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Factors determining the choice of anaphora in Old High German – A survey of zero and personal pronoun usage in Otfrid

1 Introduction – Factors determining salience

This paper attempts to work towards an explanation of the variation between personal pronouns and zero pronouns in an Old High German text, the *Evangelienbuch* by Otfrid von Weißenburg. Old High German is a stage of the German language, having lasted until around 1050 AD, in which there is still considerable variation between personal and zero pronouns in anaphoric usage (Schrodt 2004: 73–75.). The study is to be understood as a pilot study; so mostly it is a review of possible factors inducing the variation. It is premature to come to a clear conclusion, in the sense, Factor A in combination with Factor B favours (or even: determines) the use of zero pronoun, while Factor C does not, but what we can do is to identify the factors that show an effect in isolation. The interplay between different factors has not been addressed here, this is left for future investigation.¹

I assume that the choice between personal and zero pronouns directly depends on the salience of the referents, in the sense of the well-known principle going back to Ariel (1990), that the more salient a referent is, the less substantial the expression is that is used to refer to this referent (cf. also Ellert 2010; Jaeger 2010:

¹ We might assume some correlations, some of which (the ones to do with animacy) are mentioned here, with others, it is not so clear. So one might assume that a correlation exists between grammatical role and the linear order of the referents. But since German is a language that allows for scrambling, and since it is not clear whether the surface order or the base order would play a role, one first would have to determine whether there is a correlation. But this is beyond the scope of this paper which only is to be taken as a very first step.

Note: This paper basically goes back to a talk given at the workshop on “Information Structural Evidence in the Race for Salience” hosted by Anke Holler and Miriam Ellert at the 35th Annual Meeting of the DGfS March 13 to 15 at Potsdam University, Germany. My thanks goes to the audience, especially Katrin Axel, Miriam Ellert, Sonja Gipper, Petra B. Schumacher, and Stefan Hinterwimmer for their comments. I also want to thank two anonymous reviewers for their helpful comments. All remaining errors are mine.

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24; de la Fuente and Hemforth 2013; Özge, Özge, and von Heusinger 2016; Runner and Ibarra 2016; Schumacher, Dangl, and Uzun 2016 among others).² That means, zero pronouns as the maximally unsubstantial referring expression should refer to referents if they are maximally salient, while personal pronouns, being slightly more substantial (at least they have a phonetic form), should refer to referents if they are still highly salient, but not quite so as the ones zero pronouns refer to. As Ariel's (1990) principle should be an effect of both, economy in language use and the cognitive capacity of human beings in general, it should constitute a language universal. As such we should expect it to hold also for historical stages of any given language (cf. Petrova and Solf 2010).

Salience can be understood as the degree of relative prominence of a unit of information (cf. Chiarcos, Claus, and Grabski 2011). In more cognitive terms, salience is an effect of activation: Some referents are more strongly activated than others and thus more easily accessible to the language producer and the language comprehender. The easier the access to a referent is, the more salient it is (cf. Gernsbacher 1989). This is, of course, highly dependent on the linguistic and extralinguistic context. So, a salient referent can be defined as a referent that is at the center of attention at a given point in discourse and thus prominently represented in the mental discourse models of the participants in a discourse at that point (cf. Kaiser and Trueswell 2011; de la Fuente and Hemforth 2013).

But what are the factors that determine the salience of a referent in discourse? A number of factors have been proposed in the literature, many of which are enumerated on the following non-exhaustive list:

- (discourse) topichood (Bosch and Umbach 2007; Kaiser and Trueswell 2008; Pander Maat and Sanders 2009; Jasinskaja et al. 2015)
- centerhood (Speyer in print)
- hierarchical discourse organization (Schlachter 2011)
- first mention (Gernsbacher and Hargreaves 1988; Bosch and Umbach 2007; Ellert 2010)
- recency (Clark and Sengul 1979)
- grammatical role of the antecedent (Grober, Beardsley, and Caramazza 1978; Carminati 2002; Bosch and Umbach 2007)
- subordination of the clause (Miltakaki 2003)
- type of connector (Holler and Suckow 2016)
- verb type (Rudolph and Försterling 1997)
- thematic role (Kaiser, Li, and Holsinger 2011; Schumacher, and Dangl, and Uzun 2016)

² This view is contested e.g. by Kaiser and Trueswell (2008).

- animateness (Bittner and Kuehnast 2012)
- information structural status (Arnold 1999; Ellert 2010)
- inherent causality (Garvey and Caramazza 1975; Holler and Suckow 2016)

Note that these factors constitute a blend of syntactic, semantic and pragmatic phenomena. This is, however, quite typical (see e.g. de la Fuente et al. 2016). The question this paper addresses is which factors constituting salience are relevant for the choice of anaphoric expression in Old High German. In the end it will become apparent that it is not possible to pinpoint one factor, but that several factors show some effect. The progress of the argumentation is as follows: In Section 2, some properties of the selected Old High German text are presented, the *Evangelienbuch* by Otfrid von Weißenburg. The corpus study is presented in Section 3, the analysis follows in Section 4, followed by a brief discussion.

2 The Old High German picture

The term Old High German (OHG) denotes a group of West Germanic dialects that were spoken and written between c. 750 AD and 1050 AD. They share a number of characteristics, among which is the defining property (which distinguishes OHG from other contemporary West Germanic varieties such as Old Saxon or Old English), i.e. the full or partial application of a sound shift called the *Zweite Lautverschiebung* or *Hochdeutsche Lautverschiebung* (second / High German sound shift).

The problem with OHG is that it is attested only very unevenly (on the problems in general see Fleischer 2006). It is not a matter of quantity: There is a fair amount of material extant. Unfortunately, virtually all of this data is not immediately usable for syntactic research, as more or less all extant prose texts are translations from Latin, and the few texts that are no translation are in verse. So we have compromised data in all cases. The research on anaphora and anaphora resolution focused on translation texts up to now. The method here is to take only *Kontrastbelege* into account, that is: translation clauses that deviate in at least one syntactic parameter from the Latin original (see Petrova and Solf 2010 on Tatian, Schlachter 2011 on Isidor).

In the present study, another text is taken as basis, namely the *Evangelienbuch* by Otfrid von Weißenburg. I am aware that this will not enable me to make statements about OHG in general, but only for Otfrid, but as this is a pilot study for a more comprehensive project on anaphora usage in OHG, this shortcoming might be excused. This text is an epic text in verse that is loosely based on Tatian's Diatessaron, a Gospel harmony that was quite popular in Central Europe in

the 9th century AD. Aside from renarrating the content of the Gospel harmony, the author inserts short sermons; furthermore, there are quite elaborate dedication texts framing the work. The author, Otfrid von Weißenburg, composed this text around 870 AD. Weißenburg, today Wissembourg, is in the Northern Alsace, a few kilometers south of the German/French border near Bad Bergzabern. This text is interesting also from a poetological perspective, as this is one of the first German texts using end rhyme. This feature was extremely innovative for this period (for philological information on the text see Haubrichs 2003).

