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Mappings between context sets and definite forms: variation and stability

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Issues in the Syntax and Semantics of Definiteness
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Outline

Morphology and interpretation

The interpretation of determiners has been related to the morphological inventory of determiners in a given language.

Morphology and interpretation

Frei (1944): the interpretation of a given demonstrative form is a function of the number of oppositions in the demonstrative system.

- Classical Latin *hic*, Ancient Greek *ὅδε*, Old Slavic *sъ*, Old Armenian *ays* – **specifically Speaker-oriented (as opposed to the Hearer)**
- (Modern) French *celui-ci*, German *dieser*, English *this* – **proximal, not opposing the Speaker and the Hearer**

Systems:

- ternary: *hic*/*iste*/*ille*, *ὅδε*/*οὗτοσ*/*ἐχεῖνοσ*, *sъ*/*tъ*/*onъ*, *ays*/*ayd*/*ayn*
- binary: *celui-ci*/*celui-lá*, *dieser*/*jener*, *this*/*that*

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Morphology and interpretation

- Heim (1991): the anti-uniqueness effect in indefinites arises as an implicature generated by Maximize Presupposition! because of the competition with *the* (Schlenker (2012) assimilates this case to scalar implicatures).
- Levinson (2004): the distal interpretation of the semantically neutral *that* in English arises as a scalar implicature in competition with the (inherently proximal) *this*.
- Alonso-Ovalle et al. (2009): the anti-uniqueness effect in indefinites disappears *in the context of relative clauses* in German since in this context an indefinite competes with a strong definite article (presupposing familiarity) rather than with a weak one (presupposing uniqueness).

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MORPHOLOGY AND INTERPRETATION

When studying determiners, we want to study them as *systems*.

'Semasiological" perspective – what lexical entries (of the morphological forms) capture the distribution of forms across contexts?

"Onomasiological" perspective – how do contexts map onto morphological forms? (To avoid committing to lexical entries).

MORPHOLOGY AND INTERPRETATION

Mappings between context sets* and morphological forms are morphological inventory-specific (and can be further relativized to a syntactic context).

What are possible mappings for definite context sets**?

*CONTEXT SET – the set of worlds in which all mutually believed propositions hold (in situational counterparts) (Cf. Stalnaker 1978: the set of worlds where mutually believed propositions hold; Schwarz (2008): situations have their counterparts across possible worlds).

**A CONTEXT SET IS DEFINITE WRT AN NP iff it entails the existence of a unique individual with the property denoted by the NP in a particular situation (i.e. the existential proposition holds in all counterparts of a particular situation across context set worlds).

Outline

PRAGMATIC CONTEXTS

The ontology of definite context sets as defined by the relationship between:

a) the Topic situation s_{TOP}* and b) (the proposition about) the existence of a unique individual with the property denoted by the relevant NP in the current utterance U_n.

1. Existence in (an extended) Topic situation
2. Existence in Topic situation
3. Existence in the most prominent situation

*TOPIC SITUATION = **a minimal situation where the proposition denoted by the previous utterance U_{n-1} holds**, where minimality is defined in terms of exemplification: EX($[\![U_{n-1}]\!]$)(s_{TOP}) or s_{TOP} exemplifies $[\![U_{n-1}]\!]$ (Berman 1987, Kratzer 2021); situations consist of individuals and relations between them.

1. Existence in (an extended) Topic situation

The Context set entails that the Topic situation s_{TOP} is a minimal situation where an individual with NP-property exists, $\exists x EX([\![NP]\!](x))(s_{\mathbf{TOP}})$

or s_{TOP} has an extension $s_{TOP} \leq s'$ s.t. $\exists x EX([\![NP]\!](x))(s')$

- A situation s exemplifying an existential proposition $\exists x EX([\![NP]\!](x))$ **entails** uniqueness wrt to s (s is a *minimal* situation where the existential proposition holds).
- A situation s' exemplifying an existential proposition $\exists x EX([\![NP]\!](x))$ and containing s_{TOP} entails that s' is a minimal extension of s_{TOP} with respect to the existential proposition.

1. Existence in (an extended) Topic situation

U_{n-1}: [There is a lot of cleaning to do in the house]

s_{TOP} s.t. EX($[\![U_{n-1}]\!](s_{TOP})$

U_n: I will begin with [the kitchen]$_{\mathbf{NP}}$.

s′ s.t. $s_{TOP} \leq s'$ & $\exists x EX([\![kitchen]\!](x))(s')$

The Context set entails that there exists a unique kitchen in s′, a minimal extension of the Topic situation with respect to the NP *kitchen*.

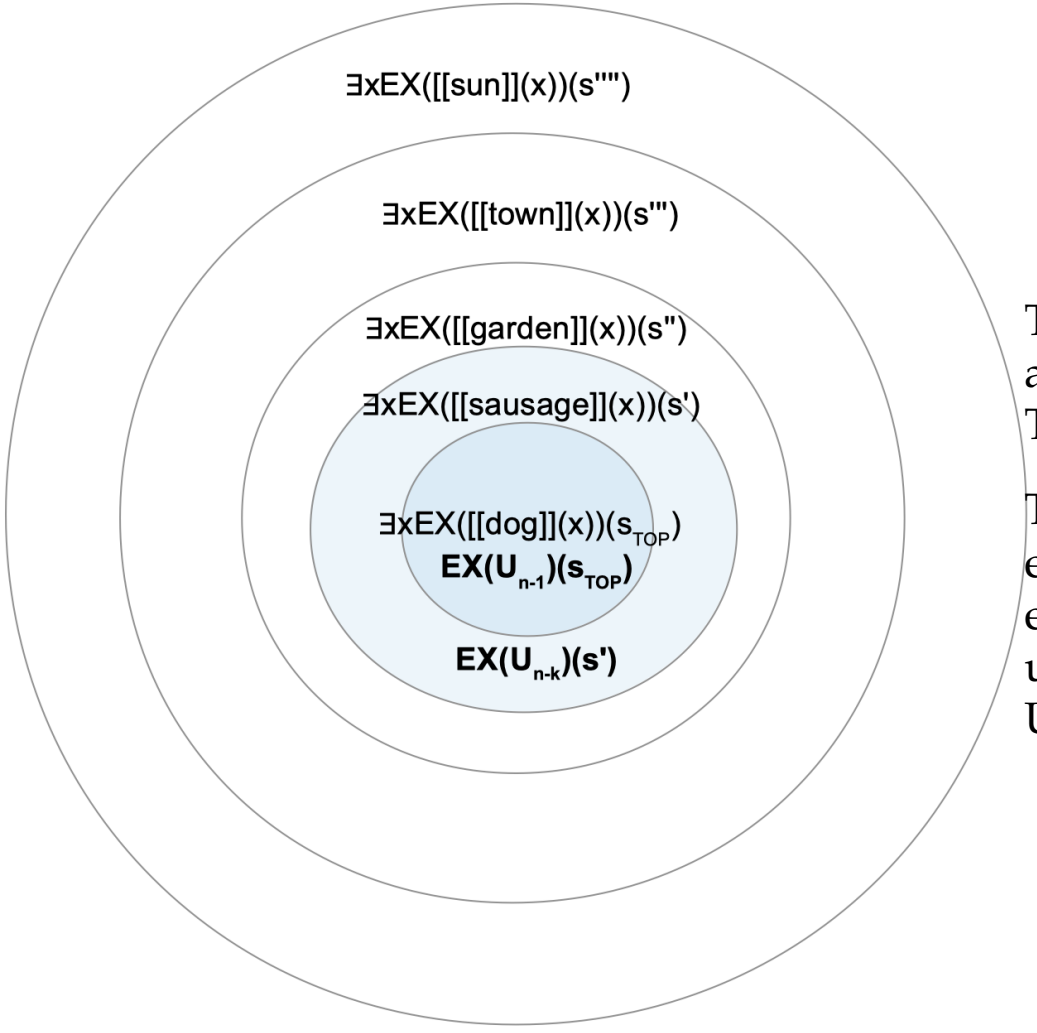
1. Pragmatic structuring of situations. Part 1

