Semantic versus lexical gender

Synchronic and diachronic variation
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Acknowledgements

My interest in linguistics started in high school, where simultaneously studying English, German, French and Latin made me realize how much these at first sight very different languages have in common. I was enthralled to discover all the loan words, cognates and structures that these languages share. Learning them as school subjects, I was also fascinated by the process of language acquisition that I experienced within myself. How wonderful it was that a once unintelligible stream of French sounds could suddenly be disclosed to me as I started recognizing individual words, or that at some point I heard myself form completely new and complex sentences out of a limited set of vocabulary items and some basic knowledge of grammar. The continued acquisition of my own language often made me rejoice over all sorts of small 'discoveries'. My heart still jumps when I discover a morpheme boundary I had not seen before or when a literal, obsolete meaning of a word suddenly reveals itself to me. Language continues to fascinate me and I love that there are always new things to be discovered and explained about it.

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List of abbreviations

3	third person
ACC	accusative
ART	article
C	common gender
DAT	dative
DEM	demonstrative
DET	determiner
F	feminine gender
fem	feminine
GEN	genitive
INDEF	indefinite
M	masculine gender
masc	masculine
N	neuter gender
neut	neuter
NOM	nominative
NP	noun phrase
PART	particle
PL	plural
POSS	possessive
REFL	reflexive
SG	singular

Chapter I
Introduction

Bij politici, sporters, presentatoren, op televisie bij DWDD en Pauw en op de radio hoor je elke dag: "het meisje ... die", een jongetje ... die" of "mijn paard ....die". Zo verwatert [...] kennelijk toch het Standaardnederlands.

'With politicians, athletes, hosts, on television in DWDD and Pauw and on the radio, every day, you hear: "the girl ... she", "a boy ... he" or "my horse ... he". Thus, Standard Dutch [...] apparently deteriorates.'

(Excerpt from a reader's e-mail to Dutch newspaper *De Telegraaf*, 25 January 2016, http://www.telegraaf.nl/watuzegt/25076464/HetisHETmeisjeDAT.html)

This dissertation is about gender agreement. The term 'gender' derives from the Latin word *genus*, meaning 'sort' or 'category'. It usually refers to the categories of male and female in the non-linguistic context, but in the present linguistic context, it is used in its broader sense. The nominal classes in language referred to as genders are not always based on a classification in terms of sex, but can also be based on, for instance, animacy or the noun's form. A good starting point to explain linguistic gender is Hockett's (1958: 231) definition: "Genders are classes of nouns reflected in the behaviour of associated words". This behaviour of associated words is called gender agreement. Corbett's (1991) extensive reference work on gender shows that gender systems are found in many different languages of the world, varying in the number of genders used, their basis of classification, and the kind and number of elements that show gender agreement. Many of the Indo-European languages have a gender system, inherited from Proto-Indo-European, which generally involves two or three nominal genders and agreement on determiners, adjectives and pronouns.

The dissertation focuses on pronominal gender agreement in Dutch, a Germanic language with two nominal genders in its standard variety spoken in The Netherlands. The outline of this chapter is as follows. Section 1 introduces the concepts of gender assignment and gender agreement. Section 2 discusses gender

agreement in pronouns and the agreement variation that pronouns can display. Section 3 introduces the gender system of Dutch and the agreement phenomenon that is the subject of this study. Section 4 presents the aim and research questions of this dissertation and gives an overview of the outline of this book.

1. Gender assignment and gender agreement

In languages with nominal genders, each noun belongs to a certain gender. In comparison with other grammatical categories, nominal gender is a remarkable one, because, although it forms an integral part of many languages around the world, it does not seem to serve a grammatical function in most languages. The gender of a noun is invariant in most gender systems, that is, speakers cannot choose the gender of a noun, in the same way that they can choose, for instance, the singular or plural number of a noun. Nominal gender does not vary from one context to the next and does not modify the meaning of the noun. As such, nominal gender does not behave as most grammatical categories, which tend to have a choice of meaningful settings (Leiss 2000). While the purpose of nominal gender is obscure, it can be one of the most cumbersome aspects of a language to learn. This is the case for Dutch in particular, where the gender of nouns largely has to be learnt word by word, which takes a relatively long time even for native speakers and is a feat that is often never fully accomplished by second language learners (Blom, Poliśenská & Weerman 2008).

The attribution of a particular gender to a noun is called gender assignment. Gender assignment can be based on different properties of the noun, viz. its semantic properties or its form, that is, the morphological or phonological properties of the noun, and often a combination of form and meaning is involved (Corbett 1991). An example of a language with a purely semantic gender assignment system is Diyari, an Australian Aboriginal language with two genders, where nouns denoting female humans and female animals belong to one gender, and all other nouns belong to the other gender (Corbett 1991: 11). Assignment systems that are purely based on form, without any semantic factors involved, do not exist, as all gender systems show at least some semantic assignment rules (Corbett 1991, Corbett & Fraser 2000). An example of a language with a predominantly formal gender assignment system is Qafar, an East Cushitic language with two genders, where

nouns that end in an accented vowel belong to one gender and all other nouns, those ending in a consonant or unaccented vowel, belong to the other gender (Corbett 1991: 51). In some languages, gender assignment is not systematically based on formal or semantic criteria. This can be said for Dutch, which shows some regularities in gender assignment, such as that nouns referring to countries are usually neuter gender or nouns ending in *-de* or *–te* are usually common gender, but these regularities cover only a very limited portion of the lexicon. Gender assignment to the majority of Dutch nouns does not follow any formal or semantic criteria, but is arbitrary (Donaldson 1987, Haeseryn, Romijn, Geerts, De Rooij & Van den Toorn 1997, Booij 2002).

Following Hockett's (1958) definition of gender, gender systems are defined by the existence of gender agreement. Agreement in general can be described as the "systematic covariance between a semantic or formal property of one element and a formal property of another" (Steele 1978: 610). The first element controls the agreement and determines the form of the latter element, the agreement target (Corbett 2006: 4). In the case of gender agreement, the agreement controller is typically a noun and possible agreement targets include determiners, numerals, adjectives, verbs and pronouns (Corbett 1991: 105-112). The agreement targets are able to take different forms and can show gender agreement with the controller in this way. An example of gender agreement in Italian is shown in (1) below, where the demonstrative determiner, predicative adjective and pronoun all show agreement with the masculine gender of the noun *libro* 'book'.

(1) Quest-o libro è molt-o stran-o. Vorrei   legger-lo.
     DEM-M book is very-M strange-M would.like.1SG to.read-3SG.M
     'This book is very strange. I would like to read it.'

Although nominal gender assignment and gender agreement are concepts that are distinguished from each other, the two are intertwined, as a noun's gender is ultimately defined by the agreement it receives. The noun *libro* in example (1) is considered a masculine noun, because it is combined with masculine forms. The relevance of gender agreement to nominal gender assignment becomes particularly clear in cases where the agreement that a noun receives is different from the gender

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that is typically associated with the noun's form. The noun *mano* 'hand' in Italian is an example of this. Although nouns ending in *–o* are usually masculine in Italian, *mano* combines with feminine forms, such as the determiner *la*, and it is considered a feminine, not a masculine, noun. In Dutch, most nouns do not even have a gender-specific form that could indicate their gender. The interconnectedness of gender assignment and gender agreement is illustrated in Dutch by the fact that speakers informally refer to common and neuter nouns in Dutch as *de-woorden* '*de*[DET.C] words' and *het-woorden* '*het*[DET.N] words', distinguishing the nouns on the basis of the gender form of the definite article they take.

2. Pronominal gender agreement and agreement variation

This thesis focuses on gender agreement in pronouns. Pronouns are exceptional agreement targets for two reasons. One is that, unlike other agreement targets, they can be widely separated from the noun that controls the agreement. Pronouns do not have to occur in the same sentence as the antecedent noun and can even be separated from it by a speaker turn, as in the dialogue in (2):

(2)   Did you like the book I gave you for your birthday? – Yes, I loved it. I just
        finished it yesterday.

Another aspect of pronouns that makes them exceptional as agreement targets is that they are coreferential with the agreement-controlling noun, that is, the pronoun and the noun share a real-world referent. The pronominal references in examples (1) and (2) above are called 'anaphoric reference', which means that there is a linguistic antecedent to which the pronoun refers 'back', viz. the noun *libro* 'book' in (1) and *book* in (2). This is different with deictic reference, where there is no linguistic antecedent and the pronoun refers to the real-world referent directly, for example when a speaker points and says 'look at him'. Although the criterion of the presence or absence of a linguistic antecedent makes a clear distinction between the types of pronominal reference, they are not entirely distinct. Even in the presence of an antecedent noun, a pronoun does not necessarily refer only to this noun, but, as in deictic reference, likely refers to the referent directly as well (Lyons 1977: 646-677). Lyons (1977: 660) describes anaphoric reference as follows: "[w]e

will not say that a pronoun refers to its antecedent but rather that it refers to the referent of the antecedent expression with which it is correlated". While the pronoun and the antecedent are connected in the discourse, they still each on their own refer to the referent in the real world.

Thus, anaphoric pronouns have a connection with both the antecedent noun and their real-world referent. It may be this dual connection that makes pronouns particularly prone to displaying agreement variation. An example of pronominal agreement variation in German is shown in (3a) and (3b):

(3) a. Dieses **Mädchen** ist sehr sympathish. Ich möchte **es** gerne
         DEM.N girl(N) is very sympathetic I would.like 3SG.N gladly

         kennen-lernen.
         to.know-learn

     'This girl is very sympathetic. I would like to get to know her.'

     b. Dieses **Mädchen** ist sehr sympathish. Ich möchte **sie** gerne
         DEM.N girl(N) is very sympathetic I would.like 3SG.F gladly

         kennen-lernen.
         to.know-learn

     'This girl is very sympathetic. I would like to get to know her.'

The pronoun in the German example above can be either neuter, as in (3a), or it can be feminine, as in (3b). The pronominal agreement in (3a) is in accordance with the neuter gender of the antecedent noun *Mädchen* 'girl'. Different terms are used in the literature for this canonical type of gender agreement. Throughout this thesis it is referred to as 'lexical gender agreement', following Dahl (2000). It is also known as 'grammatical gender agreement' (e.g. Baron 1971) or 'syntactic gender agreement' (e.g. Corbett 1991, Audring 2009). However, these terms are not always clearly or appropriately defined. 'Grammatical gender agreement' can also refer to gender

agreement in general, just as 'grammatical gender' is often used for linguistic gender in general (for instance, Corbett 1991, Comrie 1999). Corbett (1991: 226) defines 'syntactic agreement' as "agreement consistent with form, that is, agreement consistent with the gender as it would be assigned by morphological or phonological assignment rules". However, this definition is a little too restricted, especially to describe gender agreement in a language like Dutch, as not all nouns have a gender-specific form. Dahl (2000) also points out this shortcoming of Corbett's terminology and proposes that what Corbett refers to as 'syntactic agreement' is agreement with 'lexical gender', that is, agreement that is based on the lexically stored gender of the noun.

The feminine agreement in (3b) is in not in accordance with the gender of the antecedent noun, but instead it is in accordance with the gender that is associated with the referent. This kind of agreement is known as 'semantic gender agreement'. This term is commonly used in the literature and therefore it is used throughout this thesis as well. However, it would perhaps be more accurately called agreement based on 'referential gender', following Dahl (2000). The term 'semantic gender agreement' is in line with Corbett's (1991) description of it as agreement with the semantic properties of the noun, which, in the case of (3b), would be the semantic feature [female] of the noun *Mädchen* 'girl'. However, rather than being based on the semantic properties of the noun, this kind of agreement is more likely based on the properties of the referent, that is, the sex of the actual girl in example (3). This becomes apparent with nouns whose meaning does not specify the sex of the referent. The English noun *doctor* is an example of this. Pronominal agreement with either *he* or s*he* with this noun varies from one context to the next, depending on whether the doctor in question is a man or a woman. This indicates that the pronominal agreement is not based on the semantic properties of the noun *doctor*, which does not include a sex specification, but on the properties of the actual referent in context (Dahl 2000). A consequence of this analysis is that with semantic gender agreement, it is not the noun that is the agreement controller, but the referent is. In this view, variation between lexical and semantic gender agreement, as in (3a) and (3b), is variation between agreement that is based on the gender assigned to the noun and agreement that is based on the gender associated with the referent.

3. Semantic gender agreement in Dutch

This thesis studies pronominal gender agreement in Dutch. Standard Dutch spoken in The Netherlands (subsequently referred to as 'Dutch') has two nominal genders, common and neuter. Common gender is a conflation of former masculine and feminine gender. These two genders conflated around the seventeenth century as a result of deflection in the noun phrase (Geerts 1966: 192-210, Schönfeld & Van Loey 1970: 119-120). Several Eastern and Southern Dutch dialects, particularly Flemish dialects, still distinguish the original three nominal genders to varying extents, but the distinction between masculine and feminine nouns is no longer made in Standard Dutch spoken in The Netherlands. Gender agreement in Dutch is shown on determiners, such as the definite article (*de* versus *het*), attributive adjectives and pronouns. In the pronominal domain, the two genders are expressed on the relative pronoun (common *die* versus neuter *dat* 'that') and on the demonstrative pronouns (common *die, deze* versus neuter *dat, dit* 'that, this'). The personal pronoun distinguishes masculine (*hij*, *hem* 'he, him'), feminine (*zij*, *haar* 'she, her') and neuter (*het* 'it') gender.

As in the German example (3) above, pronouns in Dutch show variation between lexical gender agreement and semantic gender agreement. Interestingly, semantic agreement in Dutch not only occurs with animate referents, but it occurs with inanimate referents as well. This has been observed by, among others, Van Haeringen (1936, 1951), Fletcher (1987), Siemund (2002) and Audring (2006, 2009). Audring (2009) demonstrates and analyses the phenomenon in great detail on the basis of spoken language data from the *Corpus Gesproken Nederlands* (*CGN*, 'Corpus of Spoken Dutch'). The semantic agreement with inanimates appears to be based on the degree of individuation of the referent. Common and masculine pronouns are used with referents that have a high degree of individuation, that is, referents with a clearly bounded shape, such as concrete objects, while neuter pronouns are used with referents that have a low degree of individuation, that is, referents with unclear boundaries, such as materials and liquids. Examples of this semantic agreement from the *CGN* are shown in (4) and (5) below (from Audring 2006: 95-99). In (4) a masculine pronoun is used with a neuter gender noun denoting a concrete object, *boek* 'book', while in (5) a neuter pronoun is used with a common gender noun denoting a mass, *olijfolie* 'olive oil'.

(4) Moet je   nog   wat informatie over   dat   **boek**   hebben?
     need you   more some information about DEM.N book(N)   have

     Dan moet   'k   **'m**   nog niet gaan inleveren.
     then should I   3SG.M yet not   go   return

     'Do you need some more information about that book? Then I shouldn't return
     it yet.'

(5) 't   zit toch   ook bij   **olijfolie**   wel een beetje in
     it   is   in.fact also with olive.oil(C) PRT a   bit   about

     hoe **'t**   geconserveerd wordt.
     how 3SG.N   preserved   is

     'In fact also with olive oil, it matters how it is preserved.'

This semantic gender agreement exists beside lexical gender agreement in present-day Dutch. For example, the pronoun in (4) could alternatively be neuter, as in (4'), agreeing with the neuter gender of the noun *boek*:

(4') Moet je   nog   wat informatie over   dat   **boek**   hebben?
     need you   more some information about DEM.N book(N)   have

     Dan moet   'k   **'t**   nog niet gaan inleveren.
     then should I   3SG.N yet not   go   return

     'Do you need some more information about that book? Then I shouldn't return
     it yet.'

This thesis was inspired by Audring's work on pronominal gender agreement in Dutch and investigates the origin of the observed semantic agreement based on

individuation, when this kind of agreement has developed and what factors could be involved in its surfacing. Audring (2006, 2009) herself proposes that the semantic agreement has developed in response to the change from a three-gender system to a two-gender system in Dutch, due to the conflation of masculine and feminine nominal gender. The resulting mismatch between nominal gender and pronominal gender may have led to a reinterpretation of the pronouns in semantic terms. This dissertation explores an alternative scenario. It investigates the possibility that agreement based on individuation already existed before this change, and that the semantic agreement that is now observed in pronouns reflects a long existing semantic interpretation of the genders.

4. Aim and outline

The aim of this dissertation is to gain insight into the origin of semantic gender agreement based on individuation in Dutch, when it has developed and what factors could be involved in its surfacing. This thesis addresses the following research questions that are each intended to shed light on this issue:

(i)   How deeply rooted is the association of common and masculine gender with the meaning of high individuation and neuter gender with the meaning of low individuation in Dutch? Is this semantic association restricted to pronominal gender or can it be found in nominal gender as well? Could the association go back to a semantic origin of the gender system?

(ii)   Does semantic agreement based on individuation also exist in Germanic varieties that still distinguish the original three nominal genders?

(iii) Did semantic agreement based on individuation develop in Dutch after the change from a three-gender system to a two-gender system or did it exist already before this change?

(iv)   Is there a relation between the extent to which lexical gender is marked in the noun phrase and the ratio of semantic gender agreement in pronouns?

The core of this dissertation consists of four chapters that each address one of the research questions presented above. These chapters were written as separate research papers that have been published in or submitted to different linguistics journals. This means that the chapters can be read independently and, although they each address a separate research question, there is some overlap between them.

Chapter II addresses the first research question, or set of questions. In this chapter it is argued that individuation plays a role in the Dutch gender system as a whole. The association between the genders and different degrees of individuation not only exists in pronouns but can be found in nominal gender in Dutch as well. The semantic agreement found in pronouns relates to an existing semantic distinction between the genders, which is also found in the gender systems of other Germanic, and Romance, varieties and possibly dates back to Proto-Indo-European.

Chapter III addresses the second research question and investigates whether semantic agreement based on individuation also exists in German, a Germanic variety that still distinguishes three nominal genders. The chapter presents an pronoun elicitation experiment that compares pronominal agreement in Dutch and in German. The results of the experiment show that semantic agreement based on individuation exists in both languages, but in considerably different ratios.

Chapter IV addresses the third research question of when semantic agreement based on individuation developed in Dutch pronouns, particularly whether or not it existed before the conflation of masculine and feminine nominal gender. This chapter presents a corpus study of pronominal agreement in Middle Dutch, where the original three-gender system was still in place. The results show that agreement based on individuation already existed beside lexical gender agreement in Middle Dutch, although its frequency seems to be lower than in present-day Dutch.

Chapter V addresses the final, fourth research question. It investigates whether the visibility of lexical gender in the noun phrase could influence the ratio of lexical to semantic gender agreement in pronouns. The experiment presented in this chapter tests whether the presence or absence of explicit lexical gender marking on the antecedent affects the choice between lexical and semantic gender agreement in pronouns. The results of the experiment show that the absence of lexical gender marking increases the likelihood of semantic agreement.

Chapter VI summarizes and discusses the findings of this dissertation, addresses remaining questions and provides suggestions for future research.

Chapter II
The semantics of the Dutch gender system[*]

Abstract

In this chapter it is argued that, although Dutch gender assignment is not systematically organized along semantic lines in the lexicon, the gender system has a semantic basis. Audring (2006, 2009) found that Dutch pronouns often show semantic gender agreement that is based on the degree of individuation of their referent. It is shown that this pronominal agreement behaviour relates to an existing semantic interpretation of the genders, as the same semantic distinction can also be found in the nominal domain. It surfaces particularly in cases where the gender of nouns is variable. The semantic interpretation of the genders possibly goes back their roots in Proto-Indo-European. It is argued that, ever since nominal gender became an invariable, lexically stored feature of nouns, the semantic basis of nominal gender assignment has become disrupted. This creates a conflict between lexical and semantic gender agreement in pronouns. It is suggested that the surfacing of semantic agreement in this conflict is connected with a reduced marking of lexical gender in the nominal domain.

1. Introduction

This study focuses on the gender system of Standard Northern Dutch (subsequently referred to as 'Dutch'), a language with two nominal genders, common and neuter.[1] As in the other Germanic languages with two genders, common gender in Dutch is a conflation of former masculine and feminine gender. The two nominal genders are marked on determiners, attributive adjectives and pronouns. Only the personal pronoun still distinguishes three genders, masculine, feminine and neuter. Table 1 gives an overview of all the forms that mark gender in Dutch. Gender distinctions only exist in the singular. In the plural, the common gender forms are used.

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[1] Several Eastern and Southern Dutch dialects still distinguish three nominal genders, masculine, feminine, and neuter. In the Standard Northern Dutch spoken language, however, the distinction between masculine and feminine nouns is no longer made (see Audring 2009: 94).

