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THE CARTOGRAPHY OF THE DP FROM MIDDLE HIGH TO MODERN GERMAN: POSITIONS AND FEATURES OF SELECTED QUANTIFIERS, POSSESSIVES, AND ADJECTIVES*

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Abstract Based on data from a new parsed corpus, we propose a cartography of the DP in medieval and early-modern German. Our cartography expands on Roehrs's (2020) structure for the Modern German DP and on claims about the relative orders of different classes of adjectives by Cinque (1994) and Scott (2002). We propose that the DP in earlier stages of German has at least two underlying positions for (different kinds of) quantifiers and a position between D and N for adnominal genitives. Furthermore, we argue that there are two types of DP-internal movement, resulting in some surface deviation from the underlying cartographic order. Diachronically, in earlier German certain determiner-like elements could remain in their underlying positions, but in Modern German they move to a position at the front of the DP. We identify changes in the definiteness features of these determiner-like words as the catalyst for this structural change.

1 Introduction

In this paper, we propose a cartography of the DP in Middle High German (MHG; 1050-1350) and Early New High German (ENHG; 1350-1650). Based

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on empirical data drawn from a new parsed corpus, we expand on Roehrs's (2020) structure for the Modern German DP, adding an Ord(inal)P and a Poss(essor)P. Moreover, we find evidence that certain types of adjectives occupy different positions in the DP (in the spirit of Cinque 1994 and Scott 2002), proposing that non-predicative adjectives are in $\text{Adj}_{\text{non-pred}}$P high in the DP, while ordinary adjectives are closer to the N. Finally, we propose two types of movement that account for surface word orders that deviate from the underlying structure: movement to the D-layer to satisfy a definiteness feature and movement to a DP-internal focus position.

In addition to this more fine-grained structure of the DP, we will show that the DP in MHG/ENHG contrasts with Modern German in certain respects. Most importantly, while certain determiner-like elements between D and N (such as possessive adjectives and prenominal genitives) could remain in D's c-command domain in earlier German, in Modern German they are in complementary distribution with overt D and thus arguably move into the D-layer. We identify changes in the definiteness features of these possessors, and we argue that the change from a privative specificity feature [*i*def:SPEC] to the binary feature [*i*def:+spec] results in the possessor becoming more determiner-like, in both its syntax and its morphology.

This paper is structured as follows. In section 2, we lay out our assumptions about the DP more broadly and the German DP in particular. In section 3, we present the data from our corpus on the relative order of the various kinds of functional modifiers of N. Based on those findings, section 4 discusses our proposal for the DP in MHG/ENHG, including the cartography of the underlying positions and the movements that derive word-order variation. In section 5, we analyze the changes in the positions of certain modifiers from MHG/ENHG to Modern German, with a particular focus on possessors. Section 6 offers a brief conclusion and directions for future research.

2 Assumptions

We assume the DP hypothesis of Abney (1987), in which N projects not just an NP, but a number of functional projections above NP, culminating in DP. The heads and specifiers of these functional projections house modifiers of N including quantifiers, numerals, adnominal genitives, and adjectives.

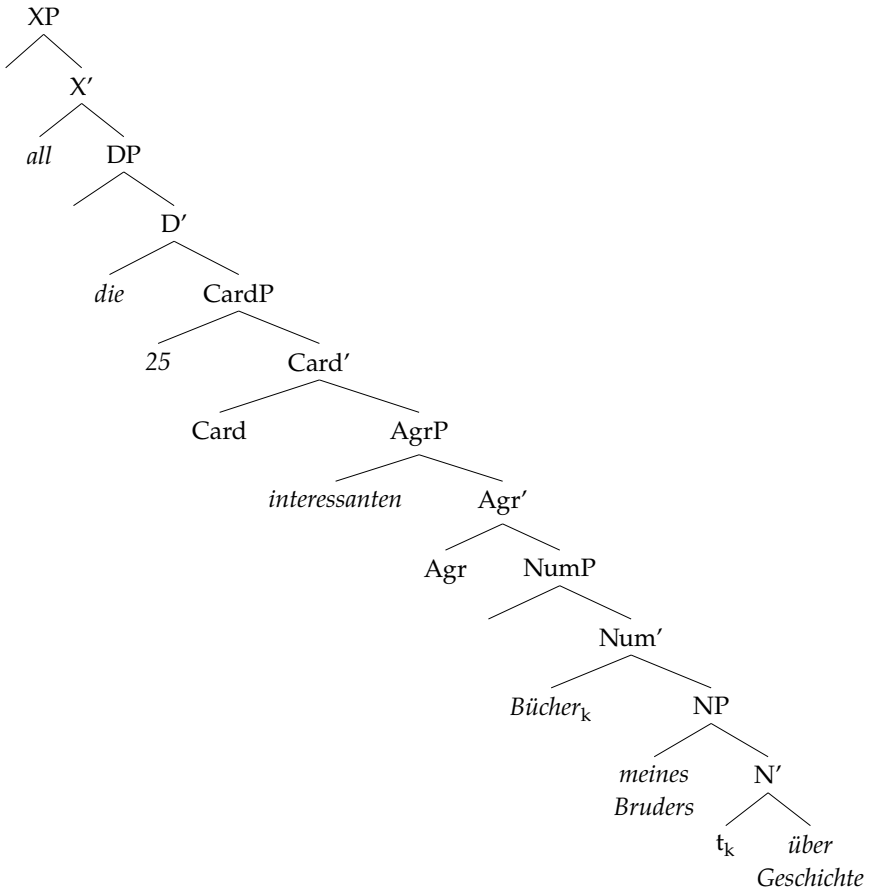
Furthermore, in the spirit of the cartographic approach (e.g., Cinque 2010), we assume a large number of functional projections between NP and DP, which are hierarchically ordered with respect to one another; if subcategory X consistently precedes subcategory Y, we assume that XP is a functional projection different from and higher in the DP than YP. Application of this approach results in the articulated structures of the DP proposed in section 4.

Additionally, we assume Antisymmetry (Kayne 1994) with linearization (for the sake of concreteness) in the syntax proper. We also take Antisymmetry to enforce a universal Spec-Head-Comp order and to prohibit rightward movement in the narrow syntax.

Our cartography of the DP in MHG/ENHG takes as its starting point Roehrs's (2020) proposal for the DP in Modern Standard German (MSG). Roehrs (2020: 538) gives the DP in (1 a) the structure (1 b):

(1) (a) *all die 25 interessanten Bücher* [*meines Bruders*] *über Geschichte*
all the 25 interesting books my-GEN brother-GEN about history
'all the 25 interesting books of my brother about history'
(MSG, Roehrs 2020: 538)

(b)



Beginning our discussion at the bottom of Roehrs' tree, note that the head of the whole nominal (*Bücher*) is merged into N. The NP layer contains the arguments of N: the possessor *meines Bruders* and the complement PP; thus, the N and its arguments are in a local relationship underlyingly.[1] The noun then undergoes head movement to Num, thereby coming to precede its genitive argument. Modifiers/adjuncts are generated in specifier positions (following work such as Corver 1997), and these are hierarchically ordered: adjectives are in Spec-AgrP and above that cardinal numbers and weak quantifiers (such as 'many') are in Spec-CardP. Determiners are in D, and above DP Roehrs assumes an additional functional projection (XP) for 'pre-determiners' such as *ein* in *ein jeder* 'an every' and *all* in *all die* 'all the'.

We will return to each of these phrases in the discussion below. We propose a number of additions to Roehrs's (2020) structure in section 4, on the basis of evidence from our MHG/ENHG corpus presented in the next section.

3 Data: the positions of modifiers within the DP

3.1 Corpus

The data in this study are taken from the Indiana Parsed Corpus of Historical (High) German (IPCHG; Sapp, Sprouse & Evans 2025), which is nearly complete. The IPCHG is constituency parsed in the Penn format, with significant modifications to accommodate historical German phenomena. This corpus comprises excerpts of up to 10,000 words from prose texts of the Referenzkorpus Mittelhochdeutsch (Klein, Wegera, Dipper & Wich-Reif 2016), the Referenzkorpus Frühneuhochdeutsch (Wegera, Solms, Demske & Dipper 2021), and the Deutsches Textarchiv (Berlin-Brandenburgischen Akademie der Wissenschaften 2020). The texts of the IPCHG were selected to represent a balance of time periods and dialects, including a variety of prose genres (from sermons to collections of laws to chronicles, with few literary texts). After machine parsing, annotations undergo manual correction. (For details on text selection and the parsing/annotation process, see Sapp, Evans, Sprouse & Dakota 2024.) As of the time when the data for this study were extracted

1 Roehrs' claim that the possessive genitive is underlyingly in Spec-NP, while the PP is the complement of N, is substantiated by the following example, in which the genitive scopes over the possessor in the PP.

(i) *die riese Wut [jedes$_i$ Sohnes] auf seinen$_i$ Vater*
the huge rage each-GEN son-GEN at his father
'the huge rage of each son at his (own) father' (MSG, in Roehrs 2020: 544)

If *jedes Sohnes* were the complement of N, the PP would have to be adjoined, in which case it would not be c-commanded by *jedes Sohnes*.

Cent.	West Middle German		West Upper German			East Middle German		East Upper German		
	Cologne	Hesse	Alsace	Swabia	Switzerland	Saxony	Thuringia	Nuremberg	Bavaria	Austria
11.2			Älterer Physiologus & Gebete		Rheinauer			Williram	Otlohs Gebet	
12.1	Bamb. Arzneibuch		Alkuins Traktat & Christi Geburt					Prüler Steinbuch	Jüngerer Physiologus	
12.2	Schleizer Psalm		Lucidarius	Spec.eccl.	Zuricher Pred.		Predigt-fragmente	Schlierbach Ps.	Barthomäus	Priester Konrad
13.1	Lancelot M	Mitteldeut. Pred.	Millstätter Pred.	Hoffmann. Pred.			Mülhäuser Rechtsbuch	Prager Predigtentw.	St. Pauler Pred.	Leysersche Pred.
13.2	Die Lilie	Salomons Haus	Freiburger Urkunden	Buch der Konige	Expositio		Martyrolog.		David v. Augsburg	Admonter Ben.
14.1	Koelner Klosterpred.	Heligenleben	Nikolaus Pred.	Augsburger Urkunden	Hugo: Predigten	Leipziger Pred.	Berliner Evangelistar	Engelthaler Schwesternb.	Freisinger Rechtsb.	Klosterneub. Evangelienwe
14.2	Neues Buch Köln	Leiden Christi	Büchlein d. ew. Weisheit	Rotes Buch Ulm	Naturlehre Mainau	Altdeutsche Pred.	Thüringer Spiele	Namen Fronleichnam	Buch der Natur	Rationale
15.1	Reimchronik	Karrenritter	Nabucho-donosor	Fuchsfalle	Appenweiler Chronik	Ältestes Stadtbuch	Eisenacher Chronik	Laien-doktrinal	Wahrer Andacht	Denkwürdig-keiten
15.2	Koelhoff Chronik	Jerusalem	Cirurgia	Verbotene Kunst	Edlibach Chronik	Tauler Sermon	Stolle: Memoriale	St. Anselmi Fragen	Bairische Chronik	Hystoria Troyana
16.1	Junge Fursten	Fierrabras	Butzers Predig	Weltbuch	Olvier und Artus	Bachmann: Martinus	Vonn Gehorsam	Grundliche	Geistliche Mai	Stiftbriefe
16.2	Epitome Warhaftiger	Wahrhaftig historia	Nachbarn	Beschreib. der Reise	Gespenster	Chronica Marsburg	Thüringische Chronik	Dietriech: Summaria	Concordia	Moscouia
17.1	Teutscher Nation	Hessische Chronik	Policeij Ordnung	Lichtkugel	Schiffarten	Poeterey	Theatri	Opus Theatricum	Kurtze Rettung	Probstein

Figure 1 Texts in the IPCHG as of April 2025 (green=complete)

(April 9, 2025), the IPCHG consisted of 37 MHG texts (234,873 words; 13,606 sentences) and 45 ENHG texts (411,233 words; 16,315 sentences), illustrated in Figure 1.[2]

The examples for this study were extracted using *CorpusSearch 2* (Randall, Taylor & Kroch 2005) queries, mostly run via the graphical interface PACS (Evans & Sapp 2025).[3] Except when the results of a query numbered in the thousands, all hits were saved in a Word document, verified, sorted, and counted by hand.

