anteriority:

- (14) nam per biennium in seminario suo **est**
 PRT for two.years.ACC in nursery-garden.ABL own.ABL be.PR.3.SG
 stercore et adsidua runcatione **nutrita**.
 manure.ABL and continuous.ABL weeding.ABL fed.NOM.F.SG
 'During a period of two years, this (root ld) is fed in the nursery-garden, which is fertilized
 with manure and kept free of weeds.' (= Pall. Agr. 4.9.11)

- similar examples can actually already be found much earlier, viz. in Vitruvius (early first century AD):

- (15) balnearia item **coniuncta** **sint** culinae.
 baths.NOM likewise joined.NOM.N.PL be.PR.SUBJ.3.PL kitchen.DAT
 'The baths should likewise be adjacent to the kitchen.' (= Vitruv. Arch. 6.6.2)

- (16) puteique ita **sint** **facti**, uti inter duos
 wells.NOM=and so be.PR.SUBJ.3.PL made.NOM.M.PL that between two.ACC
 sit actus.
 be.PR.SUBJ.3.SG actus.ACC.PL
 'Air shafts should be made such that a distance of 120 feet separates two of them.'
 (= Vitr. Arch. 8.6.3)

4.2 Evaluation

General trends:

- analytic alternatives for the synthetic *infectum* passive emerge much later than the F-periphrases in the *perfectum* passive, and
- they are also much less numerous (Muller 1924; Herman 2002). Moreover,
- *amatus sum* type periphrases are not the only competitor of the synthetic passive (see a.o. Harris 1978b; Cennamo 2001, 2005), and finally,
- these periphrases with an *infectum* BE-auxiliary are never attested with deponent verbs, despite the latter still being productive.

- Herman (2002: 32, 3 footnotes omitted Id) about 7th and 8th century Latin authors:

Cependant, l'élimination des formes synthétiques du passif présente, si on tient compte des textes latins, un aspect gênant. Alors que les langues romanes ne renferment aucune trace, aucun vestige de ces formes [...] les textes latins tardifs, même les plus «vulgaires», les plus fortement influencées par la compétence parlée de leurs auteurs - ou de leurs scribes - continuent à employer des formes synthétiques. Certes, ces emplois peuvent être plus ou moins rares, mais ils sont généralement corrects, sur le plan morphologique comme sur celui de la syntaxe.