Table 1. Dutch gender-marked forms

Determiners		common	neuter
Definite article 'the'		*de*	*het/'t*
Demonstrative determiner	distal 'that'	*die*	*dat*
	proximate 'this'	*deze*	*dit*
Demonstrative determiner 'such'		*zulke*	*zulk*
Interrogative determiner 'which'		*welke*	*welk*
First plural possessive determiner 'our'		*onze*	*ons*
Collective determiner 'every'		*iedere/elke*	*ieder/elk*
Indefinite quantifying determiner 'many a'		*menige*	*menig*
Adjectives		**common**	**neuter**
Attributive adjective (indefinite NPs only)		*-e* suffix	no suffix
Pronouns		**common**	**neuter**
Relative pronoun 'that'		*die*	*dat*
Demonstrative pronoun	distal 'that'	*die*	*dat*
	proximate 'this'	*deze*	*dit*
Personal pronoun 'it' (nominative – oblique)		**masc.** — *hij/'ie – hem/'m*	**fem.** [2] — *zij/ze – haar/'r* — **neuter** — *het/'t*

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[2] As discussed later in the text, in spoken language, feminine pronouns are almost exclusively used for animate, female referents. Masculine pronouns generally agree with common gender nouns.

Nominal gender assignment is largely arbitrary in Dutch. Although there exists a limited set of semantic and formal regularities in nominal gender assignment, there is generally no motivation as to why one noun is common and another noun is neuter gender (see, for instance, Donaldson 1987, Haeseryn et al. 1997, Booij 2002).

In pronominal gender agreement, two types of agreement are found: 'lexical gender agreement', that is, agreement based on the lexical gender of the noun, and 'semantic gender agreement', that is, agreement based on the properties of the referent. An example of lexical gender agreement is shown in (1).

(1) Ik kocht   het   **huis**   van mijn grootouders
    I   bought DET.N house(N) of   my   grandparents

    en   wilde   **'t**   opknappen.
    and   wanted   3SG.N   renovate
    'I bought my grandparents' house and wanted to renovate it.'

When pronouns refer to animate entities, however, they tend to show agreement with the referent's sex instead of with the lexical gender of the noun. An example is shown in (2), where the feminine pronoun is used, while the antecedent noun is neuter.

(2) Het   **meisje**   ging   snel   naar school,
    DET.N girl(N)   went   quickly   to   school

    want   **ze**   was te   laat.
    because 3SG.F   was too   late

    'The girl left for school quickly, because she was late.'

This kind of semantic agreement, with animate referents, is quite common in languages that otherwise show lexical gender agreement (see Corbett 1991).

Audring (2006, 2009) shows that another kind of semantic gender agreement occurs in Dutch, with inanimate entities. This semantic agreement involves an

opposition between masculine/common gender and neuter gender, and is based on the degree of individuation of the referent. Masculine and common gender pronouns, on the one hand, tend to be used with referents that have a high degree of individuation, that is, discrete, countable entities with clear boundaries, typically concrete objects, such as a cup or a book. Neuter pronouns, on the other hand, tend to be used with referents that have a low degree of individuation, that is, nondiscrete, uncountable entities with unclear boundaries, typically masses, such as sugar or water.

This agreement pattern was first described by Van Haeringen (1936, 1951), who observed that any object may be pronominalized by a masculine pronoun in Dutch (1936: 20), and that the neuter pronoun, instead of the masculine pronoun, may be used for non-neuter mass nouns (1951: 13). Audring (2006, 2009) has supported this early observation with spoken language data from the *Corpus Gesproken Nederlands* (*CGN*, 'Corpus of Spoken Dutch'). Examples (3) - (6) below (adapted from Audring 2006: 95-99), demonstrate this semantic agreement for both personal and demonstrative pronouns. Example (3) shows the use of a masculine personal pronoun with a neuter noun that denotes a concrete object:

(3) Moet je   nog   wat informatie over   dat   **boek**   hebben?
     need you more some information about DEM.N book(N)   have

     Dan moet   'k   **'m**   nog niet gaan inleveren.
     then should I   3SG.M   yet not go   return

     'Do you need some more information about that book? Then I shouldn't return it yet.'

Similarly, a common gender demonstrative pronoun is used with a neuter noun denoting a concrete object in example (4):

(4) Heb jij   een **fototoestel**?
     have you   a   camera(N)

     Nee ik   kan **die**   van m'n broer   wel lenen.
     no   I   can DEM.C of   my   brother PRT   borrow

     'Do you have a camera? No I can borrow my brother's.'

The other way around, in example (5), a neuter personal pronoun is used with a common gender noun that denotes a mass:

(5) 't   zit toch   ook bij **olijfolie**   wel een beetje in
    it   is   in.fact also with olive.oil(C) PRT   a   bit   about

    hoe **'t**   geconserveerd wordt.
    how 3SG.N   preserved   is

    'In fact also with olive oil, it matters how it is preserved.'

Similarly, a neuter demonstrative pronoun is used with a common gender noun denoting a mass in example (6):

(6) Wij hebben daar   geen behang   zitten
     we   have   there   no   wallpaper hanging

     maar gewoon **verf**   en   **dat**   is oranje.
     but   just   paint(C) and DEM.N is orange

     'We don't have wallpaper there but just paint and that is orange.'

This type of agreement is frequent in Dutch. Audring (2009: 16) found that in 65% of the cases where there is a conflict between lexical and semantic gender (that

is, with common gender mass nouns and neuter gender count nouns), the personal or demonstrative pronoun does not agree with the noun's lexical gender.

Semantic agreement is found with the relative pronoun as well, but less frequently – in 25% of the cases where there is a conflict between lexical and semantic gender (Audring 2009: 160). It appears that the greater the distance between the antecedent and the pronoun – both structural/syntactic distance and plain word distance – the higher the likelihood of semantic agreement (Audring 2009: 165-166). Examples (7a) and (7b) (adapted from Audring 2006: 98-99), show the use of a common gender relative pronoun with a neuter noun, and a neuter relative pronoun with a common gender noun, respectively.

(7) a. Misschien   is 't ook wel   handig om zo'n   **toestel**
       maybe   is it also quite handy to such.a device(N)

       te nemen **die** je   d'r zo   af kan halen.
       to take DEM.C you there simply off can take

       'Maybe it is rather handy to take the kind of device that you can simply remove.'

   b. dat er   geen **apparatuur** onbeheerd   is achtergebleven   **dat**
      that there no equipment(C)   unattended   is stayed.behind   DEM.N

      aan staat.
      on stands

      'That no equipment has been left unattended that is switched on.'

What these data show is the existence of semantic gender agreement in the pronominal domain of a language that otherwise has a lexical gender agreement system. Cross-linguistically, this phenomenon is not uncommon. The observation that semantic agreement can occur in the personal and demonstrative pronoun, and to a lesser extent also in the relative pronoun, while determiners show lexical gender

agreement is consistent with Corbett's (1979) Agreement Hierarchy. Corbett observes that cross-linguistically, gender agreement can be represented on a hierarchy, with the likelihood of semantic gender agreement increasing the further one moves towards the right end of the scale:

(8) The Agreement Hierarchy (adapted from Corbett 1979)

    attributive > predicate > relative pronoun > personal pronoun

    lexical   semantic

    agreement   agreement

According to this hierarchy, determiners and attributive adjectives (adnominal elements) are most likely to agree with the noun's lexical gender, while personal and demonstrative pronouns are generally the first to show semantic instead of lexical gender agreement. This pattern is also observed in spoken Dutch.

The question is why this semantic agreement occurs in Dutch, and why it is based on individuation. In this chapter, it is argued that individuation not only plays a role in the kind of pronominal gender agreement illustrated above, but in fact constitutes the basis of a semantic contrast that operates in the Dutch gender system as a whole. It is shown that the semantic agreement observed in pronouns relates to an existing semantic distinction between the genders, which arguably dates back to Proto-Indo-European. It is suggested that the surfacing of semantic agreement in pronouns is related to a reduced marking of lexical gender in the noun phrase. The next section discusses previous research showing that the semantic interpretation of the Dutch pronouns can be related to a semantic hierarchy called the Individuation Hierarchy, and that this interpretation of the pronouns is not unique to Dutch, but has been found in other Germanic languages as well.

2. The Individuation Hierarchy

The semantic agreement pattern in Dutch pronouns can be described in terms of a distinction between referents on the basis of their position on the Individuation Hierarchy (Siemund 2002, Audring 2006, 2009). This hierarchy, shown in (9), is

essentially an elaboration of the Animacy Hierarchy (Silverstein 1976), in which the inanimate section of the hierarchy is further subdivided.

(9)   The Individuation Hierarchy[3]

Human > Animal > Object > Bounded > Specific > Unbounded
                                    abstract   mass   abstract,
                                                             Unspecific
                                                             mass

Entities on the left of the hierarchy have a high degree of individuation; they have a clearly bounded shape and specific characteristics. Entities on the right have a low degree of individuation; they have unclear boundaries and are less specified. Animate entities have a high degree of individuation. Next to them on the hierarchy are concrete objects, such as a book or a table. Abstracts are intangible things, concepts. They can be bounded and countable, such as a problem, an idea, or a question, or unbounded and uncountable, such as pain, love, or happiness. Specific masses are specific instantiations of masses, such as my mother's soup or his tea. Lowest on the hierarchy, with unbounded abstracts, are unspecific masses, such as snow, rain, or honey (Audring 2006: 102-103).

The boundary between the domain of masculine/common pronouns and the domain of neuter pronouns is situated somewhere between bounded and unbounded referents in Dutch. Siemund (2002: 224-225) shows that the pronominal gender systems of other Germanic languages can be related to this hierarchy as well. The

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[3] The hierarchy presented here is an adaptation of Audring's (2006: 102, 2009: 127) rendition of the Individuation Hierarchy. Audring uses an adapted version of Sasse's (1993: 659) Continuum of Individuality to explain the Dutch pronominal gender system. In Sasse's hierarchy, abstracts form a single category, while Audring distinguishes between bounded abstracts (such as a problem or a word) and unbounded abstracts (such as love or pain). In Audring's hierarchy, bounded abstracts are grouped together with objects (such as a book or a table). This grouping was motivated by the fact that in Audring's corpus data it was often difficult to tease apart concrete and abstract readings of nouns denoting objects (Audring 2009: 70). However, as the two categories are not equal in terms of individuation, they are separated in the version of the hierarchy adopted here. It is of course still an empirical question whether or not a distinction is made between the two kinds of referents in pronominal agreement.

pronominal gender system of Standard English is based on a split between animate and inanimate entities, whereby neuter pronouns are used for all inanimate referents. This constitutes a cut-off point that is situated further to the left than in Dutch, as shown in (10).

(10) Gender distinctions on the Individuation Hierarchy

Human > Animal > Object > Bounded > Specific > Unbounded
abstract   mass   abstract,
Unspecific
mass

Dutch

fem/masc common	masc common	neuter

English

fem/masc	neuter

Just as with the grammatical markings on the Animacy Hierarchy, the number of gender distinctions increases towards the left. In both English and Dutch, a further distinction between masculine and feminine gender is made on the left end of the hierarchy, with humans and animals. Here pronominal gender varies between masculine and feminine depending on the sex of the referent.[4]

Not only in Dutch, but also in several other Germanic languages the boundary between common, or masculine and feminine, gender on the one hand, and neuter gender on the other hand, lies between bounded and unbounded referents. Siemund (2002) notes that in some regional varieties of English, pronouns show a count

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[4] The boundaries between the domains of the genders on the hierarchy are not absolute, but vary within certain ranges. In English, nonhuman animates are sometimes referred to with the neuter pronoun and sometimes with a gendered pronoun, masculine or feminine. Similarly, in Dutch, animals are sometimes referred to with a default masculine pronoun, and sometimes with a pronoun that agrees with their sex. (Of course, this distinction only becomes apparent with female referents). This variation seems to depend on how familiar the speaker is with the animal, for example, whether one refers to their own pet or to some other animal, or whether one refers to a large animal or a small insect. Obviously, whether or not the speaker knows the animal's sex also plays a role here.

versus mass distinction. Particularly, in the English dialect of West Somerset, masculine and feminine pronouns are used for count nouns (that is, with bounded referents), while neuter pronouns are used for mass nouns. This phenomenon in South-Western dialects was also observed by Jespersen (1924: 240):

> Here and there we find a tendency to establish a grammatical distinction between thing-words (countables) and mass-words (uncountables) […] In the south-western dialects of England "full shapen things" are referred to as *he*, acc. *en* (from OE *hine*) and take the pronominal adjuncts *theäse, thik*, while "unshapen quantities" are referred to as *it* and take *this*, *that*.

In several varieties of Frisian as well, the choice between a masculine or neuter pronoun depends on the bounded versus unbounded nature of the referent (Wahrig-Burfeind 1989). The West Frisian varieties of City Frisian (Stedsk) have two nominal genders, common and neuter. With mass nouns, regardless of whether they are common or neuter, the neuter personal pronoun *it/'t* is systematically used. Count nouns, however, are not always pronominalized by the masculine pronoun.

In the Frisian variety spoken on the island of Helgoland, a stricter bounded-unbounded distinction in pronouns is observed. In this variety, the neuter demonstrative/personal pronoun *deät* is always used for masses and abstracts, and the masculine personal pronoun *hi/hem* is systematically used for countable objects, regardless of whether the corresponding noun is common or neuter gender.

In the Danish dialect of West Jutland, the same bounded-unbounded distinction is made (Ringgaard 1973: 30-31). Countable objects are referred to by the common (uter) demonstrative pronoun *den*, while masses and abstracts are referred to by the neuter demonstrative pronoun *det*. What is particularly interesting about West Jutish is that the semantic distinction is not only made in pronouns, but also within the noun phrase. West Jutish is generally said to have lost its nominal gender distinctions, since all nouns combine with the determiner *æ* 'the' or *en* 'a' (for example, *æ/en hus* 'the/a house'). However, the pronouns *den* and *det* are also used as demonstrative determiners, and within the noun phrase, they make the same semantic distinction as in the pronominal domain: nouns that denote countable objects combine with *den*, while nouns that denote masses or abstracts combine with

det, for example, *den hus* 'that house', but *det mælk* 'that milk', *det skrigen* 'that shouting'. The determiner can even vary for the same noun depending on whether its referent is conceptualized as a countable item or a mass. The noun *fisk* 'fish', for instance, can combine with either *den* or *det* depending on whether the speaker refers to an individual fish or a type of food. It seems, therefore, that what West Jutish has lost is not gender in the nominal domain, but rather lexically stored nominal gender. Having lost that, the gender system of West Jutish is now entirely based on the semantics of individuation.

In contrast, in Dutch, lexically stored gender still plays a role, and pronominal gender can conflict with the lexical gender of a noun. The following section addresses the question of what makes it possible for semantic agreement to surface on a large-scale in a gender system that is otherwise based on lexical gender.

3. The rise of semantic agreement

Audring (2006, 2009) proposes that the semantic agreement observed in Dutch pronouns is caused by a mismatch between the numbers of nominal and pronominal genders. She argues that, since masculine and feminine gender have conflated into one common gender, there exists a mismatch between the nominal and the pronominal gender system: Only two genders exist in the nominal domain, viz. common and neuter, while three genders, viz. masculine, feminine, and neuter, exist in the domain of the personal pronoun. According to Audring, this means the following in practice:

> [S]peakers have lost the knowledge about masculine and feminine nouns,
> while common gender nouns in Dutch are unable to govern pronoun choice
> in the usual way, as there is no personal pronoun corresponding directly to
> a common gender noun. This problem arises whenever a speaker wants to
> pronominalize such a noun.
>
> (Audring 2006: 87-88)

However, this claim is not uncontroversial. Although personal pronouns distinguish three genders, while nouns distinguish only two, in practice, this does not necessarily involve a mismatch. It should be noted that in spoken language, the

feminine pronoun is, in fact, only used for semantic agreement with female referents. Audring's findings in the *CGN* confirm this: Feminine pronouns are found exclusively with female referents (Audring 2009: 92). It seems, therefore, that at least in spoken language, the feminine pronoun is reserved for semantic gender agreement and no longer plays a role in lexical gender agreement. If this is the case, then there is no mismatch between the numbers of nominal and pronominal genders with respect to the lexical gender agreement system.

Another question that arises with the mismatch analysis is how the new division of labour between the masculine and neuter pronouns is motivated by the proposed mismatch. Audring (2006, 2009) suggests that the semantic reinterpretation of these pronouns arises as a solution to the mismatch problem. However, the mismatch exists between the common gender noun on the one hand, and the masculine and feminine pronoun, on the other hand:

(11) Mismatch

common gender noun	→ masculine personal pronoun
	→ feminine personal pronoun
neuter gender noun	→ neuter personal pronoun

If this situation causes a reinterpretation of the pronominal genders, then a new division of labour between the masculine and feminine pronoun is expected. This has in fact already occurred in spoken language since the feminine pronoun became more and more reserved for semantic agreement with animate, female referents and the masculine pronoun came to replace it in other cases. This new division of labour between the masculine and feminine pronoun was already well on its way by the end of the 17th century (see Geerts 1966: 192-210, Schönfeld & Van Loey 1970: 119-120). These historical developments can be roughly schematized as in (12) below.

(12)   Diachronic developments in Dutch lexical gender

Middle Dutch (ca. 1200–1500)

masculine gender noun	→	masculine personal pronoun
feminine gender noun	→	feminine personal pronoun
neuter gender noun	→	neuter personal pronoun

Early Modern Dutch (ca. 1500–1800)

	→	masculine personal pronoun
common gender noun		
	→	feminine personal pronoun
neuter gender noun	→	neuter personal pronoun

Modern Dutch (ca. 1800–today)

| common gender noun | → | masculine personal pronoun |
| neuter gender noun | → | neuter personal pronoun |

Starting in the Late Middle Dutch period, deflection gradually led to the conflation of masculine and feminine nominal gender. It was in the 17th century that a mismatch had developed between the available nominal and pronominal genders because masculine and feminine nominal gender had merged into one category. According to Geerts (1966), this mismatch was gradually resolved as the feminine pronoun was increasingly replaced by the masculine pronoun, while the feminine form became reserved for agreement with female referents.[5]

Therefore, it is not immediately clear at this point that it is the discrepancy between the numbers of nominal and pronominal genders that causes the reinterpretation of the masculine and neuter pronoun in semantic terms. Yet there does appear to exist at least an indirect relation between semantic agreement and a reduction in the number of nominal genders. Braunmüller (2000: 44), for instance,

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[5] It is possible that what Geerts (1966) describes as a general replacement of feminine pronouns by masculine pronouns is, in fact, an increase of semantic agreement with masculine pronouns. If this is the case, then the gradual replacement of feminine pronouns by masculine pronouns should be found only with individuated referents. As it is not certain whether this is the case, this question remains open for future research.

observes for the North Germanic languages that semantic gender agreement, on the basis of individuation or biological sex, only occurs in those varieties that have reduced the original three-way nominal gender system to a two-way or zero gender system, such as Standard Danish, Standard Swedish (two genders) and the West Jutish dialect (zero genders), and not in varieties that still employ a three-way gender system, such as Icelandic.

However, the distinction among the Germanic varieties is not that clear-cut. Semantic agreement is also found in Germanic varieties that have not lost a nominal gender. For example, in German – a language with three nominal genders solidly in place – semantic agreement occurs, albeit to a more limited extent than in Dutch. Pronouns can show semantic agreement with animate referents. For instance, with neuter nouns such as *Mädchen* 'girl', the feminine pronoun as well as the neuter pronoun is used (Corbett 1991: 228, Audring 2009: 193). It seems that semantic agreement is also possible at the other end of the Individuation Hierarchy. Audring (2009: 193) observes that neuter pronouns can be used with non-neuter nouns with referents of low individuation. She provides the following constructed examples:

(13) a. **Kartoffelsuppe**?　　　Ja, **das**　esse ich　gern.
　　　 potato soup(F)　　　　yes DEM.N eat I　　with.pleasure
　　　 'Potato soup? Yes, I like to eat that.'

　　b. Sie　mag　keinen　　**Jazz**,
　　　 she　likes　no.MASC.SG　jazz(M)

　　　 aber ihr Freund hört　**das**　immer.
　　　 but　her friend　listens　DEM.N always

　　　 'She doesn't like jazz, but her boyfriend listens to it all the time.'

So, at least with referents on the outer ends of the Individuation Hierarchy, where the potential conflict between semantic and lexical gender is the largest, semantic agreement appears to be possible in German. This suggests that semantic agreement

is not an all-or-nothing phenomenon in the Germanic varieties but rather a matter of degree.

This view also emerges from studies on dialects of Dutch. Using written questionnaires, De Paepe & De Vogelaer (2008), De Vos (2009), and De Vogelaer & De Sutter (2011) found that in East Flemish dialects with three nominal genders, the neuter pronoun is often used with masculine and feminine nouns referring to abstracts or masses.[6] Comparing the results for different East and West Flemish dialects, De Vogelaer & De Sutter (2011) further observed that this type of agreement is more frequent in those dialects where the distinction between masculine and feminine gender is not marked on the indefinite article, but only, in a limited number of phonological contexts, on the definite article and the attributive adjective.