This opens up the question whether it is possible at all to use a poetic text for the present purpose. We have to distinguish here between poetic texts that follow a strict syllable-counting meter (such as e.g. 18th and 19th century German lyric by Goethe, Schiller, Mörike etc.) and poetic texts that follow a more loosely knit metrical pattern. Otfrid (as indeed all Old High German and most of the earlier Middle High German poets) falls into the second category. His verse is relatively archaic in that it counts only the peaks (two per half-line) and leaves open the number of syllables constituting the troughs. This phenomenon is known as *Freie Senkung*. In a verse with *Freie Senkung*, it is irrelevant, whether anaphors, being obligatorily unstressed elements, are realized as zero pronouns, personal pronouns or demonstrative pronouns, as the presence or absence of an anaphoric pronoun does not help to reach a given number of trough syllables – simply because the number of unstressed syllables between the peaks or on either side of them is arbitrary. So we can exclude metrical considerations as a factor for the realization of an anaphor by an overt or zero pronoun. Consequently, Otfrid’s *Evangelienbuch* is usable for an investigation of this parameter (cf. for a different view Eggenberger 1961: 41–43, 54–55.).

For the present study, a selection of Otfrid³ was searched for non-full noun phrase subjects, that is, subjects that are referred to by means of an overt pronoun or a zero pronoun. The search was done manually. The text is available in digital format, but not in parsed form, so automated search for zero pronouns is not possible. The anaphoric expressions were fed into a database (Excel-sheet)

³ The selection comprised: Ad Ludovicum; I,1; I,3; I,5; I,11; II,1;II,8; II,9; II,10; III,14; IV,1; IV,4; IV,18; V,19. The numbers are taken from Erdmann’s edition and are to be read as follows: book, chapter, line, e.g. 3.14 means: 3rd book, 14th chapter; 1,11,37 means: 1st book, 11th chapter, 37th line within the chapter. Ad Ludovicum is a preface that is not included in the book count. A guiding principle in selecting the chapters was to avoid passages in which there is direct speech or otherwise a change of perspective. The selection and coding was done with the aid of Vollmann-Profe’s bilingual selection of several chapters from Otfrid. The reason for this was that it offered an objective mode of resolving potential ambiguities in anaphoric reference, by simply taking the reference resolutions of the interpreter as basis. Otherwise, the text follows Erdmann’s edition from 1973.

and coded for some of the factors that are discussed in the literature (see above), namely whether the anaphoric expression functions as discourse topic, what is the distance between antecedent and anaphor, whether the anaphor stands in a subordinated clause, whether the anaphor is in a syntactic configuration in which it is considered to be bound by its antecedent, what is the verb type of the clause containing the anaphor, what thematic role does the anaphor occupy and what degree of animacy the referent of the anaphoric expression has. Some of these parameters apply to the respective antecedents as well, but note that the focus is always on the anaphoric expressions. Cases in which a clear assignment to a given parameter was impossible were left out of the calculations, therefore the numbers in the tables reporting single parameters do often not reach the total token number as reported in Table 1 on page 208. I want to point out again that the research reported in this paper has the character of a pilot study, more work on this subject is definitely needed.

3 Salience in Otfrid: the data

3.1 Zero pronouns in Otfrid: pro-drop or topic-drop?

A question that has to be addressed in this context is whether the variation between zero pronouns and personal pronouns is due to any non-grammatical factors or whether it is a case of grammatically conditioned pro-drop.⁴ If we find clear structural conditions under which zero pronouns occur regularly, and if

⁴ Pro-drop refers to the phenomenon that subjects are never overtly realized when they refer to a given referent (that is, when no-pro-drop languages such as Modern English or German would use a pronoun). It is assumed that this is a grammatical parameter meaning that it does not depend on pragmatic factors such as topichood and the like whether a subject pronoun is realized, but that it is either categorically not realized (in classical pro-drop languages such as Latin or Italian) or that the conditions under which it is realized or not are determined purely by syntactic configurations (partial pro-drop). Topic-drop, on the other hand, refers to the phenomenon that given referents that function as a topic, be they subjects or not, can be left out. Note that this is a purely pragmatic condition; languages that show topic-drop usually realize subject pronouns, that is, they are no-pro-drop-languages. Modern German, for instance, is a no-pro-drop language which means that omission of a subject pronoun under normal circumstances leads to an ungrammatical sentence (i), but under certain conditions the omission of an expression referring to a topical referent is acceptable (ii). Note that the topic is here not the subject, but topic-drop with subjects is possible too (iii). (Footnote continues on next page.)

this condition explains all cases, we might assume that the variation is simply a question of contexts in which the conditions of pro-drop are fulfilled and contexts in which the conditions of pro-drop are not fulfilled.⁵

The issue has been addressed repeatedly in the previous literature. Eggenberger (1961) assumes that subject zero pronouns in Old High German are in general due to Latin influence, Latin being a pro-drop language. All writers are potentially subject to Latin inferences, as there existed no writer of Old High German texts who was not highly proficient in reading and writing Latin. This goes of course also for Otfrid, who prefaced his *Evangelienbuch* with a dedication to Liutbert, then archbishop of Mainz, composed in Latin. But the treatment of subject pronouns is rather a matter of translation technique, how close to the original the translator wants (or needs) to stay, than a “genuine” calque due to unconscious influence. So one might object that being proficient in Latin does not automatically have as a consequence to compromise the syntactic rules of the mother tongue; for example, modern classicists are highly proficient in reading and writing Latin as well without having this interfere with their usage of anaphoric expressions. So, if there is variation in the texts, there must also be some variation in the language as it was in use at that time. Even if the Latin model was looming eminently, a writer like Otfrid, composing a free-standing (in the sense of: not translated) work of epic, would not compromise the rules of the Old High German syntax in that respect. Moreover, in contrast to the scholars who worked on translations such as Tatian or Isidor, Otfrid wrote predominantly for a non-clerical person, King Ludwig “the German”, who probably was not proficient in Latin and was more interested in having a smooth, understandable text at his command. In fact, Otfrid

i. *Uller ging nach Hause. Dann öffnete *(✓er) ein Bier*
 Uller went to house. Then opened he a beer
 ‘Uller went home. Then, he opened a bottle of beer.’

ii. A: *Gehst du mit ins Kino? Sie zeigen “Ocean’s Eleven.”*
 go you with into=the cinema? they show Ocean’s Eleven
 B: *✓(✓Den) hab ich schon gesehen.*
 this-one have I already seen
 ‘A: Will you join me to the cinema? They show Ocean’s Eleven. B: I already saw this one.’

iii. A: *Hast du ihn gefragt? – B: Ja. ✓(✓Er) will nicht.*
 have you him asked yes he wants not
 ‘A: Did you ask him? B: Yes. He doesn’t want to.’