2 The dates and regions in Figure 1 follow the source corpus's characterization of each text. In some cases, these refer to broader dialect areas ('West Middle German' rather than 'Hesse') or may refer to the region in which the text was copied/published rather than the dialect of the author.

3 To illustrate the kinds of queries we used, adjectives preceding possessors were found by the following:
`query: (NP* idoms ADJ*) AND (NP* idoms PRO$*) AND (ADJ* precedes PRO$*) .`
Adjectives preceding determiners, numerals, and quantifiers (except *all*) were queried as follows:
`query: (NP* idoms ADJ*) AND (NP* idoms D*|Q*|NUM*) AND (ADJ* precedes D*|Q*|NUM*) AND (D*|Q*|NUM* idoms ![Aa]l*|*=all) .`

3.2 *The status of* all

To determine the base position of elements within the DP, we examine the relative order of determiners, quantifiers, possessors, adjectives, and nouns. We begin the presentation of our query results with the element that we believe is in the nominal's highest functional projection—the quantifier (or predeterminer) *all*.

Recall from (1) that *all* in MSG is very high in the nominal—in fact, higher than the D-layer. Likewise in MHG/ENHG, the quantifier *all* has a strong tendency to appear as the first element of the nominal. In our corpus, when *all* co-occurs with another constituent (including determiners, other quantifiers, numerals, possessors, and adjectives), *all* precedes every other element of the DP 1,638 times:[4]

(2) (a) *alle die werlt*
all the world
'all the world' (1299_Martyrologium, 596)

(b) *all ander bischoff vnd prelaten* [*anderer nacionen*]
all other bishops and prelates other-GEN nations.GEN
'all other bishops and prelates of other nations'
(1486_Jerusalem, 312)

(c) *alle min erben vnd Nachkomen*
all my heirs and descendants
'all my heirs and descendants' (1336_Augsburger, 2)

(d) *allen zwölff boten*
all twelve messengers
'all twelve apostles' (1465_Verbotene, 472)

(e) *alle* [*der Stede*] *priuilegien*
all the.GEN city-GEN privileges
'all the privileges of the city' (1360_NeuesBuch, 116)

(f) *alle lijffliche narunge*
all bodily nourishment
'all bodily nourishment' (1399_Leiden, 210)

4 All examples with citations in the format 'YYYY_Text' as in 2 are from the IPCHG. The number following the text name is the sentence number in the corpus. See the corpus documentation at https://ipchg.iu.edu for bibliographical details of each text. We have not glossed each element of the DP for case and number, because this is largely irrelevant to the discussion and/or clear from the translation. However, when there is a genitive DP embedded in the matrix DP, we indicate this with brackets and the gloss GEN.

The other position in which *all* frequently appears is following (most of) the rest of the DP, which occurs 456 times. In 445 instances, *all* follows every other DP element (3 a); we suggest that this does not represent a low position in the DP for *all* but rather that *all* is a 'floating quantifier' (or more accurately: the rest of the DP has moved up to the left of *all*, as in Sportiche 1988). In 11 cases, *all* follows N but another constituent has arguably 'floated' with *all* (3 b). An additional example (3 c) lacks N, so it is unclear whether *allen* is *in situ* in a DP-internal position between *andern* and the PP, or whether either *allen* or the PP are in a floated position.

(3) (a) *die offentliche Lehrer all*
the public teachers all
'all the public teachers' (1650_Probstein, 365)

(b) *div kint elliv driv*
the children all three
'all three of the children' (1274_BuchKoenige, 672)

(c) *den andern allen vff erden*
the other all on Earth
'all the other ones on Earth' (1537_JungeFursten, 133)

This leaves only 7 instances in which *all* appears to follow some DP modifier but precede the head N. In two early texts, we find 4 instances in which the preceding DP modifier is a possessive adjective (hereafter 'possessor') (4 a) or adnominal genitive (4 b); it is unclear whether this involves movement of the possessor/genitive phrase above *all*'s underlying position (as in Roehrs 2020: 554), or is just an idiosyncrasy of these texts, or both.[5] At any rate, the possessor and *all* both remain inside the matrix nominal, as their position following a preposition makes clear.

(4) (a) *ze ir allen chnien*
to their all knees
'to all their knees' (1250_Admonter, 67)

(b) *Von [der dinge] aller varwe oder groezze*
of the.GEN things.GEN all color or size
'of all color or size of the things' (1250_Admonter, 261)

5 Example (4 b) is especially unclear, because *aller* is morphologically ambiguous. If it is dative singular modifying *varwe*, as our gloss implies, it is in the same position of the matrix DP as *allen* in (4 a). If, on the other hand, it is genitive plural ('of color and size of all the things') as suggested by a reviewer, then it is the last word of the pre-nominal genitive *der dinge aller*.

The example in (5) exhibits not the quantifier *all*, but the adjectival use of *all* 'whole' (in the context 'One should pray to Christ with bowed head and with the whole body spread on the ground'); the weak ending on *allen* is further evidence that it is an adjective here:

(5) *gestrevtem allen lip an di erde*
spread all body on the earth
'the whole body spread on the ground' (1250_Admonter, 230)

There remain, then, only 2 genuine instances (6) of *all* in a position lower than expected given the proposed structure in (1). Note, however, that these are from a legal text and seem to have definiteness expressed on three modifiers ('the same', 'all', and 'his'); thus, we suspect that this construction involves legalese:

(6) (a) *dazselb allez sin ligend guot*
that-same all his lying good
'all that same lying property of his' (1376_RotesBuch, 96)

(b) *dazselb allez sin Guot*
that-same all his good
'all that same property of his' (1376_RotesBuch, 97)

Roehrs & Sapp (2016) claim that *all* behaves like other quantifiers in MHG and early ENHG, then appears in Spec-DP in later ENHG, before becoming a pre-determiner in Modern German. However, the current study finds that *all* is overwhelmingly the first element of the DP or is in a floated position. Furthermore, (2 a) implies that *all* could be a pre-determiner as far back as MHG. At any rate, the vast majority of instances of *all* can be accounted for by assuming that it is either in the D-layer or a predeterminer just above DP (Roehrs & Sapp 2016; Roehrs 2020). We will not pursue this further in this study.

3.3 The position of determiners

Determiners (definite articles, indefinite articles, and demonstratives) overwhelmingly precede all other elements (except for the pre-determiner *all*).

First, consider definite and demonstrative determiners: our corpus contains 15,216 instances in which this is the first constituent of the DP (save *all*). There are only 19 instances where a definite or demonstrative determiner follows some other constituent of the DP. These fall into a few discrete categories. There are 3 instances in which a definite determiner follows the word

ein (ambiguous between the indefinite article, the numeral 'one', and the focus particle 'only/alone'):[6]

(7) (a) *ift ein diu ficherheit an ime*
is one the guarantee on him
'if only this guarantee is in him, (it should be the guarantee of the sins)' (1100_Alkuin, 58)

(b) *ein dat herlihste bedde*
one the glorious-SUP bed
'only the most glorious bed' (1200_Lancelot, 7)

There are 5 cases where the definite determiner (including here the complex element *dasselbe* 'the same') follows a weak quantifier:

(8) (a) *beide die chinne*
both the cheeks
'both the cheeks' (1100_Bamberger, 7)

(b) *uff somlichs diss stuck*
on such this piece
'on such a piece as this' (1486_Edlibach, 40a)

(c) *vil daselbet* [*der cristen*]
much the-same the.GEN Christians.GEN
'much the same of the Christians' (1486_Jerusalem, 54)

The most frequent type, with 11 examples, consists of a genitive phrase or a possessor preceding D:

(9) [*der kneht*] *die menige*
the.GEN servants.GEN the number
'the number of the servants' (1272_David, 141)

Secondly, indefinite determiners nearly always (4,144 times) precede the other parts of the DP. The indefinite determiner even precedes the definite article 7 times (as mentioned above). Conversely, there are only 287 examples of DP modifiers preceding *ein*. Just over half of these (146) are cases where *ein* follows a definite or demonstrative determiner. We suggest that *ein* is not an indefinite determiner in such cases, but the numeral 'one' (10 a) or the pronoun 'one' (10 b):

6 In context, a relative clause modifies (7 b), and Paul (2007: §135) shows that the MHG *ein der* construction commonly occurs with a relative clause.

(10) (a) *der eine sterne*
the one star
'this one star' (1195_Lucidarius, 502)

(b) *Er was [der] ainer den Priamus darczue geschikt hett*
he was the-GEN.PL one-NOM.SG REL Priam there sent had
'Of those, he was one whom Priam had sent there' (1480_Troyana, 330)

Most of the rest (136 instances) are adnominal genitives preceding *ein*. Either adnominal genitives can be higher than indefinite articles (not surprising given that adnominal genitives occasionally precede even definite articles as in (9) above), or this *ein* is the numeral 'one'. Various types of genitives seem to participate in this construction, including partitive genitive (11 a), possessive genitive (11 b), genitive of origin (11 c), and objective genitive (11 d):

(11) (a) [*der kaufleut*] *ein gantzer hauffen*
the.GEN merchants.GEN a entire pile
'an entire cohort of merchants' (1556_Nachbarn, 321)

(b) [*der frowen*] *ein grosse wund*
the.GEN woman.GEN a great wound
'a great wound of the woman' (1497_Cirurgia, 36)

(c) [*der geburt*] *ein Roemer*
the.GEN birth.GEN a Roman
'a Roman by birth' (1556_Marsburg, 182)

(d) [*dieses Handels*] *ein vrsach*
this-GEN transaction-GEN a cause
'a cause of this transaction' (1599_Thuringische, 619)

Excluding determiners and genitive phrases yields just 5 examples of an element preceding *ein*. This is possible in three contexts: *wh*-movement to the left of *ein* (12 a), *ein* as the numeral 'one' (12 b), or the chunk *irgend ein* 'any' (12 c):

(12) (a) [*wie groz*] *ein dinc*
how great a thing
'how great a thing' (1278_Salomons, 141)

(b) [*uwer*] *ein* *fuß*
you-GEN a foot
'one foot of yours' (1430_Karrenritter, 241)

(c) *iendert* *ain* *Maister* *in* *Baris*
any a master in Paris
'any master in Paris' (1465_Verbotene, 248)

As we will demonstrate in the sections below, there is also a great deal of movement within the DP, especially movement of quantifiers, numerals, certain adjectives, and genitive phrases to the D-layer from lower functional projections in the DP. We will show that the presence of a determiner in D rules out such movement in the vast majority of cases.[7] Therefore, DPs with an overt determiner in D can generally be used to diagnose the underlying positions of the various DP modifiers.

To sum up this section, determiners are overwhelmingly the first element of the DP (abstracting away from the pre-determiner *all*), an order that occurs over 19,000 times in the corpus. This is in contrast to only 287 instances where something precedes the word *ein* (which can be ambiguous between an indefinite determiner, the numeral 'one', and the focus particle 'only') and 16 where a quantifier or possessor precedes the definite determiner.

3.4 Ordinal numbers and ander

Next, we identify a group of quantifier-like words that appear just below D, consisting of the ordinal numbers, plus the word *ander* 'other/second'. It should not be surprising that *ander* should pattern with the ordinal numbers, because it is often used as the ordinal number 'second' in older stages of the language, including MHG/ENHG.