Considering this, it is possible that semantic agreement correlates not with the loss of a nominal gender per se, but rather with the weakened state of the lexical gender system in general. Compared to a language like German, where semantic agreement is considerably less frequent than in Dutch, Dutch not only has a reduced number of nominal genders, but it also has a reduced gender agreement system with respect to the number of elements that show gender agreement. Indefinite determiners no longer show gender agreement in Dutch, the possessive determiner shows very limited gender agreement, and attributive adjectives show gender agreement only when they appear in indefinite noun phrases (see Table 1 in Section 1). Importantly, these are all adnominal elements, which constitute agreement targets that most reliably express lexical gender (see the Agreement Hierarchy in Section 1). Considering this, it seems posssible that the high frequency of semantic agreement in Dutch pronouns is connected to the reduced marking of lexical gender on adnominal elements.

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[6] The reverse agreement pattern, that is, the use of a masculine pronoun with a neuter noun referring to an individuated item, was not found by De Paepe & De Vogelaer (2008) and did not emerge clearly in De Vos 2009. De Vogelear & De Sutter (2011), therefore, chose not to investigate this type of agreement in their study. The absence of such an agreement pattern may indicate a developmental path in a change towards more semantic gender agreement. Possibly, neuter pronouns are used with referents of low individuation sooner than masculine/common pronouns are used with referents of high individuation.

An important question that remains is why semantic agreement in pronouns occurs along the lines of individuation. Apparently, there exists a tendency in the Germanic languages to make a gender distinction between individuated and non-individuated referents. It should be explained where this semantic interpretation of the genders comes from, more specifically, why the masculine/common pronoun is connected with a high degree of individuation and the neuter pronoun with a low degree of individuation. Perhaps the answer to this question could also explain why a new division of labour between masculine/common gender and neuter gender is found, while neuter gender was never involved in a mismatch between nominal and pronominal gender. In the following sections, it is argued that the individuation distinction found in pronominal agreement relates to an existing semantic distinction between neuter and non-neuter gender in Dutch. First, section 4 shows that the neuter gender pronoun is more generally connected with the notion of low individuation.

4. The semantics of neuter gender

It can be argued that the use of the neuter pronoun with referents of low individuation is connected to a much larger semantic role of neuter gender. The neuter pronoun is used not only for unbounded entities or lexically neuter nouns. It is also used with non-nominal antecedents that denote activities, processes, states, properties, events, or propositions, henceforth called 'nonentities'. Consider the use of neuter pronouns in examples (14) – (17) below.

(14) a. De   tuin   is compleet   vernield.
        DET.C garden is completely ruined

        Wie   heeft **dat**   gedaan?
        who   has   DEM.N done

        'The garden is completely ruined. Who did that?'

b. Ik ga het huis opruimen.
I go DET.N house clean.up

Dat is hard nodig
DEM.N is quite necessary

en **het** zal me veel tijd kosten.
and 3SG.N will me much time cost

'I'm going to clean up the house. That is quite necessary and it will take me a lot of time.'

In example (14), the neuter pronoun refers to activities. In (14a), the neuter demonstrative pronoun refers to the activity of ruining the garden, and in (14b), the neuter demonstrative pronoun and the neuter personal pronoun both refer to the activity of cleaning up the house.

In (15a), the neuter demonstrative pronoun refers to a state, that is, being grey, and in (15b) it refers to a property, that is, happy:

(15) a. De broek is nu grijs, maar
DET.C pants is now grey but

dat verandert nog door de verf.
DEM.N change PRT by the dye

'The pants are grey now, but that will change with the dye.'

b. Frans is vrolijk vandaag. **Dat** is hij eigenlijk altijd.
Frans is happy today DEM.N is he actually always.

'Frans is happy today. He always is, actually.'

In (16), the neuter personal pronoun and the neuter demonstrative pronoun refer to an entire proposition:

(16) a. De   tuin   is compleet   vernield
        DET.C garden is completely ruined

           en   jij   ziet **het**   nu   pas.
           and you see 3SG.N now only

           'The garden is completely ruined and you only see it now.'

     b. Een kwispelende   hond is niet agressief.
         a   tail.wagging   dog is not aggressive

         Dat   weet iedereen.
         DEM.N knows everyone

         'A dog wagging its tail is not aggressive. Everyone knows that.'

The neuter personal pronoun is also used when there is no (clear) referent at all, as in (17), where it functions as an expletive:

(17) a. **Het**   regent.
       3SG.N rains
       'It is raining.'

     b. Hoe gaat   **het**   met je?
         how goes 3SG.N with you
         'How are you doing?'

This use of neuter gender with nonentities is quite common in the Indo-European languages that have a neuter gender form available. Corbett (1991: 204-205) discusses the use of neuter gender in several Indo-European languages with

what he refers to as non-prototypical controllers, that is, elements with no specified gender, such as clauses and infinitival phrases. In the three-gender system of Russian, for example, the neuter verb form is used to agree with infinitival subjects, as in example (18a) (adapted from Corbett 1991: 204). Similarly, in Serbo-Croat, it is the neuter pronoun that agrees with predicative adjectives, as in example (18b) (adapted from Corbett 1991: 205).

(18) a. Dozvonit'sja   byl-o   problemoj.
         to.ring.through   was-N.SG   problem
         'To ring through was a problem.'

   b. kod   njih   čovek   mora biti   lukav,
       with   them   person   must   be   cunning

       a   ja   to   nisam
       but   I   DEM.N.SG   am.not

       'With them a person must be cunning, but I am not (that).'

Corbett (1991: 206) notes that this use of the neuter form cannot be explained by markedness theory, since it is not immediately clear that neuter is the unmarked form in the languages in question. This is certainly also the case for Dutch, where common gender appears to be the unmarked form. Common gender is always used in the plural, where gender distinctions are neutralized, which makes it the most frequently occurring form in the determiner paradigm. Furthermore, the large majority of nouns – approximately three out of four – are common gender, while only one out of four nouns is neuter (Van Berkum 1996).[7] During the acquisition of nominal gender, the common determiner is also largely overgeneralized before the

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[7] Van Berkum's (1996) counts are based on the CELEX lexical database of Dutch. His lemma type count rendered 72% common gender entries and 27% neuter gender entries, a lemma ratio of approximately 3:1. Taking token frequencies into account (singular forms only), the distribution of the nominal genders in a running text was estimated: 67% of encountered singular nouns are common gender versus 33% neuter gender nouns, a ratio of approximately 2:1.

neuter determiner is used (Van der Velde 2004, Blom, Polişenská, & Weerman 2008). However, despite this, in several ways, default status of common gender in Dutch, it is neuter gender that is used in reference to nonentities.

Corbett (1991: 205-206) proposes to explain this use of neuter gender in languages such as Russian and Serbo-Croat in terms of the distribution of the genders in the lexicon. He notes that in these languages, almost all nouns that denote humans are masculine or feminine, while nouns that denote inanimates can be masculine, feminine, or neuter. Given this distribution, Corbett (1991: 206) argues, the selection of neuter gender for agreement with non-nominal antecedents could be considered the most appropriate option in semantic terms. This analysis could be used to explain the use of neuter with nonentities in Dutch as well, as a similar distribution of common and neuter gender exists there: nouns that denote humans tend to be common rather than neuter gender in Dutch (see Haeseryn et al. 1997).

However, the facts could be approached from a different angle. Instead of departing from the distribution of the genders in the lexicon, one could consider the use of neuter gender with nonentities to reveal something about the semantics of neuter gender itself. Returning to the Individuation Hierarchy discussed above, it can be argued that neuter gender is more extensively connected with the meaning of low individuation than the present hierarchy reveals. The larger semantic domain of neuter gender becomes more apparent if the Individuation Hierarchy is extended on the right side with nonentities – the category that can be considered the least individuated in the system.

(19) The Individuation Hierarchy (extended)

Human > Animal > Object > Bounded > Specific > Unbounded > Nonentity
                                   abstract   mass   abstract,
                                                                    Unspecific
                                                                    mass

Under this approach, the observed division of labour between masculine/common and neuter pronouns in Dutch can be said to reside within a broader system of semantic categories: While common gender is used for referents of high individuation, neuter gender is used for a wide range of referents of low

individuation, from abstracts/masses to all other possible referents that are not bounded in nature, such as events, activities, and propositions.[8]

Considering this function of neuter gender, it is interesting to note that there are several Indo-European languages which otherwise have a two-way masculine-feminine gender system, that still use a neuter form with nonentities (Corbett 1991: 214-215). Corbett's examples include Portuguese, the Surselvan dialect of Romansh, and Spanish. Below is a Spanish example from Corbett 1991: 214.

(20) Antes me gustaba   mucho ir a los partidos de futbol,
      before me was.pleasing   much   go to the games   of football

      pero todo **ello** ya   no   me interesta.
      but   all   it   any.more not   me interests

      'I used to be very keen on going to football matches, but all that doesn't interest me anymore.'

The neuter pronoun *ello* 'it, that' refers to the activity of going to football matches. This kind of reference is the only function of the neuter form in Spanish, for there is no class of neuter nouns in the language. It seems that, while the original three-way gender system of Romance has been reduced to two, neuter gender has been preserved for this type of agreement (Corbett 1991: 215). With the proposed extension of the Individuation Hierarchy in mind, it can be said that the Spanish gender system operates on this hierarchy, with the boundary between neuter and feminine/masculine gender located between masses and nonentities.

So far, it has been shown that the individuation distinction observed in Dutch pronominal gender agreement is connected to an existing semantic distinction between neuter and non-neuter pronouns. In the following section, it is shown that

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[8] See Roodenburg & Hulk 2009 for a comparable, but different, analysis of neuter in Dutch. Following Picallo's (2008) analysis of neuter in Spanish and Catalan, they argue that neuter is not a true gender, but rather an underspecified element, or default, used in the absence of gender and number features on the antecedent. The present analysis differs from this view in that neuter is not considered a default element, but a regular gender that covers a certain semantic domain.

this semantic gender distinction is not restricted to pronouns, but also exists in the nominal domain.

5. The individuation distinction in the nominal domain

It is generally assumed that Dutch nominal gender assignment is not based on any semantic principle, but that it is arbitrary. Although this is largely the case, as discussed further in Section 6.2, in certain cases the semantics of individuation appear to play a role in nominal gender assignment.

5.1. Nominalized adjectives

The individuation distinction is reflected in the choice of the determiner that appears with nominalized adjectives. In Dutch, adjectives can be nominalized by adding a determiner to the inflected form of the adjective. This process is fully productive, that is, any adjective can be nominalized in this way. If there is a nominal antecedent, the determiner-adjective construction is generally analysed as an elliptical phrase, in which the gender of the determiner simply corresponds to that of the elided noun, as in (21).

(21) a. Er   was een rode auto en   een zwarte auto.
       there was a   red   car(C) and   a   black   car(C)

       Ik heb **de   rode** genomen.
       I have DET.C red   taken

       'There was a red car and a black car. I took the red one.'

    b. Er   was een dik   boek en   een dun boek.
       there was a   thick book(N) and a   thin book(N)

       Ik heb **het   dunne** gekocht.
       I have DET.N thin   bought

       'There was a thick book and a thin book. I bought the thin one.'

However, in spoken language, the determiner in this construction can also agree with the degree of individuation of the referent rather than with the lexical gender of the elided, or antecedent, noun. If the elliptical phrase refers to an object, as in (21) above, the determiner could also be common gender, regardless of the neuter gender of the corresponding noun.[9]

(22) Er   was een dik   boek   en   een dun boek.
      there was a   thick book(N) and a   thin book(N)

      Ik heb **de**   **dunne** gekocht.
      I   have DET.C thin   bought

      'There was a thick book and a thin book. I bought the thin one.'

If the determiner-adjective construction occurs without a corresponding noun in the linguistic context, the individuation distinction becomes even more apparent. In this case, individuation alone appears to determine the form of the determiner. The neuter determiner is always used if the referent is a nonentity, as in example (23a-b), while the common determiner is always used if the referent is animate, as in example (23c-d).[10]

(23) a. De   lamp verandert van kleur. Dat is **het** **leuke** ervan.
        DET.C lamp changes   of color that is DET.N fun   of.it
        'The lamp changes color. That is the fun of it.'

     b. **Het**   **belangrijkste** is   dat hij weer kan werken.
        DET.N most.important   is   that he   again can work
        'What's important is that he can work again.'

___

[9] The fact that the determiner can show semantic agreement with the referent instead of agreement with the supposed elided noun suggests that these constructions are not in fact elliptical phrases but true nominalizations.

[10] Nominalized adjectives with referents located between these two extremes do not usually occur without an antecedent noun or a physical referent in the context.

c. Eén van ons zal **de**   **gelukkige** zijn.

one of us   will DET.C lucky   be

'One of us will be the lucky one.'

d. Het is altijd   zo dat **de**   **sterkste** wint.

 it is always so that DET.C strongest wins

'It is always the case that the strongest wins.'

These nominalized adjectives can be considered ad-hoc, nonlexicalized noun formations. Therefore, they do not have a lexically stored gender and in that case, gender assignment appears to be based on individuation.

The following subsections show that the individuation distinction can, in some cases, be found with lexically stored gender as well.

5.2. Double gender nouns

Lexically stored nominal gender shows much arbitrariness. Compare, for example, *de trui* 'the sweater', *de jurk* 'the dress' but *het hemd* 'the shirt', and *de stoel* 'the chair', *de kast* 'the cabinet' but *het bed* 'the bed'. These objects are the same in terms of individuation, and they do not seem to differ systematically in any other way. Yet the nouns take different genders.

Nevertheless, the individuation distinction can be observed with lexical gender in some cases. It is visible with nouns that can be either common or neuter gender, with a concomitant difference in meaning. In such minimal pairs, the neuter variant often has a less individuated referent than the common gender variant. The most straightforward examples are found among nouns denoting materials. When a noun can denote both a material and an object made of that material, it is usually neuter when it refers to the material and common when it refers to the object (Haeseryn et al. 1997). In the minimal pairs in (24), the neuter variant is a mass noun referring to a material, while the common gender variant is a count noun referring to an object.

(24)   **mass**   **count**

     het steen   *de steen*   'stone'

     het diamant   *de diamant*   'diamond'

     het kurk   *de kurk*   'cork'

The neuter noun *zout* 'salt' shows a similar gender alternation. In spoken language, when a speaker refers to the salt in a saltshaker, typically at the dinner table, a common determiner is sometimes used. This gender alternation is illustrated in (25).

(25) a. **Het   zout** van   de   zee prikt in mijn   ogen.

     DET.N salt of   the sea stings in my   eyes

     'The salt of the sea stings my eyes.'

  b. Mag ik **de   zout**?

     may I   DET.C salt

     'Can I have the salt please?'

    (Example (25b) is from http://www.onzetaal.nl/advies/zout.php)

In a context like (25a), where *zout* has an unbounded interpretation, the noun is always neuter, while in a context such as (25b) the noun can take a common determiner. This use of the common determiner is not readily explained by some kind of ellipsis from a compound, as a likely candidate would in that case be *zoutvaatje* 'saltshaker', which is neuter. It appears that in this context, the preference for common gender is due to the individuated nature of salt in a saltshaker.[11]

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[11] See Semplicini 2012 for a discussion of double gender nouns for which gender variation is not generally connected to a semantic difference, but to geographical/inter-speaker variation. Semplicini argues that, in some cases, the gender variation for these nouns depends on subtle differences in the degree of individuation of the referent in a particular context.

5.3. Nouns from the same semantic domain

Besides gender alternations for the same noun, the gender of nouns that belong to the same semantic domain can also show the individuation distinction. Zubin & Köpcke (1986) provide an elaborate description of nominal gender in German, in which they examine the semantic differences between neuter and non-neuter nouns in several semantic fields. They show that nouns referring to superordinate categories, that is, overarching terms that subsume more specific categories, are usually neuter, while nouns referring to more specific categories, that is, more basic level terms, tend to be masculine or feminine.

This gender distinction between neuter and non-neuter can be observed in Dutch as well. Some examples are listed in (26).

(26) *het instrument* 'the instrument' — *de gitaar* 'the guitar'
 de piano 'the piano'
 de trompet 'the trumpet'
 de fluit 'the flute'

 het fruit 'the fruit' — *de appel* 'the apple'
 de peer 'the pear'
 de kers 'the cherry'
 de banaan 'the banana'

 het meubel 'the piece of furniture' — *de tafel* 'the table'
 de stoel 'the chair'
 de bank 'the couch'
 de kast 'the cabinet'

Zubin & Köpcke (1986: 144) observe that neuter gender is associated with a lesser differentiation in the lexical hierarchy and a corresponding lack of precise characteristics, while masculine and feminine gender (common gender in Dutch) are linked to a greater differentiation in the lexical hierarchy and hence more precisely defined characteristics. This distinction relates to the Individuation Hierarchy: The referents of superordinate terms are less specific than those of basic level terms.

Therefore, superordinate terms are associated with a lower degree of individuation than their corresponding basic level terms. Thus, the gender distinction between the two categories follows the individuation distinction.

The examples of the individuation distinction in lexical gender make up only a limited proportion of the lexicon, however. Therefore, they cannot be said to represent a consistent pattern in lexical gender assignment.[12] Nevertheless, their existence, together with the gender assignment pattern observed in productive nominalizations, indicates that the semantic agreement pattern found in pronouns is not an isolated phenomenon within the Dutch gender system. Rather, the behaviour of pronouns reveals a semantic principle that operates in the gender system as a whole.

Possibly, the semantics of individuation have always played a role in the gender system. The individuation distinction in the nominal domain may have been inherited from an earlier stage of the language when nominal gender assignment had a more transparent semantic basis. In general, it is likely that the assignment of nouns to different genders has not always been arbitrary, but was originally based on some semantic distinction between their referents. The following section discusses the possible semantic basis of the Indo-European genders, and how this basis may have been disrupted.

6. The semantic basis of nominal gender and its disruption

6.1. The original meanings of the Indo-European genders

Although the Indo-European genders are traditionally labeled masculine, feminine, and neuter, it is unlikely that gender assignment in the Indo-European languages originally involved a distinction on the basis of biological sex. Fodor (1959) notes that these gender labels were adopted in the heroic age of grammar writing for the

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[12] Considering the fact that lexical gender otherwise shows much arbitrariness, it is interesting to note that the results of a pilot study by Reijers (2008) suggest that in the acquisition of neuter lexical gender, individuation plays a role. The acquisition of lexical gender in Dutch starts with an almost complete overgeneralization of common gender, followed by a gradual acquisition of neuter gender for neuter nouns (see Van der Velde 2004). Reijers's study shows that Dutch children acquire neuter gender for mass nouns, such as *gras* 'grass', earlier than for count nouns, such as *boek* 'book'. This suggests that, at least during acquisition, an association exists between neuter lexical gender and low individuation.

modern European languages. The 19th century grammarians were proud to discover that the same three genders existed in the modern European languages as in the honored classical languages. Driven by the idea of anthropomorphism, they thought it "reasonable and consequently superb that natural gender [that is, biological sex, MK] was reflected in language through such subtle grammatical devices" (Fodor 1959: 3).

One notable proponent of the natural gender basis was Jacob Grimm. In Grimm 1831, he claimed that the gender system was originally a reflection of biological sex, which was subsequently extended to nouns with inanimate referents through the human imagination. This would have involved the personification of inanimate objects, which were classified as having either typically masculine (such as big, firm, active), feminine (such as small, weak, passive) or sexually indifferent (such as general, underdeveloped) characteristics.

Brugmann (1889, 1897), however, opposed this view and claimed that the association of the genders with biological sex was only a secondary phenomenon. He argued that the class of nouns labeled "feminine", that is, the nouns ending in -$\bar{a}$ and -$\bar{\imath}$, was not made up of nouns that referred to female animate beings, but of collective and abstract nouns. This view still stands today. Furthermore, evidence has now converged on the view that Proto-Indo-European originally had only two genders, common and neuter, and that the third, feminine, gender developed later (Matasović 2004: 33, 165, Schwink 2004: 12).[13] Therefore, it is unlikely that biological sex formed the semantic basis of the Indo-European genders.

At the same time, there are indications that the genders were connected with different degrees of individuation. Lehmann (1958: 188-192) reconstructs a paradigm of nominal suffixes in Proto-Indo-European that gave rise to the genders. Making use of insights from phonological theory, Lehmann argues that the long vowel endings -$\bar{a}$, -$\bar{\imath}$, and -$\bar{u}$ resulted from a merge of different short vowels with the

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[13] Much research has been done on how the third, feminine, gender has developed. For an overview, see, for instance, Ledo-Lemos 2003. It seems clear that there is a connection between feminine gender and the meanings "abstract" and "collective". Also, a connection appears to exist between the feminine gender suffix and the neuter nominative-accusative plural ending. However, the exact nature of the connection between feminine gender on the one hand, and the neuter plural and the abstract/collective meaning on the other hand is debated. See, for instance, Luraghi 2009 for a recent proposal regarding this issue.

same ending, the laryngeal -*h*. Thus, three nominal endings could be distinguished that gave rise to the genders: -*s* ("masculine"), -*h* ("feminine") and -*m* ("neuter"). According to Lehmann, these suffixes were systematically connected with certain meanings. They corresponded to the respective meanings "individual", "collective", and "resultative", later including "mass". [14]

Every noun could be inflected with each of these suffixes, which modified the noun's meaning in a specific way. For example, the "feminine" form *himā* (<*himah*) had the collective meaning 'season of cold and frost' or 'winter', the "masculine" form, *himás*, referred to a singular occurrence of cold or frost, while the "neuter" form, *himam*, meant "snow", which could be paraphrased as "the result of cold". Thus, the same noun could have different forms associated with systematic differences in meaning.