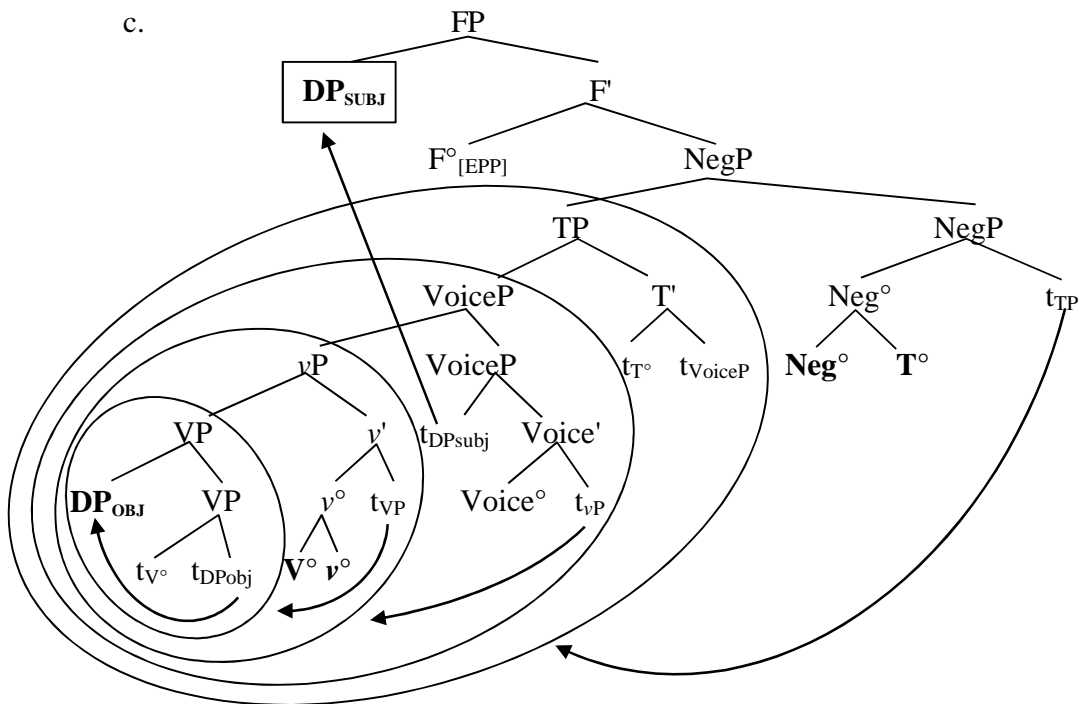
5. Syntactic analysis

5.1 Assumptions on Late Latin clause structure

5.1.1 Deriving head-final sequences: phrasal roll-up and head-movement

(i) SOVAux ((17)a) and SOVNegAux ((17)b):

- (17) a. nemo aquam vivam haurire poterit
 nobody.NOM water.ACC living.ACC drink.INF be.able.FUT.3.SG
 'nobody will be able to drink the living water.' (Caes. Arel. 77.4)
- b. ut in nobis amaritudo odii locum habere non possit.
 so.that in us.ABL bitterness.NOM hate.GEN place.ACC have.INF not be.able.PR.SUBJ.3.SG
 'so that the bitterness of hate may have no place in us.' (= Caes. Arel. 37.1)



- (ii) AuxOV: same as the above, but with less roll-up
- (iii) AuxVO: same as the above, but hardly any, or even no roll-up at all
- (iv) VOAux: becomes vanishingly rare, not attested at all with analytic deponents

NOTE: independent evidence suggests that by the Late Latin period, preverbal sentential negation (*non* 'not') had already been incorporated into the hierarchically highest verb. Just as in e.g. present-day Italian, we can assume it to be a proclitic.

5.2 Aux-cliticization: more or less simultaneous with, but unrelated to the death of the E-paradigm

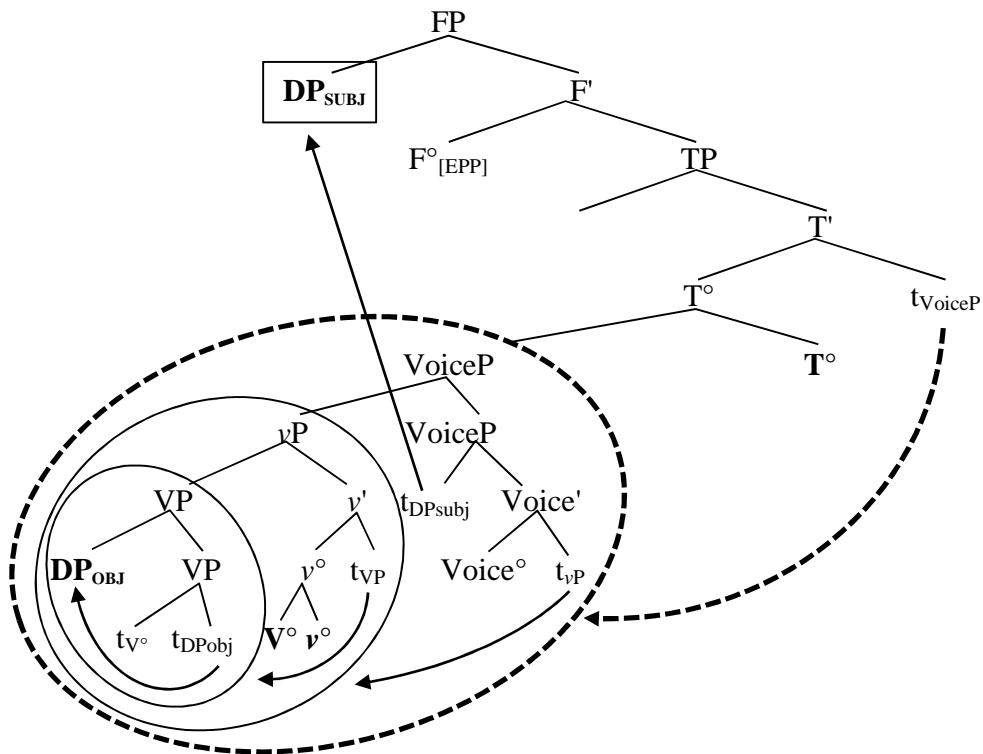
- Halpern & Fontana (1994): distinction between **phrasal** (X^{\max}) and **head** (X^0) **clitics**. Building on this, it has been proposed that some clitics attach to heads, and others to phrases. For (various) implementations of H&F's basic idea, see a.o. Pintzuk (1996) and Condoravdi & Kiparsky (2002)). My proposal:

- The BE-auxiliary, itself an X^0 and potentially complex (viz. with a procliticized Neg^0 to its left), weakens to become an X^{\max} clitic.
- Concretely: it becomes enclitic to its c-selected complement (VoiceP), itself a maximal projection.
- Roll-up movement of VoiceP is thus reanalysed as 'phrasal incorporation' (in X-bar terms: phrase-to-head adjunction).
- This new evolution is logically unrelated to the fact that (head-final) E-periphrasis pattern dies: the latter was already on its way out.

- diachronic evolution: phrasal roll-up of VoiceP first **reanalysed** as X^{\max} cliticization (which can then (optionally) be reanalysed as X° cliticization (aka incorporation-by-head-movement)).

- (18) a. consul Belesarius Romanam urbem ingressus est
 consul.NOM Belesarius.NOM Roman.ACC city.ACC entered.NOM be.PR.3.SG
 'the consul Belesarius entered the Roman city.' (= Iord. Rom. Auct. ant. 5.1.373, p.49, lin.9)

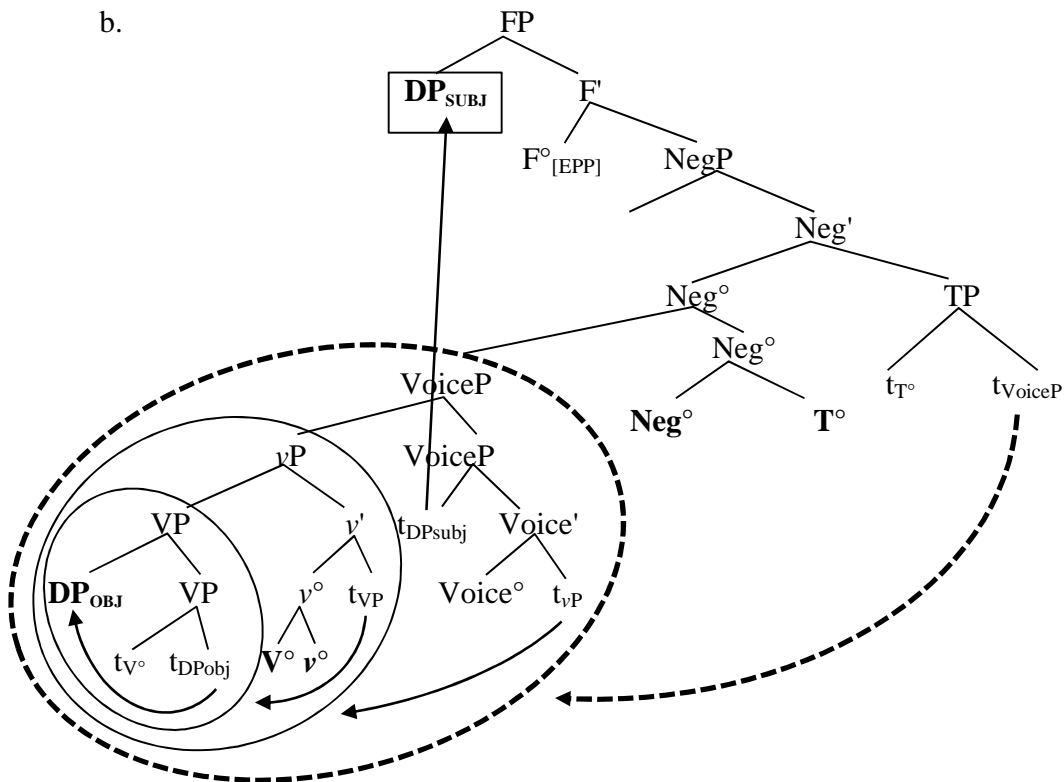
b.



