

Null subjects in Old High German and Old Saxon

George Walkden

Department of Linguistics & English Language, University of Manchester

george.walkden@manchester.ac.uk · <http://personalpages.manchester.ac.uk/staff/george.walkden/>

Outline of the talk:

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2. A new quantitative investigation
3. Results: differences between texts, between clause types, between persons
4. Towards an analysis
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1. Introduction and previous research

It has long been known that referential null subjects are possible in Old High German (OHG): see Held (1903), Eggenberger (1961), Axel (2005, 2007: ch. 6), Axel & Weiß (2011).

- (1) Sume hahet in cruci
some-ACC hang-2PL to cross
'Some of them you will crucify'
(Monsee Fragments XVIII.17; Matthew 23:34; Axel 2007: 293)
- (2) steih tho in skifilin
stepped.3SG then into boat
'He then stepped into the boat'
(*Tatian* 193.1; Axel 2007: 293)

Less well known is that referential null subjects are also possible in Old Low German/Old Saxon (OS); cf. Behrmann (1879).

- (3) Giuuitun im thô eft te Hierusalem iro sunu sôkean
went.3PL REFL.DAT then after to Jerusalem their son seek.INF
'They then went to Jerusalem to seek their son'
(*Heliand* 806–807)
- (4) gisâhun iro barn biforan, kindiunge man, qualmu sueltan
saw.3PL their children before child-young men murder.INSTR die.INF
'They saw their young children murdered before them'
(*Heliand* 749–751)

- ♣ In all of these cases, no nominative antecedent to the null subject:
 - (3): Joseph and Mary (Joseph not in previous sentence)
 - (4): the women of Bethlehem (dative object in previous sentence)

The early Germanic languages have been noted to display a number of peculiarities in the *distribution* of null subjects, not familiar from canonical null subject languages like Italian & Spanish (cf. Abraham 1991, Rosenkvist 2009).

2. A new quantitative investigation

- ♣ OHG: data from Eggenberger (1961), Axel (2007)
- ♣ OS: search of manually annotated of *Heliand* ('HeliCoPTER'; Walkden 2011), based on Behaghel (1948) edition, supplemented with Sievers (1878)
- ♣ Aim: to find and count:
 - a) overt personal pronoun subjects
 - b) referential null subjects (RefNSs)

3. Results

3.1 Differences between languages and texts

- ♣ OHG (Axel 2007: ch. 6): RefNSs mostly found in early prose texts (though some are found in the *Hildebrandslied*).
 - *Isidor*: 56/202: 27.7%
 - Monsee Fragments: 97/218: 44.5%
 - *Tatian*: 1055/3669: 28.8%
 - In late OHG, e.g. Notker, RefNSs are basically not attested.
- ♣ OS: only one text studied.
 - *Heliand*: 109/2452: 4.4%
 - Note that this figure is a lower bound, including only subjects which *cannot* be analysed as cases of conjunction reduction.

⇒ RefNSs much less frequent in the *Heliand* than in the three OHG texts investigated – but non-negligible.

- ♣ In addition to these 109 OS examples of RefNSs, there are 30 cases in which the two main manuscripts diverge:
 - In 8 cases, M omits the pronoun, e.g. (5).
 - In 22 cases, C omits the pronoun, e.g. (6).

- (5) M: Oc scal ic iu te uuarun seggean
 C: Oc scal iu te uaron seggean
 also shall (I) you to truth say.INF
 ‘I will also truly tell you ...’
 (*Heliand* 1628; Sievers 1878: 114–115)
- (6) M: Ac than uuillean te iuuuono herron helpono biddean
 C: Ac than gi uuellean te iuuuon herron helpono biddean
 but when (you) want.2PL to your lord help request.INF
 ‘But when you want to ask for help from your lord, ...’
 (*Heliand* 1573–1574; Sievers 1878: 112–113)

3.2 Differences between clause types

- ⤴ In all of the texts that robustly exhibit RefNSs, null variants are more common in main clauses than in subordinate clauses.