Cf. Hawkins (1991, 408): "we must ... postulate a rich pragmatic structuring of entities. <...> it is the pragmatic sets within which the uniqueness claim ... holds and which enable speaker and hearer to co-operate and actually 'refer' unambiguously to the individual that satisfies the definite description."

- previous discourse set
- immediate situation set
- larger situation set

Spelling out: Interlocutors are mutually aware of the situation embedding structure with respect to some predicates (i.e. which situation can be a minimal extension of the topic situation with respect a given NP).

1. Pragmatic structuring of situations. Part 1



The search is mutually assumed to proceed from Topic situation outwards.

Topic situation is first extended onto situations exemplifying previously uttered propositions U_{n-k}.

2. EXISTENCE IN TOPIC SITUATION

The Context set entails that the Topic situation s_{TOP} is a minimal situation where an individual with NP-property exists, $\exists x EX([\![NP]\!](x))(s_{\mathbf{TOP}})$

U_{n-1}: [An unknown woman came to my door today.]

s_{TOP} is s.t. $EX([\![U_{n-1}]\!](s_{TOP})$

U_n: I'd never met the lady$_{\mathbf{NP}}$ but she insisted on talking to me.

s_{TOP} is s.t. $\exists x EX([\![lady]\!](x))(s_{TOP})$

The Context set entails that there exists a unique lady in Topic situation. E.g. Dutch maps such contexts sets to a special determiner form.

(1) [Een onbekende vrouw is vandaag aan mijn deur gekomen.]$_{U_{n-1}}$ [Ik heb die/#de dame nooit ontmoet.$_{U_n}$]

3. EXISTENCE IN THE MOST PROMINENT SITUATION

Context set entails that the currently most prominent situation $s^!$ is a minimal situation where an individual with NP-property exists.

U_{n-3}: I first bought a chair.
U_{n-2}: And then I went...
U_{n-1}: and I got another one.
U_n: I figured I could put that/#the [chair]$_{\mathbf{NP}}$ by the fireplace, but now I'm less sure about the first one.

$s^!$ is s.t. $\exists EX([\![\textit{chair}]\!](x)(s^!))$

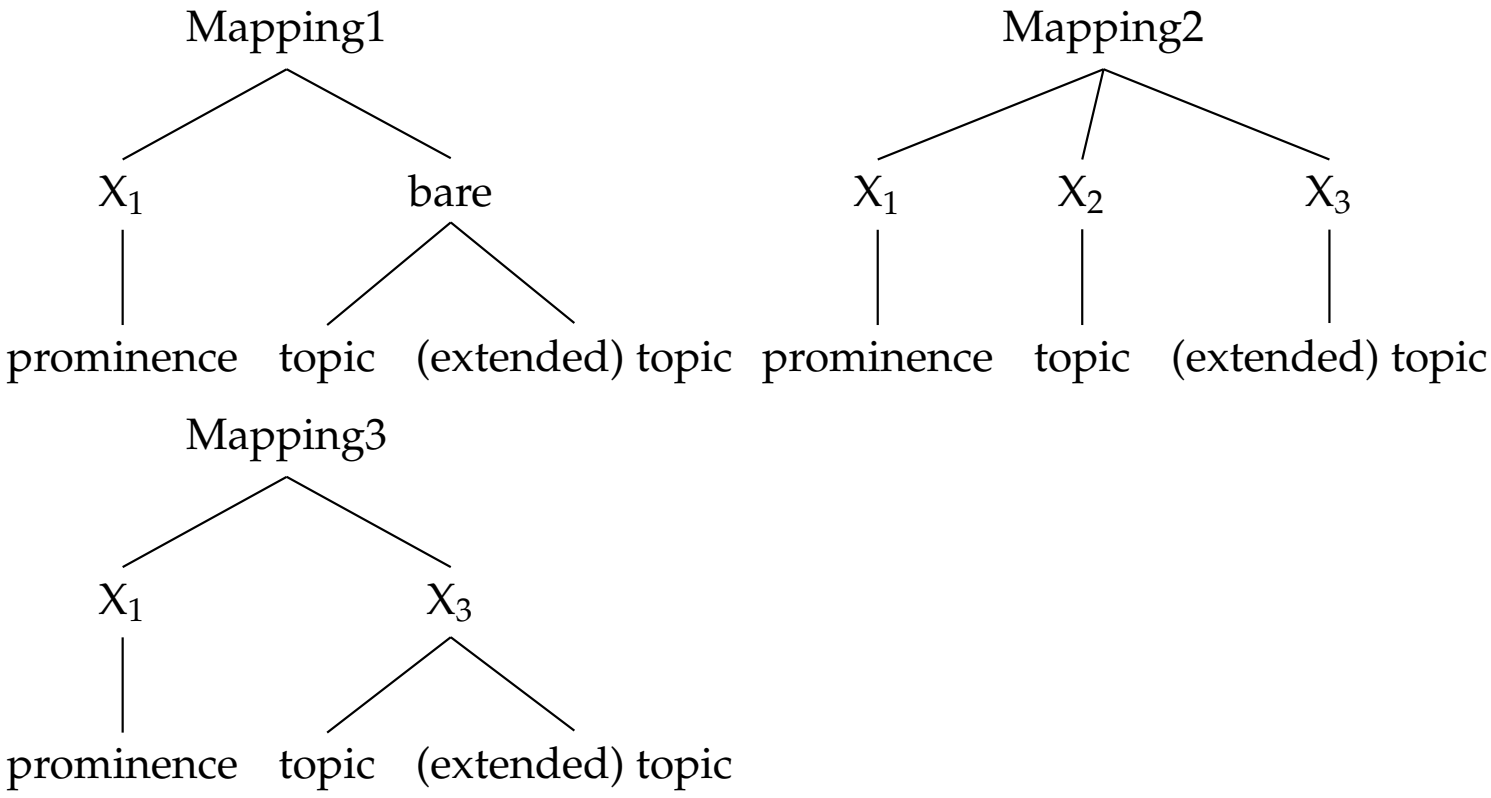
Notice: there are two minimal extensions of the Topic situations where there is a chair, but one of them is more prominent.