- no genuine incorporation-via-head-movement: position of negation.

- (19) 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. *Car., Carin., Num.*, 17.1 (Fl. Vop. Syr.))

b.



5.3 An interesting (partial) parallel

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

- Roberts (1992: 230):

It is well-known that Old Spanish (OSp) and conservative European Portuguese (EP) have future and conditional markers which are more clitic-like than affix-like. [...] [T]hey are halfway between being auxiliaries and being affixes.

- independent evidence for X^ο-to-XP cliticization: mesocclisis (example from Lema & Rivero 1989: 250, their (21a)):

- (20) Senora, - dixo el - dezir=lo hedes al rey? Old Spanish
 lady said he tell=it you.will to.the king
 'Lady, he said, will you tell it to the king?' (= *Libro del caballero Zifar* 124)

- same phenomenon in Old Romanian ((21), from D'Hulst, Coene & Avram 2004: 362, who refer to Densușianu 1997: 567), and European Portuguese (from Duarte & Matos 2000: 117, their (5)):

- (21) Schimba=ne=văm. Old Romanian
 change=us=will
 'We will change ourselves.'

- (22) Ele vê=la=a. European Portuguese
 he see.INF=CL.ACC.F.3.SG=FUT.3.SG
 'He will see her.'

- first attestation of the fully-synthetic future ((23), 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.

- (23) et ille respondebat: 'non dabo'. Iustinianus dicebat: 'daras'.
 and he.NOM answer.IMPF.3.SG not give.FUT.3.SG Iustinianus.NOM say.IMPF.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))

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

6. Conclusions

- Reconstruction of the change from the Latin to the early Romance passive paradigms:

1. E- and F-periphrases coexist in the *perfectum* (perhaps with functional differentiation, see de Melo 2012) => competition between E- and F-pattern to express passive perfects (ca. 200 BC - 150 AD).
2. Cliticization of the auxiliary of the E- (but not the F-) periphrases, and 'fossilization' of the VAux-order (perhaps even from the late second century AD onwards).
3. Decline of the E-periphrases, which are being replaced by F-periphrases.
4. Later than, and partly independently of the previous (cf. phonology), decline of the synthetic *infectum* passives (on the persistence of these after 350 AD, see Muller 1924; Herman 2002).
5. New formation of combination BE + participle (in this order), by analogy with the perfect F-periphrases, to replace the obsolete synthetic passives.

- Ultimate causes driving the various changes: phonological erosion, and analogical extension of existing paradigms (de Melo 2012). Thus Vincent (1988: 58):

'The motivation for this change is not hard to find in the inroads made on the inflectional system by sound change, but important too - perhaps more so - is the increasing role of the perfect periphrasis, and this for two reasons. First, by providing a model in which the auxiliary verb gives expression to the appropriate categories of tense, mood, etc., it ensures that CANTATUM EST should be interpreted as a present imperfective, not perfective.'

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