Grammar Competition in Old English Relative Clauses

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0. Introduction

grammar competition:

- syntactic change involves innovative form α driving out conservative form β; during transitional period, α and β co-occur; relative frequencies gradually shift following an s-shaped curve
- e.g. the change in IP headedness (Pintzuk 1999), loss of V-to-I movement (Ellegård 1953) in the history of English among many others.
- model: competence-based approach "grammar competition"; co-existence of two competing grammatical options within a single I-language; generation of observed structured variation between α and β (Kroch 1989)

grammar competition with overlapping forms:

- competing rules may not necessarily involve the same initial node but can be introduced in two distinct positions in the syntactic structure
- competition arises not from strict mutual exclusivity, but rather from similar functional contribution
- result: diachronic variation with three instead of two variants: one for the rule generating α, one for the rule generating β, one for the **overlapping form**, α∩β

example: Old English (OE) relative clauses

- generation of Old English relative clauses:
  - demonstrative *se* in Spec,CP

(1) ðonne cymeð [se man [*se* þæt swiftoste hors hafað]] to þæm ærestan dæle
then comes the man who the fastest horse had to the first valley
'Then the man who had the fastest horse came to the first valley'
(coorosiu,Or_1:1.17.21.333)

  - indeclinable C-head *þe* with a tensed clause

(2) ... gold-horde on þam ærcere þone behyt [se man [*þe* hyne fint]]
... treasure in the field which hides the man that it finds
'... a treasure in the field, which the man that finds it, hides'
(cowsgosp,Mt_[WSCp]:13.44.890)

- overlapping form, since the starting nodes are different, CP and C' respectively (3)

(3) Eadig bið [se man [*se* *ðe* gemet wisdom]]
blessed is the men who that meets wisdom
'Blessed is the man who finds wisdom'
(coaelive,ÆLS[Pr_Moses]:322.3053)

research question:

- rule independence and rule conditioning and application to OE relative clauses

outline:

1. concepts of rule independence and conditioning
2. OE relative clauses
   2.1. grammar competition between *se*- and *þe*-relatives
   2.2. contextual factors determining the distribution of OE relatives
   2.3. rule conditioning in OE relatives
   2.4. frequency prediction and testing of the overlapping form
3. sketch of a formal account
4. conclusion

1. Rule Independence and Rule Conditioning

definition:

- a rule is independent if its range of application is not restricted by a conditioning factor / context
- a rule is conditioned if its range of application is restricted to a certain conditioning factor / context

inspiration: rules in historical phonological (Campell 1959: §132, §426)

(4) independent sound change: Proto-Germanic *[ai] → West-Saxon [aː]
a. Proto-Germanic **stainaz* → West-Saxon *stān* 'stone'
b. Proto-Germanic **aiks* → West-Saxon *āc* 'oak'

(5) conditioned sound change: Proto-Germanic *[k] → Old English [tʃ] /_ [+palatal]
a. Proto-Germanic **kildiz* → West-Saxon *cild* [tʃild] 'child'
vs. Proto-Germanic **kaldaz* → Anglian *cald* [kald] 'cold'
b. Proto-Germanic **sprēkijō* → Old English *spǣc* [spæːtʃ] 'speech'
vs. Proto-Germanic **sprekanan* → Old English *specan* [spekan] 'speak'

rule conditioning in syntax:

- conditioning factors in syntax more "unwieldy"; •occur with exceptions; •"soft" / probabilistic rather than absolute (Hawkins 1994); •more difficult to formalize
- possible conditioning factors: •presence / absence of a grammatical feature; •semantic characteristics of a set of relevant lexical items; •import from information structure; •phonological factors (heaviness); •domain boundaries; and more

examples of independent and conditioned rules in syntax:

(6) independent syntactic rule: combination of V and its complement in ModEnglish
  a. verb – complement b. *complement – verb

(7) conditioned syntactic rule: high verb placement in ModEnglish
  a. Never again will she knock on my door.
  b. *Frequently will she knock on my door.
  c. Only at night do I sleep.
  d. *Every night do I sleep.

(8) conditioned syntactic rule: indirect, pronominal, animate objects in Modern French
  a. je pense à lui
    I think of him
  b. *je lui pense
    I him think
  c. je lui parle
    I him talk
    'I talk to him'
  d. *je parle à lui
    I talk to him

(9) conditioned syntactic rule: verb position in Modern German
  a. …dass Peter Maria ein Buch gibt.
    …that P. M. a book gives.
    '… that Peter gave Mary a book'
  b. *... dass Peter gibt Maria ein Buch.
  c. Peter gibt Maria ein Buch.
    P. gives M. a book
    'Peter gives Mary a book'
  d. *Peter Maria ein Buch gibt.

note on weights:

- rules are associated with weights ≈ relative strength of representation in the mind, P(α)

Frequency prediction for an overlapping form based on independent rules α, β:

rule independence	rule conditioning
simultaneous rule application possible overlapping form $P(\alpha \cap \beta) = P(\alpha) \cdot P(\beta)$	simultaneous rule application impossible no overlapping form $P(\alpha \cap \beta) = P(\alpha \mid A) \cdot P(\beta \mid A) = 0$ (if either $P(\alpha \mid A)$ or $P(\beta \mid A) = 0$)

example: Jespersen's cycle

(10) a. oc Crist it *ne* uuolde.
  but Christ it NEG wanted
  'But Christ didn't want it' (CMPETERB,54.374) (1154 A.D.)
 b. Þise *ne* uorbereþ *naʒt* oure lheuedi.
  this NEG endure NEG our Lady
  'Our Lady would not endure this' (CMAYENBI,64.1205) (c.1400 A.D.)
 c. Tou schalt *not* tempte God.
  you shall NEG tempt God
  'You shall not tempt God' (CMMIRK,83.2232) (c. 1470 A.D.)