Table 1: Referential pronominal subjects in OHG finite clauses, by text and clause type (based on Axel 2007: 310, her table 2; data from Eggenberger 1961)

Text	Clause type	Overt	Null	Total
<i>Isidor</i>	Main	61 (56.0%)	48 (44.0%)	109
	Subordinate	85 (91.4%)	8 (8.6%)	93
	Total	146	56	202
Monsee Fragments	Main	48 (36.4%)	84 (63.6%)	132
	Subordinate	73 (84.9%)	13 (15.1%)	86
	Total	121	97	218
<i>Tatian</i>	Main	1434 (59.9%)	960 (40.1%)	2394
	Subordinate	1180 (92.5%)	95 (7.5%)	1275
	Total	2614	1055	3669

Table 2: Referential pronominal subjects in the OS *Heliand*, by clause type

Text	Clause type	Overt	Null	Total
<i>Heliand</i>	Main	969 (93.4%)	68 (6.6%)	1037
	Subordinate	1277 (99.4%)	8 (0.6%)	1285
	Conjunct	97 (74.6%)	33 (25.4%)	130
	Total	2343	109	2452

- ⤴ Effect of main vs. subordinate clearly significant for both OHG and OS (Fisher’s exact test; $p < 0.0001$)
- ⤴ However, RefNSs in subordinate clauses do exist:

- (7) nibu fona zuuem chiboran uuerdhe
 NEG-if from two born become-3SG.SBJV
 ‘if he is not born of two people’
 (OHG; *Isidor* 3.15)
- (8) that brôðer brûd an is bed nâmi
 that brother.GEN bride.ACC to his bed take.SBJV
 ‘... that he takes his brother’s bride to his bed’
 (OS; *Heliand* 2713)

- ⤴ Axel (2007: 311) proposes that RefNSs are **licensed by V⁰-to-C⁰** (i.e. V2).
- Examples like (7) above are counterexamples.
 - Axel suggests that Latin ‘may have had a minor impact’ here.
 - Schlachter (2010: 161–163) finds this unconvincing, and gives several examples where Latin influence is unlikely.
 - A new count of null subjects in *Isidor* reveals no obvious correlation between the possibility of verb-movement (basically, V1/V2) and RefNSs in subordinate clauses:

Table 3: Referential pronominal subjects in subordinate clauses in *Isidor* by possibility of verb-movement

V-movement possible?	Overt	Null	Total
Yes	26 (30.6%)	4 (50.0%)	30
No	59 (69.4%)	4 (50.0%)	63
Total	85	8	93

- Not significant (p = 0.2666).

⇒ Embedded RefNSs cannot be linked to V⁰-to-C⁰.

3.3 Differences between persons

- ⤴ In all of the texts that robustly exhibit RefNSs, 3rd person null variants are more common.
- ⤴ Effect of 3rd vs. non-3rd person is statistically significant; p < 0.0001 for all texts.
 - *Beowulf*: p < 0.0001
 - *Bald’s Leechbook*: p < 0.0001
- ⤴ The effect of number in the third person is not statistically significant in OHG:
 - *Isidor*: p = 0.7544
 - Monsee Fragments: p = 1.0000
 - *Tatian*: p = 0.0918
 - *Heliand*: p = 0.0275 (higher proportion of plural null subjects!)

Table 4: Referential pronominal subjects in main clauses in *Isidor*, the Monsee Fragments and the *Tatian*, by person and number (based on Axel 2007: 315; data from Eggenberger 1961)

Text	Person	N	Overt	Null	Total
<i>Isidor</i>	1	sg	36 (94.7%)	2 (5.3%)	38
		pl	2 (40.0%)	3 (60.0%)	5
	2	sg	3 (60.0%)	2 (40.0%)	5
		pl	1 (100.0%)	0 (0.0%)	1
	3	sg	15 (34.1%)	29 (65.9%)	44
		pl	4 (25.0%)	12 (75.0%)	16
	Totals		61	48	109
Monsee Fragments	1	sg	10 (66.7%)	5 (33.3%)	15
		pl	2 (66.7%)	1 (33.3%)	3
	2	sg	5 (62.5%)	3 (37.5%)	8
		pl	16 (61.5%)	10 (38.5%)	26
	3	sg	12 (18.8%)	52 (81.3%)	64
		pl	3 (18.8%)	13 (81.3%)	16
	Totals		48	84	132
<i>Tatian</i>	1	sg	415 (80.1%)	103 (19.9%)	518
		pl	62 (69.7%)	27 (30.3%)	89
	2	sg	131 (60.9%)	84 (39.1%)	215
		pl	262 (86.2%)	42 (13.8%)	304
	3	sg	394 (46.1%)	460 (53.9%)	854
		pl	170 (41.1%)	244 (58.9%)	414
	Totals		1434	960	2394