5 The omission of subject pronouns (though perhaps not pro-drop in the strictest sense) is still in operation in Modern German, see e.g. Trutkowski (2011) and literature cited therein.

himself says so, in his dedication to Luitbert and in I,1,119–122. So the variation in zero versus overt pronouns probably reflects the state of the Old High German language in use around 870 AD.

Hopper (1975) goes in the same direction in stating that even for Proto-Germanic, “the use of a pronominal subject was usual” (Hopper 1975: 31–32). So in his opinion, Old High German could not be a pro-drop language, as even its predecessor was no pro-drop language.

By contrast, Axel (2007) and Axel and Weiß (2011) concentrate on a pattern, reported e.g. in Eggenberger (1961: 94, 168), that subject zero pronouns are predominantly to be found in matrix clauses. They conclude from that that the omission of an overt pronoun had to be licensed by agreement morphology on the verb. The condition for licensing was that the verb linearly preceded the site where the pronoun would be expected to stand if it was realized overtly. So, for Axel (2007), Old High German was a partial pro-drop language. Axel and Weiß (2011) follow the same line. They see OHG as a point in the development from unrestricted pro-drop in Proto-Germanic to partial pro-drop in the modern dialects which is constrained by pronominal agreement and complementizer agreement.⁶

Schlachter (2011) takes a position in-between (mostly following Schrodtt 2004: 73), in that she states that in subject position, overt personal pronouns are the normal case, whereas zero subject pronouns are possible (Schlachter 2011: 170). She assumes, contra both Eggenberger (1961) and Axel (2007), that zero subject pronouns are neither restricted to *calque*, nor restricted to clauses in which the verb is in the C-position. She recognizes a pattern: Zero pronouns are particularly frequent with verbs of saying, simple (that is: non-periphrastic) verb forms and in clauses that are in a coordinating discourse relation to their clausal antecedent, thus continuing the main line of the narrative (cf. Asher and Lascarides 2003). So the omission is partly a case of topic-drop (the last-mentioned condition), partly influenced by other factors. Walkden (2014: 189–190) is also not conclusive in what stance to take, although he seems to suggest that he prefers a topic-drop analysis.

In sum, we can say that the problem has not been solved conclusively. In this paper, an attempt is undertaken to add a new facet to the discussion, by investigating a particular text, Otfrid’s *Evangelienbuch*, for salience conditions under which the zero pronoun can stand; optimally, by that we can identify factors that

⁶ The development is a change in licensing of *pro* by Agr: Originally, *pro* could be licensed by any Agr feature in C that c-commands *pro* (the verb moves to C in main clauses, therefore the restriction of pro-drop to main clauses in OHG), in the modern dialects, it can only be licensed by a pronominal Agr (Axel and Weiß 2011: 38). This is not to say that Axel’s (2007) analysis excludes the possibility of topic-drop; as these are two differently constrained phenomena, they need not be in complementary distribution.

determine the choice of anaphora. It is important to mention that the studies mentioned above do not focus on pronominal usage in Otfrid, but rather investigate pronominal usage in either all of OHG or a portion of the OHG texts different from the present study. So it is questionable whether the results from these studies can be inferred directly to Otfrid. There are two points at issue. First: The production conditions of Otfrid are quite different from the production conditions of most other OHG texts, which are closely based on a Latin source text. Otfrid is partly freely composed, partly in a very loose relationship to a Latin pretext, so direct influence from the source text is not to be expected. Second: Otfrid was composed around 870 AD, by that significantly later than e.g. the Isidor translation. So features, which might show up in the Isidor text, might have changed by the time Otfrid wrote his text.

In trying to apply the previous literature to the text under discussion, Eggenberger (1961) can be discarded right at the beginning, as the conditions under which he allows zero pronouns are not given in our text, being a non-translational text. Instead, it might be fruitful to look at Axel (2007) in more detail and see whether her expectations do hold for Otfrid.

In the text selection, there are 55 examples of verb-final clauses with zero pronoun. If there are 120 examples of zero pronouns, this is almost half of all cases (46%), a number not to be neglected. So, for Otfrid, the condition of pro-drop identified by Axel (2007) obviously does not hold. This indicates that at least these cases are instances of topic-drop, that is: omission of a subject pronoun for information structural reasons, rather than pro-drop.⁷

Still, it might be the case that the omission of the subject pronoun might be due to other structural constraints. Possible candidates are coordination and subject equity of a main clause and a subordinate clause.

Let us turn first to coordination. It is important to point out that, although of course zero pronouns do occur in coordination in the text, quite often they do not. Furthermore, coordination does not always lead to the omission of a pronoun. So, although cases of coordination with zero pronoun in the second conjunct can be analysed as instances of VP-coordination (e.g. Burton and Grimshaw 1992; McNally 1992), we still would have to determine under what circumstances VP-coordination holds and under what conditions IP- or CP-coordination holds; in the latter cases we would have real zero pronouns.

Let us now turn to the possibility that zero pronouns might be interpreted as the main clause subject per default. We might have to ask whether this would qualify as a syntactic condition on pro-drop in the first place, as the subject ante-

⁷ Diary drop can be excluded, as there are only third person referents included in this database.

cedent as realization of these features is not in the same clause and so the conditions on locality would be violated. This is in contrast to Axel's (2007) explanation that the agreement marking might be a sufficient representation of the ϕ -features and thus be able to replace the subject pronoun, the phonetically empty *pro* being c-commanded by the verb (rephrasing Axel 2007: 307–314). But one could speculate whether it is sufficient binding if a subject c-commands and consequently binds another subject in a subordinate clause, so that it does not have to be specified again. Apart from the fact that this rather is long distance binding (which is arguably less constrained by syntax, if at all, but rather by discourse structural considerations), there are clear counterexamples to that hypothesis. If this were so, we should expect these cases to be confined to subordinate clauses with the same logical subject as their matrix clause. We however find counterexamples, namely zero subjects that are coreferential to the subjects in the preceding clause, but which are in a clause not dominated by the preceding clause (1). We even find zero subjects that are not coreferential to the subject of the preceding clause and are in a clause not dominated by the preceding clause (2).