PRAGMATIC STRUCTURING OF SITUATIONS. PART 2

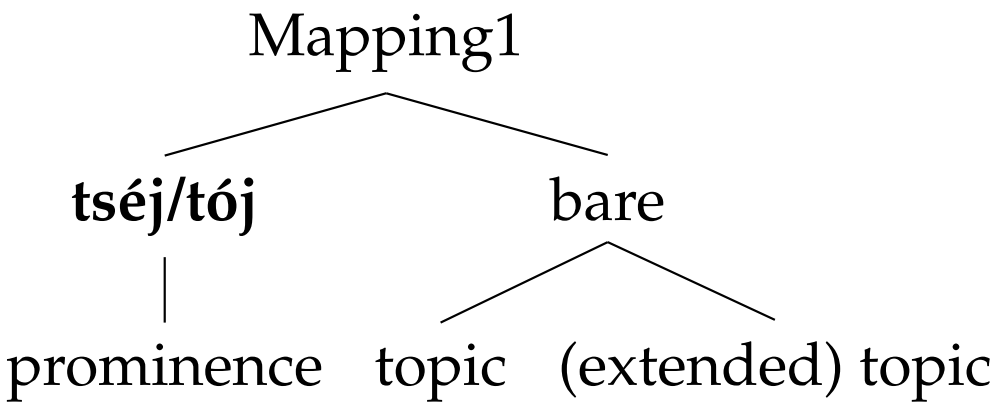
- Prominence is determined by joint attention, which is a registrable property in case of extra-linguistic situations (gaze, gesture etc.).
- Otherwise, prominence is determined by discourse closeness to the current utterance U_n: $s^!$ is s.t. $EX(U_{n-1})(s^!)$.

Outline

(Some) attested mappings

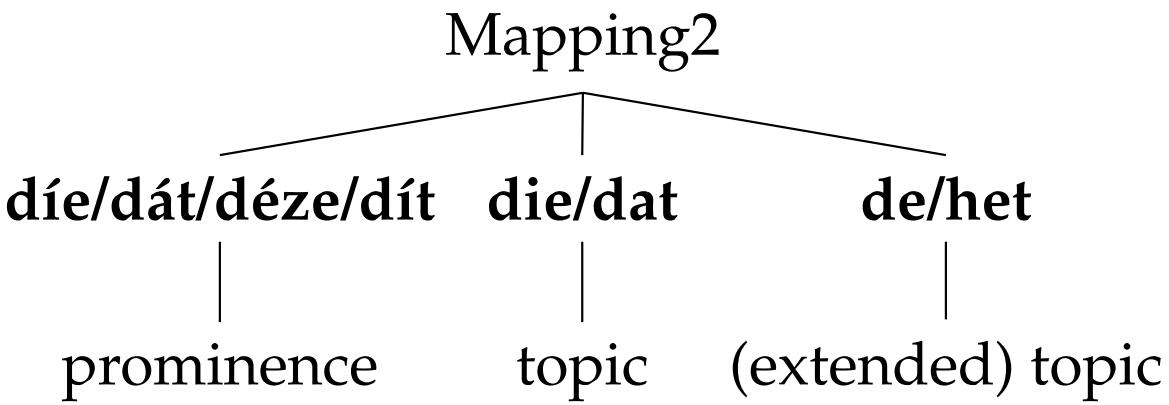


MAPPING 1



Ukrainian ...

MAPPING 2



Dutch, French, German ... Languages featuring "weak" and "strong" definite articles (Ebert 1970, Schwarz 2019)

Mapping 2

Dutch

(2) [Ik heb een vijgenboom gekocht vandaag]$_{U_{n-1}}$. Ik zal **die**/#de boom in de
I have a fig.tree bought today I will DIE tree in *de*
zuidelijke kant van mijn tuin planten.
southern corner of my garden plant
"I bought a fig tree today. I will put the tree in the southern part of my yard."

(3) [Ik heb een vijgenboom gekocht vandaag]$_{U_{n-2}}$ en [dan heb ik nog wat
I have a fig.tree bought today and then have I yet some
boodschappen gedaan]$_{U_{n-1}}$. Ik zal **de**/#die boom in de zuidelijke kant van
purchases done I will DE tree in DE southern corner of
mijn tuin planten.
my garden plant
"I bought a fig tree today and then I did some other purchases. I will put the tree in the southern part of my yard."

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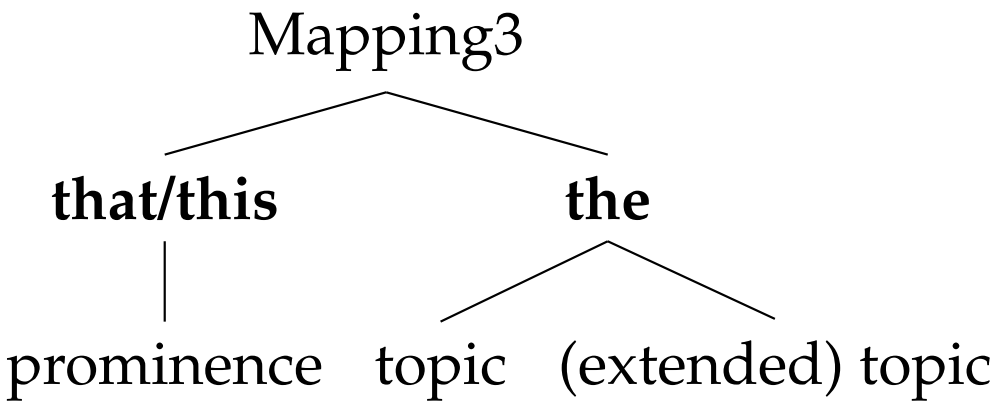
MAPPING 3



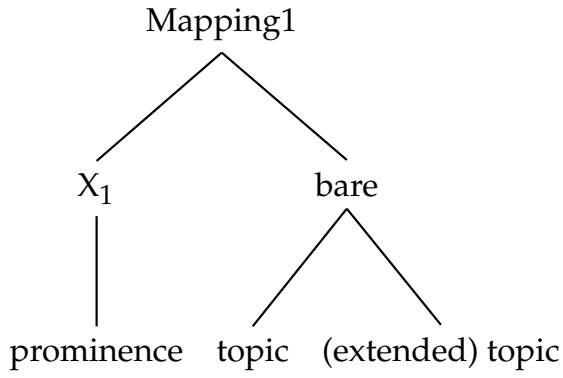
English ...

Outline

Mapping genesis (what is assumed)

Descriptive terminology often gives a clue about a mapping type. E.g. "articleless" points to Mapping 1, where Context sets entailing the existence in the most prominent situation map onto morphemes called demonstratives.

- All languages have demonstratives (Diessel 1999);
- Demonstratives are the most frequent diachronic source of definite determiners (Kouteva et al. 2019, 138).