Following Lehmann (1958), Leiss (2000) argues that remnants of this meaningful gender alternation can still be found in Old High German. In Old High German, many nouns occur in two or three different genders, which is usually interpreted as arbitrary variation leading up to a gender change. Leiss argues, however, that these different genders can often be related to the categorical meanings count (masculine), collective (feminine), and mass (neuter). An example of such gender variation is the Old High German noun that means "wood" or "string of wood". The mass meaning was expressed by the neuter form *witu* 'wood', while the collective meaning was expressed by the feminine form *witta* 'string of wood, headband'.

Moreover, in a reconstructed lexicon of Proto-Indo-European nouns, Matasović (2004: 133-134) observes semantic tendencies in gender assignment that operate along the lines of individuation. Nouns with referents at the leftmost end of the Animacy Hierarchy (humans, animals, and most plants) are consistently common

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[14] Lehmann (1958) argues that as the case and gender congruence system developed in Proto-Indo-European, mass nouns (such as the Sanskrit nouns *ápas* 'work', *áyas* 'metal', and *páśu* 'stock') were aligned with the class of resultative nouns ending in -*m*. This alignment happened because the two groups of nouns became formally similar. In addition to indicating resultatives, the ending -*m* began to mark accusative case. Consequently, resultative nouns, ending in -*m* in the nominative, had the same form for both subject and object. This aligned them with mass nouns, which did not distinguish subject and object forms either (Lehmann 1958: 197).

(masculine/feminine) gender, while nouns with referents at the rightmost end (fluids and masses) are consistently neuter. Nouns with referents located between these two extremes show a less consistent assignment pattern. Interestingly, however, nouns denoting abstracts are always assigned either feminine or neuter gender.

Considering the above, the semantic basis of gender classification in Indo-European likely involved a distinction between the meanings countable/individual, mass, and collective/abstract. The gender distinction on the basis of biological sex would have developed later, in addition to these original meanings.

(27)   The semantic basis of Indo-European gender

count/individual	collective/abstract	mass
male individual	female individual	sexless
↓	↓	↓
'masculine' gender	'feminine' gender	'neuter' gender

Thus, each of the Indo-European genders corresponded to a different degree of individuation. Masculine gender (countable entities) was associated with the highest degree of individuation, while neuter gender (masses) was associated with the lowest. Feminine gender (collective/abstract entities) was associated with a degree of individuation that lies between the two extremes.

These semantic distinctions still appear to play a role in the Dutch gender system today. Particularly in the choice of pronouns, the individuation distinction, as well as the biological sex distinction, are involved. As discussed in the previous section, the semantics of individuation can be observed in lexical gender as well, although to a limited extent. The gender of many nouns does not follow the individuation distinction and appears to be arbitrary in terms of semantics. In the following section, it is argued that this situation may have resulted from a gradual, though large-scale, disruption of the semantic basis of gender classification in the lexicon.

6.2. Disruption

The fact that nowadays the gender of most Dutch nouns is arbitrary shows that there is no longer a semantic principle underlying lexical gender. The original semantic classification has somehow become largely disrupted in the nominal domain. One factor that must have been particularly important in this process is that nominal gender has become an invariable, lexically stored feature of the noun rather than a variable feature that modifies the noun's meaning.[15] It is possible that once nominal gender becomes lexicalized, the semantic principle underlying gender classification becomes susceptible to disruption. In time, a noun tends to change its meaning, and if its gender remains the same, the connection between the meaning of the noun and its lexical gender can be lost.

Importantly, meaning shifts along the Individuation Hierarchy are not uncommon. One common type of meaning change involves the development of a more concrete, or specific meaning from a more abstract, or general one (narrowing). Another common change proceeds in the opposite direction and involves the development of a more abstract, or general meaning from a more concrete, or specific one (widening) (Williams 1986: 170-177). These semantic changes are particularly disruptive in a gender system based on individuation, as they involve shifts along the Individuation Hierarchy, from a lower to a higher degree of individuation in the case of narrowing, and from a higher to a lower degree of individuation in the case of widening.

An example of the shift towards a higher degree of individuation is the development of the neuter noun *brood* 'bread, loaf of bread'. Nowadays, it can either be a mass noun, denoting the substance bread, or a count noun, denoting a loaf of bread. This noun dates back to Old Germanic, possibly Proto-Germanic (Philippa

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[15] Why gender has become a fixed, invariable nominal feature is still an open question. One factor that may have played an important role is the emergence of the definite article. The grammaticalization of the gender-marked demonstrative into the definite article in Old Germanic entailed that the determiner became obligatory in a wider range of contexts. Consequently, nouns would appear with a gender-marked determiner more and more frequently. It is likely that even with variable nominal gender, most nouns would appear more frequently in one gender than in another, as certain meanings would likely be more common than others. If a noun frequently appeared with a particular gender form of the article, this article-noun combination could have become entrenched as a single unit, thus contributing to the lexicalization of nominal gender.

et al. 2007). It is likely that it has always been neuter, for according to the dictionary of Middle Dutch (*Cd-rom Middelnederlands* 1998), it was neuter in Middle Dutch and in Middle High German. According to Philippa et al. (2007), the noun originally meant "food" or "bread in general". Only later did it develop the meaning "a piece of bread". Thus, the neuter gender of the noun originally corresponded with the low degree of individuation of its referent. However, since the noun has also come to denote a unit of bread, while retaining its gender, there is now a discrepancy between the individuated meaning and the neuter gender of the noun. It is possible that over time, many more nouns have changed their meanings or have developed additional meanings along similar lines, while maintaining their lexically stored gender.

A more drastic disruption of the connection between semantics and gender occurs when a productive suffix that is systematically connected with a specific gender changes its meaning. A salient example is the diminutive suffix *-(t)je*, which goes back to Old Dutch *-kī* and Proto-Germanic *-kīn-* (Philippa et al. 2007). This suffix is systematically connected with neuter gender. It is likely that the diminutive originally denoted a young child (see Jurafsky 1996). With this denotation, the neuter gender corresponds with the absence, or irrelevance, of a specified sex for the referent. However, gradual metaphorical extension of this original meaning has led to several additional meanings, including partition. The suffix has often been used to derive count nouns from mass nouns, and it is still moderately productive in this function. Some examples of the partitive meaning of the Dutch diminutive suffix are given in (28).

(28) *bier* 'beer'   –   *bier-tje* 'glass/unit of beer'
      snoep 'candy'   –   *snoep-je* 'piece of candy'
      krijt 'chalk (mass)'   –   *krijt-je* 'chalk (writing utensil)'
      vilt 'felt'   –   *vilt-je* 'coaster'
      vuil 'dirt'   –   *vuil-tje* 'speck of dust'

Although the partitive meaning of the suffix follows quite naturally from its original semantics, shifting from 'child' to 'smallness' to 'partition', it creates a structural violation of the connection between meaning and gender. The concrete, countable

meaning of the partitive nouns on the right in (28) in no way corresponds with the semantics of neuter and yet the diminutive suffix systematically connects them with neuter gender.

The example of the diminutive suffix shows that the connection between gender and form is very strong. This connection is maintained even when the meaning of a morpheme changes and no longer motivates its gender or even contradicts it. This persistence of gender-form pairings can be an important factor in the gradual disruption of the semantic basis of nominal gender classification.

At the same time, this strong connection between gender and form can be responsible for the development of more formal, that is, phonological and/or morphological, gender systems. For example, although the Romance languages, like the Germanic languages, no longer have a transparent semantic basis for nominal gender assignment, many of them do show a systematic connection between gender and form. In Spanish, for instance, nouns ending in -*a* are usually feminine, while nouns ending in -*o* are usually masculine (Mel'čuk 1974). Thus, Spanish can be considered to have a formal gender assignment system.

In this respect it is interesting to note that even in gender assignment systems that are predominately based on form, there always remains a semantic core to nominal gender assignment (Corbett 1991: 8, Corbett & Fraser 2000: 294). In their typology of gender systems across the world, Corbett (1991) and Corbett & Fraser (2000) broadly distinguish between two types: (predominantly) semantic systems, in which nominal gender is assigned completely or largely according to meaning, and predominantly formal systems, in which gender is assigned largely according to the morphological or phonological properties of a noun. Interestingly, while there exist purely semantic gender systems, there appear to be no systems based solely on form.[16] Semantics always play a role in gender assignment, and importantly, the

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[16] The question arises as to why some languages have been able to maintain their purely semantic gender systems, while Indo-European has not been able to do so. If the account of the developments in Indo-European proposed here is correct, purely semantic gender systems are expected to have at least one of the following characteristics: the gender system is relatively young, so that large-scale disruption through meaning change has not occurred yet; nominal gender is variable, so that if the meaning of a noun changes (diachronically or in context), its gender changes accordingly; the semantic basis for gender assignment is not particularly susceptible to disruption because meaning changes tend not to cross the semantic boundaries of the genders. Although this issue deserves a more thorough investigation, it is

formal and semantic assignment criteria always overlap to some extent (Corbett 1991: 63). This observation supports the idea that gender systems are primarily based on semantics, while formal regularities may develop in tandem. If the semantic basis for gender assignment becomes opaque, the nominal form itself may eventually become the basis for gender assignment, resulting in a formal gender system

However, although some formal regularities exist in nominal gender assignment, the Germanic languages have not developed transparent formal gender systems. The development of a formal system could have been prevented by the Germanic nominal stress pattern. Since in Proto-Germanic nominal stress became fixed on the initial syllable, there has always been erosion of nominal endings (Barber 2000: 92). This has led to the loss of many transparent formal gender distinctions on nouns. Consequently, lexical gender is now largely arbitrary in the Germanic languages, with respect to form as well as semantics.[17]

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noteworthy that the gender systems described by Corbett (1991: 8-12) as strictly semantic all, in fact, show at least one of these characteristics. The semantic gender systems are all based on a distinction between either: (i) male/female humans versus all nonhumans (Tamil, Defaka, English), (ii) female animates versus all others (Diyari), or (iii) female animates and diminutives versus all others (Dizi, Halkomelem). It is possible that these semantic bases for gender classification are indeed less susceptible to disruption, as meaning changes from 'male' to 'female', 'human' to 'nonhuman', 'animate' to 'inanimate', or vice versa, are not very common. Furthermore, in English and Defaka, gender is only marked on pronouns, and in Tamil, it is only marked on the predicate. Thus, one can say that in English, and perhaps also in Tamil and Defaka, there is, in fact, no lexical gender – or at least, the noun's lexical gender is variable – so that the gender system is not subject to disruption in the lexicon.

[17] The Germanic -*ing* suffix provides an interesting example of a nominal ending that used to show both a transparent formal as well as semantic gender distinction, which has been lost in the Germanic languages. The suffix dates back to Old Germanic, possibly Proto-Indo-European (Munske 1964). Munske (1964: 21) notes that originally, -*ing* had two distinct gender forms: masculine †-*inga* and feminine †-*ingo*. The masculine form derived concrete nouns, denoting persons or objects, from adjectives, nouns, and verbs. The feminine form derived abstract nouns from verbs. The two gender endings have disappeared. Now, the remaining suffix -*ing* conveys both types of meaning that are quite distinct in terms of individuation. The process of deriving abstract nouns with this suffix is still highly productive in Dutch, and although it no longer derives new concrete nouns, many of the derived concretes still exist in the lexicon, for example, *woesteling* 'ruffian', *koning* 'king', *drenkeling* 'drowned/drowning person'.

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7. Semantic versus lexical gender agreement

Since the semantic basis of nominal gender assignment became disrupted, the lexical gender of nouns no longer always reflects the properties of their referents. This situation causes a conflict between lexical and semantic gender agreement in pronouns. Such a conflict of course only exists if the genders are, in fact, associated with particular referent properties. It seems that the Dutch genders have retained their semantic interpretation, that is, masculine/common gender being associated with high individuation and neuter gender with low individuation, despite the fact that these meanings have become opaque in the lexical domain. What could have played a role in the retention of the semantic interpretation of the genders is that lexical gender is not always involved in pronominal reference. This is the case in deictic reference, that is, in the absence of a linguistic antecedent, or when the antecedent is not expressed nominally, as in reference to nonentities. When no nominal antecedent is present, lexical gender does not have to interfere and pronouns can agree semantically.

In the presence of a nominal antecedent, however, lexical and semantic gender are in competition for agreement if the gender of the noun is not in accordance with the properties of the referent. Which of these two genders wins must somehow depend on the amount of pull that semantic and lexical gender each exert on the pronoun. Several factors appear to play a role here: the place of the referent on the Individuation Hierarchy, the distance between the pronoun and the antecedent, and, more generally, the amount of lexical gender marking in the nominal domain.

The pull from semantic gender appears to become greater as the degree of individuation of the referent is more saliently high or low. As discussed in Section 3, semantic agreement is less common in German than in Dutch, but it can occur with referents on the extreme ends of the Individuation Hierarchy. Audring (2009: 167-168) also observes for Dutch that semantic agreement is more likely to occur with animates and unspecific masses than with referents that take a position in between these two extremes.

The pull from lexical gender, on the other hand, seems to depend, first of all, on its degree of overt expression in the language in general. As discussed in Section 3, lexical gender agreement takes precedence over semantic gender agreement in languages that have relatively many adnominal elements marking lexical gender.

Second, the pull from lexical gender appears to depend on how far the pronoun is separated from its nominal antecedent. As noted earlier, the likelihood of semantic agreement increases the further a pronoun is separated from its antecedent noun (Audring 2009: 165-166). Apparently, the longer ago a noun was expressed, the less weight its lexical gender has in the competition for gender agreement. It could be said that it is generally the saliency of lexical gender, in the agreement system in general and in the actual context of the agreeing pronoun, that determines the pull from lexical gender in the competition between lexical and semantic gender agreement.

8. Conclusion

This study showed that the semantic agreement behaviour that has been observed in Dutch pronouns reveals a semantic principle that operates within the Dutch gender system as a whole. The gender distinction that is made between referents based on their degree of individuation was shown to relate to an existing semantic interpretation of the Dutch genders that arguably goes back to Proto-Indo-European. These semantics come to the fore most clearly in cases nominal gender is variable, such as with double gender nouns, nominalized adjectives or in pronominal reference to non-nominal antecedents. It was suggested that ever since nominal gender became an invariable, lexically stored feature of nouns, the semantic basis of nominal gender assignment has been susceptible to disruption over time. This analysis explains why lexical nominal gender is now largely arbitrary. This situation creates a conflict between lexical and semantic gender, which currently surfaces in Dutch and several other Germanic varieties where pronouns show variation between lexical and semantic gender agreement. Considering the distribution of semantic gender agreement in the Germanic languages, it was suggested that there is a relation between semantic gender agreement in pronouns on the one hand, and the number of adnominal elements that mark lexical gender, on the other hand. Semantic agreement in pronouns may only gain ground if the marking of lexical gender within the noun phrase has become sufficiently reduced.

Chapter III

Semantic gender agreement: Dutch and German compared[*]

Abstract

This study compares pronominal gender agreement in Dutch and German. Pronouns do not always agree with the gender of their antecedent: instead of agreeing with the lexical gender of the noun, they show semantic gender agreement. This is known to occur with human referents in both Dutch and German. In Dutch, pronouns can agree semantically with non-human referents as well, based on their degree of individuation. This type of agreement has been found in several Germanic varieties. It has been suggested for Dutch that this type of agreement resulted from the loss of the three-way nominal gender system. However, it has not been systematically investigated to what extent this type of agreement also exists in Germanic varieties that still distinguish three nominal genders, such as German. This chapter presents the results of a pronoun elicitation experiment conducted both in Dutch and in German, testing pronominal reference to non-human referents with varying degrees of individuation. Two types of pronominal reference were tested: anaphoric and deictic reference. The results show that semantic agreement based on individuation occurs in both languages, in particular with animals, abstracts and masses. Semantic agreement is more frequent in deictic reference than in anaphoric reference in both languages. The languages differ with respect to the total frequency of semantic agreement, which is significantly higher in Dutch. This difference may be explained by the reduced visibility of lexical gender in Dutch compared to German. The findings suggest that semantic agreement based on individuation is a shared Germanic feature and that the difference between Dutch and German with respect to this kind of agreement is mainly one of degree.

1. Introduction

This study compares pronominal gender agreement in Dutch and German. Both languages inherited a gender system from Proto-Germanic in which each noun has a

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lexically stored gender. German nouns are either neuter, masculine or feminine. Dutch nouns are neuter or common, a conflation of former masculine and feminine gender. These genders are marked on determiners, attributive adjectives and pronouns. Pronouns, however, do not always agree with the lexical gender of their antecedent noun. This can occur when the lexical gender of the noun conflicts with the semantics of the referent. Such a conflict exists, for instance, when a neuter noun refers to a human being, such as the noun *meisje* 'girl' in Dutch or *Mädchen* 'girl' in German (Corbett 1991: 228). With such nouns, pronouns show variation between two types of agreement: agreement with the gender of the antecedent, henceforth called 'lexical gender agreement', and agreement with the properties of the referent, henceforth called 'semantic gender agreement'. Examples of this variation are shown in (1) and (2) for Dutch and German respectively (example (2) for German is from Corbett 1991: 228):

(1) Kijk dat **meisje**, hoe goed **ze/het** tennis speelt.
    look DEM.N girl(N) how well 3SG.F/3SG.N tennis plays
    'Look at this girl, how well she plays tennis.'

(2) Schau dir dieses **Mädchen** an, wie gut **sie/es** Tennis
    look you DEM.N girl(N) at how well 3SG.F/3SG.N tennis

    spielt.
    plays

    'Look at this girl, how well she plays tennis.'

In example (1) and (2), the determiner necessarily agrees with the neuter gender of the nouns *meisje* and *Mädchen*, but the personal pronoun can be either neuter or feminine, the latter agreeing with the sex of the referent. Cross-linguistically, it is not uncommon for pronouns to show semantic gender agreement, while adnominal elements agree with the lexical gender of the noun. This is captured in Corbett's (1979) Agreement Hierarchy, in which the likelihood of showing either lexical or semantic gender agreement differs per agreement target. Adnominal elements, such

as determiners and attributive adjectives, are most likely to agree with the lexical gender of the noun, while personal pronouns have the highest likelihood of showing semantic gender agreement.

Dutch and German seem to differ with respect to the frequency of semantic agreement in the pronoun. With a neuter noun referring to a female person, as in example (1) and (2), neuter and feminine agreement are equally likely in German (Braun & Haig 2010), while feminine agreement is strongly preferred over neuter agreement in Dutch (Haeseryn et al. 1997: §5.1.2).

In Dutch, semantic agreement does not only occur with human referents, but with inanimate referents as well (Van Haeringen 1936, 1951, Fletcher 1987, Audring 2006, 2009). This agreement is based on the degree of individuation of the referent. Masculine/common gender pronouns tend to be used for individuated referents, such as a concrete object, while neuter pronouns tend to be used for non-individuated referents, such as a mass. Examples of this are shown in (3) and (4) below (from the *Corpus Gesproken Nederlands* 'Corpus of Spoken Dutch', from Audring 2006):

(3) Moet je nog   wat informatie over dat **boek**   hebben?
     need you more some information about DEM.N book(N)   have

     Dan moet 'k **'m**   nog niet gaan inleveren.
     then should I 3SG.M yet not go   return

     'Do you need some more information about that book? Then I shouldn't return it yet.'

(4) 't zit toch   ook bij **olijfolie**   wel een beetje in
     it is in.fact also with olive.oil(C) PRT a   bit   about

     hoe **'t**   geconserveerd wordt.
     how 3SG.N preserved   is

     'In fact also with olive oil, it matters how it is preserved.'

While the antecedent *boek* 'book' in (3) is neuter, the personal pronoun is masculine. Conversely in (4), the antecedent *olijfolie* 'olive oil' is common gender and the personal pronoun is neuter.