- (1) *In thésomo ist ouh scínhaft, so fram so inan lázit thiú craft, thaz ér*
 in this is also apparent so good so him lets the power that he
ist io in nóti gote thíononti;
 is always in necessity God_{dat} serving
∅ Selbaz ríchi sinaz ál rihtit scóno, soso er scal,
 itself kingdom his all governs_{3.sg.ind.} beautifully as he shall_{3.sg.ind.}
 'It is also apparent in him, who is as good as the power allows him to be,
 that he is by necessity a servant of God. He governs all this kingdom as
 excellently as is his duty.'
 (Otfrid, Ad Lud., 65–67)
- (2) *Iz ist ál thuruh nót so kléino girédinot*
 it is all by necessity so neatly presented
(∅ iz dúnkál eigun fúntan, zisámáne gibúntan)
 it dark have_{3.pl.ind.} found together bound
 'It is all by necessity very artfully presented. They (= the authors of ancient
 epics) have found it dark and composed in a dark manner'
 (Otfrid 1,1,8–9)

Most noteworthy in this respect are cases in which the zero pronoun stands in a subordinate clause without complementizer (cf. Schrodtt 2004: 147). Example (3) shows a case of non-coordinated zero pronoun in the main clause (marked as \emptyset_a),

followed by a zero pronoun in a complementizerless complement clause (marked as \emptyset_b).

- (3) *Tho bót si mit gilústi thio kíndisgun brústi*
 then offered_{3.sg.ind.} she with joy [the child-like breasts]_{acc.}
ni méid \emptyset_a sih, suntar si óugti.
 NEG dodged_{3.sg.ind.} herself, but she showed_{3.sg.subj.}
 \emptyset_b then gotes sún sougti.
 [the God_{gen} son]_{acc} nursed_{3.sg.subj.}
 ‘Then she offered gladly her maiden-like breasts (to the babe). She was not
 ashamed, but she showed that she nursed God’s son.’
 (Otf rid 1,11,37–38)

So, many cases of zero subject pronoun in Otf rid are not instances of pro-drop but rather of topic-drop. If this is so, that is: if there are no clear-cut grammatical constraints on the omission of pronouns that hold for all cases, it might be fruitful to search for other factors favouring zero-pronouns. This is the objective of this essay.

3.2 Types of anaphoric expressions

A first rough count reveals a distribution not unlike what Schlachter (2011) found in her text corpus (Table 1).

Table 1. Distribution of anaphora in the Otf rid text sample.

type of anaphor	number of tokens	percentage
zero pronouns	121	21.3
personal pronouns (er/sie/es)	425	75.0
simple demonstratives (der/die/das)	15	2.6
complex proximal demonstratives (dieser/-/s)	4	0.7
complex distal demonstratives (jener/-/s)	2	0.4
total	567	

Zero pronouns are more frequent than what Schrod t (2004: 74) reports; he says the relation between zero pronouns and personal pronouns is roughly 1 : 8. A similar relation is reported by Axel (2007: 306), who reports 597 zero pronouns as opposed to 4753 personal pronouns. This gives a relationship of roughly 1 : 8 as well. A potential reason is that I had a high percentage of narrative passages in my text sample. Hinterhölzl and Petrova (2011) showed that a linguistic parameter such as

verb-first versus verb-second syntax is directly dependent of discourse relations. It might well be that the same holds for a parameter such as the realization of anaphoric expressions. This is relevant insofar as narrative passages tend to have a high percentage of coordinating discourse relations as opposed to argumentative passages.

Note that demonstrative pronouns on the whole are relatively rare in the selected text passages; the cases that are in the sample have a clearly deictic reading, sometimes slightly contrastive (4), or are discourse anaphors (5).

- (4) *Thaz íst ouh dag hórnēs joh éngilliches gálmēs* [...] *that is also day horn_{gen} and [angelic sound]_{gen} that-is*
Theist dag ouh nībulnisses joh wīntesbruti, léwes!
day also fog_{gen} and wind's bride_{gen} alas
 'That is also the day of the last trumpet and song from the angels. . . . That is also the day of fog and storm, alas!'
 (Otfrid 5,19,25,27)
- (5) *Thie dāti man giscríbe: theist mannes lúst zi líbe*
the deeds man writes that-is man_{gen} fun to life
nim góuma thera díhta: thaz húrsgit thina dráhta
take heed [the poetry]_{gen} that stimulates thy mind
 'When someone writes down the deeds, that is fun for man's life. Be engaged with poetry, that stimulates your mind.'
 (Otfrid 1,1,17–18)

When comparing the state of Old High German, as apparent from Otfrid, to Modern German with respect to anaphora resolution, we encounter two conspicuous differences. First: Zero subject pronouns were obviously much more frequent in Old High German than they are today. In Modern German, the use of zero pronouns is restricted to coordination ellipsis, which can be analysed as VP coordination. In Old High German, the use of zero pronouns was apparently less restricted. Second: Demonstrative pronouns are obviously not utilized to denote different degrees of salience. In Modern German, by contrast, there is a direct correspondence between salience and the use of personal and demonstrative pronouns in that demonstrative pronouns regularly refer to the less salient referent. So they are used to resolve ambiguities of anaphoric reference (see e.g. Bosch and Umbach 2007). In Old High German, this was not the case. In Speyer (in print) it is shown that the centering status, one potential indicator of salience, of the referents is more or less irrelevant for the choice of anaphoric expressions in Old High German. This observation ties in with the marginal role demonstrative pronouns play in Otfrid.

A question that comes to mind is, whether the functional opposition between personal pronouns for more salient referents and demonstrative pronouns for less salient referents, which we observe in Modern German (see e.g. Ellert 2010 and references therein), had as an Old High German equivalent the opposition between zero pronouns and personal pronouns. Judging from the bare numbers, for Otfrid this cannot be the case. The relation between zero pronouns and personal pronouns should then be much more in favour of zero pronouns. But it might be that this opposition held in earlier stages of Old High German, for which we have no records, but remnants of which might still be palpable in the later documents that are available for us. In the present paper we will see that there is evidence in favour of this hypothesis.

4 Conditions for zero subject pronouns in Otfrid

Let us look at some of the potential factors for salience and see whether they can be shown to play a role for the variation of zero and personal pronouns. I will discuss all factors regardless of whether they turn out to play a role just in order to give a complete report.