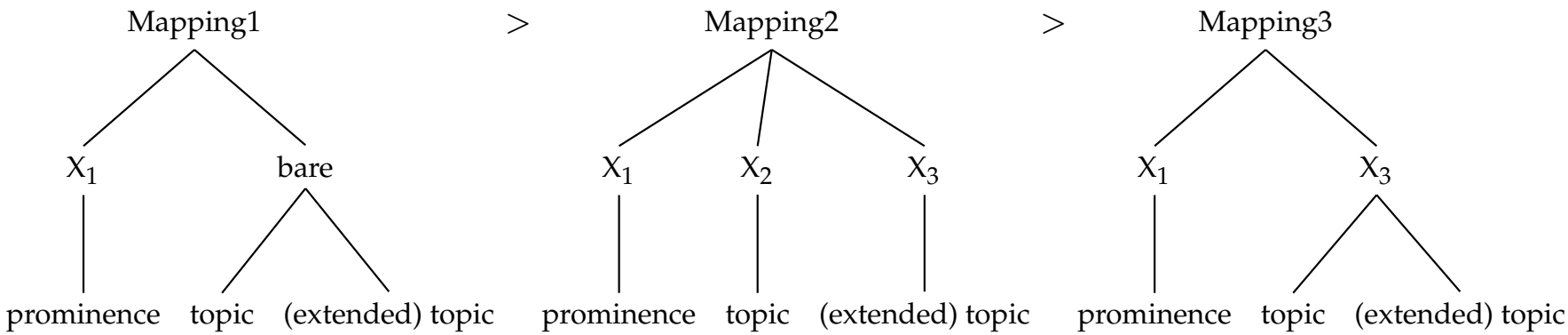
MAPPING GENESIS (WHAT IS ASSUMED)

Stage 0		Stage I		Stage II		Stage III
demonstrative	>	definite article	>	non-generic marker	>	noun class marker

Table 1: Greenberg (1978): "definiteness cycle"

Skrzypek (2012, 47): "The development from Stage 0 to Stage I can be further subdivided into sub-stages. It originates with the use of the demonstrative in anaphoric contexts, when an exophoric (situational) marker is used intra-liguistically (e.g. Lyons 1975, Diessel 1999, 109-111)."

Kouteva et al. (2019, 137): "The [DEMONSTRATIVE > DEFINITE] pathway appears to be restricted to demonstrative forms having an anaphoric function."



Learning from change

"With such process information [about the time course of language change], we may hope to learn how the grammars of languages change from one state to another over time; and from an understanding of the process by which they change, to learn more about their principles of organization. After all, perturbing a complex system and observing its subsequent evolution is often an excellent way of inferring internal structure." Kroch (1989, 199)

Outline

Morphological inventory (what is assumed)

	singular			plural
	masc.	fem.	neuter.	all genders
N	*se, sē*	*sēo*	*þæt*	*þā*
A	*þone*	*þā*	*þæt*	*þā*
G	*þæs*	*þǣre, þāre*	*þæs*	*þāra, þǣra*
D	*þǣm, þām*	*þǣre, þāre*	*þǣm, þām*	*þǣm, þām*

Figure 1: Early West Saxon *se* from Hogg (1992, 143)

	singular			plural
	masc.	fem.	neuter.	all genders
N	*þes*	*þēos*	*þis*	*þās*
A	*þisne*	*þās*	*þis*	*þās*
G	*þisses*	*þisse, þisre*	*þisses*	*þissa, þisra*
D	*þissum*	*þisse*	*þissum*	*þissum*

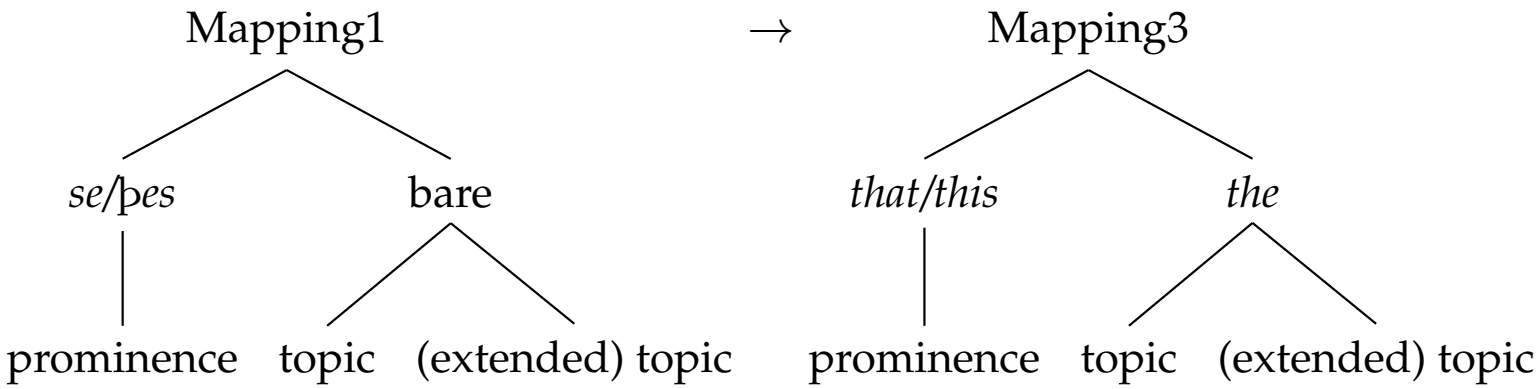
Figure 2: Old English *þes* from Mitchell and Robinson (2001, 18)

Form-meaning mapping (what is assumed)

Two camps:

- Old English *se*-paradigm **is a demonstrative**, while definite articles develop in Early Middle English (Van Gelderen 2007, Denison 2006, Stevens 2008)
- Old English *se*-paradigm **is ambiguous** between demonstratives and definite articles (Crisma 2011, Allen 2016, Struik and Van Kemenade 2022)

ENGLISH: EVOLUTION (WHAT IS ASSUMED)



Debated: in Old English vs. in Early Middle English

Today: the mapping type is more stable than previously assumed.

English: Mapping 1 in OE?

(4) Oft ðonne se$_1$ hirde gæð on frecne wegas, sio$_2$
often when se.nom.masc shepherd goes on dangerous ways, se.nom.fem
hiord ðe unwærre bið, gehrist. Be suelcum hirdum cwæð se$_3$
flock which unwary is, falls of such shepherds spoke se.nom.masc
witga:
prophet
"Often when the$_1$ shepherd goes on dangerous ways, the$_2$ flock, being heedless, falls. Of such shepherds the$_3$ prophet spoke:" (Cura Pastoralis, late 9th c., cocura,CP:2.29.23.129, Trans. Heggelund (2010, 71))

English: Mapping 1 in OE?