Ordinals never precede a determiner, as the results in section 3.3 make clear, but typically they precede every other type of modifier of N. They precede an adjective 224 times, 41 of which include a determiner (13). As we show in section 4.3, many modifiers of DP are able to move to Spec-DP if there is no determiner; thus, the presence of a determiner in D is a useful diagnostic that the other parts of the nominal are in their underlying positions. That is, we have 41 examples suggesting that the underlying position of ordinals is just below D. The reverse order, where one of these words follows an

7 The determiner in D does not necessarily prevent movement of all phrases to Spec-DP, as examples (9) and (11-12) show. Section 5 accounts for the failure of possessors to move to Spec-DP when an overt determiner is present; we leave to future research the question why other modifiers do not move above the determiner.

adjective, occurs only five times (14). (Because the adjectives *ob gemeldeten*, *schrecklich*, and *glaubigen* are linearly preceded by elements in D, the adjectives cannot have moved to the D-layer; we argue in section 4.4 below for a focus position below D to which these adjectives have moved.)

(13) (a) *der andern vorgeschriben geschicht*
the second aforementioned story
'the second aforementioned story [of three stories]'
(1427_Fuchsfalle, 351)

(b) *die ersten alten einwohner* [*des Landes*]
the first old inhabitants the.GEN land-GEN
'the first old inhabitants of the land' (1556_Marsburg, 208)

(c) *der andrenn vnsinnigen tobheit*
the other nonsensical numbness
'the other nonsensical numbness' (1370_EwigWeisheit, 447)

(14) (a) *den ob gemeldeten andren arttigel* [*dess nottels*]
the above mentioned other article the.GEN note-GEN
'the aforementioned second article of the note'
(1486_Edlibach, 115)

(b) *ein schrecklich ander botschafft*
a frightful other message
'a frightful other message' (1537_JungeFursten, 144)

(c) *seinen glaubigen ersten Fuersten vnnd Predigern*
his faithful first princes and preachers
'his faithful first princes and preachers' (1583_Concordia, 13)

The data are somewhat less clear regarding the relative order of ordinals vis-à-vis numerals/quantifiers. There are 82 cases in which an ordinal, including *ander*, precedes a numeral or weak quantifier, of which 17 have an overt D (15). On the other hand, there are 64 instances of the opposite order, of which 3 have an overt D (16):

(15) (a) *der andere eyniger*
the other some
'the other some' (1399_Leiden, 158)

(b) *den eyrsten drien dagen*
the first three days
'the first three days' (1483_Koelhoff, 102)

(16) (a) *die etlich andern*
the several others
'the several others' (1559_Epitome, 41)

(b) *den drij ander daghen*
the three other days
'the three other days' (1483_Koelhoff, 103)

(c) *die zwey anderen Schiff*
the two other ships
'the two other ships' (1624_Schiffarten, 293)

On balance, it would seem that, when there is an overt D to help diagnose the underlying positions of these words, ordinals strongly tend to precede numerals and weak quantifiers; the three exceptions in (16) might be understood as *ander* having been reanalyzed from an ordinal number to an adjective (or that the numeral has moved above *ander* to scope over it, as discussed in 4.4). At any rate, when there is no overt D, either an ordinal or a weak quantifier/numeral can appear as the first element of DP, which we claim is due to movement into the D-layer.

An ordinal precedes a possessor 47 times, of which two have an overt determiner (17), ruling out that these words precede possessors due to movement to the D-layer. This contrasts with the 38 examples of a possessor before an ordinal, none of which have an overt D (18); it is then likely that the possessor has moved over the ordinal into the D-layer in such cases.

(17) (a) *der andern vnserr menschait*
the other our humanity
'our other humanity' (1399_Namen, 400)

(b) *den andern synen manen*
the other his men
'the other men of his' (1449_Eisenacher, 65)

(18) (a) *sein andere zwey schwerdter*
his other two swords
'his other two swords' (1533_Fierrabras, 181)

(b) *jhren ersten Apostolischen seligen Lehrer*
their first apostolic blessed teachers
'their first apostolic blessed teachers' (1583_Concordia, 340)

Finally, when ordinals occur with a pre-nominal genitive, they precede the genitive 9 times (19), and in one case (19 b) they occur between a determiner and the genitive.[8] The reverse order, in which the genitive precedes an ordinal, occurs only once (20), and in this case it seems that the genitive has moved to the initial position of the DP.

(19) (a) *andern* [*des* *Raitz*] *vruonden*
other the.GEN council-GEN friends
'other friends of the council' (1360_NeuesBuch, 156)

(b) *dat* *ander* [*dodes*] *we*
the other death-GEN sorrow
'the other sorrow of death' (1399_Leiden, 183)

(20) [*hern* *Hainrichs* *des* *Hurnaus* *mins* *wirtes*]
Sir-GEN Henry-GEN the.GEN Hurnaus.GEN my-GEN husband-GEN
ersten *kinde*
first children
'the first children of Sir Henry the Hurnaus, my husband'
(1336_Augsburger, 141)

The data in this section show that ordinal numbers, including *ander*, are among the first elements of the DP, preceded only by determiners and constituents that we will argue to move into the D-layer (see section 4.3 below). This indicates that ordinals are base-generated relatively high in the DP, just below D.

3.5 Non-predicative adjectives

There is a class of adjectives in MHG/ENHG that occur higher in the DP than typical attributive adjectives. These adjectives do not 'describe a property that is predicated of the set of individuals denoted by the noun' (Valois 2006: 62) and therefore cannot be used in the predicate position. Instead, they are deictic (*nachfolgend* 'following', *nächst* 'next', *letzt* 'last', *hinter* 'latter', *äußerst* 'outermost', *jetzig* 'current', *zukünftig* 'future', and most commonly words meaning 'aforementioned' such as *vorgenannt*) or have a quantificational function (*besonder* 'certain', *übrig* 'remaining'). This class corresponds to the adjectives

8 While one could treat *dodes* we in (19 b) as a compound, rather than a noun with an adnominal genitive, Demske gives a clearer example of the order determiner > ordinal > genitive > N:

(i) *die* *anderen* [*des* *graffen*] *Diener*
the other the.GEN count-GEN servants
'the other servants of the counts' (Demske 2001: 226, ex. 39a)

identified by Cinque (1994), Laenzlinger (2005), and Evans (2021) as non-predicative. The non-predicative adjectives follow determiners and words like *ander*, just as most adjectives do (see sections 3.3 and 3.4). However, these are virtually the only adjectives to precede certain other elements of the DP, suggesting that they are syntactically quite different from ordinary, descriptive adjectives and occupy a separate, higher position in the DP. As an additional argument for a major distinction between non-predicative and other types of adjectives, Evans (2021) identifies cross-linguistic evidence that these are distinct subcategories, showing that the predicative/non-predicative distinction correlates to postnominal/prenominal placement in French and inflected/uninflected forms in Dutch.

In our corpus, these adjectives consistently precede possessors (21), which occurs 27 times. There are only 2 examples of ordinary adjectives preceding a possessor (22), both from a single sentence and likely legalese. The only examples in which a possessor precedes the non-predicative adjective is when there is no determiner, i.e. the possessor has presumably moved to the DP-initial position (23).

(21) (a) *die vor genanten min toehtermaenne*
the fore named my daughter-men
'my aforementioned sons-in-law' (1336_Augsburger, 128)

(b) *der ob berurt vnser gestiffter gotsdinst*
the above touched our endowed god.service
'our aforementioned endowed church service'
(1501_Stiftbriefe, 253)

(c) *der ob geseitten vnsser gnadigen frowen*
the above said our merciful lady
'our aforementioned merciful lady' (1486_Edlibach, 21b)

(22) *die fursichtigen wissen vnsser gutten frund*
the previsional wise our good friends
'our previsional wise good friends' (1486_Edlibach, 97a)

(23) *vnser vor genanter drier gebruoder*
our fore mentioned three brothers
'our aforementioned three brothers' (1336_Augsburger, 124)

These non-predicative adjectives also precede a weak quantifier or numeral 65 times (24). Only eight times does an ordinary adjective occur in this position, and six of these seem exceptional in that the numeral and the N form

a unit akin to a proper noun ('the Three Wise Men' and 'the Twelve Apostles'), illustrated in (25). The remaining two instances, in which an ordinary adjective precedes a numeral (26), are accounted for in section 4.4 below.

(24) *die vor geschriben Driv pfunt*
the fore written three pounds
'the aforewritten three pounds' (1336_Augsburger, 13)

(25) (a) *der hailigen drey küng*
the holy three kings
'the holy Three Kings' (1465_Verbotene, 334)

(b) *die hailigen zwölf boten*
the holy twelve messengers
'the holy Twelve Apostles' (1465_Verbotene, 455)

(26) (a) *div bosen siben Rinder*
the bad seven cows
'the bad seven cows' (1274_BuchKoenige,103)

(b) *die schonisten drein fräwen*
the prettiest three women
'the prettiest three women' (1480_Troyana, 96)

Despite the apparent counterexamples in (25) and (26), it is clear that adjectives appearing before numerals in the corpus consulted are overwhelmingly of the non-predicative class.

Adjectives preceding a pre-nominal genitive fall into two types. First, there are 14 instances in which an ordinary, descriptive adjective precedes a one-word, pre-nominal genitive (27). As discussed by Demske (2001: 297-316), these one-word, pre-nominal genitives were reanalyzed during the ENHG period as the first element of a compound. If even late-MHG examples like (27 a) are ambiguous as to whether they are compounds, then there are no clear instances in which an ordinary adjective precedes a pre-nominal genitive phrase.[9]

(27) (a) *dise chlein* [*anvanges*] *regel*
This small beginning-GEN rule
'this small beginning rule' (1250_Admonter, 468)

9 In fact, (27 b) is the only instance in this text in which the expression *lands herren* is written as two words; the other two times it is spelled as a compound *landsherren*.

(b) *der obresten* [*lands*] *herren*
the highest country-GEN lords
'the highest lords of the country' (1521_Olvier, 284)

On the other hand, we find 11 instances of a non-predicative adjective preceding a pre-nominal genitive (28). Unlike the cases in (27) above, many of the genitives following non-predicative adjectives are phrasal and thus not ambiguously compounds. In the final analysis, all clear instances of adjectives that precede pre-nominal genitive phrases are non-predicative.

(28) *der ob gemelter* [*verstorbenen Landtgraffen*] *Schwester*
the above mentioned deceased-GEN landgrave-GEN sister
'the aforementioned sister of the deceased landgrave'
(1599_Thuringische, 736)

Finally, non-predicative adjectives precede ordinary, descriptive adjectives:

(29) *den vor genanten Gaistlichen frawen*
the fore named holy women
'the aforementioned holy women' (1336_Augsburger, 1)

3.6 Cardinal numbers and weak quantifiers

In the previous sections, we showed that cardinal numbers and weak quantifiers follow determiners, ordinals, and non-predicative adjectives. In this section we consider the remaining interactions, namely with possessors, genitive DPs and ordinary adjectives. [10]

Cardinal numbers or weak quantifiers precede possessors 48 times (30), but the opposite is true 69 times (31). These numbers do not indicate a strong trend either way, and none of the examples contain an overt determiner that could rule out movement of the cardinal/quantifier or of the possessor to the D-layer. However, several texts were added to the corpus between our original queries in April 2025 and the time of publication, and in that larger version of the corpus there is one example in which an overt D is present (32):

(30) (a) *Etzeliche sine wort*
some his words

10 Although some consider *solcher* to be determiner-like, Demske (2005) notes that it does not pattern syntactically with determiners and instead has a 'sortal' meaning. We find no evidence to suggest that *solcher* occurs higher than the position of numerals and weak quantifiers.

'some of his words' (1300_KoelnKloster, 301)

(b) *beyde sijne voisse*
both his feet
'both of his feet' (1399_Leiden, 156)

(c) *solicher seiner inprunstiger pegerung*
such his fervent desire
'such a fervent desire of his' (1475_Bairische, 155)

(31) (a) *vnsere zwey* [*mitgesellen*] *schiffe*
our two companions-GEN ships
'our two companion ships' (1557_Historia, 271)

(b) *iren vilen fürsprechen*
their many advocates
'their many advocates' (1523_Butzer, 253)

(32) *Dîe andern zwêne fíne fônе*
the other two his sons
'the other two sons of his' (1249_Millstaetter, 406)

Example (32) suggests that the underlying order is cardinal > possessor; if true, the order possessor > cardinal (31) can be derived by movement of the possessor to the D-layer.