- the two negation rules are independent; thus, overlapping form follows frequency prediction (Frisch 1997, Wallage 2007):

time period	**# negative clauses**	***ne***	***not***	**expected *ne…not***	**observed *ne…not***
1150-1220	235	232 (99%)	85 (36%)	84 (36%)	82 (35%)
1220-1290	184	179 (97%)	72 (39%)	70 (38%)	67 (36%)
1290-1360	421	377 (90%)	235 (56%)	210 (50%)	191 (45%)
1360-1430	746	139 (19%)	717 (96%)	134 (18%)	110 (15%)
1430-1500	343	2 (1%)	341 (99%)	2 (1%)	0 (0%)

Table 1: Frequency of Middle English negation through the negative clitic *ne*, the adverb *not*, and their overlapping form, in declarative clauses (based on Frisch 1997: 32, table 1)

example: relative clauses in Middle English (Suárez 2012, Fischer et al. 2000, Karlberg 1954)

(11) a. seo stow *þæt* man on gebidde.
the place-fem.sg. THAT one in pray
'the place that one should pray in'
(cowsgosp,Jn_[WSCp]:4.20.5988) (c. 1000 A.D.)

b. þilke precious tresour of maydenhood, *which* so profitable is ihad
the-same precious treasure of maidenhood WH so profitable is had
'this same precious treasure of maidenhood, which is so profitable to be had'
(CMAELR3,27.38) (c. 1400)

c. the person of Syn Stevynnys in Walbroke, *whyche that* was one of the same fore sayde traytours, deyde in the Toure for sorowe.
'The parson of St Stephen's in Walbrook, who was one of the aforementioned traitors, died in the Tower out of sorrow'
(CMGREGOR,184.1301) (c. 1450 A.D.)

- possible source for introduction of *wh*-relatives: generalising free relatives

(12) & þa þider urnon swa *hwelc* swa þonne gearo wearþ
and then thither ran so which so then ready was
'and they then ran there, whoever was then ready'
(cochronA-CC,ChronA_[Plummer]:755.16.524) (c. 900 A.D.)

- the two relativization rules are conditioned by restrictiveness (Romaine 1984, Diertani 2008); thus, overlapping forms are generally impossible:

time period	**# relative clauses**	***that***	***wh***	**expected *wh that***	**observed *wh that***
1150-1250	951	948 (100%)	3 (0%)	3 (0%)	0 (0%)
1250-1350	1998	1931 (97%)	78 (4%)	75 (4%)	11 (1%)
1350-1420	4211	3979 (94%)	270 (6%)	255 (6%)	38 (1%)
1420-1500	2109	1447 (69%)	668 (32%)	458 (22%)	6 (0%)

Table 2: Frequency of Middle English relativization through *that*, *wh*-elements, and their overlapping form

2. OE Relative Clauses

2.1. Grammar Competition between *se* and *þe*

methodology:

- dependent variable: occurrence of *se* vs. *þe* relativization
- independent variables: time/period: 9, 10, 11th c.; genre: prose, documents, poetry
- data collection with the YCOE2 (Taylor et al. 2003) for prose
- YCOEP2 (Pintzuk & Plug 2001) and early Middle English poems for poetry

(*Body and Soul* (Buchholz 1890 : 1-10), *The Grave* (Buchholz 1890: 11), *Poema Morale* (Morris 1873: 220-32), *The First Worcester Fragment* (Brehe 1990: 530), *Pater Noster* (Morris 1868: 55-71), *A Good Orison of Our Lady* (Morris 1868: 191-99))

- *se*- and *þe*-relatives measured as a percentage of all relative clauses (including relativization with zero operators, *that*, possessive determiners, adverbial relatives)

results:

genre	**time period**	**# relative clauses**	***se***	***þe***
prose	9th c.	10033	1953 (19%)	4075 (41%)
	10th c.	4798	523 (11%)	2614 (54%)
	11th c.	12856	1172 (9%)	7336 (57%)
documents	to 950	88	11 (13%)	49 (56%)
	after 950	162	11 (7%)	112 (69%)
poetry	Old English	1274	200 (16%)	341 (27%)
	Middle English	260	7 (3%)	102 (39%)

Table 3: Frequencies of *se* and *þe*-relatives as a percentage of all relative clauses

- *se*-relatives consistently decline across all genres; not a genre-specific effect
- *þe*-relatives consistently increase; suggests competition between *se* and *þe*-relatives

2.2. Contextual factors determining the distribution of *se* and *þe*

methodology:

- variable rules analysis with VARBRUL (GoldVarb, Robinson, Lawrence & Tagliamonte 2001)
- dependent variable: occurrence of *se* vs. *þe*-relatives
- independent variables: •antecedent type: 'bare proper names', 'complex proper names', 'bare negative quantifiers', 'complex negatively quantified DPs', 'bare universal quantifiers', 'complex universally quantified DPs', 'bare existential quantifiers', 'complex existentially quantified DPs', 'DPs containing a superlative', 'DPs containing a possessive', 'bare determiner', 'complex DPs', 'bare personal pronouns', 'other DPs with a nominal', 'other' (defined in a mutually exclusive way) •position of the relative clause: 'in situ' (relative clause immediately follows antecedent), 'extraposed' (material intervenes between antecedent and relative clause) •period:'9th century', '10th century' and '11th century'
- data collection with YCOE2 (Taylor et al. 2003); automatic coding function of CorpuSearch 2 (Randell 2004) (N.B.: technological limitations, only first relative clause per token)
- overall number of tokens: 16,519

results:

Total N=16,519			Corrected Mean: 0.156
	Factor Weight	% SE-relatives	N
Antecedent			
bare universal	0.936	70.3	313
complex name	0.864	55.1	405
complex existential	0.863	57.9	594
bare nominal	0.813	46.6	654
bare name	0.789	44.3	476
possessive	0.722	35.4	1267
other	0.718	33.1	904
bare existential	0.698	31.6	38
superlative	0.674	28.9	90
bare pronoun	0.505	17.6	301
complex negative	0.445	15.8	133
bare determiner	0.408	13.2	4012
bare negative	0.379	12.5	24
complex DP	0.342	9.9	6057
complex universal	0.324	8.6	1251
Range	*61*		
Position			
in situ	0.463	17.5	12666
extraposed	0.619	30.7	3853
Range	*16*		
Period			
9th c.	0.695	32.7	5674
10th c.	0.458	16.7	2898
11th c.	0.371	13.4	7947
Range	*33*		

Table 4: Factors significant to the occurrence of *se*-relatives in OE
applied dependent variable = *se*-relatives

evaluation:

- factor weight larger/smaller than 0.5 indicates preference/dispreference for *se*-relatives
- low corrected mean of 0.156 indicates that *se*-relatives are dispreferred overall
- restrictiveness: •*se*-relatives are significantly more likely to occur with complex name, complex existential, bare nominal, bare name antecedents than other antecedents; they are more likely to receive a non-restrictive interpretation
  •*þe*-relatives are significantly more likely to occur with complex universal, complex DP, bare negative, bare determiner antecedents than other antecedents; they are more likely to receive a restrictive interpretation
- thus, it is plausible to assume that *se*-relatives are favoured in non-restrictive contexts while *þe*-relatives tend to occur in restrictive relative clauses

(13) a. complex name
On þyses cinges dagum *Laurentius ercebiscop* se was on Cent æfter Agustine
in this king's days Laurentius archbishop who was in Kent after Augustine
forþferde iiii Nonae Februarii
died four Nones February
'In this king's days, Archbishop Laurentius, who was [archbishop] in Kent after Augustine, died on the second of February'
that Archbishop Laurentius who was in Kent, not the other one
(cochronA-8,ChronA_[Plummer]:616.8.287) (c. 1100 A.D.)

b. complex existential (existentially quantified DP)
he ongan onbærnan *sum deofolgild* þæt[1] mid þam hæðenum mannum
he began burn some devil-offering which among the heathen men
swiðe weorð & mære wæs.
very worthy and great was.
'He began to burn a certain idol, which was very valuable and great to the heathens'
some unspecified idol that was valuable not some other unspecified idol
(coverhom,LS_17.2_[MartinVerc_18]:155.2319) (c. 970 A.D.)

c. bare nominal (DPs without any overt quantifier or determiner)
& he þer gehadode *godne wer* se wes mid ciriclicum þeodscipum geseted
and he there ordained good man who was with churchly people set
'and there he ordained a good man, who was given an ecclesiastical community'
a good man who had an ecclesiastical community as opposed to one who didn't
(cochad,LS_3_[Chad]:31.22) (c. 850 A.D.)

(14) a. complex determiner (complex expression involving a determiner)
Se apostol Paulus manode *ða cristenan* þe he sylf ær to geleafan gebigde
The apostle Paul admonished the Christians who he self earlier to faith converted
'The apostle Paul admonished those Christians who he had himself earlier converted'
(all) the Christians as such, which he had, by the way, converted himself
(coaelive,ÆLS_[Auguries]:1.3532) (c. 1000 A.D.)

b. bare determiner
se þe wunaþ on ðære soðan lufan, he wunað on Gode
that (one) who lives in the true faith he lives in God
'He who lives in the true faith lives in God'
He (mentioned earlier), who, by the way, lives in the true faith
(coverhom,HomS_11.2_[ScraggVerc_3]:9.393) (c. 970 A.D.)

c. complex universal (universally quantified DP)
Ac *ælc mon* þe allunga underþeoded bið unþeawum forlæt his sceppend
but each man that entirely subdued is vices lets his creator
'But each man who is entirely subdued by vices loses his creator'
each man, who, as you know, are all subdued in vices anyway,
(coboeth,Bo:30.69.30.1296) (c. 900 A.D.)

[1] Here, *þæt* is accusative, neuter, singular of *se*.

- Exception: antecedents with bare universal quantifiers are modified more naturally by restrictive relative clauses than by non-restrictive ones (*everything that I know*, *#everything, which I know*), but are much more likely to occur with *se-* than with *þe-* relatives
  (cf. Modern German (similarly Modern Dutch) bare universal quantifier not relativized with standard relativizer, definite article *das* 'that', but by *was* 'what' (*alles was ich habe* 'everything I have', **alles, das ich habe*).

  (15) Đæt hwæðre æðelice ongetan meahton *ealle* þa[2] þæt cuðon
  that however easily understand could all who that knew
  'However, everybody who knew it could easily understand that'
  (cobede,Bede_4:26.348.29.3518) (c. 890 A.D.)

- scholarly consensus that restrictiveness determines distribution of OE relatives (Andrew 1940, Mitchell 1985: §§2252-2287, Troup 2010 etc.)
- interaction effect between restrictiveness and negation: in realis contexts, non-restrictive relatives must lie outside the scope of sentential negation (Arnold 2004); thus, non-restrictive relativizing strategy dispreferred in negative context

  (16) a. I have a car. It is red.
  b. I have a car, which is red.
  c. #I don't have a car. It is red.
  d. *I don't have a car, which is red.

	se	*þe*
positive context	1930	6671
negative context	22	438

Chi-square=80.54, df=1, p<0.0001

Table 5: Distribution of *se* and *þe* relatives (in situ) modifying antecedents in tokens with and without sentential negation

- position of relative clause:. *se* more likely if relative clause extraposed than if it is in situ (Mitchell 1985: §§2288-2303, Suárez 2006).
- period: *se* more likely in earlier than later periods

2.3. Rule conditioning in OE relative clauses

question:

- Is the effect of the contextual factors constant throughout the period of change fom *se-* to *þe-* relatives, or does the effect of the contextual factors itself change over time?

methodology:

- compare factor weights from variable rules analyses for individual periods: "[I]f a study reports a series of multivariate analyses for different time periods, and the contextual effects are constant across these analyses, the rate of change of each context measured separately would necessarily be the same" (Kroch 1989.: 206)
- rule independence: constant effect of contextual factors = constant rate effects
- weakening rule conditioning: weakening contextual factors = rate of change speeds up

[2] Here, *þa* is nominative, plural of *se*.

effect of 'clause type':

- three variants: main clauses, conjoined main clauses and subordinate clauses (Kemenade 1987, Traugott 1992)

time period	clause type	% *se*-relatives	total	factor weight
9th century	main	38.9	1925	0.54
	conjoined main	29.9	1110	0.48
	subordinate	29.7	2639	0.48
10th century	main	17.8	1223	0.53
	conjoined main	16.8	642	0.52
	subordinate	15.4	1033	0.46
11th century	main	15.5	3401	0.55
	conjoined main	12.5	1953	0.49
	subordinate	11.1	2593	0.45

Table 6: Effect of clause type on the distribution of *se-* (vs. *þe-*) relatives in three OE periods

- Range(MC)=2, Range(CC)=4, Range(SC)=3
- factor weights are stable
- overall rate of use of *se-* vs. *þe* relatives is independent of 'clause type'

effect of antecedents favouring non-restrictive readings:

- complex name, bare nominals

time period	antecedent	% *se*-relatives	total	factor weight
9th century	complex name	86.5	170	0.94
	bare nominal	73.8	221	0.85
10th century	complex name	55.2	29	0.90
	bare nominal	41.1	124	0.82
11th century	complex name	29.1	206	0.79
	bare nominal	29.4	309	0.79

Table 7: Effect of two antecedent types on the distribution of *se-* (vs. *þe-*) relatives in three OE periods

- Range(name)=15, Range(nominal)=6
- factor weights for complex names and bare nominals coherently decline across the three OE periods
- overall rate of use of *se-* vs. *þe* relatives is dependent on 'antecedent type'

2.4. Frequency of the overlapping *seþe*-form

predictions:

- the two base rules generating se- and þe-relatives are neither absolutely independent nor absolutely conditioned
- thus, the frequency of P(*se*∩*þe*) should lie between 0 (absolute rule conditioning) and P(*se*) · P(*þe*) (absolute rule independence)
- conditioning factors gradually weaken
- thus, the frequency of the overlapping form should gradually approach the values expected under rule independence

methodology:

- data collection with the YCOE2
- dependent variable: *se-*, *þe-* and *seþe*-relatives
- independent variables: contexts, all clauses, proper names, bare nominal and definite DP antecedents; period, 9th century, 10th century, 11th century

example of *se-*, *þe-* and *seþe*-relatives with proper name antecedents:

(17) a. proper name antecedent, *se*-relative

On þam geare *THOMAS* se wæs gecoran biscop to Eferwic com to Cantwareberig
in that year Thomas who was chosen bishop to York came to Canterbury
'This year, Thomas, who was chosen bishop of York, came to Canterbury'
(cochronA-7,ChronA_[Plummer]:1070.6.1465)

b. proper name antecedent, *þe*-relative

Ða geseah *Iudas* þe hyne belæwde þæt he fordemed wæs
Then saw Judas who him betrayed that he damned was
'Then Judas, who had betrayed him, saw that he was condemned'
(cowsgosp,Mt_[WSCp]:27.3.1993)

c. proper name antecedent, *seþe*-relative

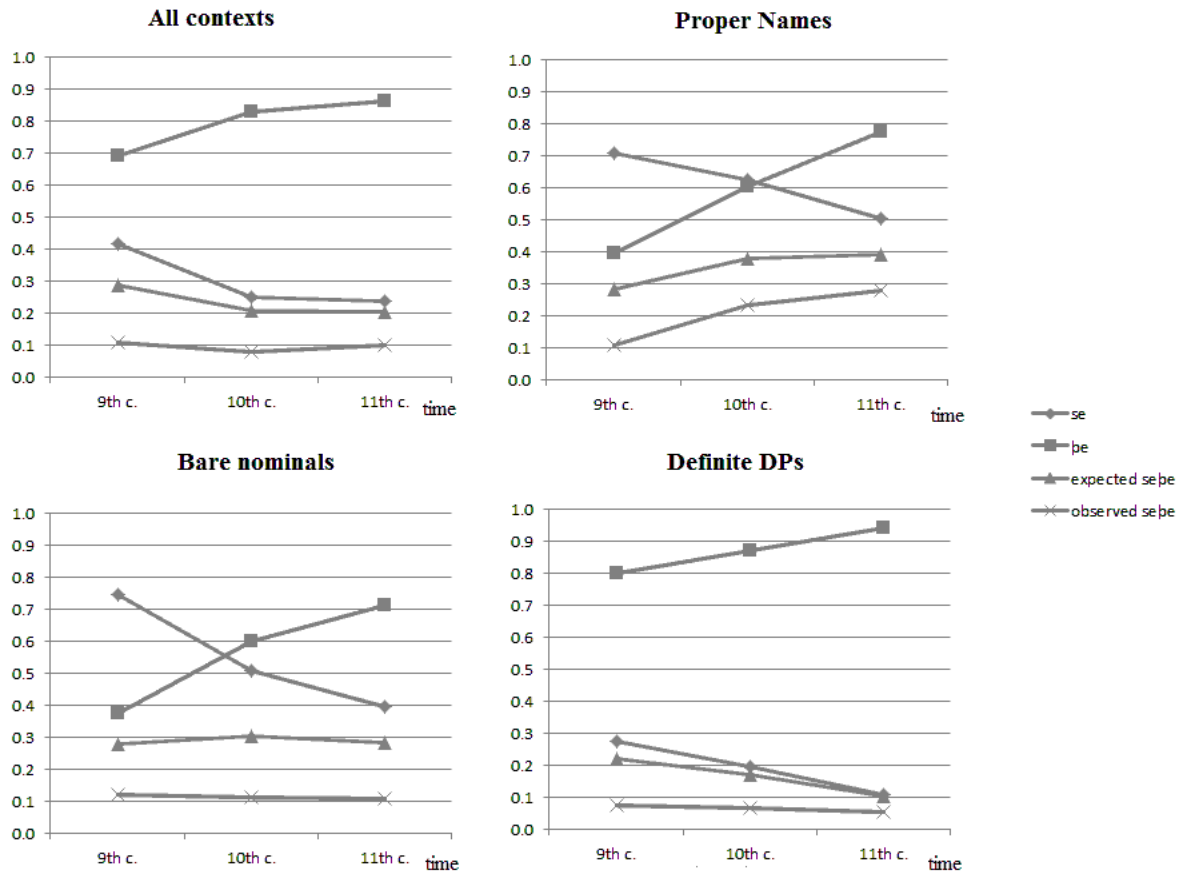
He oncneow *Lazarum* þone[3] þe he ær forseah
he recognized Lazarus whom that he earlier saw
'He recognized Lazarus who he had seen earlier'
(cocathom1,ÆCHom_I,_23:368.98.4603)