Table 5: Referential pronominal subjects in the OS *Heliand*, by person and number

Text	Person	N	Overt	Null	Total
<i>Heliand</i>	1	sg	262 (100.0%)	0 (0.0%)	262
		pl	61 (100.0%)	0 (0.0%)	61
	2	sg	247 (99.2%)	2 (0.8%)	249
		pl	230 (99.1%)	2 (0.9%)	232
	3	sg	1089 (94.5%)	63 (5.5%)	1152
		pl	454 (91.5%)	42 (8.5%)	496
	Totals		2343	109	2452

⇒ Null subject occurrences cannot be attributable solely to the influence of Latin. If the absence of pronouns in OHG and OS resulted entirely from isolated instances of over-literal translation we would expect a random distribution of null subjects across persons as well as across clause types (cf. Axel 2007: 306). The same argument applies to putative metrical influence in e.g. the *Heliand*.

3.4 Null objects

Referential null objects are also found in OHG and OS:

- (9) denne varant engilâ uper dio marhâ, wechant deotâ, wîssant ze dinge
 then travel.3PL angels over the lands wake.3PL people lead.3PL to judgement
 ‘Then angels fly over the lands, wake the people, lead them to the judgement’
 (OHG; *Muspilli* 79–80; Lockwood 1968: 215)
- (10) huuand it rotat hîr an roste, endi regintheobos farstelad, uurmi auuardiad ...
 because it rusts here to rust and thieves steal worms spoil
 ‘because it rusts away, thieves steal (it), worms spoil (it) ...’
 (OS; *Heliand* 1644–1645)

I have not attempted a quantitative investigation of referential null objects, due to the difficulty of deciding what constitutes a real one as opposed to e.g. Modern English *I have eaten*.

3.5 Generic inclusive null subjects

Occasional examples of generic null subjects (with no specific reference) can be found:

- (11) Gebet, thanne gibit ú
 give.2PL, then give.3SG YOU.PL.DAT
 ‘Give, and it shall be given to you’
 (*Otfrid* 39,3; Eggenberger 1961: 102)

As above, I have not attempted a quantitative study, but the relevance of examples such as this will become clearer later on!

4. Analysis

4.1 Rich agreement?

Traditional account following Taraldsen (1978) attributes null subjects to rich verbal agreement. This type of explanation fares okay for OHG, but much less well for OS.

Table 6: Verb paradigm for the simple present and past tenses in OHG: *nerien* (‘to save’)

N	Person	Present ind.	Past ind.	Present subj.	Past subj.
sg	1	neri-e	neri-t-a	neri-e	neri-t-i
	2	neri-s(t)	neri-t-ōs(t)	neri-ēs(t)	neri-t-īs(t)
	3	neri-t	neri-t-a	neri-e	neri-t-i
pl	1	neri-emēs	neri-t-um	neri-ēm	neri-t-īm
	2	neri-et	neri-t-ut	neri-ēt	neri-t-īt
	3	neri-ent	neri-t-un	neri-ēn	neri-t-īn

Table 7: Verb paradigm for the simple present and past tenses in OS: *nērian* ('to save')

N	Person	Present ind.	Past ind.	Present subj.	Past subj.
sg	1	nēri-u	nēri-d-a	nēri-e	nēri-d-i
	2	nēri-s	nēri-d-es		
	3	nēri-ēd	nēri-d-a		
pl		nēri-ad	nēri-d-un	nēri-en	nēri-d-in

- ⤴ OS agreement is just too weak (cf. e.g. Müller 2005): no person distinctions in the plural!
- ⤴ OHG exhibits 1st/3rd syncretism in the preterite, and hence is also too weak (Müller 2005)
- ⤴ Differences between texts/dialects are mysterious under an agreement-driven account.
- ⤴ An agreement-driven account would predict null objects to be impossible, contrary to fact.

4.2 'Radical null argument' languages?

Are OHG and OS 'radical null argument' languages like Japanese and Imbabura Quechua?

Neeleman & Szendrői (2007, 2008): such languages require agglutinating pronouns.