In our corpus, cardinal numbers and weak quantifiers precede pre-nominal genitive DPs 14 times, although in most cases (33 a)-(33 b) there is no diagnostic element in D to rule out movement of the quantifier/numeral. However, one example with a definite article shows clearly that this is the underlying order (33 c).

(33) (a) *zwen* [*miner heeren von zurich*] *knacht*
two my-GEN lords.GEN of Zurich servants
'two servants of my Lords of Zurich' (1486_Edlibach, 12)

(b) *etliche* [*der Teutschen Antiquiteten*] *sinreiche*
several the.GEN German-GEN antiquities.GEN ingenious
nachforscher
researchers
'several ingenious researchers of the German antiquities'
(1609_TeutscherNation, 61)

(c) *den mancherley* [*Adams*] *kindern*
the various Adam-GEN children
'the various children of Adam' (1583_Concordia, 137)

The opposite order is more frequent, occurring 38 times, although in every case the adnominal genitive is the first element of the nominal, thus one cannot rule out that the genitive phrase has moved to the D-layer or perhaps even moved out of the DP altogether:

(34) (a) [*seines* *Alters*] *Achtzehen* *Jahr*
his-GEN age-GEN eighteen years
'eighteen years of his age' (1599_Thuringische, 710)

(b) [*deren* *ding*] *kein* *mangel*
the.GEN things.GEN no lack
'no lack of the things' (1534_Weltbuch, 600)

That is, once one controls for movement of some element into the D-layer (33 c), weak quantifiers seem to underlyingly precede genitive phrases.

Numerals/quantifiers also overwhelmingly precede ordinary, descriptive adjectives, occurring 67 times (35):

(35) *die* *zwen* *minsten* *finger*
the two smallest fingers
'the two smallest fingers' (1497_Cirurgia, 96)

The only apparent counter-examples were shown in (25) and (26) above.

3.7 Possessives and pre-nominal genitive phrases

The previous sections establish that possessors and genitive DPs follow determiners, and in the presence of a determiner they also follow ordinals, non-predicative adjectives, and numerals/weak quantifiers. This section shows that possessors and genitive DPs must precede ordinary/descriptive adjectives.

Let us first note that the corpus contains few clear DPs containing both a possessor and a pre-nominal genitive phrase, such that the following discussion of their relative orders is tentative.[11] The genitive precedes the possessor in 3 instances (36 a) and follows 5 times (36 b). In nearly every instance, the possessor and the genitive refer to the same person, so that the second seems to be in apposition to the first; in addition, these lack a determiner, thus in all of these examples it is possible that one of these elements has moved to the D-layer.

11 We are excluding a small number of cases in which the 'genitive' is a single word, such as *mitgesellen* in (31 a), because of the possible reading in which they are the first element of a compound (i.e. *mitgesellen-schiff*e).

(36) (a) [*des seluen hern heinrichs van me Staue*] *syne*
the.GEN same-GEN Sir-GEN Henry-GEN of the Staue his
hindernisse
obstacles
'the same Sir Henry of Staue's obstacles' (1360_NeuesBuch, 173)

(b) *vnsser* [*der von zurich*] *antwort*
our the-GEN of Zurich answer
'our—those of Zurich—answer' (1486_Edlibach, 116a)

There is one unambiguous instance in which the pre-nominal genitive co-occurs with a possessor that cannot be its apposition: in (37) *ewere* shows possession, while *dergleichen* 'the like' does not. Moreover, the presence of *andere* at the beginning of the phrase indicates that *dergleichen* and *ewere* are in their underlying positions:

(37) *andere* [*dergleichen*] *ewere GlaubensArticul*
other the-like.GEN your faith-articles
'your other articles of faith of the like' (1650_Probstein, 125)

While (37) suggests that the site for pre-nominal genitives precedes the underlying position of possessors, there are too few relevant examples in this study's corpus to test this generalization.

The position of possessors and genitive phrases vis-à-vis ordinary, descriptive adjectives is much clearer. In 3.5 above we showed that the only adjectives to precede possessors are the class of non-predicative adjectives. Ordinary adjectives, on the other hand, uniformly follow possessors, which occurs 1,972 times (38).[12]

(38) (a) *die dine geistlichen viende*
the your spiritual enemies
'the spiritual enemies of yours' (1350_Altdeutsche, 72)

(b) *den jren kuniklichen menschen*
the their royal human
'their royal human' (1449_Nabuchodonosor, 224)

(c) *die seinen trewen vnd tewren hörgesellen*
the his true and dear comrades-in-arms
'the true and dear comrades-in-arms of his'
(1475_Bairische, 452)

12 The only counter-examples, already noted above, are the two instances of the phrase in (22).

Similarly, pre-nominal genitives always precede ordinary adjectives modifying the matrix N, which occurs four times in our corpus: (33 b) above and (39):

(39) (a) *vor ander deiner vnd [der deinen] groester behelf*
before other your and the.GEN your-GEN biggest help
'before the other greatest help from you and your [people]'
(1523_Gehorsam, 107)

(b) *sambt [der ReichsAbschied] wunderschoene zusam stimmung*
with the.GEN Recesses.GEN wonderful together agreement
'with the wonderful agreement of the Recesses'
(1583_Concordia, 83)

(c) *anderm [der Stat] zierlichem vnd noetigem gebews*
other the.GEN city.GEN ornate and necessary building
'another ornate and necessary building of the city'
(1559_Epitome, 124)

Finally, there are no modifiers that occur between ordinary adjectives and the head N in our corpus.

4 The cartography of the MHG/ENHG DP

4.1 Underlying positions

The relative orders that emerge from our corpus study in section 3 above can be summarized as follows. Setting aside the pre-determiner *all*, determiners precede all other modifiers. These modifiers, when they follow a determiner but precede the head N, are presumably in their underlying positions (with exceptions to be accounted for in 4.4 below). After determiners, the next position is represented by ordinal numbers and *ander*. Roehrs & Sapp (2016: 265) identify the locus of ordinal numbers, including *ander*, as the specifier of Ord(inal)P, and they locate OrdP above CardP (see also Shlonsky 2004).[13] Elements in OrdP are followed by non-predicative adjectives, housed

13 Recall from section 2 our assumption that these modifiers of DP are housed in specifier positions. For example, Roehrs (2020) has adjectives project AdjP housed in Spec-AgrP (1 b). Similarly, he assumes that quantifiers project QP, housed in Spec-CardP (1 b). Roehrs & Sapp (2016: 17) choose to label the maximal projection of all agreeing modifiers as InflP; adjectives, then, are in InflP housed in Spec-AgrP, weak quantifiers are also InflP but in Spec-CardP, etc. Nothing in our analysis hinges on the label of the modifier's maximal projection (AdjP vs.

in the higher of two AdjPs (to be justified in section 4.2 below). This precedes the location of numerals and weak quantifiers (Spec-CardP). The latter precedes the locus of possessors and pre-nominal genitives that have not moved to the D-layer; with no clear evidence that possessors and pre-nominal genitives have a preferred relative order, we place both in Spec-PossP.[14] Finally, descriptive adjectives are in an AdjP position just before the head N.

Table 1 illustrates these positions using some of the examples from section 3.

D	OrdP	$Adj_{non\text{-}pred}P$	CardP	PossP	$Adj_{desc}P$	N
der	*andern*	*vorgeschriben*				*geschicht*
die	*andern*		*zwêne*	*sîne*		*sône*
der	*andren*				*vnsinnigen*	*tobheit*
	anderm			*der Stat*	*zierlichem*	*gebews*
div		*vor geschribenn*	*vier*			*Haeuser*
die		*jetzt genantten*		*beider bartyen*		*botten*
der		*ob berurt*		*vnser*	*gestiffter*	*gotsdinst*
den			*mancherley*	*Adams*		*Kinder*
die			*zwen*		*minsten*	*finger*
			etliche	*der ... Antiquiteten*	*sinnreiche*	*nachforscher*

Table 1 Examples of elements that fill each functional projection in the early German DP

Based on the corpus data illustrated in Table 1, we propose adding OrdP, $Adj_{non\text{-}pred}P$, and PossP to Roehrs's (2020) cartographically ordered hierarchy (40). Adding these additional phrases yields our preliminary cartography for the MHG/ENHG DP in (41):

(40) D > CardP > AgrP [housing AdjP] > NumP > N
(based on the tree in Roehrs 2020)

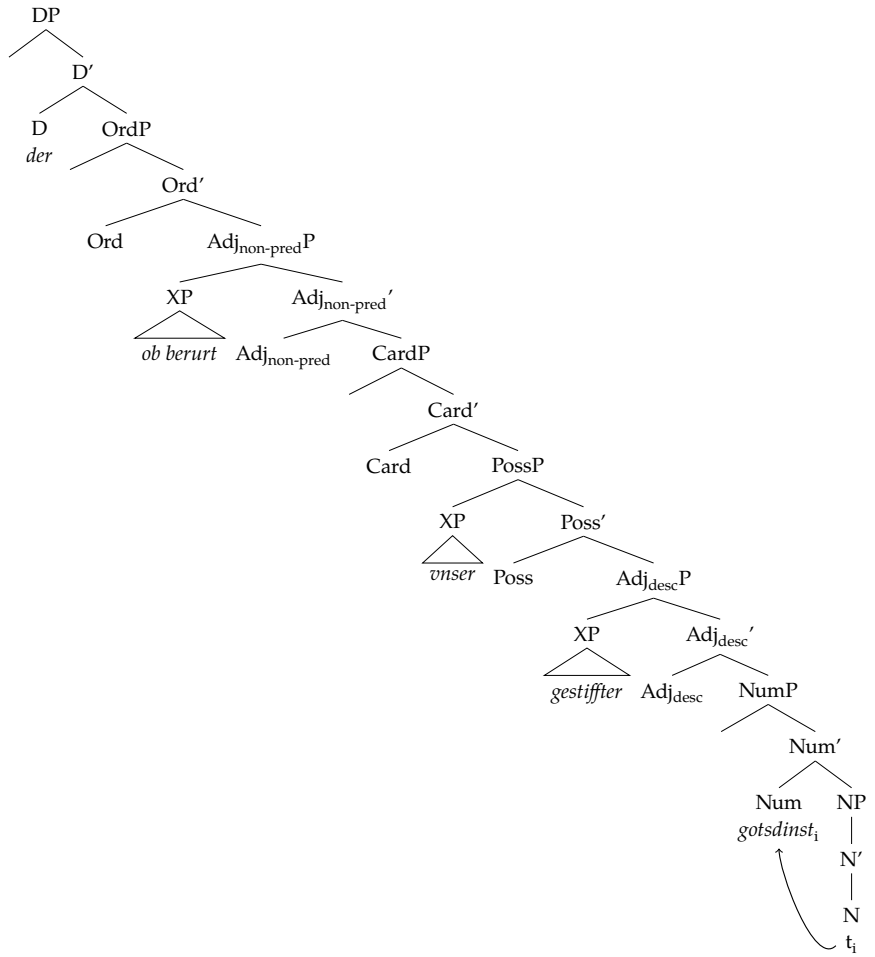
(41) D > OrdP > $Adj_{non\text{-}pred}P$ > CardP > PossP > $Adj_{desc}P$ > NumP > N
(to be revised in 4.4)

InflP, etc.), hence in the discussion that follows we simply give the labels for functional projections in the NP/DP spine. Moreover, for expository purposes we label the specifier positions that house the different classes of adjectives as $Adj_{non\text{-}pred}P$ and $Adj_{desc}P$, rather than e.g. $Agr_{non\text{-}pred}P$, to convey that these are two classes of adjectives, not two different types of agreement.