results:

context	**time period**	**# relative clauses**	***se***	***þe***	**expected *seþe***	**observed *seþe***
all clauses	9th c.	6691	2792 (42%)	4634 (69%)	1934 (29%)	735 (11%)
	10th c.	3254	815 (25%)	2702 (83%)	677 (21%)	263 (8%)
	11th c.	9140	2162 (24%)	7888 (86%)	1866 (20%)	910 (10%)
proper names	9th c.	186	132 (71%)	74 (40%)	53 (28%)	20 (11%)
	10th c.	86	54 (63%)	52 (60%)	33 (38%)	20 (23%)
	11th c.	349	176 (50%)	271 (78%)	137 (39%)	98 (28%)
bare nominals	9th c.	294	219 (74%)	111 (38%)	83 (28%)	36 (12%)
	10th c.	153	78 (51%)	92 (60%)	47 (31%)	17 (11%)
	11th c.	401	159 (40%)	286 (71%)	113 (28%)	44 (11%)
definite DPs	9th c.	2672	734 (27%)	2139 (80%)	588 (21%)	201 (8%)
	10th c.	1173	231 (20%)	1022 (87%)	201 (17%)	80 (7%)
	11th c.	3644	403 (11%)	3433 (94%)	380 (10%)	192 (5%)

Table 8: Frequency of OE relativization through the forms *se* and *þe*, and their overlapping form *seþe*

[3] Here, *þone* is accusative, masculine, singular of *se*.



Graphs 1-4: Frequency of OE relativization through the forms *se*, *þe*, expected and observed frequencies of and their overlapping form *seþe* in four different contexts

- overlapping *seþe*-form exists in all contexts with an appreciable frequency
- in all contexts, the overlapping form is considerably less frequent than what would be expected if the two base rules were completely independent.
- average difference between expected and observed *seþe*-relatives: 13% for all clauses, 14% for proper name, 17% for bare nominal and 9% for definite DP antecedents.
- expected and observed frequencies of *seþe*-relatives approach each other as time passes on (exception: bare nominal antecedents remain relatively stable)
- difference between expected and observed values 9th vs. 11th century: all clauses, from 18% to 10% (Chi-Square 17.738, df=1, $p<0.01$), proper names 17% to 9% (Chi-Square: 4.823, df=1, $p<0.05$), definite DPs 13% to 5% (Chi-Square: 10.57, df=1, $p<0.01$) (exception: bare nominal 16%/17%, Chi-Square: 0.163, df=1, $p>0.05$)
- results support the hypothesis that contextual factors like 'restrictiveness' partly condition the generation of *se*- and *þe*-relatives and weaken over time

3. Brief sketch of formalization

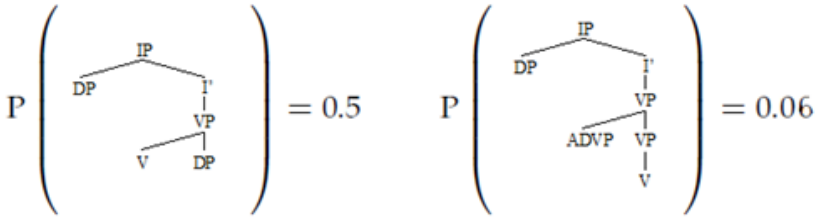
framework:

- probabilistic lexical-functional grammar (LFG)
- probabilistic grammar = production rules annotated with weights; rules with same left-hand add up to 1; probability of a tree is product of weights involved in its generation

(18)

IP → DP I'	[1.0]
I' → VP	[1.0]
VP → V DP	[0.5]
VP → ADVP VP	[0.2]
VP → V	[0.3]

(19)