4.1 Grammatical function of the antecedent

We begin with the grammatical function of the antecedent. The counts are reported in Table 2.⁸ The abbreviation “OPr” stands for zero pronoun, “PePr” for personal pronoun. In the top data row, the antecedents of zero pronouns are counted by grammatical function (s = subject, ao = accusative object, do = dative object, go = genitive object, attr = attribute to a noun phrase, adv = adverbial, pr = predicat-

⁸ Here, and in the other tables, both the proportion of zero pronouns per condition (columns) and the proportion of conditions within the number of zero pronouns / PePr (rows) is reported. I think both ways of counting have some explanatory power: If we compare, for example, the percentages of zero pronouns between subject antecedents and accusative objects antecedents, we see that the proportion with subjects is much higher than the proportion with objects (Table 2). This can be interpreted such that the choice of a zero pronoun was made more readily with subject antecedents as compared to object antecedents. Likewise, if we compare the percentage of subject antecedents among OPr with the percentage among PePr, we see that over 90% of zero pronouns have a subject antecedent, whereas only three quarters of PePr have a subject antecedent. This can be interpreted in a similar fashion, that zero pronouns are favoured with subject antecedents, whereas PePr show a more even distribution with respect to the role of antecedent. Both interpretations support each other.

ive). In the second data row, the antecedents of personal pronouns are counted for comparison. The last data row gives the percentage of resumption by a zero pronoun. The three rightmost columns give the percentage of grammatical function of zero and personal pronouns.

Table 2. Grammatical function of antecedent.⁹

	s	ao	do	go	attr	adv	pr	sum	%s	%ao	%do
OPr	111	2	4	-	3	1	-	121	91,74	1,65	3,31
comp.: PePr	310	34	38	2	20	14	3	421	73,63	8,08	9,03
sum	421	36	42	2	23	15	3	542			
%Opr	26,37	5,56	9,52	0	13,04	6,67	0	22,32			

$\chi^2 = 18.308$; $p = .001 \Rightarrow$ significant¹⁰

We see clear differences. There is a strong correlation between zero pronoun and subjecthood of the antecedent: the ratio of subject antecedents of zero pronouns is much higher than of any other functional types of antecedents, likewise is the ratio of zero pronouns higher for subject antecedents than for other antecedents. So we can say that this factor plays a role and can interpret the result such that subject antecedents are more salient than other antecedents (and are therefore more readily referred to by zero pronouns).

If we compare this finding with what Bosch and Umbach (2007) found for Modern German and the personal-demonstrative pronoun variation, we see that the two cases behave somewhat different: Bosch and Umbach state that demonstrative pronouns have a stronger preference for object antecedents (86.7% of anaphors with non-subject antecedent were demonstrative) than personal pronouns

⁹ Some examples in which the antecedent could not be identified have been left out, therefore the numbers do not add up to the values in Table 1. Likewise, in subsequent tables tokens that cannot be assigned one of the categories mentioned have been left out. To avoid zero values, I grouped the data for the calculation in the following manner: subject – accusative object – other object – attribute – other.

¹⁰ All χ^2 -calculations were done using Preacher (2001). Originally I wanted to use Fisher's test, using an online calculator (http://www.physics.csbsju.edu/stats/exact_NROW_NCOLUMN_form.html). This was the only one that would allow for more than 2x2 cells that I could find. The problem with this calculator is that it does not allow values higher than 99, so I had to use the χ^2 -test, although I am aware that it is not the test of choice for sparsely populated tables. I had to do this contrary to a recommendation by a reviewer, I am afraid. In order to avoid zero cells, some columns were combined or left out; this is indicated in each case.

have for subject antecedents (76.4% of anaphors with subject antecedent were personal pronouns). The Old High German count replicates the trend for object antecedents, here for the variation between personal (as the less salient option) and zero pronouns: 94.44% of accusative object and 90.48% of dative object antecedents are expressed by personal pronouns. As for the association of zero pronouns with subject pronouns, however, there is no correlation to be found: 26.37% against 76.4 in the Modern German study. So this data does not wholly support the assumption that the modern functional variation between demonstrative and personal pronoun is prefigured by the Old High German functional variation between personal and zero pronoun, but partly it does.

4.2 First mention

The second factor I included was first mention. We expect zero pronouns to be used preferably when referring to referents that are the first mentioned ones in the respective sentences, as those should be more salient (cf. Gernsbacher and Hargreaves 1987). The count is given in Table 3.

Table 3. First mention.

	ref. to 1st mention	ref. to other	sum	% 1st mention
OPr	80	30	110	72.72
PePr	95	183	278	34.17
sum	175	213	388	
%OPr	45.71	14.08		

$\chi^2 = 47.316$; $p < .00001 \Rightarrow$ significant

We see that this expectation is fulfilled. There is a clear correlation between zero pronouns and first mention in that almost half of the references to the first mentioned entity are realized as zero pronouns, whereas only 14% refer to other entities. And the percentage of first mentioned referents is with almost 73% more than twice as high as with personal pronouns. So this is a relevant factor. A typical example is (6): The first mentioned referent is represented by a long-distance bound personal pronoun and taken up again in the subordinate clause by a zero pronoun.

- (6) *Er uns ginádon sinen ríat, thaz ∅ súlichan kúning uns gihialt;*
 he us have-mercy his_{gen} decided that such king us sustained
 ‘He prepared his grace for us by sustaining such a king’
 (Otfrid, Ad Lud., 27)

This is a factor that has been found relevant also for the Modern German variation of personal and demonstrative pronouns, as e.g. Ellert (2010: 80–81) shows. Given that it is hard to directly compare the results of a corpus study to those of a forced-choice-questionnaire study (as Ellert 2010: 62–64), the effect seems to be overall stronger in Modern German than in Old High German. Ellert (2010: 63) reports that 97.32% of personal pronouns were resolved towards the first mentioned possible antecedent. This is higher than the 72.72% of zero pronouns referring to the first mentioned referent in Old High German. She also reports that 56.25% of demonstrative pronouns were resolved towards the second mentioned possible antecedent. This is slightly lower than the 65.83% that were found for non-first-mentioned referents in Old High German. So, again, in principle we can say that the variation between zero pronouns and personal pronouns in Old High German more or less corresponds to the modern variation between personal pronouns and demonstrative pronouns from a functional perspective, although the correlation of first mentioned to the “weaker” type of anaphor is more clear in Modern German.

4.3 Sentence type

A third factor that was investigated was sentence type. Table 4 gives the numbers in the same manner as in Table 2 (m = main clause, ac = adverbial clause, cc = complement clause, rc = relative clause, sc = subordinate clauses in sum).

Table 4. Sentence type.

	m	sc	ac	cc	rc	sum	%m	%sc	%ac	%kc	%rc
OPr	82	39	20	15	4	121	67,77	32,23	16,53	12,40	3,31
PePr	223	198	112	58	28	421	52,97	47,03	26,60	13,78	6,65
sum	305	237	132	73	32	542					
%0pr	26,89	16,46	15,15	20,55	12,5	22,32					

$\chi^2 = 13.562$; $p = .009 \Rightarrow$ significant

Also here we see some correlation between main clauses and zero pronouns. This

is the picture that is suggested by Axel's (2007) condition of a correlation between verb-first/second and zero pronouns; however, it is much less categorical than we should expect if it was a case of pro-drop after realization of finiteness features in a position c-commanding the subject position:¹¹ The percentage of main clauses as environments for zero pronouns is twice as high as that of subordinate clauses. With personal pronouns, the distribution is almost even. Also, the percentage of zero pronouns in main clauses is higher than the percentage of zero pronouns in other clause types. Note here that there are visible differences between the clause types, complement clauses showing a relatively high degree of zero pronouns, relative clauses a relatively low degree.