(4) He cwæð, wyt syndon an, for ðære$_1$ annysse, þæt seo$_2$ an
he said we are one for DEF.F.GEN oneness that DEF.F.NOM one
godcundnyss, and seo$_3$ an mægenþrymnys, and þæt$_4$ an
divine.nature and DEF.F.NOM one power and DEF.N.NOM one
gecynd þe him is gemæne nele geþafian þæt he þry godas syndon,
nature that them is common not.will permit that they three gods are
ac an ælmihtig God æfre on ðrym hadum; and þis oncnawað þa$_5$ halgan
but one almighty God ever on three persons and this know DEF.PL saints
þonne hi hinne geseoð.
when they him see.
"He said, We are one, because of the$_1$ unity, that the$_2$ one divine nature, and the$_3$ one mighty power, and the$_4$ one nature that is common to them will not allow of their being three gods, but one almighty God always in three persons; and the$_5$ saints will know this when they see him." (Homilies of Ælfric, A supplementary Collection, ca. 1000, coaelhom,+AHom_8:194.1267, Transl. Raw (1997, 40))

Diagnosing the mapping: interpretation

Sommerer (2011): *se*-paradigm forms can in some cases be translated into ME as either *that* or *the*. *se*-paradigm forms are often translated as "that/the" across the board.

1	Her com Swegen mid his flotan to Norðwic. &	*Here Swein came with his fleet to Norwich, and*
2	**þa burh** ealle gehergade. & forbærndon.	*completely raided and burned down* ***that/the town****.*
3	þa gerædde Ulfkytel wið **þa witan** on East	*Then Ulfcytel decided with* ***the councillors*** *in east*
4	Englum. þæt him bætere weron þæt man wið	*Anglia that it would be better that they [one] made*
5	**þone here** friðes ceapode. ær hi to mycelne	*peace with* ***that/the army****, before they did too much*
6	hearm on **þam earde** gedydon. forþam þe hi	*harm in* ***that/the country****, because they came*
7	unwares comon. and he fyrst næfde þæt he his	*unexpectedly and he had no time in which to gather*
8	fyrde gegadrian mihte. ða under **þam griðe** þe	*his army. Then under the cover which should have*
9	heom be tweonan beon sceolde. þa besteal **se**	*been between them, the army stole up from the ships*
10	**here** up fram scipon. and wendan heora fore	*and turned their force to Thetford.*
11	to þeodforda. ða Ulfcytel þæt undergeat. þa	*Then when Ulfcytel realized that, he sent that they*
12	seonde he þæt man sceolde **þa scipu** to	*[one] should chop up* ***those/the ships.*** *But those, who*
13	heawan. ac hi abruðon þa ðe he to þohte. and	*he thought of failed and then he secretly gathered his*
14	he þa gegaderode his fyrde diglice swa he	*army as fast as he could.*
15	swyðost muhte. **se here** com þa to þeodforda	*And* ***the army*** *then came to Thetford, within three*
16	binnon iii wuca þæs þe hi ær gehergodon	*weeks that they had earlier raided Norwich. And*
17	Norðwic.and þær binnon ane niht wæron. and	*were there one night, and raided and burned down*
18	**þa burh** hergodon & forbærndon.	***that/the town****.*

Peterborough Chronicle, 12 c., cochronE,ChronE_[Plummer]:1004.14.1665_ID, Trans. Swanton (1996, 135)

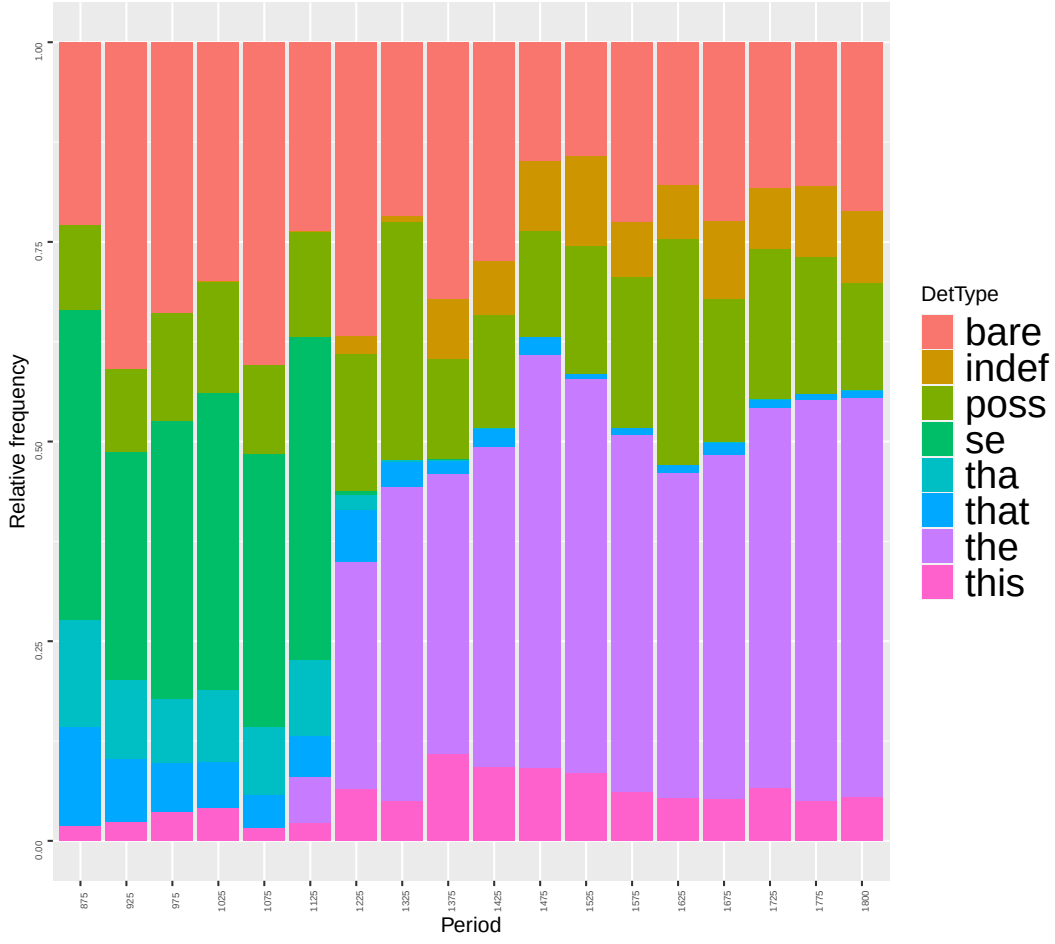
Diagnosing the mapping: interpretation

However:

- Only a subset of cases allows for an ambiguous translation.
- The distribution of Modern English *that* and *the* *pseudo*-overlaps.
  - In some cases, the Speaker can construe of a Context set as *either* entailing "the existence in an extended topic situation" or "the existence in the most prominent situation".