Audring (2009) describes this semantic agreement pattern of Dutch pronouns on the basis of the Individuation Hierarchy, shown in (5).[1]

(5) The Individuation Hierarchy and Dutch pronouns (adapted from Audring 2009: 127)

human > animal > object / bounded abstract > specific mass > unbounded abstract / unspec. mass

(girl) (horse) (book) / (question) (my tea) (love) / (snow)

fem./masc.   *masculine*   *neuter*
common   *common*

The degree of individuation of entities decreases from left to right on the hierarchy. Entities with a high degree of individuation have a clearly bounded shape, are countable and have specific characteristics. Entities with a low degree of individuation have unclear boundaries, are uncountable and have less specific characteristics. Humans have the highest degree of individuation, followed by animals. Next are objects, such as a book or a table, and bounded abstracts, such as a problem or a question. Less individuated entities are specific masses, which are specific instantiations of masses, such as this soup or my tea. Unbounded abstracts, such as pain or love, and unspecific masses, such as honey or snow, have the lowest degree of individuation.

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[1] Several slightly different versions of the Individuation Hierarchy exist in the literature. The hierarchy presented here is from Audring (2009: 127) and is based on the distinctions she found to be relevant in her corpus study of spoken Dutch. This is an adapted version of Sasse's (1993: 659) Continuum of Individuality. In Sasse's hierarchy, bounded and unbounded abstracts form a single category of abstracts between concrete objects and masses, and specific and unspecific masses are not distinguished. Although concrete objects may be considered more individuated than bounded abstracts, these two categories are grouped together on Audring's (2009) hierarchy, because bounded referents were often ambiguous between a concrete and abstract interpretation in her corpus. Whether or not objects and bounded abstracts should be considered distinct categories on the hierarchy could therefore not be determined on the basis of her corpus data.

In her study of Dutch spoken language in the *Corpus Gesproken Nederlands* ('Corpus of Spoken Dutch'), Audring found that, when personal and demonstrative pronouns do not agree with the gender of the antecedent noun, the masculine personal pronouns (*hij/hem*, 'he/him') and common demonstrative pronouns (*die*, *deze*, 'that, this') are used for (male) humans, animals, objects and bounded abstracts. The neuter personal pronoun (*het*, 'it') and demonstrative pronouns (*dat*, *dit*, 'that, this') are used for specific masses, unbounded abstracts and unspecific masses.

This type of semantic agreement occurs in 65% of the cases in which the lexical gender of the noun conflicts with the degree of individuation of the referent, so with neuter nouns referring to individuated entities and with common nouns referring to non-individuated entities. The frequency with which semantic agreement occurs differs per semantic category. It is highest with referents at the ends of the Individuation Hierarchy, those referents for which the potential conflict between semantic and lexical gender is the largest (Audring 2009: 167-168).

Semantic agreement based on individuation has not only been found in Dutch, but in other Germanic varieties as well. It occurs in West Jutland Danish (Ringgaard 1973), Helgoland Frisian (Wahrig-Burfeind 1989), and in English dialects, in particular West Somerset English (Siemund 2002, 2008). The semantic use of neuter with referents of low individuation has also been found in City Frisian (Wahrig-Burfeind 1989) and in Flemish (De Vos 2009, De Vos & De Vogelaer 2011, De Vogelaer & De Sutter 2011). A similar phenomenon with respect to the use of neuter has been found in the Scandinavian standard languages, Danish, Norwegian and Swedish, which show semantic neuter agreement in the predicative adjective (Braunmüller 2000, Enger 2004, 2013).

What most of these varieties have in common is that the original Germanic three-way nominal gender system is no longer intact. West Jutland Danish and the English dialects have lost lexical nominal gender completely. Dutch, Frisian, Danish and Swedish have conflated masculine and feminine gender and distinguish two nominal genders, common and neuter. Norwegian, with two standard varieties, partly lost the three-gender system: while Norwegian Nynorsk distinguishes three genders, Norwegian Bokmål has conflated masculine and feminine gender and

distinguishes common and neuter nouns.[2] In Flemish, the distinction between masculine and feminine nouns is in the process of disappearing, as it is only marginally marked in the noun phrase in certain dialects.

Audring (2006, 2009) suggests for Dutch that agreement based on individuation has developed in response to the loss of the three-way gender distinction. The conflation of masculine and feminine nominal gender created a mismatch in Dutch between the nominal genders (common and neuter) and the genders of the personal pronoun (masculine, feminine, neuter). This created uncertainty regarding pronominal agreement with former masculine and feminine nouns, which has led to a reinterpretation of the pronouns in semantic terms. The loss of the distinction between masculine and feminine nouns is also proposed as the cause for semantic agreement in Flemish by De Vos (2009), De Vos & De Vogelaer (2011), and De Vogelaer & De Sutter (2011).

However, the fact that agreement based on individuation is found in several Germanic varieties suggests that it may not have developed newly and independently in each variety. The association between the genders and individuation could be a shared Germanic feature. There are in fact indications that the original Proto-Indo-European genders were associated with different degrees of individuation (Leiss 2000, Matasović 2004, Luraghi 2011). Therefore, the observed semantic agreement in present-day Germanic varieties may be an increased surfacing of a tendency that was already present before the nominal gender systems of these varieties changed. If that is the case, semantic agreement based on individuation may also exist in Germanic languages that still fully distinguish three nominal genders, such as German.

Audring (2009: 193) in fact already notes that semantic agreement with inanimate referents is not impossible in German. Based on personal judgement, she observes that neuter pronouns could be used with non-neuter nouns when the

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[2] Norwegian Nynorsk is a somewhat exceptional standard variety. Nynorsk (also Landsmål) was created in the middle of the 19th century by the linguist and poet Ivar Aasen as a new, supposedly more genuine standard language in opposition to Bokmål (then called Riksmål). That Nynorsk has the more archaic three gender system is due to the fact that the variety was created on the basis of a selection of Norwegian dialects which still have three genders (Braunmüller 2000: 25-26).

referent has a low degree of individuation. She provides the following constructed examples:

(6) a. **Kartoffelsuppe**? Ja **das**   esse ich gern.
        potato soup(F)   yes DEM.N eat   I   with.pleasure
        'Potato soup? Yes, I like to eat that.'

    b. Sie mag keinen **Jazz**,   aber ihr Freund hört   **das**   immer.
        she likes no.M.SG jazz(M) but   her friend listens DEM.N always
        'She doesn't like jazz, but her boyfriend listens to it all the time.'

If Audring's observation is correct, it suggests that the difference between German and Dutch with respect to semantic agreement is not absolute but rather one of degree. Semantic agreement may exist with referents on the outer ends of the Individuation Hierarchy in German, humans at the left end and unbounded abstracts and masses at the right – those referents for which semantic agreement is the most frequent in Dutch as well.

This study investigates if, and to what extent, semantic gender agreement based on individuation exists in German as well as in Dutch. To compare the two languages, pronominal agreement with non-human referents is tested in both languages by means of a pronoun elicitation experiment. It is expected that the same kind of semantic agreement occurs in German as in Dutch: masculine pronouns are used with referents that have a high degree of individuation, in particular, animals, objects and bounded abstracts, and neuter pronouns are used with referents that have a low degree of individuation, in particular, unbounded abstracts and masses. The two languages are expected to differ in the frequency of semantic agreement. Semantic agreement is expected to be less frequent in German than in Dutch.

As semantic agreement may be low frequent in German, the experiment was designed to test two types of pronominal reference, anaphoric and deictic reference. Most studies on pronominal agreement focus only on anaphoric reference (see references above). However, semantic agreement may surface more easily in deictic reference than in anaphoric reference. While anaphoric reference involves a nominal antecedent, as in all the examples above, there is no nominal antecedent in deictic

reference. Instead, the pronoun refers to the referent directly, as in an utterance like 'Look, it is moving'. This is possible when a speaker and addressee are in the same space and are focussed on the same referent. Corbett (1991: 243-244) notes that in deictic reference, pronouns tend to agree with an implicit noun that describes the referent, usually a basic-level term. If there is a conflict between the lexical gender of the noun and the referent, it may be easier to escape the gender of the implicit noun in deictic reference than it is to escape the gender of the explicit noun in anaphoric reference. Therefore, it is expected that semantic agreement is more frequent in deictic reference than in anaphoric reference in both German and Dutch.

This chapter is organised as follows. The details of the experiment are described in the following section. The results of the experiment are presented in Section 3, followed by a discussion of the findings in Section 4. Section 5 concludes this chapter.

2. Method

2.1. Design

A pronoun elicitation experiment was conducted in which subjects were presented with sentences containing gaps where a pronoun should be used. The test was presented via a presentation on a laptop. In order to make the responses as spontaneous as possible, the subjects had to respond orally. They were instructed to read the sentences out loud and fill in the blank spots while reading. The test sentences were constructed in such a way that a personal pronoun was most likely to be used. The test contained filler sentences with blank spots where a particular conjunction should be used. Two different parts of the test were designed to test pronominal agreement in anaphoric reference and in deictic reference. In the anaphoric reference test, subjects had to insert a pronoun that refers to a nominal antecedent in the preceding sentence, as in (7) below. In the deictic reference test, subjects had to insert a pronoun that refers to a referent presented on a picture, as in (8) below.

(7)   Examples anaphoric reference test

Dutch

Er valt hier veel regen. Om kosten te besparen vangen we ... hierin op. Op die manier kan ... later in plaats van leidingwater gebruikt worden.

'There is a lot of rain here. To save costs, we catch … in this. That way … can be used later instead of tap water.'

German

Furcht hat evolutionsgeschichtlich eine wichtige Funktion. Menschen und Tiere erfahren ..., um eventuelle Gefahren abzuwenden. Deshalb dient ... als eine Warnung für Gefahr und Risiko.

'Fear has an important function from an evolutionary perspective. Humans and animals experience … to avoid potential dangers. Thus, … serves as a warning for danger and risk.'

(8)   Examples deictic reference test

Dutch

Kijk. Ik heb ... vandaag vers van de koe gemolken. De houdbaarheid is kort, maar vers heeft ... de beste smaak.

'Look. I milked … fresh from the cow today. The shelf life is short, but … has the best taste fresh.'

German

Guck mal. Ich habe … heute frisch von der Kuh gemolken. Die Haltbarkeit ist kurz, aber so hat … den besten Geschmack.

'Look. I milked … fresh from the cow today. The shelf life is short, but … has the best taste fresh.'

For every test item, both a subject and an object pronoun was elicited. The sentence containing the antecedent, or the phrase pointing out the referent, was followed by a sentence in which a subject pronoun was missing and a sentence in which an object pronoun was missing. The order of these sentences varied systematically so that for each semantic category both the order subject-object and object-subject occurred. This was done in order to control for a potential difference between subject and object pronouns in their propensity towards semantic agreement. Whether or not there is a difference between subject and object pronouns was not a research question in this experiment.[3]

2.2. Test items

The tests contained referents from different semantic categories in terms of their degree of individuation: animals, objects, bounded abstracts, unbounded abstracts

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[3] The literature is inconclusive on the question whether subject and object pronouns have different agreement preferences. Audring (2009: 163) found a higher frequency of semantic agreement with subject personal pronouns than with object personal pronouns in her corpus study of spoken Northern Dutch. However, De Vos & De Vogelaer (2011: 253) did not find a difference between subject and object personal pronouns in their questionnaire study of Flemish. Both subject and object pronouns were included in the present study to control for a potential effect. The test was not designed to answer the question whether or not there is a difference between subject and object pronouns. The test has the subject and object pronoun occur sequentially with the same antecedent, which is not a circumstance in which a difference is most likely to surface. The results indeed show no significant difference between subject and object pronouns for Dutch ($\chi 2$ (1) = 0.619, p= 0.431), but a significant difference was found for German, with subject pronouns showing slightly more semantic agreement than object pronouns ($\chi 2$ (1) = 4.649, p=0.031).

and (unspecific) masses.[4] The deictic reference test did not contain abstract referents, only animals, objects and masses, since abstract referents cannot be clearly represented visually. The test items that were used in the deictic test were pictures of referents for which no more than one plausible basic-level term exists.

The test items are nouns that have a gender that conflicts with the degree of individuation of the referent. Neuter nouns were therefore used for animals, objects and bounded abstracts (referents with a high degree of individuation). For unbounded abstracts and masses (referents with a low degree of individuation), common gender nouns were used in the Dutch test and masculine nouns in the German test. As there were no specific expectations for feminine gender with inanimate referents, feminine nouns were tested separately for all semantic categories in the German test. This means that the German test was longer than the Dutch test.

Tables 1 and 2 show the test items that were used in the Dutch test. The anaphoric reference test consisted of ten test items, two items per semantic category. The deictic reference test contained eleven test items, three to four test items per semantic category. Originally, the test contained twelve test items, but one item had to be deleted, because more than one basic-level term exists for it.[5]

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[4] The specificity of the masses is not identical in the anaphoric and deictic test. The mass nouns used in the anaphoric test are unspecific masses, as they all occur without a determiner. The specificity of the masses displayed in the deictic reference test is more subject to interpretation of the viewer. However, it could be said that their display alone makes them specific instantiations of masses.

[5] The deleted item was a picture of a bathtub, which may be referred to either by the neuter noun *bad* 'bath' or the common noun *badkuip* 'bath tub'.

Table 1. Test items Dutch anaphoric reference test

semantic category	gender noun	items
animal	neuter	*varken* 'pig' *paard* 'horse'
object	neuter	*aquarium* 'aquarium' *bed* 'bed'
bounded abstract	neuter	*antwoord* 'answer' *probleem* 'problem'
unbounded abstract	common	*liefde* 'love' *jaloezie* 'jealousy'
mass	common	*sneeuw* 'snow' *regen* 'rain'

Table 2. Test items Dutch deictic reference test

semantic category	gender noun	items (implicit nouns)
animal	neuter	*nijlpaard* 'hippopotamus' *schaap* 'sheep' *zeepaardje* 'sea horse' *lieveheersbeestje* 'ladybird'
object	neuter	*boek* 'book' *ei* 'egg' *kussen* 'cushion'
mass	common	*honing* 'honey' *soep* 'soup' *thee* 'tea' *melk* 'milk'

Tables 3 and 4 show the test items that were used in the German test. The anaphoric reference test contained twenty test items, four items per semantic category. The deictic test contained twenty-one test items, six to eight items per semantic category. The deictic test originally contained twenty-four test items. Three items were deleted, because more than one basic-level term exists for them.[6]

Table 3. Test items German anaphoric reference test

semantic category	gender noun	items
animal	neuter	*Schwein* 'pig' *Pferd* 'horse'
	feminine	*Maus* 'mouse' *Grille* 'cricket'
object	neuter	*Klavier* 'piano' *Bett* 'bed'
	feminine	*Kerze* 'candle' *Lampe* 'lamp'
bounded abstract	neuter	*Wahlergebnis* 'election results' *Problem* 'problem'
	feminine	*Antwort* 'answer' *Frage* 'question'
unbounded abstract	masculine	*Stolz* 'pride' *Neid* 'envy'
	feminine	*Liebe* 'love' *Furcht* 'fear'
mass	masculine	*Schnee* 'snow' *Regen* 'rain'
	feminine	*Erde* 'soil' *Tinte* 'ink'

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[6] The deleted items were a picture of a crocodile, which may be referred to either by the noun *Krokodil* [N] or *Alligator* [M], a picture of a bathtub, which can be referred to by *Bad* [N] or *Badewanne* [F], and a picture of a long sock, which can be referred to by *Socke* [N] or *Strumpf* [M].

Table 4. Test items German deictic reference test

semantic category	gender noun	items (implicit noun)
animal	neuter	*Kamel* 'camel' *Schaf* 'sheep' *Chamäleon* 'chameleon'
	feminine	*Gans* 'goose' *Ameise* 'ant' *Fliege* 'fly' *Spinne* 'spider'
object	neuter	*Buch* 'book' *Ei* 'egg' *Kissen* 'cushion'
	feminine	*Gitarre* 'guitar' *Trompete* 'Trumpet' *Gabel* 'fork'
mass	masculine	*Honig* 'honey' *Tee* 'tea' *Teig* 'dough' *Reis* 'rice'
	feminine	*Wolle* 'wool' *Suppe* 'soup' *Farbe* 'paint' *Milch* 'milk'

2.2. Participants

Twenty native speakers of Dutch and twenty native speakers of German were tested. The Dutch test participants were native speakers of Dutch living in the Randstad area. They were all students in higher education, mostly at the University of Amsterdam. Students of Dutch linguistics were not included. Their ages ranged between 21 and 27, with an average age of 23. The German test participants were students in higher education as well, mostly at the Radboud University Nijmegen. Their ages ranged between 19 and 27, with an average age of 22. They were all native speakers of German from the area North Rhine-Westphalia.

3. Results

3.1. The results of the Dutch test

The results of the anaphoric reference test for Dutch are presented in Table 5 below. The table shows the proportion of masculine, feminine and neuter pronouns used with each semantic category. The table does not distinguish the types of pronouns that were used. The large majority of the pronouns used are personal pronouns (93%, 371/400), but some demonstratives were used as well (7.3%, 29/400). These are all neuter demonstrative pronouns, used by several participants and with various test items.

Table 5. Results anaphoric reference test Dutch. Gender of pronouns used per semantic category.

semantic category	noun gender	pronoun gender		
		masculine	*feminine*	*neuter*
animal	neuter	53/80 66%	1/80 1.3%	26/80 33%
object	neuter	10/80 13%	0/80 0%	70/80 88%
bounded abstract	neuter	1/80 1.3%	0/80 0%	79/80 99%
unbounded abstract	common	0/80 0%	1/80 1.3%	79/80 99%
mass	common	1/80 1.3%	0/80 0%	79/80 99%

Deviations from the gender of the antecedent are found with all semantic categories. With animals, pronouns often switch to masculine gender. Masculine pronouns are used with objects as well, but not as often as with animals. Examples of these switches to masculine gender are shown in (9) and (10) below.

(9) *Dit **varken**[N] moet goed vetgemest zijn. Pas dan kan **hij**[M] naar de slacht*
     *gaan. Ik denk dat we **hem**[M] nog even een paar weken moeten houden.*
     'This pig has to be fattened up well. Only then can it go to the butcher. I think
     that we'll have to keep it for a few more weeks.'

(10) *Dit **aquarium**[N] heb ik onlangs aangeschaft. Eigenlijk is **hij**[M] te groot om in*
     *de woonkamer te staan. Ik heb **hem**[M] echter wel nodig voor mijn tropische*
     vissen.
     'I recently purchased this aquarium. It is actually too big to fit into the living
     room. However, I do need it for my tropical fishes.'

With bounded abstracts, pronouns mostly agree with the lexical gender of the noun,
with only one switch to masculine gender. The results for unbounded abstracts and
masses are particularly remarkable. Pronouns switch to neuter gender in almost all
of the cases with these referents. Examples of such switches to neuter are shown in
(11) and (12) below.

(11) *Aan **liefde**[C] worden verschillende definities gegeven. Volgens de neurologie*
     *ontstaat **het**[N] door een chemische reactie in de hersenen. We kunnen **het**[N]*
     echter ook zien als een maatschappelijk en cultureel fenomeen.
     'Love is given different definitions. According to neurology, it arises from a
     chemical reaction in the brain. But we can consider it a societal and cultural
     phenomenon as well.'

(12) *Er valt hier veel **regen**[C]. Om kosten te besparen vangen we **het**[N] hierin op.*
     *Op die manier kan **het**[N] later in plaats van leidingwater gebruikt worden.*
     'There is a lot of rain here. To save costs, we catch it in this. That way it can be
     used later instead of tap water.'

Figure 1 displays the results as proportions of lexical gender agreement versus non-lexical, or semantic, gender agreement, with either masculine, feminine or neuter pronouns. The use of masculine or feminine pronouns with common nouns and the use of neuter pronouns with neuter nouns are counted as lexical agreement.[7]
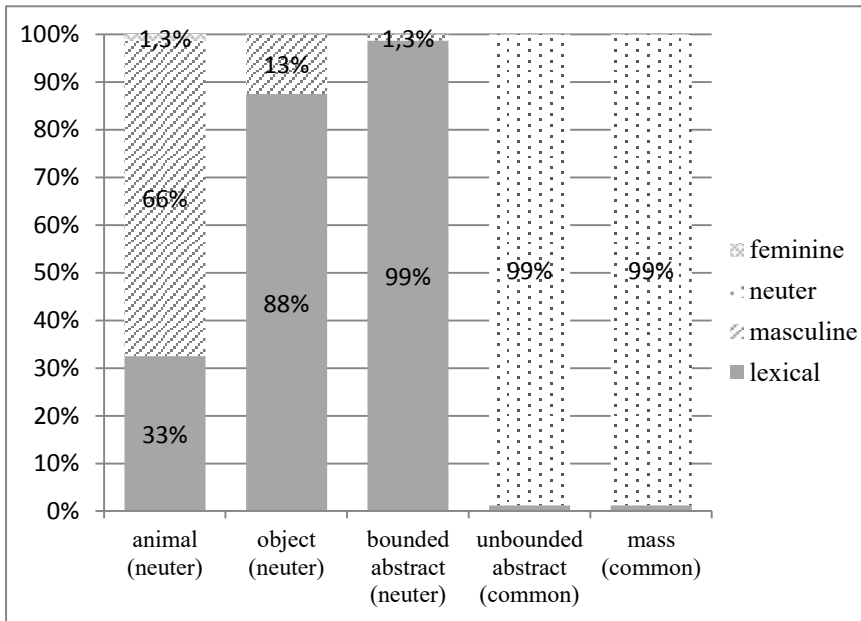

Figure 1. Results anaphoric reference test Dutch. Percentage of lexical gender
agreement and semantic gender agreement with masculine, feminine,
or neuter pronouns per semantic category.