4.4 Presence of overt complementizer

In this context, let us go back to the complement clauses lacking a complementizer (see [3]). It is not the case that these clauses have zero pronouns as a rule, although they frequently do, even if the subject is not identical to that of the main clause. In (7) we see an example in which the subject of the complement clause is coreferent with the dative object of the main clause. Example (8), on the other hand, is an example of a complement clause without complementizer in which there is an overt subject pronoun.

- (7) *Gibót si then sar gáhun then thes lídes*
 ordered_{3.sg.ind} she then very promptly those_{dat} [the drink]_{gen}
sahun, so wás so er in giqu'ati, ∅ iz íagiliher dati
 oversaw_{3.pl.ind} so what so he them_{dat} said_{3.sg.subj} it everyone did_{3.sg.subj}
 'She (=Mary) ordered at once from those who were in charge of the drinks,
 that every one of them were to do whatever he (=Jesus) made them do.'
 (Otfrid 2,8,25–26)

- (8) *thar d'uat er zi gihúgte, er thanne hímil scutte*
 there does_{3.sg.ind} he to mention he then sky_{acc} shatter_{3.sg.subj}
 'There he mentioned that he will then shatter the sky.'
 (Otfrid 5,19,32)

¹¹ It might well be, however, that Old High German moved from a state as described by Axel (2007) in which the pro-drop parameter is depending on the c-command relation of the finite verb to the subject position to a non-pro-drop-language as Modern German is via a topic-drop phase that is attested in Otfrid.

So if there is variation we might assume again that this is not one of the conditions under which regular, grammar-induced pro-drop occurs, but rather a case of topic-drop.

We might assume this to be a factor; if the type of connector does matter for anaphor resolution (Holler and Suckow 2016), then the presence or absence of a connector – say, an overt complementizer – might matter as well. Indeed it turns out that this factor, i.e. the presence or absence of an overt complementizer – the fourth factor –, is relevant, as Table 5 shows.

Table 5. Absence or presence of a complementizer.

	subord. cl. with overt complementizer	subord. cl. without overt complementizer	sum	% +ov. compl.	% -ov. compl.
0Pr	21	18	39	53.84	46.13
PePr	172	28	200	86	14
sum	193	46	239		
%0pr	10.88	39.13	16.32		

$\chi^2 = 21.709$; $p < .00001 \Rightarrow$ significant

The rate of zero pronouns is much higher in subordinate clauses without overt complementizer. At the same time, the distribution between clauses with and without overt complementizer is almost even in the case of zero pronouns, whereas it is highly in favour of overt complementizers in the case of personal pronouns. So there is a clear correlation between zero pronouns and the absence of an overt complementizer.

4.5 Degree of embeddedness

The fifth factor I investigated was the degree of embeddedness. In German, subordinate clauses can be embedded (which means that they are structurally part of the matrix clause) or not (which means that they are adjoined peripherally). Diagnostics for embeddedness are, for instance, the relative order of matrix clause and subordinate clause (if the subordinate clause stands in the prefield or middle field of the matrix clause, we can be certain that it is embedded), intonational aspects (embedded clauses form one intonational phrase with their matrix clause), or the possibility of variable binding (only inside embedded clauses).¹² The main diagnostic used here was relative position, as it is the only one that is operational

¹² See e.g. Reis (1997) for diagnostics on embedding.

for historic texts. It might be that the differences visible between the types of subordinate clauses in Table 4 reflect the relative degree of embedding rather than the grammatical function of the clause per se. I do not report the numbers in detail here; there was no significant difference between embedded and non-embedded subordinate clauses. For determining whether the clauses are embedded, tests as known from Reis (1997) have been applied (or, rather, the examples were looked at asking whether they conform to the test criteria). The most relevant test was the position test: clauses that appear in the prefield, middle field or unambiguously in the afterfield¹³ of their matrix clause were coded as embedded.

4.6 Binding

The sixth factor was binding. The idea behind this is that an anaphor that is syntactically bound might bear a closer connection to its antecedent (9a) than an anaphor that is only long-distance bound (9b), and by that might be more salient, as it obviously must be highly accessible. Table 6 gives the numbers in the format known from the previous tables.

Table 6. Binding.

	bound	non-bound	long distance	sum	Ratio b	Ratio n	Ratio l
0pr	36	5	80	121	29,75	4,13	66,12
PePr	129	41	251	421	30,64	9,74	59,62
sum	165	46	331	542			
%0pr	21,82	10,87	24,17	22,32			

$\chi^2 = 4.16; p = .13 \Rightarrow$ not significant

13 At the right periphery of German clauses there are two positions, the afterfield (*Nachfeld*) and, further outside, the right outfield (*rechtes Außenfeld*). The latter is not part of the clause proper, as opposed to the afterfield. Non-embedded subordinate clauses stand in the right outfield. If there is material which we know to be in the afterfield, for instance, complement clauses, and there is some constituent or clause to the left of this material, we can say with a certain degree of certainty that the constituent/clause under scrutiny is in the afterfield as well.

- (9) a. *Er uns ginádon sinen ríat thaz ∅ súlichan kúning uns gihíalt*
 he us grace his prepared that such king us sustained
 ‘He prepared his grace for us by sustaining such a king.’
 (Otfrid, Ad Lud., 27)
- b. *Óba ih thaz irwéllu theih sinaz lób zellu. . .*
 if I that try that-I his praise tell
Uuanta er ist édil Franko, wisero githánko
 because he is noble Franconian of-wiser thoughts
 ‘If I try to tell his fame, . . . For he is a noble Franconian with very wise thoughts.’
 (Otfrid, Ad Lud., 9; 13)

We see that this expectation does not hold. Binding has no effect on the rate of zero pronouns. If anything, the ratio of zero pronouns is even smaller if the antecedent is in the same sentence. A clear effect is visible for cases in which the antecedent is in the same sentence as the anaphor, but is not in a syntactic configuration that it can bind (that is: c-command) the anaphor. Here, zero pronouns are clearly dispreferred.