(5) Beside the barn there is a little cottage. The/This cottage was built in 1875. Fraurud (2001, 246)

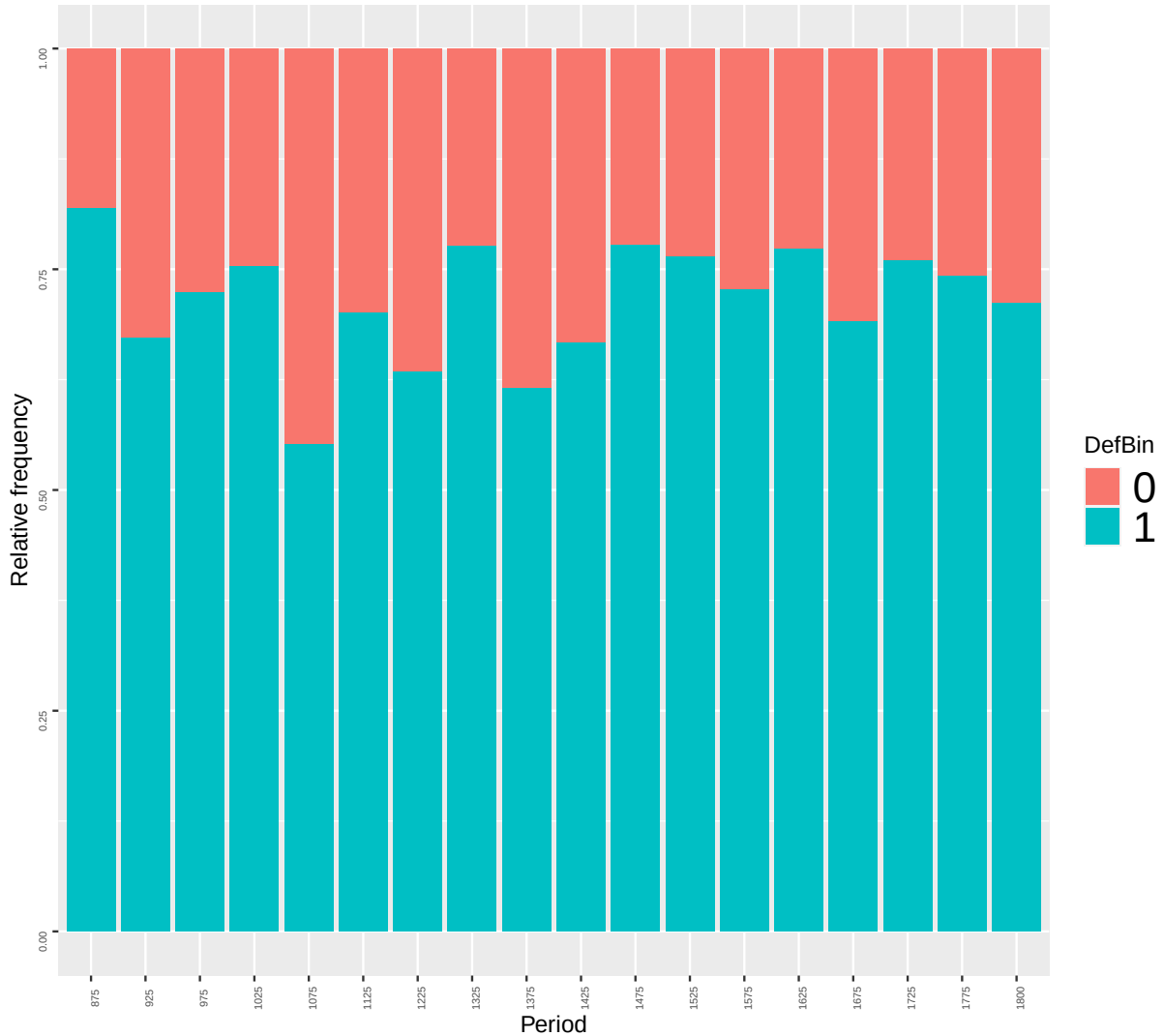
Diagnosing the mapping: quantitative data



- Nominative masculine *se* and plural þ*a* disappear;
- Nominative neuter þ*æt* goes down in frequency;
- Proximal þ*is* goes up in frequency;
- New (case neutralized, gender neutralized) *the* appears.
- Indefinite article appears.

DIAGNOSING THE MAPPING: QUANTITATIVE DATA

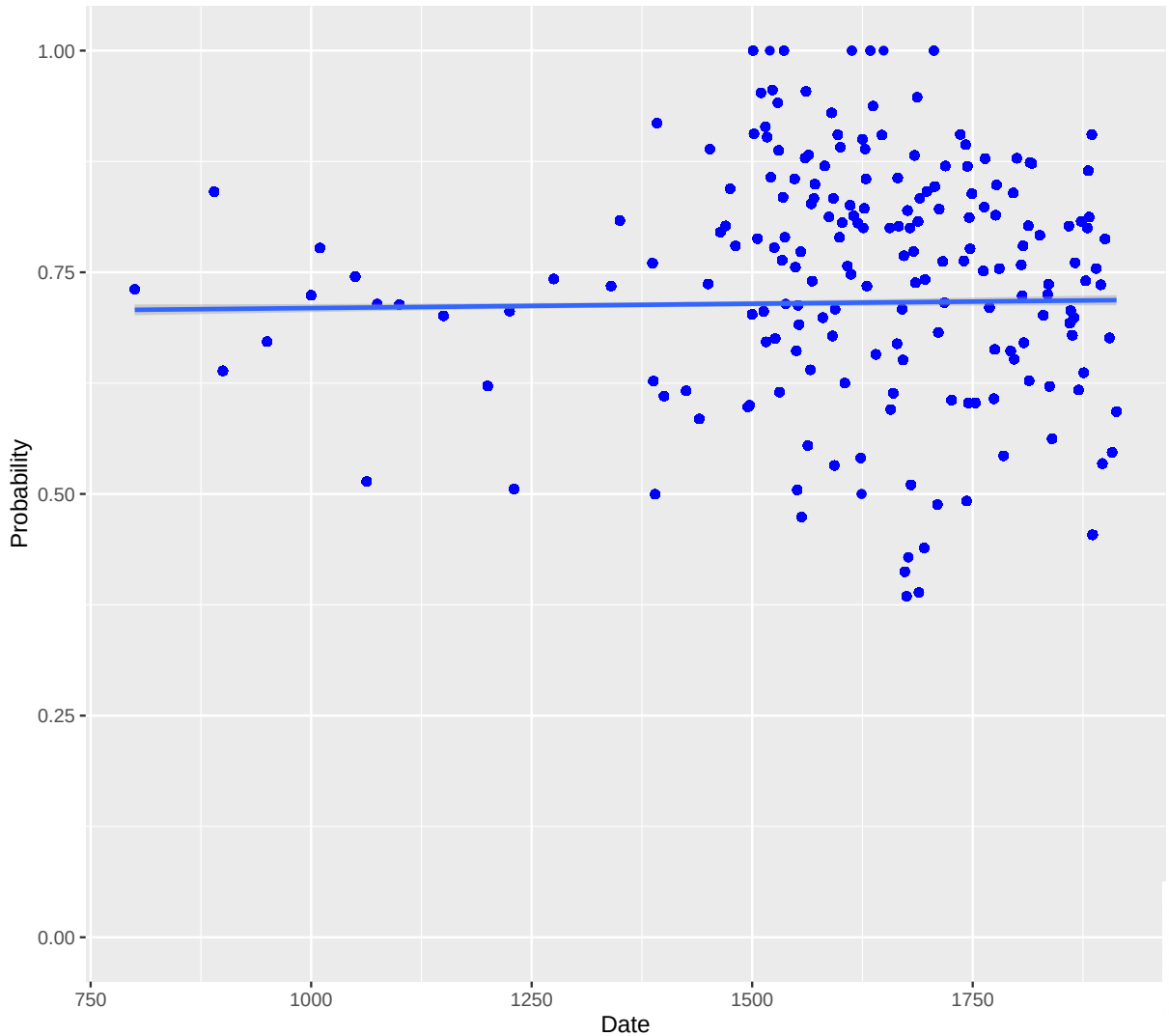
Definiteness markers (all forms) & possessives vs. rest.