The total proportion of semantic agreement with anaphoric reference is 56% (223/400). The proportion of semantic agreement differs per semantic category. A significant association exists between the semantic category and the type of agreement, lexical or semantic (χ^2 (4) = 281.38, p<0.001).

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[7] While the label lexical gender agreement indicates that there is agreement with the lexical gender of the noun, it is not excluded that the agreement is semantically motivated at the same time. The other way around, deviations from lexical gender are not necessarily all semantically motivated. Some may be slips-of-the-tongue. It is the robustness of the pattern of deviations that decides whether they are likely to be semantically motivated.

Table 6 below shows the results of the deictic reference test for Dutch. As in the anaphoric reference test, mostly personal pronouns were used (91%, 399/439), but some demonstrative pronouns were used as well (9.1%, 40/439), by several participants and with various test items. These include common and neuter demonstratives, which is why the table includes an extra column for common gender pronouns.

Table 6. Results deictic reference test Dutch. Gender of pronouns used per semantic category. Missing/irrelevant responses have been left out.

semantic category	noun gender	pronoun gender			
		masculine	*feminine*	*common*	*neuter*
animal	neuter	110/159 69%	10/159 6.3%	5/159 3.1%	34/159 21%
object	neuter	19/120 16%	0/120 0%	4/120 3.3%	97/120 81%
mass	common	9/160 5.6%	0/160 0%	0/160 0%	151/160 94%

The agreement pattern is similar to the pattern found in the anaphoric reference test. With animals, there is semantic agreement with masculine pronouns and sometimes with feminine pronouns. With objects, switches to masculine gender occur as well, but less often. Masses receive the most semantic agreement: they receive neuter pronouns in the large majority of cases.

Figure 2 shows the proportions of lexical gender agreement versus semantic gender agreement for each semantic category.
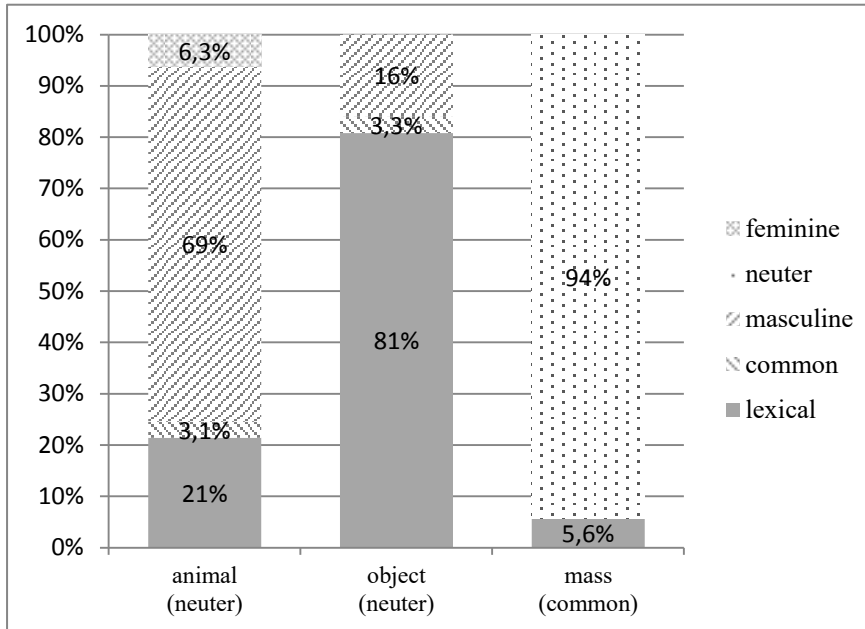

Figure 2. Results deictic reference test Dutch. Percentage of lexical gender
agreement and semantic gender agreement with either masculine,
feminine, common, or neuter pronouns per semantic category.

As in the anaphoric reference test, the proportion of semantic agreement differs significantly between the semantic categories (χ^2 (2) = 191.24, p<0.001).

The total proportion of semantic agreement with deictic reference is 68% (299/439). This is slightly higher than the ratio found with anaphoric reference. With anaphoric reference, semantic agreement with animals, objects and masses – excluding the categories of abstracts for fair comparison –, is 60% (143/240). The difference between anaphoric and deictic reference is statistically significant (χ^2 (1) = 4.96, p=0.026).

3.2. The results of the German test

The results of the anaphoric reference test for German are shown in Table 7 below. The table shows the proportion of masculine, feminine and neuter pronouns used with each semantic category. As in the Dutch tests, mostly personal pronouns were used (98%, 780/797), but some demonstratives were used as well (2.1%, 17/797). These include feminine and neuter demonstrative pronouns, used by several participants and with various test items.

Table 7. Results anaphoric reference test German. Gender of pronouns used with each semantic category. Missing/irrelevant responses have been left out.

semantic category	noun gender	pronoun gender		
		masculine	*feminine*	*neuter*
animal	neuter	2/80 2.5%	0/80 0%	78/80 97.5%
	feminine	1/78 1.3%	76/78 97.44%	1/78 1.3%
object	neuter	0/80 0%	0/80 0%	80/80 100%
	feminine	0/80 0%	80/80 100%	0/80 0%
bounded abstract	neuter	0/80 0%	12/80 15%	68/80 85%
	feminine	1/79 1.3%	67/79 84%	11/79 14%
unbounded abstract	masculine	44/80 55%	10/80 13%	26/80 33%
	feminine	0/80 0%	78/80 98%	2/80 2.5%
mass	masculine	74/80 93%	3/80 3.8%	3/80 3.8%
	feminine	0/80 0%	64/80 80%	16/80 20%

The results of the German test show that there are less deviations from lexical gender than in Dutch, but gender switches occur in German as well. With animals, three switches to masculine gender occur, and one switch to neuter. There are no switches with objects. An example of a switch to masculine gender with an animal is shown in (13) below.

(13) *Dieses **Pferd**[N] ist genau gut für mich. Ich denke, dass ich **ihn**[M] wohl in meinem Anhänger mitnehmen kann. Wie viel soll **er**[M] ungefähr kosten?*

'This horse is just right for me. I think I can take it (lit. him) with me in my trailer. About how much does it cost?'

As in Dutch, switches are mainly found with abstracts and masses. Most of these switches are to neuter gender. Switches to neuter are also found with bounded abstracts, contrary to expectation. Examples of the switches to neuter are shown (14), (15) and (16) below, with a bounded abstract, an unbounded abstract and a mass referent respectively.

(14) *Ihre **Antwort**[F] konnte nicht von jedermann verstanden werden. Vielleicht kann **es**[N] noch einmal wiederholt werden. Könnte der Sprecher **es**[N] bitte lauter und langsamer aussprechen?*

'Your answer could not be heard by everyone. Perhaps it can be repeated once more. Could the speaker please articulate it louder and more slowly?'

(15) ***Stolz**[M] ist sehr interessant. Man kann sagen, dass **es**[N] der Gewissheit entspringt, etwas Besonderes geleistet zu haben. Man trifft **es**[N] in allen menschlichen Kulturen an.*

'Pride is very interesting. One can say that it arises from knowing to have achieved something special. One encounters it in all human cultures.'

(16) *Wir müssen zuerst **Erde**[F] entsorgen. Ich hoffe, dass **es**[N] mit einem mal transportiert werden kann. Werden wir **es**[N] ins Auto einladen oder einen Container bestellen?*

'We have to dispose of soil first. I hope that it can be transported in one go. Shall we load it into the car or order a container?'

Besides switches to neuter gender, switches to feminine gender occur, mainly with bounded and unbounded abstracts. Examples of these switches to feminine are shown in (17) and (18) below, with a bounded and unbounded abstract respectively.

(17) *Das aktuelle **Wahlergebnis**[N] ist laut vieler Politiker sehr unglaubwürdig. Darum plädieren die Oppositionsparteien darauf, dass **sie**[F] aufgehoben werden soll. Sie können **sie**[F] keineswegs akzeptieren.*

'The current election result is very unreliable according to many politicians. Therefore, the opposition parties argue that it (lit. she) is annulled. They cannot accept it (lit. her) by any means.'

(18) ***Stolz**[M] ist sehr interessant. Man kann sagen, dass **sie**[F] der Gewissheit entspringt, etwas Besonderes geleistet zu haben. Man trifft **sie**[F] in allen menschlichen Kulturen an.*

'Pride is very interesting. One can say that it (lit. she) arises from knowing to have achieved something special. One encounters it (lit. her) in all human cultures.'

The agreement behaviour with masculine and neuter nouns on the one hand and feminine nouns on the other hand is similar for animals and objects, but some noteworthy differences are found with abstracts and masses. With abstracts, these differences appear to follow from the observed agreement pattern with these referents. The data show a tendency towards both neuter and feminine agreement with abstract referents. With bounded abstracts, neuter nouns receive switches to feminine gender, and feminine nouns receive switches to neuter gender. In line with this, masculine nouns receive switches to both neuter and feminine gender with unbounded abstracts, and feminine nouns receive very few switches. With masses,

the different results for masculine and feminine nouns are more elusive. There are switches to neuter with both genders, but these occur more often with feminine nouns than with masculine nouns.

Figure 3 displays the results as percentages of lexical gender agreement versus semantic gender agreement per semantic category.
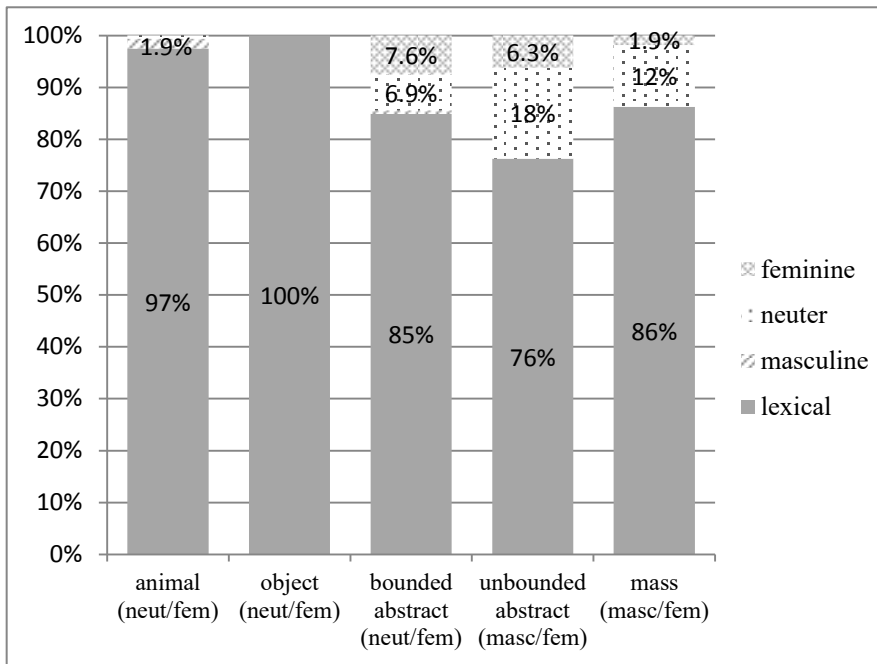

Figure 3. Results anaphoric reference test German. Percentage of lexical gender agreement and semantic gender agreement with masculine, feminine, or neuter pronouns per semantic category.

The total proportion of semantic agreement with anaphoric reference is 11% (88/797). The proportion of semantic agreement differs significantly between the semantic categories (χ^2 (4) = 61.67, p<0.001).

Table 8 shows the results of the deictic reference test for German. The large majority of the pronouns used are personal pronouns (99%, 829/840), but some demonstratives were used as well (1.3%, 11/840). These include demonstrative pronouns of all three genders, used by several participants and with various test items.

Table 8. Results deictic reference test German. Gender of pronouns used with each semantic category.

semantic category	noun gender	pronoun gender		
		masculine	*feminine*	*neuter*
animal	neuter	24/120 20%	1/120 0.83%	95/120 79%
	feminine	2/160 1.3%	148/160 93%	10/160 6.3%
object	neuter	0/120 0%	0/120 0%	120/120 100%
	feminine	0/120 0%	108/120 90%	12/120 10%
mass	masculine	129/160 81%	0/160 0%	31/160 19%
	feminine	0/160 0%	131/160 82%	29/160 18 %

In the deictic test, semantic agreement is more pronounced than in the anaphoric test. Particularly with animals, a considerable number of switches to masculine gender now occur with neuter nouns. There are fewer switches with feminine nouns with animals. With masses, switches to neuter occur with both masculine and feminine nouns. Some unexpected switches to neuter occur with feminine nouns with animals and objects.

Figure 4 displays the results of the deictic test as percentages of lexical gender agreement versus semantic gender agreement with either masculine, feminine or neuter pronouns.
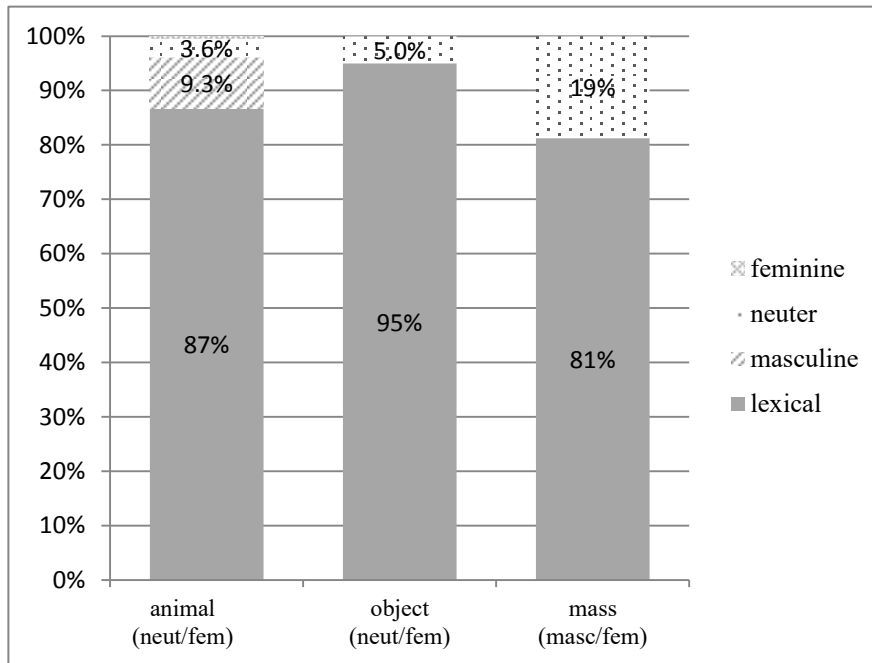
Figure 4. Results deictic reference test German. Percentage of lexical gender
agreement and semantic gender agreement with masculine, feminine,
or neuter pronouns per semantic category.

The proportion of semantic agreement differs significantly between the semantic
categories (χ^2 (2) = 22.98, p<0.001).

The total proportion of semantic agreement with deictic reference is 13%
(109/840). With anaphoric reference, the proportion of semantic agreement with
animals, objects and masses – excluding the categories of abstracts – is lower, 5.4%
(26/478). This difference between deictic and anaphoric reference is statistically
significant (χ^2 (1) = 18.82, p<0.001).

Semantic agreement is overall much more frequent in Dutch than in German.
In the anaphoric and deictic reference test together, a total of 62% (522/839)
switches were found for Dutch and 12% (197/1637) for German. This difference is
statistically significant (χ^2 (1) = 677.91, p<0.001).

4. Discussion

The research question for this study was if, and to what extent, semantic gender agreement based on individuation exists in German as well as in Dutch. It was expected that the same kind of semantic agreement can be found in both languages, with masculine pronouns being used for referents with a high degree of individuation and neuter pronouns being used for referents with a low degree of individuation. Semantic agreement was expected to be more frequent in Dutch than in German, and more frequent in deictic reference than in anaphoric reference in both languages.

Semantic agreement based on individuation was found in both Dutch and German, but the frequency with which it occurs is much lower in German than in Dutch. In both languages, there is a tendency to use masculine pronouns with animals, referents that have a high degree of individuation, and neuter pronouns with unbounded abstracts and masses, referents that have a low degree of individuation. A tendency to switch to masculine gender with objects was only found in Dutch. A tendency to switch to feminine gender with abstract referents was only found in German.

The results for Dutch are in line with the previous findings by Audring (2009), discussed in Section 2. As in Audring's corpus data, the total proportion of semantic agreement is substantial and it varies for the different semantic categories on the Individuation Hierarchy, with most semantic agreement occurring with referents at the ends of the hierarchy, animals on the left and unbounded abstracts/masses on the right.

The almost exclusive semantic neuter agreement in Dutch with unbounded abstracts and masses is particularly remarkable. This type of semantic agreement occurs most frequently in German as well. The result shows that semantic agreement is clearly preferred over lexical agreement with these referents in Dutch, if not the norm. The proportion of semantic agreement found in this experiment, 99% in anaphoric reference, is even higher than the one found in the spoken language corpus by Audring (2009), who found a proportion of 88% semantic agreement with unbounded abstracts/masses. A variety of factors could be responsible for this. One of them concerns the items included in this category in the two studies. The corpus contains a large variety of mass referents, including less prototypical ones such as

apparatuur 'equipment', whereas only very prototypical members of the category 'mass', viz. substances and liquids, were used in this experiment. It is possible that there is a higher propensity for semantic agreement with masses of this kind than with less prototypical ones.

Semantic masculine agreement with objects is less frequent in Dutch (13% in anaphoric reference and 19% in deictic reference), and this type of agreement does not occur at all in German. Semantic agreement based on a high degree of individuation occurs only with animals in German. Even with animals, it is rarely seen in the anaphoric reference test, but it occurs more frequently in deictic reference (20% masculine agreement with neuter nouns). German behaves the same as Flemish in this respect. In a questionnaire study on pronominal agreement in Flemish, De Vos (2009) did not find semantic masculine agreement with objects either, while she did find semantic masculine agreement with animals and semantic neuter agreement with abstracts and masses.

Bounded abstracts receive next to no semantic agreement in the Dutch test. In Audring's (2009) corpus study, bounded abstracts were not analysed separately from objects. The two categories were grouped together in her study, because it was often impossible to distinguish between a concrete and an abstract interpretation of bounded referents in the corpus. Therefore it could not be determined whether objects and bounded abstracts are treated differently in pronominalization. In this experiment, the test items (*antwoord* 'answer' and *probleem* 'problem') were unambiguously abstract in the given context. The results of this study suggests that bounded abstracts and objects are in fact not treated alike. While gender switches to masculine occur with objects, these switches hardly ever occur with bounded abstracts.

The low number of switches with bounded abstracts can be explained in two different ways. In the first place, bounded abstracts form a true middle category in terms of individuation. Their countability makes them individuated, like objects, but their abstractness gives them a low degree of individuation, and makes them more like other, unbounded, abstracts. Because of this ambivalent nature of bounded abstracts, the lexical gender of the noun, common or neuter, may never be strongly conflicting with them. Another possible explanation for the low number of switches is that bounded abstracts are in fact conceived of more as referents with a low degree

of individuation than as referents with a high degree of individuation. If that is the case, the neuter gender of the test items is perfectly compatible with bounded abstracts and there is no reason to switch gender. The results of a follow-up pilot study based on the present findings (Oomen 2015) point towards this second explanation. As in the present study, switches to masculine gender hardly ever occur with neuter nouns referring to bounded abstracts, but switches to neuter gender with common nouns occur frequently. This outcome is in line with the results for bounded abstracts in the German test. No switches to masculine gender were found with bounded abstracts in German either, but switches to neuter did occur (14% switches to neuter with the feminine test items). This suggests that bounded abstracts pattern with lowly individuated referents rather than with referents of high individuation in both German and Dutch.

Abstracts in German do not only receive semantic agreement with neuter pronouns, but also with feminine pronouns. This pattern is not found for Dutch, where a feminine pronoun was used with an unbounded abstract only once. It is interesting to find an association between feminine gender and abstract referents, since feminine gender and the meaning abstract are historically connected. Although the exact development of the third, feminine, gender in Proto-Indo-European is debated, it is widely accepted that there is a connection between feminine gender and the notion abstract (see, for instance, Luraghi 2009).[8] This association between feminine gender and the meaning abstract still exists in the German lexicon today, as the suffixes that derive abstract nouns, *-ung*, *-heit*, *-keit*, *-(at)ion*), are all still feminine in German (Vogel 2000: 466). Perhaps the existence of many feminine abstract nouns supports the connection between feminine gender and the meaning abstract in German. In that case, the absence of semantic feminine agreement with abstracts in Dutch may be explained by the fact that Dutch no longer has feminine nominal gender.