4.7 Distance between antecedent and anaphor

The seventh factor I investigated was the distance between the antecedent and the anaphor. Theoretically, the bigger the distance between antecedent and anaphor is, the less salient should the referent be for matters of anaphoric reference. This means, we should expect the distance between antecedent and anaphor to be significantly higher with personal pronouns, being the anaphoric expression of choice for less salient referents, than for zero pronouns. Table 7 shows the results. The distance was counted in two ways: either by counting the number of explicitly mentioned other referents intervening between antecedent and anaphor, or by counting the number of clauses that intervenes between antecedent and anaphor. The count for number of referents is reported in Table 7.

Table 7. Distance between antecedent and anaphor.

	Mean distance (arithmetic mean)	standard deviation
Opr	2.2231	1.5837
PePr	2.2903	1.5627

There is no significant difference between the distance in the case of zero pronouns as compared to personal pronouns. The difference of standard deviations under the null hypothesis is 0.1628 (cf. Spiegel and Stephens 2003: 271–272). The standardized variable z is then -1861.2, which is considerably out of the area -1.96 to 1.96 which would be the area of significance on a significance level of 0.05.¹⁴ So we can dismiss this factor as well.

4.8 Discourse topic

The eighth factor under investigation was whether the anaphor represents the discourse topic. One could assume that the discourse topic should be more accessible than other referents, thus it should rather tend to be realized by a zero pronoun. The count is reported in Table 8.¹⁵

Table 8. Discourse topichood of anaphor.

	discourse topic	not discourse topic	sum	ratio discourse topic
0pr	63	58	121	52.07
PePr	259	162	421	61.52
sum	322	220	542	
%0pr	19.57	26.36	22.32	

$\chi^2 = 3.48$; $p = .06 \Rightarrow$ weakly significant

Table 8 reveals that this assumption does not hold. The distribution is on the bor-

¹⁴ The formula is: $\sigma_{X_1-X_2} = \sqrt{\sigma_1^2/N_1 + \sigma_2^2/N_2}$ (Spiegel and Stephens 2003: 271). The arithmetic means and the σ are calculated using an online-calculator (<http://rechneronline.de/durchschnitt/>). The standardized variable z is calculated using the formula $z = (X_1 - X_2) / \sigma_{X_1-X_2}$ (Spiegel and Stephens 2003: 271).

¹⁵ The sentence topic is the referent which the sentence is about (following Reinhart 1981), the discourse topic is the referent which a chunk of discourse is about. In the easiest case, this is simply the sentence topic being constant over a certain number of sentences, in a more elaborate case, it is a topic that is the sentence topic in some sentences in the course of the paragraph under discussion, but can be left intermittently so that some sentences might have a sentence topic different from the discourse topic. Discourse-topichood and sentence-topichood was coded by three annotators independently to maintain intersubjectivity in topic assignment; in conflict cases the majority of annotations won out. While there was some variation with sentence topics – that have therefore not been included as a factor here – there was largely agreement on the discourse topic for any given chunks of narrative.

derline between being significant and being not significant. If anything, the distribution shows a bias of discourse topics to be realized by personal pronouns rather than zero pronouns. This clearly contradicts the assumption from above.

4.9 Animacy

The ninth factor was animacy. As the text deals to some degree with referents of the divine sphere, I decided to code animacy relatively fine-grained, with a scale including, in this order, human referents (hum), other animated referents (an), divine or other supernatural referents (div), unanimated concrete referents (ua) and abstract entities (abs). The position of supernatural referents between animated and unanimated concrete referents is due to the consideration that supernatural referents are more abstract than any concrete animated referent, yet they are thought to be animated.¹⁶ The important fact is that supernatural referents are treated differently than human referents, as is evident if we do a χ^2 -test of only the human and the divine column. The count is given in Table 9.

Table 9. Animacy.

	hum	an	div	ua	abs	sum	%div	%hum	%an	%ua	%abs
0Pr	86	-	30	3	2	121	24,79	71,07	0	2,48	1,65
PePr	254	2	137	19	9	421	32,54	60,33	0,48	4,51	2,14
sum	340	2	167	22	11	542					
%0pr	25,29	0	17,96	13,63	18,18	22,32					

$\chi^2 = 4.612$; $p = .20 \Rightarrow$ not significant¹⁷

Only hum and div: $\chi^2 = 3.41$, $p = .06 \Rightarrow$ weakly significant

While the distribution on the whole is not significant, there are some interesting trends. Human referents have a stronger association to zero pronoun than any other type, including divine referents. On the whole the animacy scale is not replicated by the rate of zero pronouns: The relative percentage of zero pronouns gives an order human – abstract (being unarguably the bottom of the animacy scale) – divine – unanimated – animated non-human. So there is some weak effect. It is not immediately clear what causes this effect; we will return to this issue in the discussion.

¹⁶ Thanks to an anonymous reviewer for this suggestion.

¹⁷ The animated non-human column was left out for the χ^2 -calculation in order to avoid the zero cell.

4.10 Thematic role

The tenth factor was the thematic role the referent plays when referred to by an anaphor. The count is given in Table 10.

Table 10. Thematic role.

	Agens	Experiencer	Patiens	Recipient	sum	%Ag	%Exp	%Pat
OPr	91	27	3	0	121	75,21	22,31	2,48
PePr	275	124	21	1	421	65,32	29,45	4,99
sum	366	151	24	1	542			
%0pr	24,86	17,88	12,5	-	22,32			

$\chi^2 = 4.41$; $p = .11 \Rightarrow$ not significant¹⁸

Again, there is a weak effect in that zero pronouns are most frequently referring to agents. The ratio of patients in personal pronoun cases is twice as high as the ratio of patients in zero pronouns. So there is again some effect, the reasons for which are unclear.

Schumacher, Dangl, and Uzun (2016) argue that in Modern German the effect of thematic role (understood in the sense of the Thematic Hierarchy familiar e.g. from Primus 2004) is very strong, at any rate higher than order of mention and grammatical role, with which it often coincides, though.¹⁹ The effect which they find for dative experiencer verbs (the dative experiencer being referred to by the weaker pronoun, the personal pronoun) is much stronger than any effect reported here for Otfrid. We have to bear in mind, though, that in the text sample there were no instances of non-canonical case marking. Schumacher, Dangl, and Uzun's (2016) study takes exactly such cases as basis in order to tease apart the factor thematic role from potentially strengthening factors such as first mention and grammatical function. So the best we can do is to say: Old High German does somewhat display a correlation between the Thematic Hierarchy (as we know it e.g. from Primus 2004) and salience in that the higher the referent on the Thematic Hierarchy is, the more prone it is to be realized by a zero pronoun.

¹⁸ The recipient column was left out for the χ^2 -calculation in order to avoid the zero cell.

¹⁹ The effect that thematic roles play a relatively large role compared to grammatical functions shows up every now and then in doing research on German. A case in point is the linearization of objects in earlier stages of German that can be shown to follow closely the Thematic Hierarchy (cf. Primus 2004), a correlation to grammatical function being only epiphenomenal (Speyer 2015).