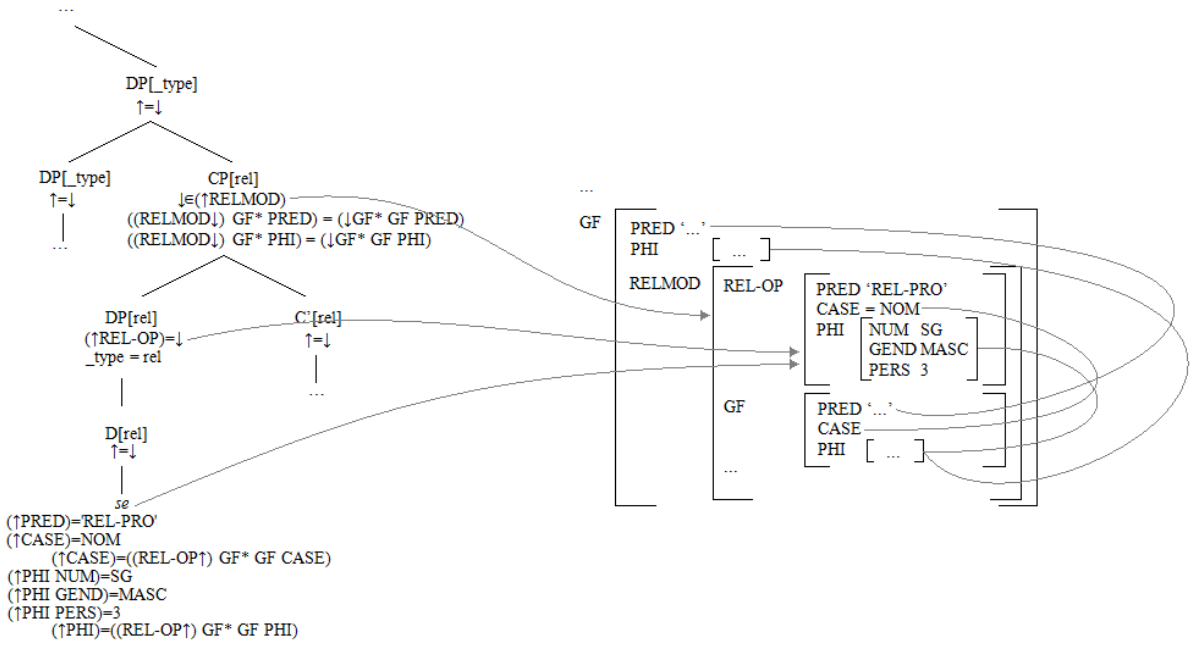
- lexical functional grammar = a generative, representational, unification & constrained-based "toolkit" for syntactic analyses; mapping between multiple levels of representation, e.g. c-structure (encodes constituency, word order), f-structure (encodes functional characteristics, features) (e.g. Bresnan 2001)

(20)

	weights
DP[_type] → D[_type] ↑=↓	[…]
DP[_type] → D[_type] NP ↑=↓ ↑=↓	[…]
…	…
DP[_type] → DP[_type] CP[rel] ↑=↓ ↓∈(↑RELMOD) ((RELMOD↓) GF* PRED) = (↓GF* GF PRED) ((RELMOD↓) GF* PHI) = (↓GF* GF PHI)	[…] ----- [1.0]
CP[_type] → C'[_type] ↑=↓	[…]
…	…
CP[_type] → DP[_type] C'[_type] (↑REL-OP)=↓ ↑=↓ _type = rel "se-rule"	[…] ------ [1.0]
C'[_type] → IP ↑=↓	[…]
…	…
C'[_type] → C[_type] IP _type = rel ↑=↓ (↑GF* GF CASE)=NOM|ACC|DAT|GEN "þe-rule"	[…] ----- [1.0]

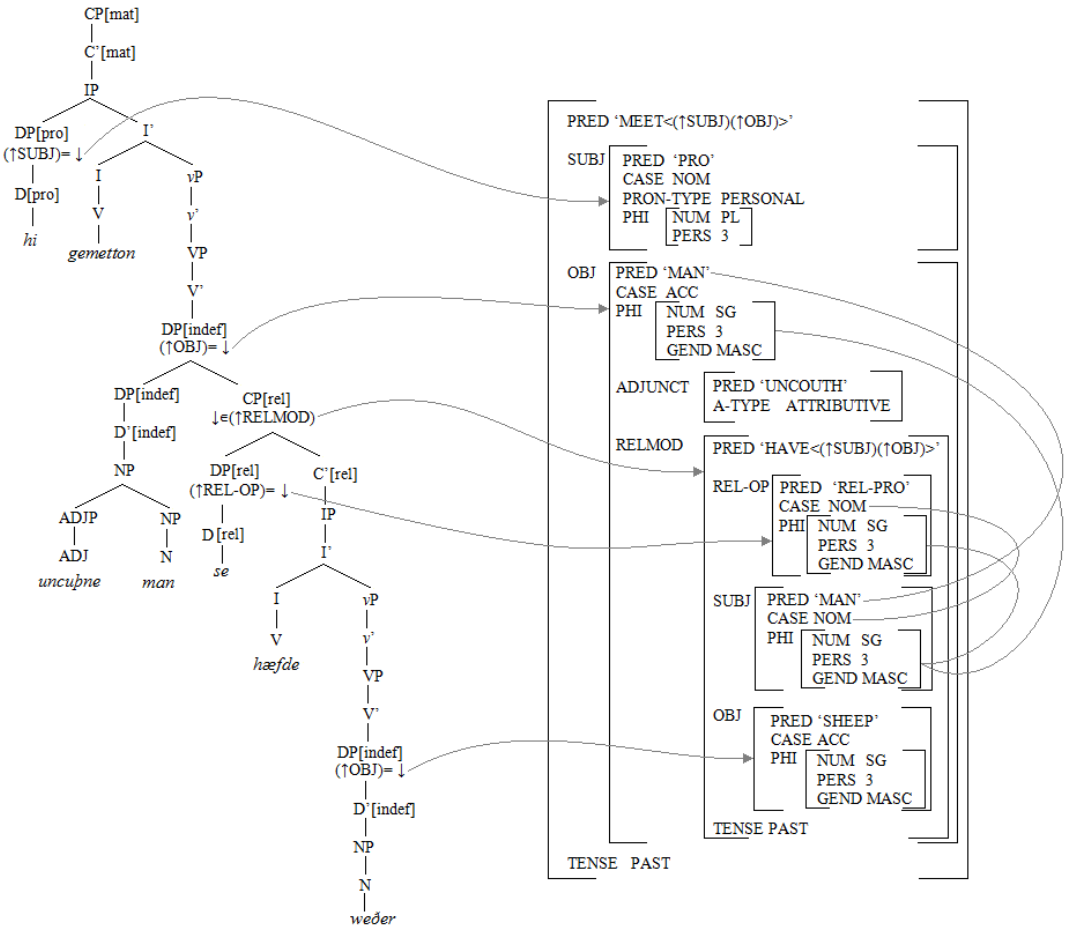
- examples:

(21) structure of *se*-relative:

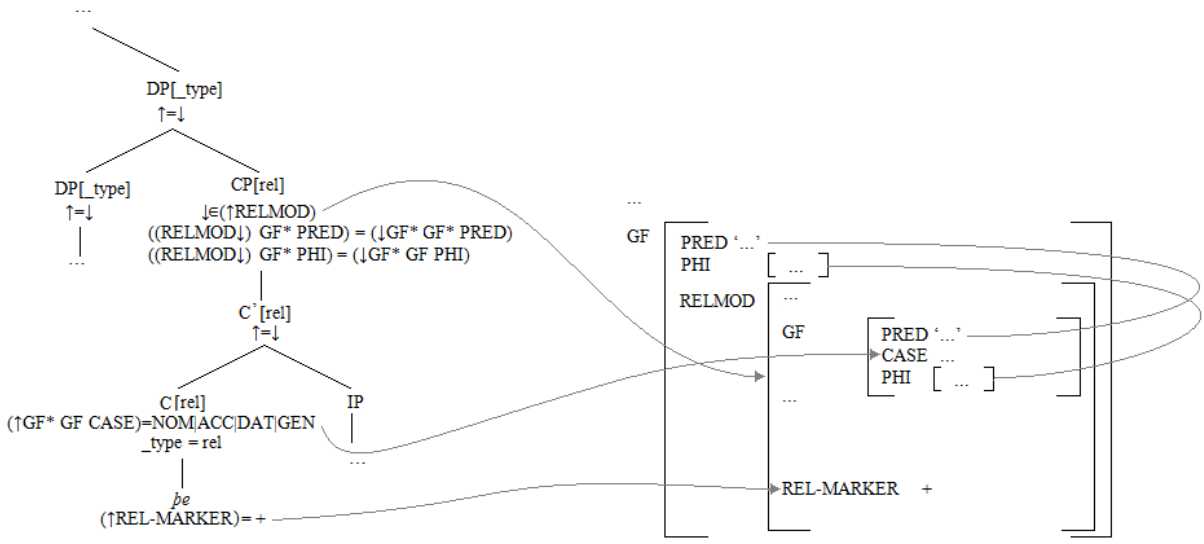


(22) a. hi gemetton uncuþne man, se hæfde weðer
they met uncouth man, who had sheep
'they met an uncouth man, who had a sheep
(cogregdC,GDPref_and_3_[C]:22.225.5.3080)

b.

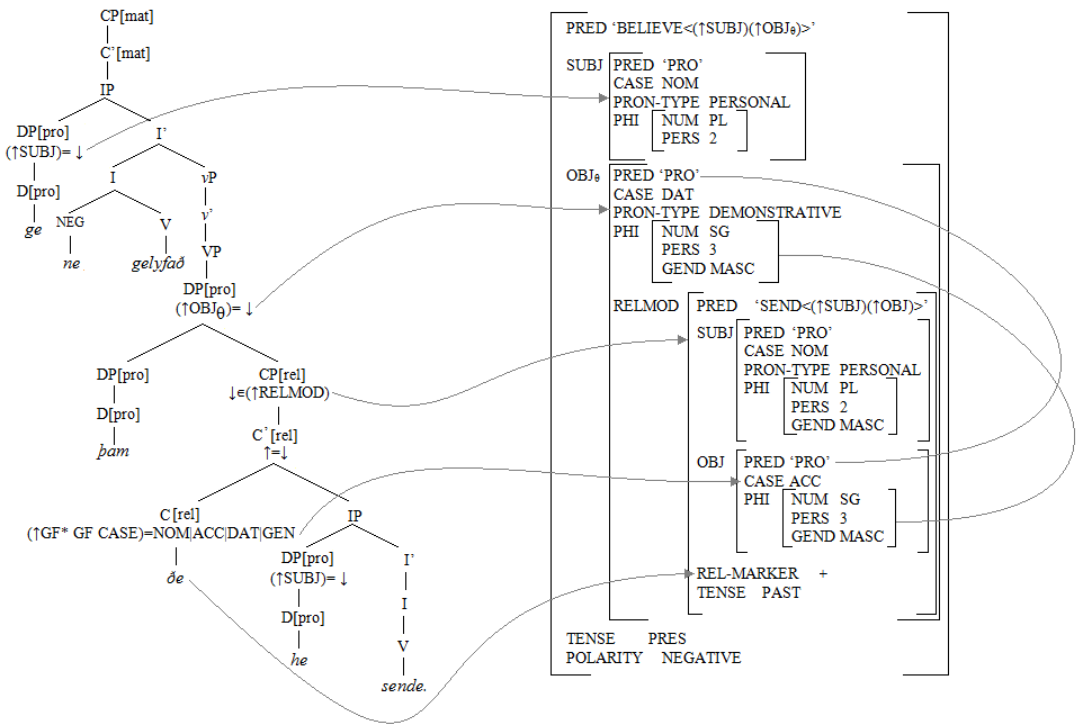


(23) structure of *þe*-relative:



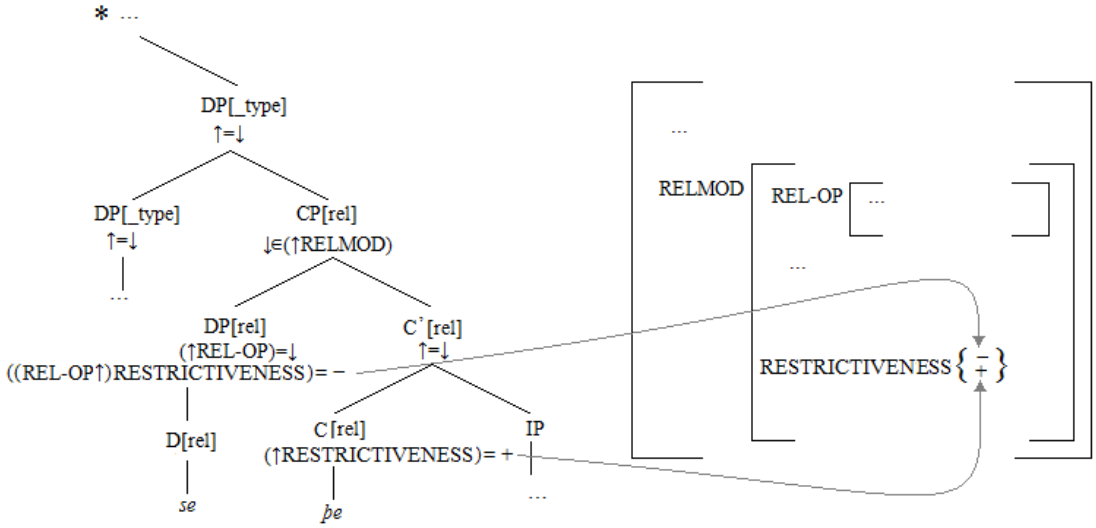
(24) a. ge ne gelyfað þam ðe he sende.
you NEG believe the-one that he sent
'you don't believe him whom he had sent'
(cowsgosp,Jn_[WSCp]:5.37.6127)

b.

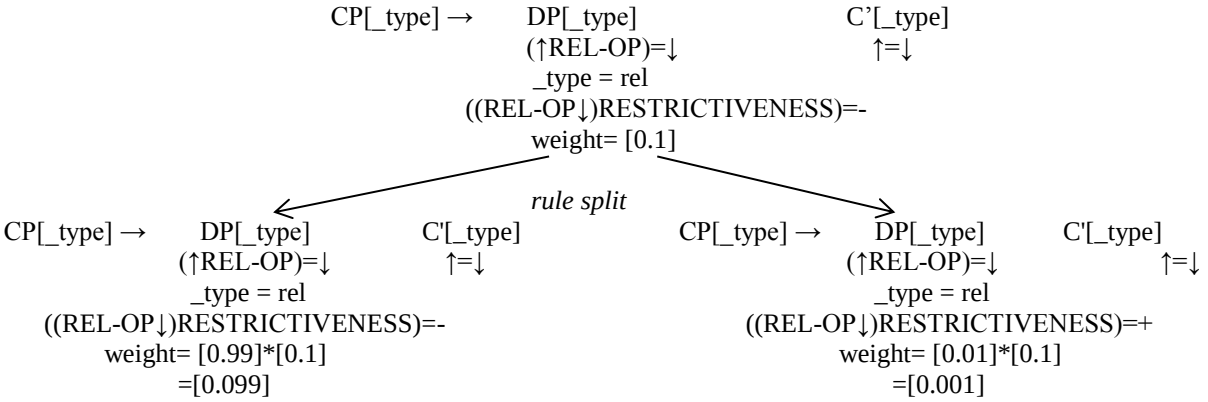


- restrictiveness as binary feature; RESTRICTIVENESS = +, RESTRICTIVENESS = -
- in prehistoric OE, rigid conditioning; no overlapping forms:

(25)



- rule split: *se*-relatives began to be used in restrictive / *þe*-relatives in non-restrictive contexts; initially with a very low frequency; distribution of weight over two new rules



- weight updating algorithm from generation to generation (e.g. Yang 2002)
- one grammar rule must have an advantage over the other; i.e. the proportion of positive evidence that can only be analysed with one rule must be greater than the proportion of positive evidence that can only be analysed with the other rule
- in OE, þe-relatives must have had an advantage over se-relatives
- possible reason: preposition stranding can only be analysed with *þe*-relatives

frequency expectation for overlapping form of partially conditioned base rules:

- $P(\alpha \cap \beta|c) = \sum_{c \in \text{conditions}} P(\alpha|c) \cdot P(\beta|c)$
- (in this case: P(se∩þe) = (P(se|restrictive) · P(þe|restrictive)) +
  (P(se|non-restrictive) · P(þe|non-restrictive))
- this model is compatible with the empirical facts

4. Conclusion

summary:

- grammatical rules can be independent of or conditioned on contextual factors
- independent rules allow simultaneous rule application, result: overlapping forms; constant rate effects
- conditions on rules can weaken over time; violation of constant rate hypothesis
- empirical case study: restrictiveness as a condition on the realization of the relativization strategy (*se* vs. *þe*) in OE becomes neutralized

further research:

- other syntactic constructions that allow overlapping forms (e.g. double superlatives / comparatives *more fairer* etc.)
- "mirror case" of OE relative clauses: initial rule independence leading to grammar competition with subsequent conditioning during a period of change; children can impose new conditioning factors on variable input during the acquisition process (e.g. Hudson Kam & Newport 2005); possible case: conditioning of German verb-second vs. verb-final orders on clause type
- more careful examination of data for OE relative clauses; more contextual factors (heaviness of and features within the relative clause, grammatical function of the relativized constituent etc.)

implications:

- grammar competition operates on individual rules
- rules in competition have associated with them a weight

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