DIAGNOSING THE MAPPING: QUANTITATIVE DATA

Definiteness markers (all forms) & possessives vs. rest.

Logistic regression: $P(\text{DEF} = yes|\text{DATE} = d) = \frac{e^{\alpha+\beta*Date}}{1+e^{\alpha+\beta*Date}}$, $\beta = 0.00004$, p = 0.036.



DIAGNOSING THE MAPPING: QUANTITATIVE DATA

Hand-coding definite contexts in text samples:

Sommerer (2011):

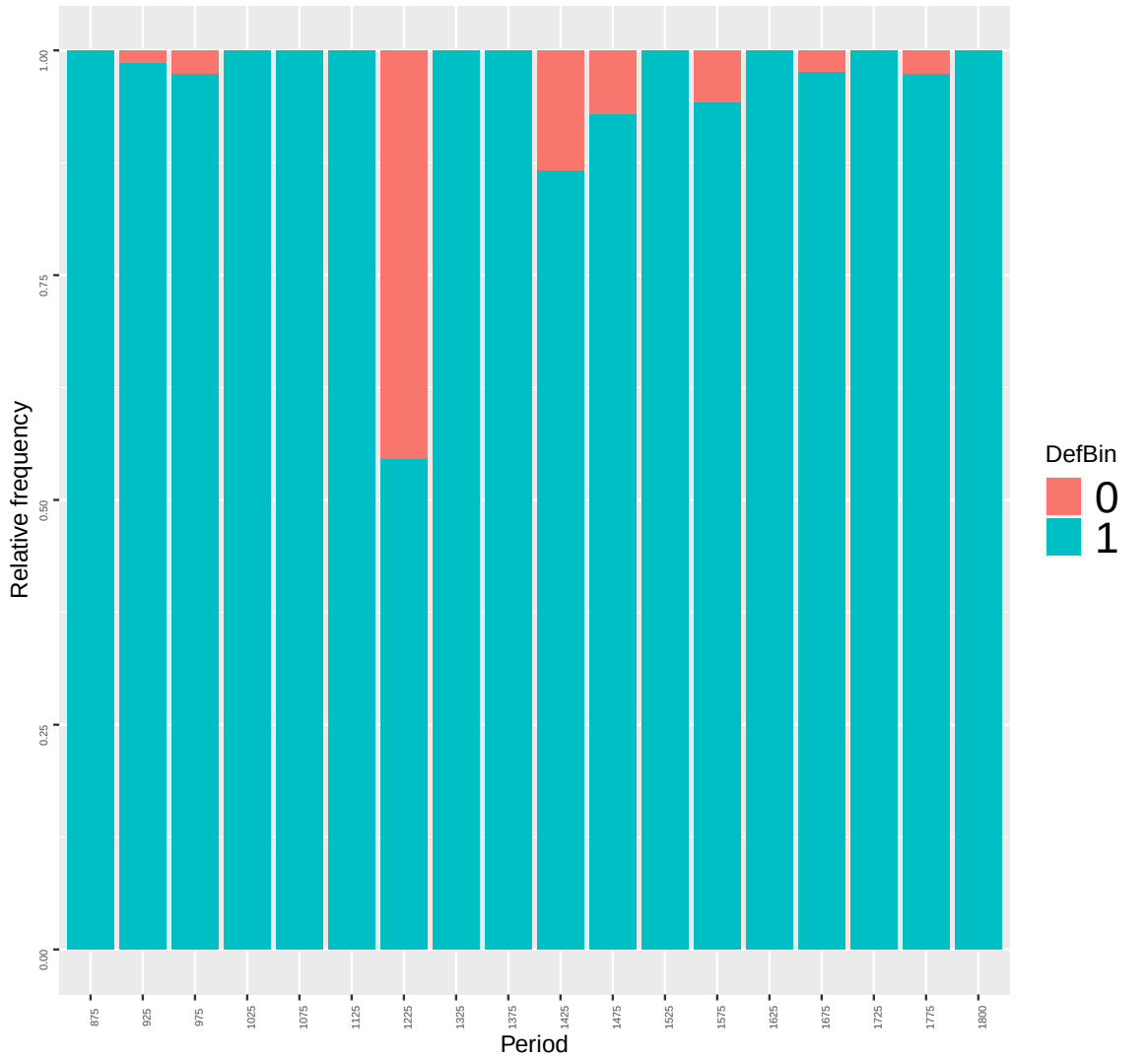
- *Parker Chronicle*, ca. 1000: 8 bare NPs vs. 816 overtly marked (≈ 1%);
- *Peterborough Chronicle*, ca. 1200: 32 bare NPs vs. 3073 overt marked (≈ 1%).

Crisma (2011): all NPs feature with an overt determiner in the 9th century prose.

DIAGNOSING THE MAPPING: QUANTITATIVE DATA

(A subset of) environments only compatible with Context sets entailing "the existence in (an extended) topic situation" (i.e. an appropriate Comparison Set)

NPs with superlatives: 14 bare NPs vs. 537 NPs with a definiteness marker (≈ 2%).



Diagnosing the mapping: An argument from the Uniformitarian Principle

Uniform Probabilities Principle (Lass 1997, 28)

"The (global, cross-linguistic) likelihood of any linguistic state of affairs (structure, inventory, process, etc.) has always been roughly the same as it is now."

- The frequency of "the existence in the most prominent situation" Context sets is stable.

Diagnosing the mapping: An argument from the Uniformitarian Principle

	Proximal mean	Distal mean
English	1.89	4.91
French	0.11	1.53
Spanish	2.08	0.13
Japanese	3.74	0.36
Chinese	2.13	0.76
Hebrew	7.43	0.31

Table 2: Mean proportions of demonstratives per 100 words in adults' speech, Diessel and Monakhov (2023, 936)

	this-paradigm	*se*-paradigm
875	1.55	7.18
925	4.32	17.13
975	7.89	23.9
1025	13.2	36.6
1075	4.49	18.03

Table 3: Mean proportions of *se*- and *this*-paradigm forms per 100 words in Old English texts (per 50-year period)

DEMONSTRATIVE USES PROPER

do occur...