14 Dékány (2011: 278) similarly places PossP just below numerals (in her NumP) in Hungarian, although her cartography of the DP is necessarily more complex than ours, to account for Hungarian's agglutinative morphology.

The hierarchy in (41) is illustrated with an example sentence in (42):

(42) *der ob berurt vnser gestiffter gotsdinst* (=21 b)



In the following sections, we will take closer looks at the different Adjective Phrases proposed in (42) as well as the possibility for many of these elements to move up within the DP.

4.2 Different types of Adjectives

As shown in section 3.5 above, in the MHG/ENHG data, non-predicative adjectives (e.g. *obgenannt* 'aforementioned', *besonder* 'a certain') precede other adjectives, even preceding possessors and cardinal numbers. Both Cinque (2010) and Evans (2021) argue that cross-linguistically, non-predicative adjectives are in the highest functional projection for adjectives. Our results dif-

fer somewhat from Laenzlinger (2005) and Cinque (2010), in that the functional projection for non-predicative adjectives (which we label $\text{Adj}_{\text{non-predP}}$) is not adjacent to the other adjectival projections, being separated by CardP and PossP.

What we call Adj_{desc}P is very likely itself a stand-in for an entire hierarchy of (adjacent) functional projections for all of the adjective types except non-predicative ones. Many such hierarchies have been proposed:

(43) (a) Cardinal > Ordinal > Quality > Size > Shape > Color > Nationality (Cinque 1994)

(b) Ordinal > Cardinal > Size > Length > Height > Speed > Width > Weight > Temperature > Wetness > Age > Shape > Color > Origin > Material (Scott 2002)

(c) Ordinal > Cardinal > Subjective Comment > Evidential > Size > Length > Height > Speed > Depth > Width > Weight > Temperature > ?Wetness > Age > Shape > Color > Nationality/Origin > Material (Laenzlinger 2005)

While the labels for these adjective classes differ, note that in all three hierarchies, every class of adjectives is below both ordinal and cardinal numbers.

In our corpus, there are few examples of co-occurring adjectives that clearly belong to separate classes in the proposed hierarchies, limiting the possibility of evaluating which claims in (43) hold for MHG/ENHG. In most examples of multiple attributive adjectives, the adjectives do not readily lend themselves to any of the subcategories in the hierarchies (also noted by Scott 2002: 111). For example, in (44 a), 'good', 'pious', and 'blessed' all seem to belong to the same unidentifiable class, namely evaluating Job's spiritual adequacy. Similar is (44 b), in which the three adjectives seem to identify Saint Dionysius' description of a type of wisdom.[15]

(44) (a) *der guot frum selig Job*
the good pious blessed Job
'the good, pious, blessed Job' (1556_Nachbarn, 131a)

(b) *Ein vnsinneliche törlich vnüernunftige wisheit*
a nonsensical foolish irrational wisdom
'a nonsensical, foolish(ly) irrational wisdom'
(1449_Nabuchodonosor, 53)

15 The fact that *törlich* of (43 b) lacks inflection suggests that it may not be an adjective modifying *wisheit* but an adverb modifying *vnüernunftige*. An anonymous reviewer suggests that the phrase may be an idiom of some kind.

Note also the contrast between the two phrases in (45), where 'eternal' is the final adjective of the series in (45 a) but the first adjective in (45 b).

(45) (a) *der scheonen minerichen Ewigen wisheit*
the beautiful loving eternal wisdom
'the beautiful, loving, eternal wisdom' (1370_EwigWeisheit, 44)

(b) *die ewig vnentlich freydenreich rue*
the eternal unending peaceful rest
'the eternal, unending, peaceful rest' (1475_Bairische, 416)

The purpose of the examples in (44) and (45) is to demonstrate that several instances of prenominal adjectives are not probative regarding the hierarchies in (43). While (44) and (45) do not violate the hierarchies above, they also offer no confirmation. It may be the case that other factors, such as phonological length, play a role. Furthermore, multiple adjectives in a series may belong to the same class in a given hierarchy, as is likely the case with 'eternal' and 'unending' in (45 b).[16]

A few clear examples appear in the orders predicted by Cinque and others. In (46 a), the color adjective follows the other two adjectives, and indeed color is close to the noun in all three hierarchies above. In (46 b) we find shape > material, and in (46 c) we find temperature > shape > origin. The example in (46 d), with the non-predicative *gemelt*, shows that non-predicative precedes the constellation age > origin. Finally (46 e) shows that *arm*, used in its non-predicative sense 'pitiable', likewise precedes other adjectives.

(46) (a) *dye lyeplichen schonen weyssen lylgen*
the dear pretty white lilies
'the dear pretty white lilies' (1529_GeistlicheMai, 19)

(b) *ein hol iserin instrument*
a hollow iron instrument
'a hollow iron instrument' (1497_Cirurgia, 179)

(c) *desem hitZigen vff rechtenden gotlichen blode*
this hot up right divine blood
'this hot upright divine blood' (1399_Leiden, 13)

(d) *der gemelt jung Hispanisch kauffherr*
the mentioned young Spanish merchant
'the mentioned young Spanish merchant' (1556_Nachbarn, 194)

16 We reserve the topic of the frequency and stylistic implications of the iteration of apparently synonymous adjectives in certain genres of this period for future research.

(e) *den armen kleinen blossen nochvolgeren*
the poor little bare followers
'the pitiable little bare followers' (1449_Nabuchodonosor, 51)

However, a few counter-examples are also attested; for instance, the following directly contradicts the order temperature > color > origin predicted by both Scott (2002) and Laenzlinger (2005):

(47) *irdischem grawem haizzem rauch*
terrestrial grey hot smoke
'terrestrial grey hot smoke' (1375_BuchNatur, 113)

While there are some MHG/ENHG data to support the hierarchies in (43), we find unambiguous evidence only that non-predicative adjectives occur furthest from the noun (Laenzlinger 2005; Cinque 2010; Evans 2021). Thus our analysis for MHG/ENHG warrants a higher functional projection for non-predicative adjectives ($\text{Adj}_{\text{non-pred}}$P) than for all other types of adjectives. Given the paucity of data, for expository purposes we collapse all types of ordinary, descriptive adjectives into a single, low Adj_{desc}P.

4.3 Movement into the D-layer

The word-order generalizations in section 3, suggesting the hierarchical relations in (42), apply when there is an overt determiner. When there is no overt determiner, it seems that the DP may begin with virtually any modifier of N: a numeral/quantifier (48 a), possessor (48 b), non-predicative adjective (48 c), or adnominal genitive (48 d)-(48 e). Even in such cases, however, the generalizations in Table 1 hold for all but the first constituent of the DP: in (48 b) *ander* precedes a cardinal number (Ord before Card), and in (48 c) the possessor precedes the descriptive adjectives:

(48) (a) *vij ander konig*
seven other kings
'seven other kings' (1486_Jerusalem, 258)

(b) *sein andere zwey schwerdter*
his other two swords
'his other two swords' (1533_Fierrabras, 181)

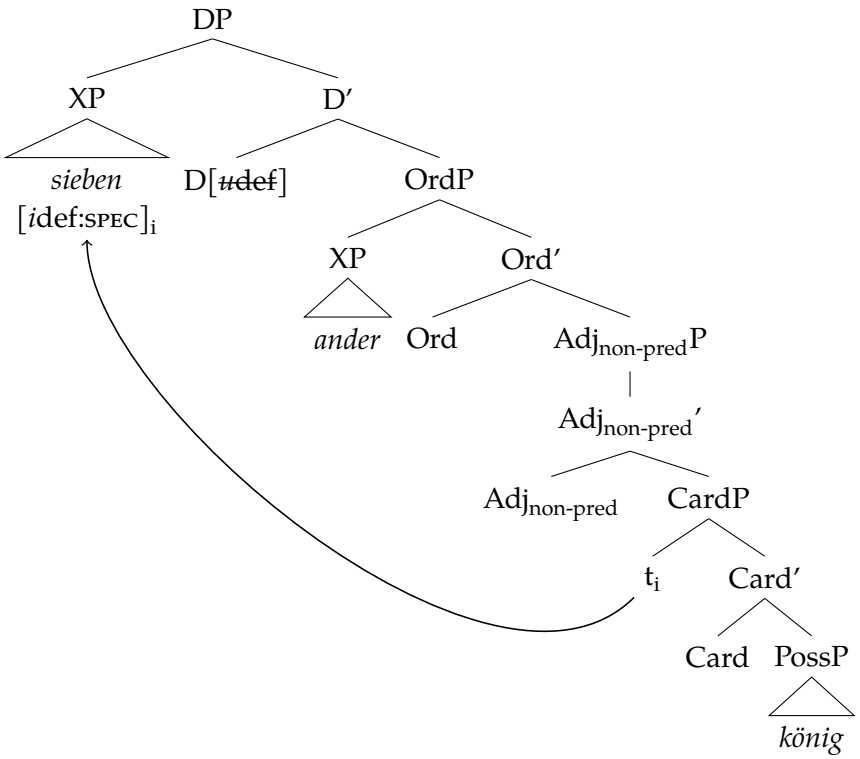
(c) *vor gedachter meiner lieben Eelichen hawsfrawen*
fore thought my dear lawful house-wife
'my aforementioned dear lawful wife' (1501_Stiftbriefe, 267)

(d) [*des* *Lehenherrn*] *vor* *gemelter* *Capellen*
the.GEN liege-GEN fore mentioned chapel
'the aforementioned chapel of the liege' (1501_Stiftbriefe, 253)

(e) [*aller* *leer* *vnd* *predig*] *einig* *regel*
all-GEN doctrine.GEN and sermons.GEN some rule
'some rule of all doctrine and sermons' (1523_Butzer, 49)

We propose that in DPs with no determiner in D (including the null determiner for indefinites and plurals), some element from lower in the DP (any modifier of N, except for garden-variety adjectives or the N itself) must move to the D-layer to satisfy a definiteness feature. Roehrs (2015) shows that definiteness is not an atomic feature, but it comprises the subfeatures incl(usiveness), presup(positionality), and spec(ificity). Because of examples like (7b) in which definite and indefinite articles appear to co-occur (also noted by (Demske 2001: 225), we propose that the definiteness feature relevant for movement to the D-layer is spec(ificity). Assuming a version of the feature checking framework of Chomsky (1995), we claim that the definiteness feature [*u*def] can be checked *either* by a determiner in D or by movement of the genitive phrase, quantifier, or possessor to Spec-DP. (In a small number of instances, a genitive phrase moves to Spec-DP while a definite (9) or indefinite (11) article appears in D.) Movement to Spec-DP is illustrated in (49), with the numeral 'seven' moving from CardP to check [*u*def] in the D-layer.

(49) *sieben ander konig* (=48 a)



Finally, note that many examples are ambiguous between the underlying/cartographic order proposed above, and an analysis in which the highest element has moved string-vacuously into the (otherwise empty) D-layer:

(50) (a) *andere manege herliche gabe*
other many glorious gifts
'many other glorious gifts' (1199_PredFragmente, 53)

(b) *andern vilen [der geschrifft] spruchen*
other many the.GEN scripture.GEN sayings
'many other sayings of scripture' (1523_Gehorsam, 35)

(c) *etliche [der Teutschen Antiquiteten] sinreiche*
several the.GEN German-GEN antiquities.GEN ingenious
nachforscher
researchers
'several ingenious researchers of the German antiquities'
(1609_TeutscherNation, 61)

This helps explain why in MHG/ENHG these elements can co-occur with

overt D: the elements themselves are not in complementary distribution with definite/demonstrative determiners; it is only movement into the D-layer that is in complementary distribution with determiners. It is the unvalued features in D that motivate the movement in MHG/ENHG, not whatever the features are on the other elements.

4.4 A DP-internal focus position

There remain a few examples, discussed in section 3, that seem to contradict our assumptions about underlying positions and cannot be accounted for by movement to the D-layer. We argue that these exhibit movement to a focus position within DP, as posited by Giusti (1996), Laenzlinger (2005), and Scott (2002), among others. Giusti (1996) shows that this focus position may not be present in all DPs of all languages, and that there is cross-linguistic variation regarding the relative order of this focus position and D. While Laenzlinger (2005) argues for a split D-layer with a focus position between the two D's, we find no data in our corpus to confirm more than one D position at this stage of the history of German. Here, we follow Scott (2002) in assuming that the focus position is immediately below the D-layer.