Although semantic feminine agreement with abstract referents was not found for Dutch, it is interesting to note that semantic feminine agreement is known to exist with collective referents in Dutch, particularly in the possessive pronoun. Haeseryn et al. (2007: §5.5.4) observe that the feminine possessive pronoun *haar*

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[8] There is great body of research on how feminine gender developed in Proto-Indo-European. For an overview, see, for instance, Ledo-Lemos 2003.

'her' is used with collective nouns, such as *regering* 'government' or *unie* 'union', mainly in written and/or formal language. Importantly, this occurs not only with common gender nouns – in which case it could be agreement with the historical feminine gender of the noun – but with neuter nouns as well, such as *kabinet* 'cabinet' or *volk* 'people'. As collective referents have a higher degree of abstractness than individuals, one may consider this semantic agreement to be the same type of agreement as the semantic feminine agreement with abstract referents found for German. However, Flemish data suggest that this is not the case. De Vos (2009) tested pronominal agreement with both abstract and collective referents in Flemish, and while she found semantic feminine agreement with collective referents, she did not find semantic feminine agreement with abstract referents. This suggests that the two types of feminine agreement are not the same. This is in line with the analysis of semantic feminine agreement in Dutch by Van der Sijs (2003). She relates this agreement to the historical semantic ambiguity of the pronoun *haar*, which used to function both as the third person singular feminine possessive ('her') and the third person plural possessive for all genders ('their'). Van der Sijs argues that the use of the pronoun *haar* with collective nouns is semantic plural agreement. If this is the case, semantic feminine agreement with collective nouns in Dutch is – at least originally – based on the conceptual plurality of the collective referent, not its abstractness.

Some switches in the German test were unexpected. A small number of switches to neuter were found with animals and objects. This could suggest that there is a tendency to switch to neuter with all semantic categories in German. However, there may be a different explanation for these switches. It should be noted that the unexpected switches to neuter were found almost exclusively in the deictic reference test – it occurs only once in the anaphoric test. With the deictic test, it cannot be excluded that some participants had a different implicit antecedent in mind than the one intended. Considering the test items involved, this is not entirely unlikely. With the pictures of objects, the switches to neuter gender occur with the items *Gitarre* 'guitar' and *Trompete* 'trumpet'. It is possible that the neuter noun *Instrument* 'instrument' has played a role with these test items. With the pictures of animals, the items *Gans* 'goose', *Ameise* 'ant' and *Fliege* 'fly' received switches to neuter. With these items, the neuter noun *Tier* 'animal' may have played a role, or in

the case of *Ameise* 'ant' and *Fliege* 'fly', the neuter noun *Insekt* 'insect'. It is also noteworthy that only one participant is responsible for most of these neuter agreements with animals. Only the item *Ameise* 'ant', which may be the least recognizable species, received a neuter pronoun from three different participants.

The inclusion of feminine test items for all semantic categories in the German test reveal some differences in the switch ratio with feminine nouns on the one hand and masculine and neuter nouns on the other hand. With animals, there are fewer switches with feminine nouns than with neuter nouns. With feminine nouns, there are hardly any switches (and most of them are unexpected switches to neuter, as discussed above). This suggests that feminine gender is not perceived as conflicting with animals, at least not to the same extent that neuter gender is. With unbounded abstracts, there are also hardly any switches with feminine nouns, while there are many switches with masculine nouns. Considering that switches *towards* feminine gender are also found with these referents (as discussed above), this difference can be explained by semantic compatibility of feminine gender with abstracts. With masses, the opposite pattern is observed: there are more switches with feminine nouns than with masculine nouns. This difference is less readily explained. It is only observed in the anaphoric reference test. In the deictic test, masculine and feminine nouns receive a similar switch ratio with masses. Possibly, the difference in the anaphoric is caused by differences between individual test items/sentences.

For future study, it would be worthwhile to replicate this experiment with more test items, and to test agreement with nouns of each gender for all semantic categories. The present experiment was not set up in this way, because this would make the test too long. However, it would be worthwhile to replicate the experiment with additional test items for certain semantic categories in particular. For Dutch, testing agreement with both neuter and common gender nouns would be relevant for bounded abstracts in particular, in order to confirm the idea that bounded abstracts pattern with referents of low individuation and are more likely to receive switches to neuter gender than to masculine gender. For German, testing agreement not only with neuter and feminine nouns but also with masculine nouns would be relevant for animals and objects, to investigate the possibility that there is a tendency to switch to neuter gender with these referents, besides the observed tendency to use masculine gender.

While German and Dutch show partially similar semantic agreement patterns, semantic agreement is overall significantly more frequent in Dutch. This difference could be related to the differences between the nominal gender systems of German and Dutch in two ways. First, the conflation of masculine and feminine nominal gender could play a role, as suggested by Audring (2006, 2009), De Vos (2009), De Vos & De Vogelaer (2011) and De Vogelaer & De Sutter (2011). Uncertainty about agreement with common gender nouns, whether they should be pronominalized by a masculine or a feminine pronoun, may cause speakers to rely on semantic rather than lexical agreement in Dutch. However, this explanation only applies to agreement with common gender nouns. It does not immediately explain semantic agreement with neuter nouns, for which no uncertainty exists. Nevertheless, it is conceivable that an increased tendency to agree semantically with common gender nouns causes an overall increase of semantic agreement, with neuter nouns as well.

Another factor that could explain the difference between German and Dutch is the general visibility of lexical gender in the two languages, as proposed in Kraaikamp 2012. This factor is related to the loss of the masculine-feminine distinction, but it is not the same. As Dutch lost the distinctive marking for masculine and feminine gender in adnominal elements, leading to the conflation of these two genders, it also lost gender marking entirely in some adnominal elements. This general loss of gender marking in the noun phrase may play a role in the increased frequency of semantic agreement in Dutch as well. Unlike German, Dutch no longer shows gender agreement in the indefinite article and in almost all of the possessive determiners, with the exception of the first person plural (common *onze* versus neuter *ons* 'our'). This has not led to a loss of knowledge about the lexical gender of nouns, as happened with masculine and feminine gender. After all, speakers of Dutch can still distinguish common and neuter nouns, reliably expressing these genders on the remaining adnominal agreement targets. However, the loss of adnominal gender markers has left Dutch with a lower visibility of lexical gender in general. The adnominal elements that no longer mark gender in Dutch all still mark gender in German. There could be a relation between the frequency of lexical gender marking in the noun phrase and the likelihood of semantic instead of lexical gender agreement in the pronoun. The higher proportion of semantic

agreement in Dutch may be explained by the lower salience of lexical gender in the Dutch noun phrase compared to German.

With respect to anaphoric and deictic reference, it was found that semantic agreement occurs more often in deictic reference, as was expected. The absence of an explicit linguistic antecedent, with a competing lexical gender, in deictic reference can explain this difference. This relates to the factor of the general visibility of lexical gender discussed above. The finding that semantic agreement is more frequent in deictic reference lends support to the idea that the frequency of semantic agreement is connected with the salience of lexical gender, with semantic agreement surfacing more easily when lexical gender is less visible.

5. Conclusion

The findings presented in this chapter confirm that pronouns in Dutch can agree semantically based on the degree of individuation of the referent, and they show that this type of agreement also exists in German. There is a tendency to use masculine pronouns with animals and neuter pronouns with unbounded abstracts and masses in both languages. This finding supports the idea that agreement based on individuation is a shared Germanic feature. As expected, the frequency of semantic agreement is higher in deictic reference than in anaphoric reference, which is explained by the fact that there is no explicit nominal antecedent in deictic reference. Differences between Dutch and German were found as well. Semantic agreement of masculine pronouns with objects was found only in Dutch and semantic agreement of feminine pronouns with abstract referents was found only in German. The most apparent difference between the two languages is that semantic agreement is significantly more frequent in Dutch than in German, which may be explained by the reduced visibility of lexical gender in Dutch compared to German.

Chapter IV
The diachrony of semantic gender agreement: findings from Middle Dutch[*]

Abstract

This chapter presents the results of a corpus study of pronominal gender agreement in Middle Dutch. In present-day Dutch and in several other Germanic varieties, pronouns show semantic gender agreement that is based on the degree of individuation of the referent. Dutch pronouns show variation between this type of agreement and lexical gender agreement. This study investigates how old semantic agreement based on individuation is. In particular, it aims to answer the question whether semantic agreement has developed in response to the change from the Germanic three-gender system to a two-gender system or dates back to before this change. The results show that agreement based on individuation already existed in Middle Dutch, when the original three-gender system was still in place. This shows that this type of agreement did not develop in response to the change from three to two nominal genders. The semantic interpretation of the genders along the lines of individuation apparently existed already and could be an old Germanic, possibly Indo-European, feature. What seems to have changed over time is the proportion of semantic to lexical agreement, as semantic agreement appears to occur more frequently in present-day Dutch than in Middle Dutch. This shift in agreement preference may be due to the loss of adnominal gender marking and the resulting reduced visibility of lexical gender in the noun phrase.

1. Introduction

This study is about gender agreement and the variation that exists, both synchronically and diachronically, between 'lexical gender agreement' and 'semantic gender agreement'. Lexical gender agreement is agreement that is based on the lexically stored gender of a noun, while semantic gender agreement is agreement that is based on certain properties of a referent, such as animacy or sex. Languages differ with respect to the type of gender agreement they display. In

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English, for instance, pronouns show exclusively semantic gender agreement: masculine and feminine pronouns are used for male and female referents respectively, and neuter pronouns are used for inanimate referents and sometimes animals. In Dutch, on the other hand, each noun has a lexically stored gender, and agreement targets typically show agreement with this lexical gender. However, even in languages such as Dutch, with a nominal gender system, semantic agreement occurs, especially with human referents. An example of this agreement variation in Dutch is shown in (1).

(1) **Dat** meisje **dat** daar staat ken ik. **Ze** zit bij mij
    DEM.N girl(N) REL.N there stands know I 3SG.F sits with me

    op school.
    in school

    'I know that girl standing over there. She is in my school.'

In example (1), the determiner and the relative pronoun are neuter, agreeing with the neuter gender of the noun *meisje* 'girl', while the personal pronoun is feminine, agreeing with the sex of the referent. With nouns such as *meisje*, the semantic gender of the referent conflicts with the lexical gender of the noun and this semantic gender is apparently able to override lexical gender in the personal pronoun.

This agreement variation is not uncommon cross-linguistically: it is often possible for personal pronouns to agree semantically while other agreement targets agree with the lexical gender of the noun. This is captured in Corbett's (1979) Agreement Hierarchy, presented in (2) below.

(2) The Agreement Hierarchy (adapted from Corbett 1979)

    attributive > predicate > relative pronoun > personal pronoun

    lexical   semantic
    agreement   agreement

Cross-linguistically, personal pronouns are most inclined towards semantic agreement, while attributive (or adnominal) elements, such as determiners and attributive adjectives, tend to agree with the lexical gender of the noun. However, the two types of agreement are not necessarily categorically distinguished from each other, with every agreement target showing either lexical or semantic gender agreement. Instead, individual agreement targets can display variation between the two types of agreement, with the likelihood of semantic agreement being higher in elements at the right of the hierarchy.

This intra-target agreement variation is clearly visible in Dutch. Example (1) above has two possible variants, shown in (3a) and (3b) below.

(3) a. **Dat**   meisje **dat**   daar staat   ken   ik. **Het**   zit bij mij
        DEM.N girl(N) REL.N there stands know I   3SG.N sits with me

     op school
     in   school

     'I know that girl standing over there. She is in my school.'

     b. **Dat**   meisje **die**   daar staat   ken   ik. **Ze**   zit bij mij
        DEM.N girl(N) REL.C there stands know I   3SG.F sits with me

     op school
     in   school

     'I know that girl standing over there. She is in my school.'

The personal pronoun can be neuter instead of feminine, as in (3a), although this is infrequent and seems more formal. Also the relative pronoun shows variation between lexical and semantic agreement. While it agrees lexically in (3a), which is the norm, it can agree semantically as well, as in (3b), particularly in informal spoken language.

In view of the Agreement Hierarchy, Corbett (1979) proposes a diachronic relation between the two types of agreement, in which semantic agreement is first introduced in the personal pronoun and then potentially moves leftwards on the hierarchy, gradually encroaching on the domain of lexical gender: "This leads to the diachronic predication to be made from the hierarchy – namely that semantic agreement will first affect the rightmost position and then spread leftwards" (Corbett 1979: 218). This pathway suggests that lexical agreement is generally the older type of agreement, while semantic agreement is an innovation that starts in the pronoun.

However, it is not necessarily the case that semantic agreement is always new compared to lexical agreement. Semantic agreement may have always been part and parcel of gender systems that display it. It seems that, at least in the West Germanic languages, semantic agreement with animate referents has long existed alongside lexical agreement. Specifically, semantic agreement based on the sex of the referent already occurred in Old and Middle High German (Birkenes, Chroni & Fleischer 2014) and in Old English, when English still had a nominal gender system (Curzan 2003). An example from Middle Dutch was encountered in the present study with the neuter noun *wif* 'woman', shown in (4) below:

(4) Overmits **een-s** **heyden-s** **wijf-s** **die** hij
      because   ART.INDEF-GEN.N heathen-GEN.N woman-GEN.N REL.ACC.F he

   soe seer mynde ende lieff hadde. Des **sij**   wel merkede […]
   so very loved and dear held   that 3SG.NOM.F well noticed

   'Because of a heathen woman whom he loved and held dear so much. Which she noticed clearly […]'

   (Dirc Potter, *Blome der doechden*, 1475-1495. Accessed via dbnl.nl.)

In view of the Agreement Hierarchy discussed above, example (4) is particularly remarkable, as it not only shows semantic agreement in the personal pronoun *sij*, but also in the relative pronoun *die*, which directly follows the neuter-marked antecedent.

In present-day Dutch, and in several other Germanic varieties today, another semantic agreement principle has been found to play a role in pronouns: the degree of individuation of the referent (Van Haeringen 1936; 1951, Fletcher 1987, Siemund 2002, Audring 2006; 2009). A distinction is made between referents with a high degree of individuation, that is, things that are countable and bounded in nature, such as concrete objects, and referents with a low degree of individuation, things that are uncountable and unbounded in nature, such as materials and liquids. Referents with a high degree of individuation tend to receive masculine and common gender agreement, while referents with a low degree of individuation tend to receive neuter gender agreement. Examples of this semantic agreement from the *Corpus Gesproken Nederlands* ('Corpus of Spoken Dutch') are shown in (5) and (6) below (from Audring 2006: 95-99).

(5) Moet je nog wat informatie over dat **boek** hebben?
     need you more some information about DEM.N book(N) have

     Dan moet 'k **'m** nog niet gaan inleveren.
     then should I 3SG.M yet not go return

     'Do you need some more information about that book? Then I shouldn't return it yet.'

(6) 't zit toch ook bij **olijfolie** wel een beetje in
      it is in.fact also with olive.oil(C) PRT a bit about

     hoe **'t** geconserveerd wordt.
     how 3SG.N preserved is

     'In fact also with olive oil, it matters how it is preserved.'

Example (5) shows the use of a masculine pronoun in reference to a neuter noun denoting a concrete object, while example (6) shows the use of a neuter pronoun with a common gender noun denoting a mass.

Pronominal agreement of this kind, viz. masculine agreement with objects and neuter agreement with masses, has been found in, besides Dutch, Helgoland Frisian (Wahrig-Burfeind 1989), West Jutland Danish (Ringgaard 1973, Braunmüller 2000) and in several English dialects, in particular West Somerset English (Siemund 2002; 2008). Semantic agreement with neuter pronouns has also been found in City Frisian (Wahrig-Burfeind 1989) and in Flemish (De Vos & De Vogelaer 2011, De Vogelaer & De Sutter 2011). A similar phenomenon with respect to the use of neuter has been found in Standard Danish, Norwegian and Swedish, which show semantic neuter agreement with referents of low individuation in the predicative adjective (Braunmüller 2000, Enger 2004; 2013). An example from Norwegian with the masculine noun *vodka* 'vodka' is shown in (7) below (from Enger 2004: 6):

(7)   Vodka   er   sun-t.
      vodka(M)   is   healthy-N.SG
      'Vodka is healthy.'

Also in Romance varieties, which have a system of masculine and feminine lexical gender, historically neuter forms are used with referents of low individuation. This has been observed in South-Central Italian dialects, mainly in pronouns and determiners, and in Spanish dialects, in pronouns and post-nominal adjectives (Fernández-Ordóñez 2009). An example from a Spanish dialect with the masculine noun *vinu* 'wine' is shown in (8) below (from Fernández-Ordóñez 2009: 58):

(8)   El   buen   vinu   blanc-o   se   toma   frí-o.   Pruéba-lo.
      DET.M   good.M   wine(M)   white-N   is   drunk   cold-N   taste-3SG.N
      'Good white wine is drunk cold. Taste it.'

The question arises where this semantic agreement based on individuation comes from. It has been suggested that this type of agreement is a new development in these European varieties. Fernández-Ordóñez (2009: 56), for instance, states that "[s]ome Western Indo-European (IE) languages, namely English, Ibero-Romance, Scandinavian and South-Central Italian varieties, have developed new gender distinctions based on the count/mass interpretation of nouns" and "these mass/count

distinctions seem to be new and independent developments of older IE gender systems that are usually well known".

More specifically, it has been suggested for Dutch that agreement based on individuation has developed as a result of changes that occurred in the nominal gender system (Audring 2006; 2009, De Vos & De Vogelaer 2011). Dutch no longer has the original three Germanic genders, since masculine and feminine nominal gender conflated into common gender in the seventeenth century. Audring (2006; 2009) proposes that the resulting mismatch between the nominal genders in Dutch, common and neuter, and the genders of the personal pronoun, masculine, feminine and neuter, instigated the development of a new, semantic agreement system in pronouns: "When regarded with unbiased eyes, the 'wrong' pronouns of spoken Dutch represent a useful and ingenious case of recovery from a historical problem. Speakers of Dutch have reinvented their pronoun genders by putting new semantic foundations under the gender system" (Audring 2009: 217).

This suggestion has been followed up by De Vos & De Vogelaer (2011) who studied pronominal agreement in the dialect of Moerzeke, a Flemish dialect of Dutch in which the distinction between masculine and feminine nominal gender still exists but is disappearing, since the distinction is only sporadically marked in the noun phrase. They found the use of masculine pronouns for feminine nouns and vice versa, with all kinds of referents, which can be considered agreement errors resulting from the loss of the masculine-feminine distinction in the adnominal marking. Additionally, they found the use of neuter pronouns for both masculine and feminine nouns with referents that have a low degree of individuation. In line with Audring's (2009) suggestion, De Vos & De Vogelaer (2011: 276) interpret this finding as the rise of an innovative agreement system caused by the apparent breakdown of the three-gender system: "This process can be considered an instance of morphological regularization, in other words, the rise of an innovative rule system when the traditional system becomes too opaque to be successfully acquired".

However, as with semantic agreement based on sex, agreement based on individuation may not be a new phenomenon in Dutch. Audring (2009: 194) also notes that "even in a thriving three-gender system, there can be some degree of semantic agreement, coupled to conceptual distinctions such as natural gender and individuation". It is possible therefore that semantic agreement based on

individuation has always existed beside lexical gender agreement in Dutch. The fact that it is found in several different Germanic and Romance varieties suggests that it could be an older Germanic or Indo-European feature.

There are in fact indications that individuation was part of the semantic basis of the Proto-Indo-European (PIE) genders. Ever since it was found that the PIE gender system did not originally consist of three genders, but two, with the third, feminine, gender developing later, it has been clear that sex could not have been the semantic basis of the PIE genders (cf. Luraghi 2011). Instead, several theories on the development of PIE gender involve a connection between the genders and individuation. Lehmann (1958), for instance, proposes that PIE gender was a variable feature of nouns and that gender variation was based on different interpretations of the referent as either an individual, a collective, or a resultative/mass entity. In a reconstructed lexicon of PIE nouns, Matasović (2004: 133–134) also observes semantic tendencies in gender assignment which appear to run along the lines of individuation: while nouns referring to humans, animals and most plants are consistently masculine/feminine gender, nouns referring to fluids and substances are always neuter gender. Following Lehmann 1958, Leiss (2000) observes remnants of meaning based gender variation in Old High German, where nominal gender variation appears to distinguish between a count, collective, and mass interpretation of the referent.

Kraaikamp (2012) argues for Dutch that, although the association between the genders and individuation has not been preserved in lexical gender, it is still visible in cases where nominal gender is variable. Since lexical gender is a fixed, invariable feature of nouns, it cannot easily respond to meaning changes over time, making any patterns in lexical gender assignment vulnerable to disruption. However, the semantic pattern still surfaces in cases where nominal gender is variable, for instance with double gender nouns (see also Semplicini 2012) and with nominalized adjectives. Nouns referring to materials, such as *steen* 'stone' or *diamant* 'diamond', can occur in different genders, with a concomitant shift in meaning. They are common gender when they refer to a unit of the material, 'a stone' or 'a diamond', and they are neuter when they refer to the material as a mass, 'stone' or 'diamond' (Haeseryn et al. 1997). Nominalized adjectives show a similar gender alternation associated with a meaning difference. They are assigned common gender when they

refer to an individual, for example *de mooie* 'the pretty one', but neuter when the referent is not individuated, as in *het mooie ervan* 'what is nice about it'. The fact that individuation plays a role in nominal gender as well as pronominal gender suggests that the semantic association of the genders is not an innovation that started in pronouns, but something that has always been part of the Dutch gender system.