Table 8: OHG pronouns (Braune & Eggers 1975)

	NOMINATIVE	ACCUSATIVE	DATIVE	GENITIVE
1 SG	ih	mih	mir	mīn
2 SG	dū, du	dih	dir	dīn
3 SG M	ēr	inan, in	imu, imo	sīn
3 SG N	iǝ			ēs, is
3 SG F	siu, sī, si	sia, sie	iru, iro	ira, iru, iro
1 PL	wir	unsih	uns	unsēr
2 PL	it	iuwih	iu	iuwēr
3 PL M	sie		im, in	iro
3 PL N	siu			
3 PL F	sio			

How rich is rich agreement?

Rohrbacher (1999: 116): RefNSs are present if 'in at least one number of one tense of the regular verb paradigms, the person features [1] and [2] are both distinctively marked' –
 ✓ Predicts RefNSs in OS. ✗ But also in modern German and Icelandic.

Müller (2005): RefNSs are present unless system-wide syncretisms in verb paradigms exist. – ✗ Predicts no RefNSs in early Germanic (as Müller acknowledges).

Tamburelli (2006: 443): RefNSs are present if 'each of the possible feature types [\pm speaker, \pm addressee, \pm singular – GW] appears in both a positive and a negative setting within the paradigm' – ✓ Predicts RefNSs in OS and Finnish, and ✓ not in German or Icelandic. ✗ But also in all modern French.

Table 9: OS pronouns (Cordes & Holthausen 1973)

	NOMINATIVE	ACCUSATIVE	DATIVE	GENITIVE
1 SG	ik	mik	mī	mīn
2 SG	thū	thik	thī	thīn
3 SG M	hīē	ina	imu	is
3 SG N	it			
3 SG F	siu	sia	iru	ira
1 DU	wit	unk		unkar
2 DU	git	ink		inkar
1 PL	wī	ūnsik	ūs	ūsar
2 PL	gī	iuwik	iu	iuwar
3 PL M	sia		im	iro
3 PL N	siu			
3 PL F	sia			

There is no feature value or combination of values such that they define a nonsingleton set of forms in which all members share phonetic material (cf. Neeleman & Szendrői 2007: 706). So if Neeleman & Szendrői are on the right track, OHG and OS weren't radical null argument languages.

4.3 Topic drop?

- ⤴ Topic drop or 'pronoun zap', as found in modern German (Ross 1982; Trutkowski 2011):
 - A topic in SpecCP may remain null.
 - Restricted to root clauses.
 - Advantages for early Germanic:
 - not tied to rich morphology (though cf. Trutkowski 2011)
 - may drop objects as well as subjects
 - Disadvantages:
 - Examples of RefNSs in yes-no questions exist (Axel 2007: 304–305)
 - Examples exist with filled SpecCP, e.g. (1) above from OHG, (12) from OS.

- (12) *lîbes uueldi ina bilôsien, of he mahti gilêstien sô*
 life.GEN would him take if he could achieve so
 'he_i would take his_j life if he_i could'
 (*Heliand* 1442)

4.4 Partial null argument languages?

However, other languages are like OHG and OS in not fitting very well into the traditional null argument typology:

- ⤴ In formal and written Finnish, for example...
 - ...1st and 2nd person pronouns can always be left unexpressed in finite contexts.
 - ...3rd person pronouns can be left unexpressed when 'bound by a higher argument, under conditions that are rather poorly understood' (Holmberg 2005: 539).
 - ...referential objects may also be unexpressed in similar contexts.
- ⤴ Hebrew has a similar distribution in the past and future (Vainikka & Levy 1999: 615)
- ⤴ Also Marathi, Russian, Brazilian Portuguese?

These could be classed as 'a separate type of null-argument language' (Holmberg & Roberts 2010: 10–11). Holmberg's (2010: 101–104) analysis:

- ⤴ RefNSs in canonical null subject languages are ϕ Ps that are incorporated into the verb in T^0 .
 - The intuition: In canonical null subject languages, the subject is **in the verb**.
 - T^0 has an uninterpretable D-feature ([uD]), which needs to be checked/valued in order for the (null) subject to be referential.