While prosodic information is lacking in historical texts, in many examples, there is contextual evidence that the word that appears outside the proposed underlying position (but below D) is focused or has scope over the following word(s). These focused words include non-predicative adjectives (51 a), numerals, quantifiers, and descriptive adjectives (51 b) that occur between an article (in D) and the word *ander* 'other, second' (in OrdP).[17] The sentence token (51 a) is a section heading; the heading of the section preceding this one is *der ander artigel in dem nottel begriffen so die von switz zu den von zurich klagent* 'the other article contained in the document, in which those from Schwyz sue those from Zurich'. In this context, (51 a) means that the 'second article' is aforementioned, not a second article of a set of aforementioned articles; i.e., the second article is presupposed and thus does not scope over 'aforementioned'. Similarly, the phrase in (51 b) immediately follows *ein ander wichtige sach* 'another important thing'; thus in (51 b), *ander* is presupposed and *schrecklich* is new-information focus.[18]

17 Recall from section 3.4 that while MSG *ander* means 'other', in earlier stages it also meant 'second'.

18 An anonymous reviewer points out further evidence for this analysis, namely that different positions of *ander* in MSG correspond to different meanings: *die zwei anderen* 'the two further ones' vs. *die anderen zwei* 'the other two'.

(51) (a) *den ob gemeldeten andren arttigel dess nottels*
the above mentioned second article of the note
'the aforementioned second article of the note'
(1486_Edlibach, 115)

(b) *ein schrecklich ander botschafft*
a frightful other message
'a frightful other message' (1537_JungeFursten, 144)

Similarly, any ordinary adjectives that occur between D and a numeral—which only occurs twice in our corpus (26, repeated here as 52)—have moved to the focus position proposed above. This is especially clear in (52 a), which is in the Biblical context of Joseph's dream of the seven fat cows and the seven skinny (or here 'bad') cows. The seven 'bad' cows are clearly in contrastive focus to the seven good cows mentioned in the immediately preceding sentence. In (52 b), the context is the Greek myth of the golden apple and Paris' subsequent judgment. The 'three women' are Juno, Pallas, and Venus, and 'prettiest' describes this group of 'three women' who are sitting at the table in a place of honor; it is not the case that there is a larger set of pretty women, of which these three are a subset. In other words, 'three' does not scope over 'prettiest':

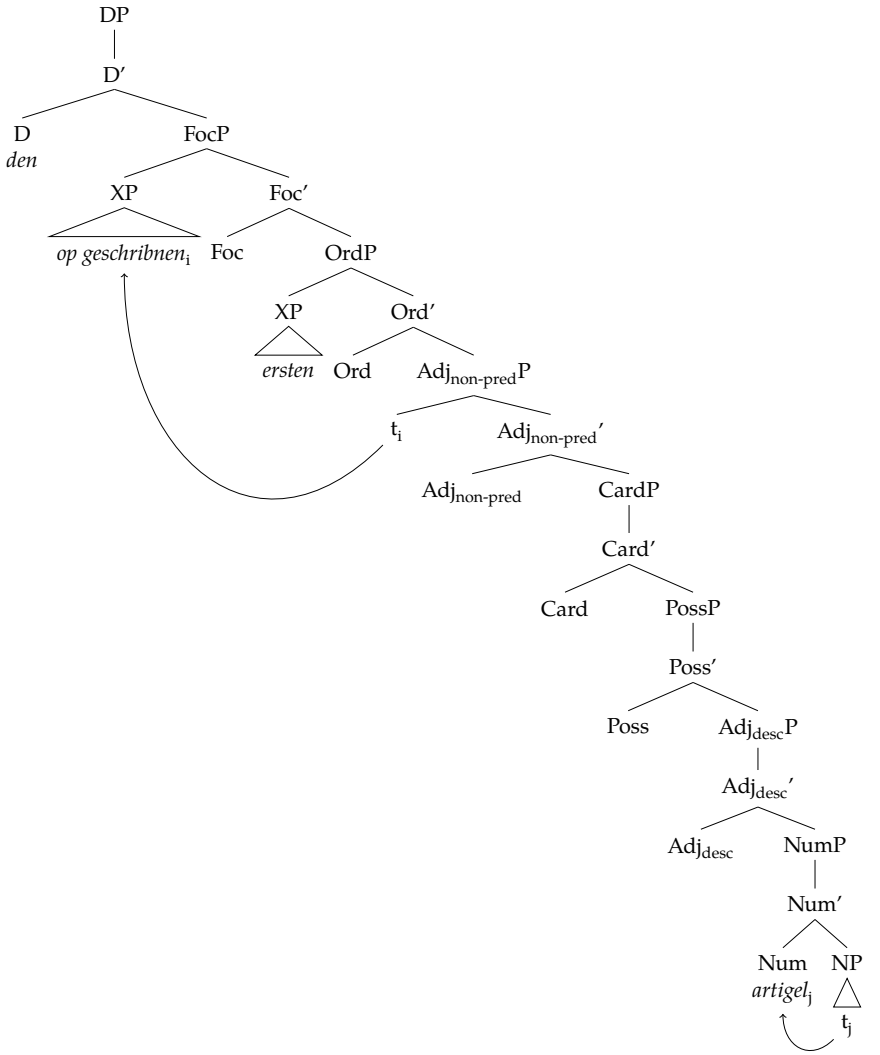
(52) (a) *div bosen siben Rinder*
the bad seven cows
'the bad seven cows' (1274_BuchKoenige, 103)

(b) *die schonisten drein fräwen*
the prettiest three women
'the prettiest three women' (1480_Troyana, 96)

The relevant identifier is not the number of women but rather 'prettiest', which we propose has moved to a focus position; this also removes 'prettiest' from the scope domain of 'three'. Scott (2002: 113) discusses a parallel example: 'Carol's horrible six children'.

Our final proposed structure for the DP in MHG/ENHG is therefore as shown in (53):

(53) *den op geschribnen ersten artigel*
the above written first article
'the aforementioned first article' (1486_Edlibach, 109)



Sections 3 and 4 have provided data indicating the cartography in (53). Deviations from this cartography occur for one of two reasons. First, we posit that one element in the DP may move to the D-layer to satisfy D's definiteness features. Second, FocP provides a landing site for elements fronted for focus or to scope over another function word.

5 Diachronic development: changes to features > changes to word order

5.1 Syntactic differences between MHG/ENHG and MSG possessors

In this section, we outline the diachronic changes that occur in the structure of the DP from the MHG/ENHG system outlined in sections 3 and 4 above to the situation in MSG. We argue that changes in the definiteness features of certain DP-elements were the catalyst for these structural developments. A comparison of the MHG/ENHG structures to their MSG equivalents reveals that three diachronic changes have occurred. In this section, we illustrate the changes using possessive adjectives (hereafter 'possessors'). (It is clear that other modifiers of DP such as quantifying words, adnominal genitive DPs, and possessive proper names undergo similar developments, which we investigate in other publications.)[19]

The first change is the surface position of possessors. While they could appear relatively low in the DP in MHG/ENHG, they appear in the highest position of the modern German DP. In (54 a), the ENHG possessor follows the determiner and adjective, in (55 a) it follows a numeral, and in (56 a) it occurs with 'one' (ambiguous with the indefinite article). However, in the MSG equivalents, the possessor is the first word (54 b, 55 b) or may be the first word (56 b) of the DP. (Example (56 c) is the closest NHG equivalent to (56 a), but this is irrelevant to the discussion at hand as it involves a recursive structure.)

(54) (a) *den vbrigen seinen Schrifften*
the remaining his writings
'his remaining writings' (1650_Probstein, 104)

(b) *seine übrigen Schriften* (MSG)

(55) (a) *drein seinen veinden*
three his enemies
'his three enemies' (1399_Namen, 171)

(b) *seinen drei Feinden* (MSG)

(56) (a) *einem seinem nachbauren*
one his neighbor

19 Evans, Sapp & Sprouse (in progress) investigate the changes to adnominal genitives. These undergo developments similar to those described here for possessors, with some complications: genitive DPs now appear only after N, while genitive proper names have developed an invariant *-s* and can appear before the N.

'one/a neighbor of his' (1556_Nachbarn, 32)

(b) {*einem* / *seinem*} *Nachbarn*
one his neighbor
'one neighbor' / 'his neighbor' (MSG)

(c) *einem* [*seiner* *Nachbarn*]
one his-GEN neighbors.GEN
'one of his neighbors' (MSG)

In section 4, we claimed that when possessors in MHG/ENHG are in the left-most position of the DP, they have moved into the D-layer, and that such movement has not occurred when these items are in their lower position. In MSG, when possessors occur, they are always the initial elements of the DP, suggesting that their movement into the D-layer has become obligatory:

(57) (a) *meine* *obengenannten* *vielen* *lieben* *Freunde*
my aforementioned many dear friends
'my aforementioned many dear friends' (MSG)

(b) *mein* *erster* *lieber* *Freund*
my first dear friend
'my first dear friend' (MSG)

The second diachronic change, obviously related to the first, is that possessors could co-occur with an overt determiner in MHG/ENHG (54 a, 56 a); there are 66 occurrences of this before the year 1520. With definite articles, this has all but disappeared in late ENHG, (54 a) being one of only three examples after 1520, although it remains possible with demonstrative determiners:

(58) (a) *dieselbig* *jre* *sect*
the-same their sect
'the same sect of theirs' (1559_Epitome, 194)

(b) *dieses* *vnseren* *Teutschenlandes*
this-GEN our-GEN Germany-GEN
'this Germany of ours' (1609_TeutscherNation, 77)

By MSG, articles and possessors cannot co-occur in the same DP, i.e. they are in complementary distribution (54 b, 56 b).[20] The only kind of possessive

20 Note, however, that similar phrases with a demonstrative instead of a definite determiner are grammatical: *diese meine Freunde* 'these my friends'. We suspect that in such cases, the possessor and N are in apposition to the demonstrative, i.e. we have two DPs in such cases. This

that can (productively) co-occur with a matrix article is a *post*-nominal genitive DP (56 c) (along with possessors expressed as post-nominal PP with the preposition *von* 'of'). The obligatory movement of possessors to the D-layer in MSG, discussed above, accounts for the complementary distribution of these elements with overt articles in the modern standard language.

The third diachronic difference is that in MHG/ENHG, possessors could occur in indefinite DPs, as in (56 a) and (59):

(59) *einen mynen öheim*
one my uncle
'my one uncle' (1430_Karrenritter, 385)

However, this is now impossible in MSG; in other words, a possessor makes the DP definite in MSG (60 a). An indefinite DP requires the DP corresponding to the possessor to be in prepositional phrase (60 b) or a post-nominal genitive plural (60 c).

(60) (a) *sein Auto*
his car
'his car' i.e. the car belonging to him (MSG)
'one of his cars'

(b) *ein Auto von ihm*
a car of him
'a car of his' (MSG)

(c) *eins [seiner Autos]*
one his-GEN cars.GEN
'one of his cars' (MSG)

Thus, while possessors such as *sein* are definite in MSG, this is not necessarily true in earlier stages of German. We see this in (56 a) above, where the possessive co-occurs in the same DP (and in the same case) as an indefinite determiner. We also see this in (61), where *den* is semantically definite but *synen* is not (justified in 5.2 below):

(61) *den andern synen manen*
the other his men
'the other men of his' (1449_Eisenacher, 65)

suspicion finds support in the inflection on the possessor, as discussed in section 5.3 below. (See also Evans & Roehrs (to appear) for similar arguments about Old Icelandic demonstratives).