4.11 Verb type

Finally, the eleventh factor that was investigated was the verb type. The verbs were coded for activity (ac-_) versus state (st-_) (accomplishments and achievements being counted as activities) and whether the action is induced by the subject (_-s) or the object (_-o). The counts are presented in Table 11; %ac and %st means the sum of activities and states respectively, regardless of inducing grammatical role-bearer.

Table 11. Verb type: *aktionsart* and attribution.

	ac-s	ac-o	st-s	st-o	sum	%ac-s	%ac-o	%st-s	%st-o	%ac	%st
OPr	86	6	20	9	121	71,07	4,96	16,53	7,44	76,03	23,97
PePr	273	19	94	35	421	64,85	4,51	22,33	8,31	69,36	30,64
sum	359	25	114	44	542					384	158
%OPr	23,96	24	17,54	20,45	22,32					23,96	18,35

$\chi^2 = 2.18$; $p = .54 \Rightarrow$ not significant

There are very little differences between cases where the subject and cases where the object is the initiator of the verbal action. But we get some effect of *aktionsart* in that the subject of activity verbs is slightly more likely to be represented by a zero pronoun than the subject of state verbs. Again we might ask why this is so.

5 Discussion

5.1 The relevant factors

Of the factors that have been argued to be relevant for salience in general – and thereby for the variation in anaphoric expressions, according to Ariel's (1990) principle – the following have been found to show a significant effect in Old High German:

- Grammatical role of the antecedent: correlation subject ~ zero pronoun; object ~ personal pronoun
- First mention: correlation first mentioned referent ~ zero pronoun
- Sentence type: correlation main clause ~ zero pronoun
- Realization of complementizer: correlation absence of complementizer ~ zero pronoun

At least grammatical role and first mention have been brought forward as relevant factors for the variation in anaphoric expressions in Modern German. The correlations of the “stronger” type of anaphoric expression – demonstrative pronoun in Modern German, personal pronoun in Old High German – with the less salient referent were on the whole stronger in Old High German than the correlations between the “weaker” type – personal pronoun in Modern German, zero pronoun in Old High German – with the more salient referent. So it looks as if salience was determined in Old High German using similar factors as in Modern German, although the assignment to different anaphoric expressions is more clear-cut in Modern German than it was in Old High German. Looking back it seems as if the “old” opposition zero pronoun vs. personal pronoun was replaced by a “new” opposition personal pronoun vs. demonstrative pronoun. This process is to be thought of as gradual, and also as already having started when Otfrid was composed, so it is perhaps not so surprising that the opposition is less clear-cut in OHG than in Modern German, where the “new” opposition has hold for some centuries.

5.2 A scenario for the change in anaphoric system

We might ask what caused this replacement process. One important contributor to this process is certainly the fact that zero pronouns were being lost in the course of OHG. This loss has independent reasons which there is no need to treat in this context (see e.g. Axel 2007; Axel and Weiß 2011). But an effect of the loss of the zero pronoun option is of course that zero pronouns are not available as means of expression any more, or rather: their usage became more and more restricted so that they could not be freely used any more for denoting the most salient referent. The natural thing would be that the personal pronoun, being the second weakest referential expression, would take over the contexts in which zero pronouns formerly were in use. This would mean, however, that the opposition between the most salient referent and other referents could not be expressed manifestly by using two different types of expression. Otfrid is on the way to such a stage, and therefore the opposition between the most salient and all other referents is not represented by the choice of referential expressions as clear-cut as one should expect. What happened in German, however, is a second development that probably is quite independent of the matter under discussion here, namely the loss of deictic force on the side of the simple demonstrative pronouns. This process is probably mainly to be seen in the context of the development of the definite article out of the simple demonstrative pronoun. It has a side-effect, however, in that the – formerly deictic – simple demonstrative pronoun can be used for anaphoric reference as well; as it is more substantial than the personal pronoun, it

“steps into the breach” for expressing less salient referents so that the opposition is re-installed. There is a clear tendency in languages of the world to have a system of anaphoric expressions that distinguishes at least two degrees of salience, so this is probably a universal principle in sorting out information and in making it more easily processable. Therefore it is not surprising that a two-degree system is rebuilt after the loss of the old two-degree system.

5.3 An over-arching semantic factor?

Not all factors that could determine the salience of a referent seem to be used by OHG for determining the choice of anaphoric expressions. The following factors have been found to show only a weak effect:

- Animacy: weak correlation human referent ~ zero pronoun
- *Aktionsart*: weak correlation activity verb ~ zero pronoun
- Thematic role: weak correlation agent ~ zero pronoun
- Discourse topichood: weak correlation discourse topic ~ personal pronoun (!)

No effect could be found for embedding, binding, distance and attribution.

It is not easy to tease these factors apart and to clearly distinguish them from other intervening factors such as grammatical role, as the written record does not allow for this. For thematic role, for instance, Schumacher, Dangl, and Uzun (2016) argue that this is one of the dominating factors in Modern German. This might well be the case in Old High German as well, but: we cannot tell for sure.

A question that needs to be addressed is whether one can trace the different factors showing only a slight impact back to an overarching factor. A possible link between animacy, *aktionsart* and activity might be empathy: Speakers might perceive referents that are similar to themselves – or how they would like to see themselves to be – as more salient: Humans (neither non-human animate referents nor supernatural referents fare as good, so it’s not simply a matter of the animacy hierarchy) that are actively engaged in doing things – being agents of activities, rather than being experiencers of stative verbal concepts, let alone patients. That supernatural referents are as salient as abstract entities is not surprising, as they can be thought of as abstract beings in the sense that they are invisible, untouchable and the like. It is interesting, however, that this effect shows up although the divine referents are presented as acting persons in the narrative, especially Jesus Christ. The fact that supernatural referents are not as salient (or, at least, are not associated with the kind of anaphor that should be associated with more salient referents, viz. zero pronouns) as human referents could also be explained differ-

ently, however. It could be related to the fact that in many cultures, divine entities tend to be addressed in a more “honorific”, that is: more circumstantial way.²⁰

On the whole we feel justified in saying that cognitive-semantic properties of the referents might have an impact on salience in Old High German similar to Modern German and by that on the choice of anaphoric expression referring to them. The main factors, however, are partly hardcore grammatical factors, in Old High German and Modern German alike, such as the grammatical function of the antecedent or sentence type, partly factors such as first mention that are in some way information structurally motivated cognitive constraints, and partly cognitive factors, such as the role of agentivity that probably plays a crucial role in Modern German but cannot be determined in its importance for Old High German.

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²⁰ I owe this observation to Petra Schumacher and Sonja Gipper.

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