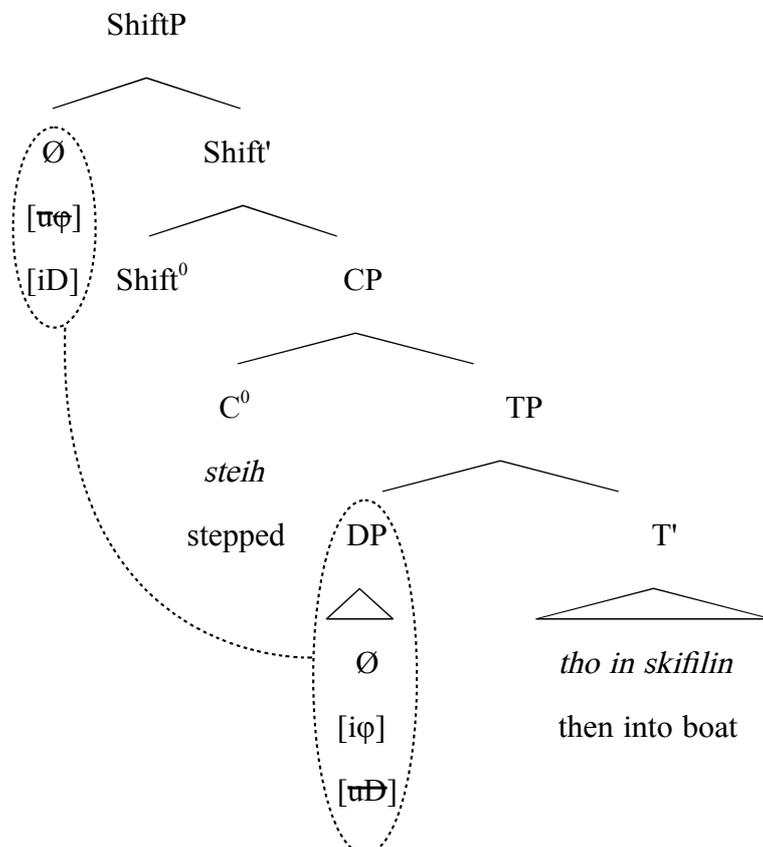
- ⤴ RefNSs in partial null subject languages are silent DPs with an uninterpretable D-feature.
- ⤴ [uD] features need to be valued by Agree with a higher element.
- ⤴ Finnish has two ways of valuing the [uD] feature on the subject DP:
 - In the case of 1st and 2nd person null subjects, it is valued by agreement with operators in the speaker (Λ_A) or addressee (Λ_P) projections in the left periphery.
 - In the case of 3rd person referential null subjects, it is valued through control.

My proposal for OHG and OS:

- ⤴ 1st and 2nd person referential null subjects are not generally available, because an Agree relation can't be established between left-peripheral elements and the [uD] DP.
- ⤴ 3rd person referential null subjects have their [uD] feature valued by an aboutness topic operator in the left periphery (unavailable in Finnish).
- ⤴ Null arguments in subordinate clauses are comparatively rare.
 - This can be captured if subordinate finite clauses in OHG and OS are islands with respect to agreement and do not always project a complete and active left periphery (cf. Haegeman 2006).

A sample configuration for null subjects is given below.

Licensing of null subjects in OHG/OS (= example (2) above)



- ⤴ Null objects can also be derived if a [uD] object ends up higher in the derivation than the subject by independent means.
- ⤴ A final important feature of partial null subject languages, according to Holmberg (2005: 540), is that they permit generic null subjects. Generic null subjects are certainly possible in OHG and OS, as illustrated by (11), though the use of *man* in this role is more common.
- ⤴ It thus seems that there is a plausible case to be made for OHG and OS as partial null argument languages.

Are there any other languages with null subjects in the third person only? Yes: Shipibo (Camacho & Elías-Ulloa 2010), Old North Russian (Kwon 2009), Old English (van Gelderen 2000, Walkden 2013), and Old Icelandic/Old Norse (Sigurðsson 1993, Rosenkvist 2009, Walkden 2012).

5. The diachrony of null arguments in Germanic

Looking more broadly across early Germanic:

- ⤴ Old Norse-Icelandic and (some texts in) Old English display very similar properties to OHG and OS with regard to RefNSs.
- ⤴ Runic Northwest Germanic does not provide much clear evidence: all referential pronominal subjects are 1st person, and 2 of 14 are omitted (Antonsen 2002: 188–189).

Not unreasonable, then, to reconstruct a partial null argument system for Proto-Northwest Germanic under identity among all the daughter languages. What about Proto-Germanic? Here, Gothic becomes relevant.