5.2 *Changes to definiteness features of possessors*

The previous sub-section illustrated three ways in which MSG differs from MHG/ENHG: in MSG, overt D is in complementary distribution with possessors; possessors cannot remain *in situ* lower than D; and possessors make the DP definite. In this section, we account for these three points by positing certain changes to the def(initeness) features at work in the DP. We claim that changes in definiteness features of possessors led to the word-order changes. We show that as these elements became more determiner-like in late ENHG, several earlier word order patterns became ungrammatical.

Because both MHG/ENHG and MSG require an overt element in D, either via merger of a determiner or via movement of some determiner-like element, we posit that the D-head has unvalued [*u*def] features.[21] Additionally, it is only in the D-layer that [def] features can be interpreted. A derivation either with uninterpreted [*u*def] or with [def] outside of the D-layer results in a crash.

The apparent optionality of moving the possessor to the D-layer in fact correlates with definiteness:

(62) (a) *sein andere zwey schwerdter*
his other two swords
'his other two swords' (1533_Fierrabras, 181)

(b) *den andern synen manen*
the other his men
'the other men of his' (1449_Eisenacher, 65)

In both examples in (62), the DPs denote unique or inclusive sets, a set of swords and a set of men. Both of these DPs are [+incl] in terms of Roehrs's (2015: 235) definiteness features, because in both, 'reference is to the totality of the objects or mass in the context which satisfy the description'.[22] However, they differ with respect to Roehrs' definiteness feature [+spec], which hinges on identifiability. In context, (62 a) refers to two particular swords. The narrator explains that Fierrabras armed himself with his best sword and

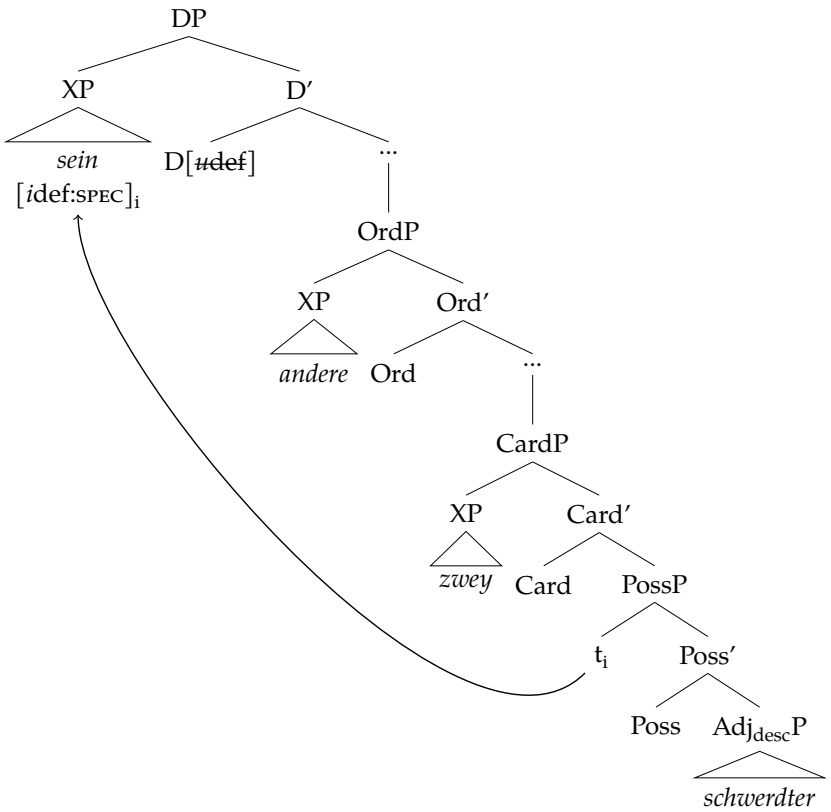
21 Here we abstract away from indefinite plurals, like *gute Freunde* 'good friends' and indefinite mass nouns, like *kaltes Bier* 'cold beer'. In these, there is likely a null determiner that values D's [*u*def]. We leave this question open to future research.

22 Recall from section 4.3 above that definiteness is not an atomic feature, but it comprises three sub-features: inclusiveness/uniqueness, presuppositionality, and specificity. In our analysis, [spec] is the feature driving the relevant movement. We assume that [incl] is valued automatically when an element is merged into D or Spec-DP, along similar lines as Roehrs's (2015: 236) claim that [incl] moves into D automatically. The feature [presup] plays no role in our analysis.

then bound 'his other two swords' to his saddle; the next two sentences name those swords as *Batime* and *Graban*. Thus in the context his two swords are identifiable; this corresponds to Roehrs' [+spec] because '[i]t is possible for the hearer to identify the object(s)/mass in the context which satisfies the description'. Such identifiability is lacking in the context of (62 b), where the reader has no information identifying who 'the other men of his' are. In other words, *synen* in (62 b) is [-spec], i.e. indefinite. The difference in specificity between (62 a) and (62 b) can be captured in English with the possibility of a felicitous interpretation with 'some'. Example (62 a) is infelicitous in context as 'some other two swords of his', but (62 b) can be rendered as 'some other men of his'. The infelicity of 'some' with *sein* in (62 a) indicates that *sein* is [+spec] in that example. Conversely, the lack of identifiability of 'his men' as well as the felicity of 'some' in (62 b) suggest that *synen* here is [-spec].

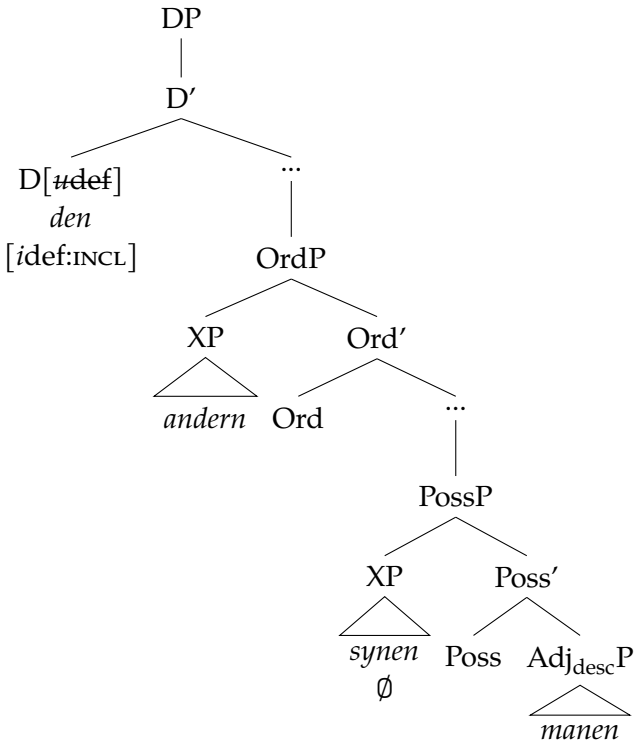
Therefore, we posit that the possessor *sein* in (62 a) is definite and bears the privative feature [*i*def:SPEC], which values D's [*u*def] feature when it moves from Spec-PossP to Spec-DP, illustrated in (63):

(63) *sein andere zwey schwerdter* (=62 a)



The corresponding possessor *synen* in (62 b) lacks the definiteness feature altogether, and [*u*def] is valued by *den* when the latter is merged in D (64). Without the definiteness feature, *synen* in (62 b, 64) remains *in situ*; if it had a definiteness feature it would cause a crash if remaining below the D-layer:

(64) *den andern synen manen* (=62 b)



We conclude that movement of the possessor in MHG/ENHG is not optional, nor motivated by extra-syntactic factors such as pragmatics; it is instead triggered by the need to value [*u*def] when the possessor bears the definiteness feature.

The relevant change from MHG/ENHG to MSG with respect to possessors is that their definiteness feature, privative in MHG/ENHG, is binary in MSG and specifically has the positive value [*i*def:+spec]. In MSG, Poss-to-D movement has two motivations: the residual motivation of valuing D's [*u*def] feature and the new motivation of interpretating Poss's [*i*def:+spec] feature. Consider the MSG equivalents of (62) above:

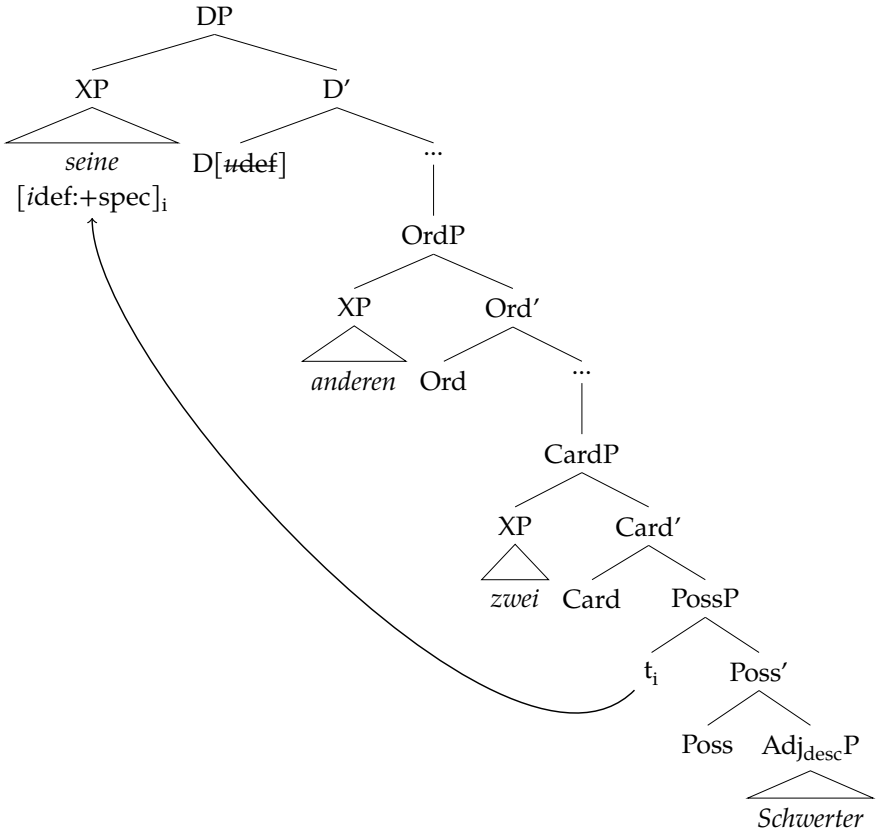
(65) (a) *seine*$_i$ *anderen* t$_i$ *zwei Schwerter* (MSG)

(b) **den anderen seinen Männern* (MSG)

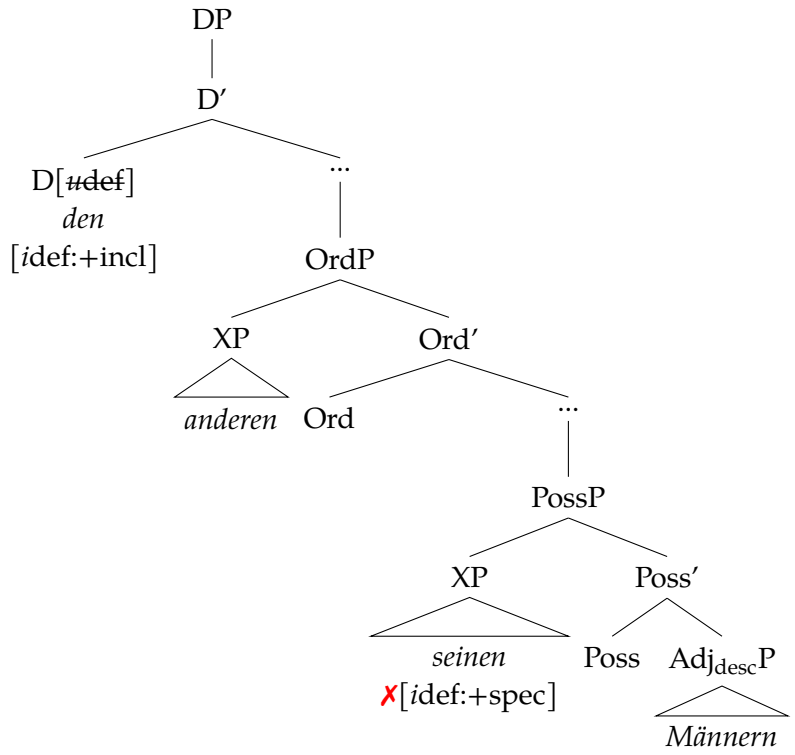
(c) *seinen*$_{i}$ *anderen* t$_{i}$ *Männern* (MSG)

In both (65 a) and (65 c), the possessor moves to D, valuing D's [*u*def], illustrated in (66). A phrase such as (65 b) is not grammatical in MSG, because MSG *seinen* has [*i*def:+spec] and this [def] feature *in situ* cannot be interpreted outside the D-layer, shown in (67).