(6) se god hatte Dagon, +tam h+a+tenum swy+de dyre.
se god named Dagon þam hæþenum swyðe dyre
“that god was named Dagon”
(coaelhom,+AHom_22:221.3402)

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DIAGNOSING THE MAPPING: TAKING STOCK

- There is no change in the frequency of definiteness marking since OE:

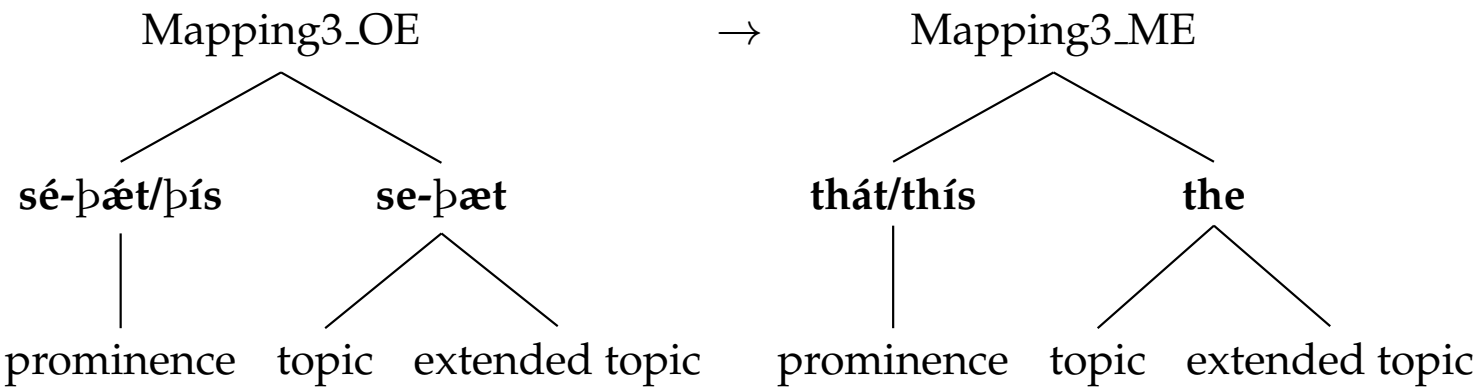
  Definiteness markers are used at the same rate in Old and Modern English.

- The *se*-paradigm in OE could not be called "demonstrative" in any useful sense of the term (pace Sommerer 2011, Struik and Van Kemenade 2022).

  Its rate is (at least) an order of magnitude higher than cross-linguistically attested rates of demonstratives.

If not Mapping 1, which mapping type do we find in OE?

WHAT *does* CHANGE?



- (The existence in the) topic and extended topic situation: case&gender distinction between *se* and *þæt* is neutralized in the emerging *the*.
- (The existence in the) most prominent situation: case&gender distinction between *sé* and *þæt* is neutralized in (now gender-less and case-less) *thát* and *thís*.

The mapping type appears to be extremely robust. Nominal case system, subject pro-drop, OV order, verbal subject agreement are lost, while Mapping 3 carries on.

that: LEXICAL SIGNATURE

#	noun	#	noun	#	noun	#	noun
71	mod "mind"	30	mod "mind"	296	folc "people"	29	folc "people"
12	folc "people"	25	deofol "devil"	130	wif "woman"	14	word "word"
10	flæsc "flesh"	21	sar "pain"	63	fyr "fire"	6	mod "mind"
7	lif "life"	21	folc "people"	62	mæden "strength"	5	land "land"
4	wif "woman"	18	good "goodness"	61	wæter "water"	4	gewrit "writing"
4	weobud	17	gewinn "war"	48	cild "child"	4	gafol "tax"
4	sar "pain"	14	mægen "strength"	35	gewrit "writing"	4	corn "grain"
4	neat "cow"	14	land "land"	34	word "word"	3	wif "woman"
4	holh "hollow"	13	fyr "fire"	34	leoht "light"	3	werod "troop"
4	heafod "head"	12	yfel "evil"	30	mod "mind"	5	wæter "water"
3	yfel "evil"	10	god "God"	28	godspel "Gospel"	3	landfolc "natives"
3	word "word"	7	wæter 'water'	27	land "land"	3	hus "house"
3	wæter "water"	7	gefeoht "fighting"	26	hus "house"	3	heafod "head"
3	sæd "seed"	7	gecynd "nature"	25	bebod "command"	3	godspell "Gospel"
3	ierre "anger"	6	fæsten "stronghold"	24	heafod "head"	3	bodig "bigness"
3	hrægl "clothing"	6	blod "blood"	23	sar "pain"	3	þing "thing"
3	gold "gold"	5	lic "corpse"	20	wite "punishment"	2	treow "tree"
3	dioful "devil"	5	godwebb "cloth"	19	win "wine"	2	tacen "sign"
2	wind "wind"	5	þing "thing"	19	sæd "seed"	2	scyp "patch"
2	twin "linen"	4	wuldor "glory"	19	lif "life"	2	mynstre "monastery"

Table 4: *THAT* $<$ 800 Table 5: *THAT* 800–900 Table 6: *THAT* 900–1000 Table 7: *THAT* 1000–1100

that: LEXICAL SIGNATURE

#	noun
28	mann
31	folc “people”
16	meiden “strength”
12	enngell “angel”
11	child “child”
7	þing “thing”
6	word “word”
6	riwle
6	name “name”
5	water “water”
5	tocume “arrival”
5	lac “play”
5	hird “household”
4	wunder “wonder”
4	lond “land”
4	liht “light”
4	hus “house”
4	godspel “Gospel”
4	fur
4	blod “blood”

Table 4: *THAT* 1100–1200

#	noun
8	man “man”
8	body “body”
7	ende “end”
6	beste “creature”
5	place “place”
5	heaued “head”
5	þing “thing”
3	wyt “mind”
3	word “word”
3	weter “water”
3	child “child”
2	vers “verse”
2	uolk “people”
2	uer
2	traw
2	lyf “life”
2	citee “hut”
2	bread “bread”
2	abbay “abbey”
1	zuyn

Table 5: *THAT* 1200–1300

#	noun
21	man “man”
14	þing “thing”
13	knyght “knight”
10	place “place”
8	water “water”
7	see
7	cytee “hut”
6	lond “land”
4	name “name”
3	Parlyment
3	lufe “life”
3	lady “lady”
3	hors “horse”
3	contree “region”
2	wylderness
2	tyme “time”
2	traytoure “traitor”
2	tour “turn”
2	temple “temple”
2	swerde “sword”

Table 6: *THAT* 1300–1400

#	noun
5	thinge “thing”
3	man “man”
2	angle
2	synne “sin”
2	state “state”
4	part “part”
2	matter “matter”
2	hond “dog”
2	word “word”
1	woman “woman”
1	wode “tree”
1	wickednes
1	whose
1	tyme “time”
1	traytour “traitor”
1	title “title”
1	summe “sum”
1	Statute “law”
1	square “square”
1	soule “soul”

Table 7: *THAT* 1400–1500

Data sources

A collection of historical treebanks of English:

- The York-Toronto-Helsinki Parsed Corpus of Old English Prose (YCOE)
- The Penn-Helsinki Parsed Corpus of Middle English, second edition (PPCME2)
- The Penn-Helsinki Parsed Corpus of Early Modern English (PPCEME)
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