- ⤴ Gothic:
 - Non-expression of pronominal subjects is the norm.
 - BUT when the Greek *Vorlage* and the Gothic text differ, it is usually the Gothic that has an overt pronoun (Ferraresi 2005: 49).
 - Nevertheless, Fertig (2000) and Ferraresi (2005) independently conclude that RefNSs were a grammatical possibility in Gothic.
 - Referential null objects can also be found (though they are uncommon).
- ⤴ If we can hypothesize that, like Greek, Gothic was a consistent/canonical null subject language...
- ⤴ ...and if, as I have argued elsewhere (Walkden 2012: 235), partial null argument systems normally develop from canonical null subject systems...
- ⤴ ...then we might be tempted to reconstruct Proto-Germanic as a canonical null subject language on criteria of directionality.
- ⤴ Either way, Proto-Germanic must have been *some* kind of null subject language; cf. Grimm (1837: 203), Paul (1919: 22), Hopper (1975), Fertig (2000: 8).

6. Summary and conclusions

- ⤴ Many OHG and OS texts reflect a null-subject-permitting grammar.
- ⤴ Clear patterns can be seen in those texts that robustly exhibit referential null subjects.
 - RefNSs are rare in subordinate clauses.
 - RefNSs are rarer in the 1st and 2nd persons than in the 3rd person.
 - Generic inclusive null subjects can be found.
 - Referential null objects can also be found.
- ⤴ OHG and OS null arguments cannot be accounted for by rich agreement or topic drop, but...
- ⤴ OHG and OS can be analysed as partial null argument languages in the sense of Holmberg (2010).
 - This has implications for comparative work on early Germanic (Rosenkvist 2009, Walkden 2012) and for the typology of null argument languages in general.
- ⤴ We can confidently reconstruct Proto-Northwest Germanic as a partial null argument language, and less confidently reconstruct Proto-Germanic as a more canonical null argument language.

References

- Abraham, Werner. 1991. Null subjects: From Gothic, Old High German and Middle High German to Modern German. From pro-drop to semi-pro-drop. *Groninger Arbeiten zur germanistischen Linguistik* 34, 1–28.
- Antonsen, Elmer H. 2002. *Runes and Germanic linguistics*. Berlin: Mouton de Gruyter.
- Axel, Katrin. 2005. Null subjects and verb placement in Old High German. In Stephan Kepser & Marga Reis (eds.), *Linguistic evidence: empirical, theoretical and computational perspectives*, 27–48. Berlin: Mouton de Gruyter.
- Axel, Katrin. 2007. *Studies on Old High German syntax: left sentence periphery, verb placement and verb-second*. Amsterdam: John Benjamins.
- Axel, Katrin, & Helmut Weiß. 2011. Pro-drop in the history of German from Old High German to the modern dialects. In Melani Wratil & Peter Gallmann (eds.), *Null pronouns*, 21–52. Berlin: Mouton de Gruyter.
- Behrmann, Adolf. 1879. *Die pronomina personalia und ihr Gebrauch im Hêliand*. Marburg: C. L. Pfeil.
- Braune, Wilhelm, & Hans Eggerts. 1975. *Althochdeutsche Grammatik*. 13th edn. Tübingen: Max Niemeyer.
- Camacho, José, & José Elías-Ulloa. 2010. Null subjects in Shipibo switch-reference systems. In José Camacho, Rodrigo Gutiérrez-Bravo & Liliana Sánchez (eds.), *Information structure in indigenous languages of the Americas: syntactic approaches*, 65–85. Berlin: Mouton de Gruyter.
- Cordes, Gerhard, & Ferdinand Holthausen. 1973. *Altniederdeutsches Elementarbuch*. Heidelberg: Carl Winter.
- Eggenberger, Jakob. 1961. *Das Subjektpronomen im Althochdeutschen: ein syntaktischer Beitrag zur Frühgeschichte des deutschen Schrifttums*. Grabs: self-published.
- Ferraresi, Gisella. 2005. *Word order and phrase structure in Gothic*. Leuven: Peeters.
- Fertig, David. 2000. Null subjects in Gothic. *American Journal of Germanic Linguistics & Literatures* 12, 3–21.
- Gelderen, Elly van. 2000. *A history of English reflexive pronouns: person, self, and interpretability*. Amsterdam: John Benjamins.
- Grimm, Jacob. 1837. *Deutsche Grammatik, IV: Syntax*. Göttingen: Dieterichsche Buchhandlung.
- Haegeman, Liliane. 2006. Conditionals, factives and the left periphery. *Lingua* 116, 1651–1669.
- Held, Karl. 1903. *Das Verbum ohne pronominales Subjekt in der älteren deutschen Sprache*. Berlin: Mayer & Müller.