(66) *seine anderen zwei Schwerter* (=65 a)



(67) **den anderen seinen Männern* (=65b)



In Modern German, therefore, possessors enter the derivation with definiteness features and move to the D-layer obligatorily.

Table 2 sums up the differences between MHG/ENHG and MSG possessors in their definiteness features and in the empirical consequences of those features.

	MHG/ENHG (optional privative feature)		MSG (binary feature)
Definiteness feature	∅	[*i*def:SPEC]	[*i*def:+spec]
Move to Spec-DP	no	yes	obligatory
Co-occur with def. art.	yes	no	no
Occur in indefinite DP	yes	no	no

Table 2 Properties of MHG/ENHG possessors vs. MSG possessors

The diachronic differences between MHG/ENHG possessors and MSG possessors presented in Table 2 can be restated as follows. In MHG/ENHG,

possessors could enter the derivation with or without the privative feature [*i*def:SPEC]. If the possessor enters the derivation without a definiteness feature, the possessor remains *in situ*, another word must merge in or move to D to value [*u*def], and the possessor may lack semantic definiteness (62 b) or may appear in an indefinite DP (56 a). If, however, the possessor enters the derivation with [*i*def:SPEC] it must move to the D-layer, cannot occur with an article, and renders the DP semantically definite (62 a). Then in MSG, the possessor's privative feature [*i*def:SPEC]/∅ was replaced with a binary feature [*i*def:+spec], explaining its obligatory movement to the D-layer, complimentary distribution with articles, and definite semantics. In other words, in the transition to modern German, possessors became syntactically determiner-like.

Our distinction between MHG/ENHG and MSG in terms of definiteness features finds resonance with the analysis of Schoorlemmer (1998), but with crucial differences. For Schoorlemmer (1998), prenominal possessors always surface in Spec-PosP and never move to the D-layer. Instead, in languages with D and possessors in complementary distribution (which she terms 'type 2' languages, including MSG), the phonologically null Pos head must move to D to value definiteness features on Pos. If D contains an overt determiner, the movement is blocked, and Pos's unvalued feature results in a crash. Languages without the complementary distribution (her 'type 1' language, which we show should include MHG/ENHG), the Pos-head simply lacks this feature altogether, and Pos has no motivation to move to D.

While such an analysis accounts for several cross-linguistic correlations (not repeated here), it cannot account for certain facts analyzed above. First, section 3 shows that possessors typically follow ordinals and non-predicative adjectives but can precede them in the absence of an overt determiner. The fact that the possessor can precede or follow other DP elements, within a single language, is strong evidence that the possessor itself moves, contradicting Schoorlemmer's claim that the possessor remains *in situ* and a null head moves to D. Finally, it is not quite true that Pos in 'type 1' languages simply lacks the definiteness feature; as we have argued in this section, the definiteness feature on Pos can be privative, and if present on Pos triggers movement to D. For these reasons, we maintain that definiteness features, when present on possessors, drive movement of the possessor to the D-layer.

5.3 Morphological changes

Further evidence that possessors took on characteristics of determiners can be seen in two morphological developments: the presence of strong vs. weak inflection on the possessor itself, and the strong vs. weak inflection on an

adjective that follows the possessor. The traditional terminology 'strong' vs 'weak' describes the dual inflection of German adjectives (and some other modifiers of DP). Namely, adjectives and adjective-like words can inflect for case/number/gender (traditionally 'strong' endings) as in (68 a), or they can bear the 'weak' endings (*-e* or *-en*), which do not specify case/number/gender (68 b).[23] In broad strokes, determiners that are themselves inflected trigger weak endings on following adjectives, while strong adjectives occur elsewhere. This is true throughout the history of German (see Braune & Reiffenstein 2004: §244 for Old High German; Paul 2007: §201 for MHG; Evans 2019: 147-157 for a diachronic account), illustrated here with MHG:

(68) (a) *mit gefunt-eme houbite*
with healthy-ST head
'with a healthy head' (1100_JungPhysiologus, 214)

(b) *in demo guot-en lébenne*
in the good-WK life
'in the good life' (1100_Alkuin, 10)

The first change involves the inflection on the possessor itself. When no determiner is present, the possessor has mostly strong inflection (69).[24] Following an overt determiner, the possessor can be inflected strong like *unssre* in (70 a) or weak as with *seinen* in (70 b).

(69) *sin-er gulubt oder sin-em aid*
his-ST vow or his-ST oath
'his vow or his oath' (1427_Fuchsfalle, 157)

23 The *-e*/*-en* distinction in the weak adjective inflection *nearly* corresponds to a morphologically relevant distinction. For most of the paradigm, *-e* surfaces in the singular nominative/accusative and *-en* elsewhere, but the otherwise unexpected *-en* of the masculine accusative singular disrupts such a generalization.

24 Occasionally, we find what appears to be the weak ending *-en* instead of the expected strong *-em*:

(i) *zu sin-en rechte alter*
to his right age
'to his right age' (1427_Fuchsfalle, 59)

This is likely the well-known confusion between the two nasal endings of the dative singular (as in MSG, see Wöllstein et al. 2022: 420). Crucially, we never find weak fem.sg. *-en* when one would expect the strong dat.fem.sg *-er*: **zu sin-en ehefraw*.

(70) (a) *die vergemelt-en vnssr-e gnadig-en frowen von*
the aforementioned-WK our-ST merciful-WK lady of
Togenburg
Togenburg
'our aforementioned merciful lady of Togenburg'
(1486_Edlibach, 19b)

(b) *die sein-en trew-en vnd tewr-en hörgesellen*
the his-WK loyal-WK and dear-WK army-companions
'his loyal and dear army-companions' (1475_Bairische, 452)

This behavior of MHG/ENHG possessors mirrors that of adjectives, which are mostly strong when not preceded by a determiner and weak after a definite determiner (with some vacillation). However, in MSG, possessors are inflected like the determiners *ein*/*kein* (with -∅ inflection in the masc.nom.sg. and neut.nom/acc.sg and strong endings elsewhere). To the limited extent that a possessor can follow a demonstrative, the possessor retains determiner-like inflection in MSG (71 b), in contrast to the weak ending in the ENHG example (71 a):[25]

(71) (a) *dies-es vnser-en Teutschenlandes*
this-ST our-WK Germany
'of this our Germany' (1609_TeutscherNation, 77)

(b) *dies-es unser-∅ schön-es Land*
this-ST our-ST beautiful-ST country
'this our beautiful country' (MSG, Wöllstein et al. 2022: 414)

In other words, possessors have ceased being adjective-like (with a contextually driven choice between weak and strong endings) and have become consistently determiner-like in their morphology.

The second piece of evidence that possessors took on characteristics of determiners can be seen in their interaction with co-occurring adjectives. MHG/ENHG possessors could be followed by adjectives with either strong (72 a) or weak endings (72 b); see also Evans (2019: 148-151).[26] In (73), we see a mix of the two types: the first two modifiers have strong endings, while the last two adjectives are weak.

25 In MSG, there are adjectives in *-ig* derived from possessors which follow determiners, e.g. *der meinige* 'mine'. Curme (1922: 165) dates the emergence of these *-ig* forms to the 16th century; we interpret this emergence as a response to the ongoing shift in feature composition of the possessors.

26 Similarly, Evans (2020) shows that Old High German possessors could trigger either weak or strong endings on adjectives.

(72) (a) *sin-er suoz-er salven*
his-ST sweet-ST ointment
'his sweet ointment' (1300_KoelnKloster, 338)

(b) *sin-er heilig-en vferstandunge*
his-ST holy-WK resurrection
'his holy resurrection' (1300_Leipziger, 84)

(73) *vor gedacht-er mein-er lieb-en Eelich-en hawsfrawen*
fore thought-ST my-ST dear-WK lawful-WK house-wife
'(by) my aforementioned dear lawful wife' (1501_Stiftbriefe, 267)

That is, in MHG/ENHG there was no clear morphological difference between possessors and adjectives. But after ca. 1500 in our corpus, possessors increasingly tend to trigger weak inflection on adjectives (74 a), with only a single counter-example occurring after 1500 (74 b). By MSG, possessors are always (unless themselves -∅ inflected) followed by weak adjectives (75), another property that they share with determiners such as *ein* and *kein*:

(74) (a) *sein-em allerlyebst-en hymelisch-en vatter*
his-ST dearest-WK heavenly-WK father
'his dearest heavenly father' (1529_GeistlicheMai, 271)

(b) *fein-em hochfchwanger-em weibe*
his-ST high-pregnant-ST wife
'his very pregnant wife' (1605_Hessische, 153)

(75) *sein-er schwanger-en Frau*
his-ST pregnant-WK wife
'his pregnant wife' (MSG)

To conclude this section, in 5.1 we identified three changes to the distribution of possessors from medieval German to MSG: they now appear at the beginning of the DP, are in complementary distribution with determiners, and render the DP definite. In 5.2, we attributed these developments to the presence of an interpretable definiteness feature [idef:+spec] in MSG. In other words, syntactically, possessors have become more article-like. This syntactic change had morphological consequences. When possessors began to enter the derivation with [idef:+spec], they gave up morphological properties shared with adjectives (weak and strong inflection depending on the preceding determiner; optionally bearing the same inflection as a following adjective) and took on the morphological properties of determiners (strong

inflection of the *ein*/*kein* type; triggering weak inflection on following adjectives).

6 Conclusions

In this paper, we have proposed a cartography for the early German DP and analyzed changes from MHG through ENHG to MSG. Data from a parsed corpus of historical High German allowed us to establish a number of facts about word order in the early German DP. First, we identified the underlying positions of the functional modifiers of N: just below D is the position of ordinal numbers and *ander*, followed by non-predicative adjectives, below that cardinal numbers and weak quantifiers, then possessors and genitives, and finally descriptive adjectives. Second, we established that there is movement within the DP: if no determiner is present, any single functional modifier of N may move to the D-layer, and there is also a focus position in the DP spine.

Because a full account of the diachronic changes from the early German DP to the Modern Standard German DP is beyond the scope of this study, we investigated changes to one class of functional modifiers: possessors. We showed that a change to the definite features of possessors led to their obligatory movement to the D-layer, with accompanying morphological changes. Evans et al. (in progress) expands this analysis to adnominal genitives and the possessive forms of proper names in German. Future research should test whether other word-order changes to the German DP result from featural change as well. Furthermore, future research should seek further evidence for the rise of binary [def] features elsewhere in the grammar. A fruitful area could be the expansion of *ein* from numeral 'one' to indefinite article 'a', a development that might be understood as the expression of a new binary feature [-def].

Another open question is whether the analysis presented in section 5 can account for the cross-linguistic correlations discussed in Schoorlemmer (1998). Taking data from Germanic, Romance, and Slavic, she shows that languages with co-occurring determiners and possessors (her 'type 1' language) also permit possessors in indefinite matrix DPs and lack a special possessor form for DPs with an elided matrix noun. Conversely, languages with determiners and possessors in complementary distribution (her 'type 2' language) likewise prohibit possessors in indefinite DPs and have special possessors in elliptical DPs. We leave open to future research how variation in definiteness features on possessors (not on the Pos head) may account for this correlation and whether the movement of possessors to D that we propose for MSG extends to other 'type 2' languages.

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