- Holmberg, Anders. 2005. Is there a little *pro*? Evidence from Finnish. *Linguistic Inquiry* 36, 533–564.
- Holmberg, Anders. 2010. Null subject parameters. In Theresa Biberauer, Anders Holmberg, Ian Roberts & Michelle Sheehan (eds.), *Parametric variation: null subjects in Minimalist theory*, 88–124. Cambridge: Cambridge University Press.
- Holmberg, Anders, & Ian Roberts. 2010. Introduction: parameters in Minimalist theory. In Theresa Biberauer, Anders Holmberg, Ian Roberts & Michelle Sheehan (eds.), *Parametric variation: null subjects in Minimalist theory*, 1–57. Cambridge: Cambridge University Press.
- Hopper, Paul J. 1975. *The syntax of the simple sentence in Proto-Germanic*. The Hague: Mouton.
- Kwon, Kyongjoon. 2009. The subject cycle of pronominal auxiliaries in Old North Russian. In Elly van Gelderen (ed.), *Cyclical change*, 157–184. Amsterdam: John Benjamins.
- Müller, Gereon. 2005. Pro-drop and impoverishment. In Patrick Brandt & Eric Fuß (eds.), *Form, structure and grammar: a festschrift presented to Günther Grewendorf on the occasion of his 60th birthday*, 93–115. Tübingen: Narr.
- Neeleman, Ad, & Kriszta Szendrői. 2007. Radical pro drop and the morphology of pronouns. *Linguistic Inquiry* 38, 671–714.
- Neeleman, Ad, & Kriszta Szendrői. 2008. Case morphology and radical *pro*-drop. In Theresa Biberauer (ed.), *The limits of syntactic variation*, 331–348. Amsterdam: John Benjamins.
- Paul, Hermann. 1919. *Deutsche Grammatik, Teil IV: Syntax*, vol. 3. Tübingen: Niemeyer.
- Rohrbacher, Bernhard. 1999. *Morphology-driven syntax: a theory of V-to-I raising and pro-drop*. Amsterdam: John Benjamins.
- Rosenkvist, Henrik. 2009. Referential null subjects in Germanic: an overview. *Working Papers in Scandinavian Syntax* 84, 151–180.
- Ross, John Robert. 1982. Pronoun-deleting processes in German. Paper presented at the annual meeting of the Linguistic Society of America, San Diego, California.
- Schlachter, Eva. 2010. *Syntax und Informationsstruktur im Althochdeutschen: Untersuchungen am Beispiel der Isidor-Gruppe*. PhD dissertation. Humboldt-Universität zu Berlin.
- Sievers, Eduard. 1878. *Heliand*. Halle: Verlag der Buchhandlung des Waisenhauses.
- Sigurðsson, Halldór Ármann. 1993. Argument drop in Old Icelandic. *Lingua* 89, 247–280.
- Tamburelli, Marco. 2006. Remarks on richness. *UCL Working Papers in Linguistics* 18, 439–455.
- Taraldsen, Knut Tarald. 1978. *On the NIC, vacuous application, and the that-t filter*. Ms. Massachusetts Institute of Technology.
- Trutkowski, Ewa. 2011. Referential null subjects in German. In Chris Cummins, Chi-Hé Elder, Thomas Godard, Morgan Macleod, Elaine Schmidt & George Walkden (eds.), *Proceedings of the Sixth Cambridge Postgraduate Conference in Linguistics (CamLing)*, 206–217. Cambridge: Cambridge Institute for Language Research.
- Vainikka, Anne, & Yonata Levy. 1999. Empty subjects in Finnish and Hebrew. *Natural Language and Linguistic Theory* 17, 613–671.
- Walkden, George. 2011. Heliand Corpus, a Partially Tagged Excel Resource (HeliCoPTER). <http://personalpages.manchester.ac.uk/staff/george.walkden/helicopter/>.
- Walkden, George. 2012. *Syntactic reconstruction and Proto-Germanic*. PhD dissertation. University of Cambridge.
- Walkden, George. 2013. Null subjects in Old English. *Language Variation & Change* 25(2), in press.