This study addresses the question of when semantic agreement based on individuation has developed in Dutch pronouns, particularly if it developed after the change from a three-gender system to a two-gender system or if it existed before this change. Data from Middle Dutch, where the three nominal genders were still in place, can shed light on this issue. If agreement based on individuation resulted from the loss of the three-gender system, it is not expected to occur before this change. This chapter presents the results of a corpus study of pronominal gender agreement in Middle Dutch and is organized as follows. The next section discusses semantic agreement in present-day Dutch in more detail and formulates the specific expectations for the corpus study. Section 3 describes the sources and methodology of the corpus study. The results are presented in Section 4, followed by a discussion of the findings in Section 5. Section 6 concludes this chapter.

2. Gender agreement in present-day Dutch

Standard Dutch spoken in The Netherlands today (subsequently referred to as 'Dutch') has two nominal genders, common and neuter, where common gender is a conflation of former masculine and feminine gender. Several Eastern and Southern Dutch dialects, particularly Flemish dialects, still distinguish the original three nominal genders. Also, dictionaries of Standard Dutch sometimes still report masculine or feminine gender for common gender nouns. However, the distinction between masculine and feminine nouns is no longer made in Standard Dutch spoken in The Netherlands.

Common and neuter gender are expressed on determiners, such as the definite article (*de* versus *het*), and on the attributive adjective (*mooie* versus *mooi* 'pretty',

for instance).[1] In the pronominal domain, the two genders are expressed on the relative pronoun (*die* versus *dat*) and on the distal and proximal demonstrative pronouns (*die, deze* versus *dat, dit*). The personal pronoun expresses masculine (*hij*, *hem*), feminine (*zij, haar*) and neuter (*het*) gender. The feminine pronoun is used exclusively with female referents in informal spoken language (Audring 2009: 92). The masculine personal pronoun is used to agree lexically with common gender nouns.[2]

Lexical gender assignment is largely arbitrary in Dutch. There exists a limited set of semantic and formal regularities, such as that nouns referring to adult humans or nouns ending in -*de* or –*te* are usually common gender. However, there are no general rules behind the assignment of common or neuter gender to nouns (see, for instance, Haeseryn et al. 1997).

As discussed in Section 1, determiners and adjectives agree with the lexical gender of the noun, while pronouns show variation between lexical agreement and semantic agreement on the basis of the sex and degree of individuation of the referent. Audring (2009) captures the relevant semantic distinctions in the Individuation Hierarchy, shown in (9) below.

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[1] Other determiners expressing gender are the demonstrative determiners *die/dat* 'that', *deze/dit* 'this', *zulke/zulk* 'such', the interrogative determiner *welke/welk* 'which', the collective determiners *iedere/ieder*, *elke/elk* 'every', the indefinite quantifying determiner *menige/menig* 'many a' and the first person plural possessive determiner *onze/ons* 'our'.

[2] It is generally believed that with the disappearance of the distinction between masculine and feminine nominal gender, feminine nouns were masculinized, as former feminine nouns were increasingly referred to by masculine pronouns (Geerts 1966). However, Audring (2009: 89-91) debates whether masculine pronouns in fact agree lexically with common gender nouns in present-day Dutch and argues that when masculine pronouns are used with common gender nouns, this is always semantic agreement, not lexical agreement. A problem with this view, however, is that masculine pronouns appear to be used more easily with common gender nouns than with neuter gender nouns. This remains unexplained if masculine pronouns are not somehow considered to agree with common gender nouns.

(9)   The Individuation Hierarchy and Dutch pronouns (adapted from Audring
        2009: 127)

human > animal > object / bounded abstract > specific mass > unbounded abstract / unspec. mass

(girl)   (horse) (book) / (question)   (my tea)   (love) / (snow)

fem./masc.   *masculine*   *neuter*
common   *common*

The Individuation Hierarchy is essentially an elaboration of the Animacy Hierarchy
(Silverstein 1976), in which the inanimate part of the hierarchy is further
subdivided.[3] The degree of individuation of entities decreases from left to right on
the hierarchy. Entities with a high degree of individuation have a clearly bounded
shape, are countable and have specific characteristics, whereas entities with a low
degree of individuation have an unbounded shape or unclear boundaries, are
uncountable and have less specific characteristics. Animate entities have the highest
degree of individuation, and within that category, humans are more individuated
than animals.[4] Next to animals there is the category of bounded objects, such as a
book or a cup, and bounded abstracts, such as a question or a word. More lowly
individuated are specific masses, which are specific instantiations of masses, such as
my tea or this wine. Unbounded abstracts, such as love or nature, and unspecific
masses, such as snow or honey, have the lowest degree of individuation.

In her study of Dutch spoken language data from the *Corpus Gesproken
Nederlands* ('Corpus of Spoken Dutch'), Audring (2009) found that pronouns
display a semantic agreement pattern along the lines of individuation when they do
not agree with the lexical gender of the noun. Masculine and common pronouns are

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[3] Several slightly different versions of the Individuation Hierarchy exist in the literature. The
hierarchy presented here is from Audring (2009: 127) and is based on the distinctions she
found to be relevant in present-day Dutch. This is an adapted version of Sasse's (1993: 659)
Continuum of Individuality. In Sasse's hierarchy, abstracts form a single category between
concrete objects and masses, and specific and unspecific masses are not distinguished.

[4] This follows from the fact that the Individuation Hierarchy is a categorization of entities
from the human viewpoint on the world. From the human perspective, humans are more
individuated than other animals, and they in turn are more individuated than lifeless objects
(see Audring 2009: 125).

used for referents with a high degree of individuation, including humans, animals, objects and bounded abstracts. Neuter pronouns are used for referents with a low degree of individuation, including specific masses, unbounded abstracts and unspecific masses. This type of agreement was found to be frequent. Personal and demonstrative pronouns show semantic agreement in 65% of the cases where lexical and semantic gender conflict, that is with neuter nouns referring to highly individuated entities, such as *fototoestel* 'camera', and common gender nouns referring to lowly individuated entities, such as *olijfolie* 'olive oil'. The relative pronoun shows semantic agreement as well, but less frequently, in 25% of the cases (Audring 2009: 159-160). This difference is in line with Corbett's Agreement Hierarchy presented in Section 1, which describes that relative pronouns are less inclined towards semantic agreement than personal pronouns.

Another factor that determines the frequency of semantic agreement in Dutch is the position of the referent on the Individuation Hierarchy. Semantic agreement occurs significantly more often with referents at the extreme ends of the hierarchy than with those towards the middle (Audring 2009: 167-168). This is explained by the fact that referents at the ends of the hierarchy have a more saliently high or low degree of individuation. When lexical gender conflicts with semantic gender, as with neuter for individuated referents or common gender for referents of low individuation, this conflict is most prominent with referents at the outer ends of the hierarchy. It is not unexpected therefore to find most semantic agreement there.

The present-day Dutch gender system thus shows two different principles for gender agreement: lexical gender, which is largely arbitrary, and semantic gender, which is based on the degree of individuation and sex of the referent. This leads to competition and agreement variation in those cases where the two genders do not coincide. This situation may have always existed in Dutch if the genders have always had a semantic interpretation. Semantic agreement with animate referents is known to have existed already alongside lexical agreement in Middle Dutch (cf. Section 1). The expectation is that semantic agreement with inanimate referents exists in Middle Dutch as well, with masculine pronouns being used for referents that have a high degree of individuation and neuter pronouns being used for referents that have a low degree of individuation.

3. Sources and methodology

3.1. Textual sources

The texts used for this study had to meet three important requirements: they had to date from before the conflation of masculine and feminine nominal gender in Dutch, they had to be prose texts, so that considerations of rhyme or special styles are not at play, and they had to contain a relatively high number of pronominal references to inanimate referents. It was decided to look at sixteenth century recipe books. The following two texts were used:

Een notabel boecxken van cokeryen. Printed in Brussels in ca. 1514, by Thomas van der Noot, anonymous author (Jansen-Sieben & Van der Molen-Willebrands, eds., 1994, accessed via dbnl.nl).

Dat batement van recepten. Een secreetboek uit de zestiende eeuw. Printed in Antwerp in 1549, by Hans de Laet, anonymous author (Willy L. Braekman, ed., 1990, accessed via dbnl.nl).

The *Boecxken* is a collection of food recipes. It contains 175 recipes, comprising approximately 17,000 words in total. The *Batement* is a collection of food recipes and recipes for medicinal and household purposes. It contains 258 recipes, comprising approximately 22,000 words in total. Both texts were printed in the first half of the 16th century.

The authors of the recipes are anonymous, but the names of the printers are known, as are the locations where the books were printed, Bussels and Antwerp. The choice for texts from cities in the southern part of the Dutch speaking area was practical, as no suitable sources from the north were available for this study. Most of the Middle Dutch literature is from the south, as the culturally most important cities of the Dutch speaking area were located there until the fall of Antwerp in 1585. However, the three-gender system that is observed in these southern texts can be considered representative of the system that must have preceded the gender system of both present-day Southern and Northern Dutch.

3.2. Data collection

All pronominal references to singular nominal antecedents were manually extracted from the texts. All types of pronouns were collected, including personal pronouns, both freestanding and cliticized forms, demonstrative pronouns, relative pronouns and possessive pronouns. Sequences of pronouns with the same antecedent were included. The clitic personal pronoun was the most frequently attested form. The gender-case paradigms of the freestanding and clitic personal pronoun are shown in Table 1 and 2 below.[5]

Table 1. Paradigm of the personal pronoun singular in Middle Dutch

	MASC	FEM	NEUT
NOM	hi/hie	si/sie	het
GEN	sijns/sijnre	haer(s)/hare	sijns
DAT	hem/heme	haer/hare	hem
ACC	hem	haer/hare	het

Table 2. Paradigm of the clitic personal pronoun singular in Middle Dutch

	MASC	FEM	NEUT
NOM	-i	-si/-se	-et/-t
GEN	-es/-s	-ere/-er/-re	-es/-s
DAT	-em/-en	-ere/-er/-re	-em
ACC	-en/-ene/-ne	-se	-et/-t

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[5] The paradigms presented in Tables 1 and 2 are largely based on Van Royen 1991. Grammars of Middle Dutch, e.g. Van Loey 1976, Van de Ketterij 1980, Van Royen 1991 and Mooijaart & Van der Wal 2008, differ with respect to the number of form variants, and thereby potential gender syncretisms, they report. Van Royen 1991 is the most comprehensive grammar in this respect. To ensure that potential gender syncretisms were taken into account maximally, the paradigms from this grammar formed the basis for this study, and syncretisms and forms not reported in Van Royen 1991 but mentioned in the other grammars were taken into account as well. For instance, Van Royen (1991) does not report a clitic form for the dative neuter, but Mooijaard & Van der Wal (2008) report the form *–em* shown in Table 2, which is syncretic with the masculine dative form *–em*. This form was therefore considered ambiguous masculine/neuter in this study.

Note that there are gender syncretisms in some case forms, such as the dative form *hem*, which is both masculine and neuter. Pronouns with ambiguous forms were recorded as such in the results.

References to plural antecedents were not included in this study, because there are no gender distinctions in the plural. Also not included were references to disjunctions, conjunctions, lists and other combinations of nominal antecedents, because in these cases, the antecedent does not have a (single) gender. Combinations of nominal antecedents were frequently found, because ingredients are combined and subsequent pronominal references then tend to refer to the resulting mixture. (10) is an example of this kind of reference from the *Boecxcken:*

(10) *Daerna neempt witt-en   wijn met wat   verjuys,* **dat**
     then   take   white-ACC.M wine with some verjus DEM.SG.ACC.N

     minghelt wel   tesamen met bloemen van rijs.
     mix   well together with flour   of   rice

     'Then take white wine with some verjus, mix that well together with rice flour.'

It is interesting to note that with such references to mixtures, neuter pronouns are almost always used. This is in line with the expectation for mass referents, which these mixtures always are. However, as more than one nominal gender can be involved in such cases, these references were not included. Note that such methodological decisions were made with the intention to maximize the possibility of falsifying the hypothesis.

Other references that were excluded are those for which there is more than one plausible antecedent. This can be the case, for instance, with quantifier phrases such as *een bolleken eyiuns* 'a ball of onion', whereby it is unclear if the reference is to the quantifier, *bolleken*, or the quantified, *eyiun*. References to nouns that are not in the dictionary and whose gender and/or exact meaning remains uncertain were excluded as well. Finally, references with invariant neuter pronouns were excluded. These occur in nominal copula phrases, such as *Daerna neemt tartre,* **dat** *is*

droessem van wijn die gedroocht is 'Then take tarter, that is wine sedate that has been dried'. In such phrases, the pronoun does not show gender agreement but is invariantly neuter.

3.3. Categorization

For each pronominal reference, the gender of the pronoun and the type of pronoun was recorded. The gender of the antecedent was determined and the referent was categorized according to its semantic class. The methodology used to determine the gender of the antecedent and the semantic class of the referent is described below.

3.3.1. The gender of the antecedent

The gender of the antecedent was based on adnominal gender marking, viz. gender-distinctive forms of determiners, adjectives or nominal case endings, and the gender listed for the noun in the *Middelnederlandsch Woordenboek* (*MNW*) 'Middle Dutch dictionary'. This dictionary, by Jacob Verdam and Eelco Verwijs, covers the Dutch vocabulary from circa 1250 to circa 1550. Its nine parts were published consecutively from 1885 to 1929.[6]

Adnominal gender marking was considered the most reliable indication of the antecedent's gender, as this is a direct reflection of the gender attributed to the noun by the author. It was therefore considered the primary source for the antecedent's gender. However, the additional use of dictionary information was inevitable, because gender marking is not always present, and if it is, it is sometimes ambiguous. If there was no marking, the gender of the antecedent was based on the dictionary gender of the noun. If the gender marking was ambiguous, the gender of the noun was based on this marking in combination with the dictionary gender. How these two sources of information were mapped onto each other is explained below. In some cases, when the antecedent itself has no, or ambiguous, gender marking, the same noun occurs within the same or a neighboring, related recipe, with unambiguous marking. This marking was then taken into account as adnominal gender marking.

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[6] The *Middelnederlandsch Woordenboek (MNW)* was accessed via the *INL-Geintegreerde TaalBank (INL-GTB)*, a digital, online database, supported by the *Instituut voor Nederlandse Lexicologie* and the *Nederlandse Taalunie*, http://gtb.inl.nl.

The dictionary was used in combination with the gender marking on the antecedent in cases where this gender marking was ambiguous. Ambiguous gender marking exists because of syncretisms in the gender-case paradigms of adnominal elements. To illustrate this, the Middle Dutch paradigm of the singular definite article is given in Table 3 below.[7]

Table 3. Paradigm of the definite article singular in Middle Dutch

	MASC	FEM	NEUT
NOM	die/de(/den) [8]	die/de	dat
GEN	des	der/dier/diere	des
DAT	dien/den/die	der/dier/diere	dien/den/die
ACC	dien/den/die	die/de	dat

The table shows that the form of the definite article is the same for masculine and feminine gender in the nominative case, and for masculine and neuter gender in the genitive and dative case. If such ambiguous gender marking was encountered, the gender of the antecedent was determined on the basis of this marking in combination with the dictionary gender of the noun. For example, if the adnominal marking is masculine/feminine gender, and the gender listed for the noun in the dictionary is masculine, the antecedent was considered to have masculine gender. When the dictionary lists more than one gender for the noun, for example masculine and neuter gender, while the adnominal gender marking is masculine/feminine, the noun was considered to have masculine gender. If the dictionary genders coincide with

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[7] The paradigm presented in Table 3 is largely based on Van Royen 1991. The neuter dative form *den* is not reported in Van Royen 1991:94, but is reported in Van de Ketterij 1980:47 and Mooijaart & Van der Wal 2008:43. See footnote 5 for the approach adopted in this study with respect to form variants and potential gender syncretisms.

[8] The use of the originally accusative form *den* in the nominative was rarely found in the texts used in this study. It occurs twice, with the nouns *inct* 'ink' and *roost* 'roast', which are both listed with masculine and neuter gender in the dictionary. With *inct*, the noun is the subject of a subclause that functions as the object in the main clause: […] *dan proeft oft den inct swart ghenoech zijn sal* '[...] then check if the inc will be black enough'. With *roost*, the noun is the subject of a passive sentence: *Ende als den roost ghetrocken sal sijn uut den spete* […] 'And when the roast will have been pulled off the spit […]'.

the ambiguous marking on the antecedent, in this example, if the dictionary genders are masculine and feminine gender, the ambiguity remains and the antecedent was labelled as having ambiguous masculine/feminine gender. These ambiguous-gender antecedents were not excluded from the data, but, as indicated in the results section, they were excluded from the quantitative analyses.

With respect to the dictionary gender, it can of course never be said with certainty that the gender of a noun given in the dictionary is in fact the gender attributed to that noun in the text. A problem with dictionary gender is that nominal gender is subject to regional and diachronic variation, which may not be captured by the dictionary. The *MNW* at least aims to report gender variation and uncertainty regarding nominal gender. It regularly lists more than one gender for a particular noun, pointing either to uncertainty about the noun's gender or to gender variation.[9] The gender information in the *MNW* generally proved to be reliable for the texts used in this study. In those cases where a noun was marked for gender in the text, the dictionary gender was almost always in accordance with this marking. Only three cases were encountered where the dictionary gender and the gender marking in the text did not match. Therefore, the *MNW* was considered a fairly reliable source of information regarding nominal gender.

3.3.2. The semantic class of the referent

For each pronominal reference, the referent was categorized according to its degree of individuation. The large majority of referents were inanimate referents, for which the following semantic classes were distinguished:

  - object
  - bounded abstract
  - unbounded abstract

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[9] It is not always clear what the multiple genders in the dictionary are based on. Sometimes the citations provided in the entry demonstrate the gender variation, as the noun occurs with varying adnominal gender marking, but such examples are not always provided. It is not impossible that the reported gender variation is in some cases based on pronominal agreement. It is not necessarily the case then that the noun has different lexical genders, but the variation may exist in the pronominal agreement. For this study, this means that there could be an underreporting of semantic agreement.

- mass

In the context of the texts that were studied, some animal referents such as *een visch* 'a fish', could in principle be interpreted as either animate or inanimate. When such referents occur in the context of cooking and are referred to as lifeless ingredients, they were classified as objects.

The distinction between objects and masses was most relevant for this study. However, referents were sometimes ambiguous between an object and a mass interpretation. An example of such an object/mass referent from the *Boecxcken* is shown in (11):

(11) *Neemt* **den**   **palinck** *ende siett-**en**   wel.*
take   DET.SG.NOM.M eel   and cook-3SG.ACC.M well

*Dan doet-**en**   uut sin-en   sope ende laitt-**en***
then do-3SG.ACC.M out 3SG.POSS-ACC.M juice and let-3SG.ACC.M

coelen.
cool

'Take the eel and cook it well. Then take it out of its juice and let it cool off.'

In this example, *den palinck* could in principle refer to a singular eel or a mass of eels. In some cases, the larger context disambiguates these readings. For instance, if the fish has been chopped up earlier in the recipe, the referent is clearly a mass. However, in cases where the context does not clearly point to an object or a mass reading, the referent was classified as ambiguous object/mass.

For masses, a distinction between specific masses and unspecific masses was originally made, following Audring (2009) (cf. Section 2). However, this distinction proved to be irrelevant in the present study, as no significant differences between the two categories were found (see footnote 11 in Section 4.2). The distinction is therefore not discussed further and the two types of masses are subsumed under one category.

4. Results

4.1. Data

A total number of 731 pronominal references were collected, of which 672 are references to inanimate referents.[10] The majority of these referents are concrete objects and masses. Very few abstract referents were found. The number of references per semantic class is presented in Table 4 below. A complete list of the references that were found, including the exact lexical items involved, is provided in the Appendix.

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[10] A total of 59 references to animate referents were found. These all occur in the medicinal and household recipes in *Dat Batement van recepten*. Most of the references (44/59) are references with feminine pronouns to female persons, involving the feminine antecedent *vrouwe* 'woman' or *paciente* '(female) patient', for example: [...] *ende dan legtse op den nauel van die vrouwe, ende terstont sal si dat kint baren sonder groote weedom* '[...] and then put them on the navel of the woman, and she will immediately give birth to the child without much pain' or [...] *ende dan g(e)uet die paciente te drincken tsauons ende tsmorgens, ende si sal haer sake crijghen* '[...] and then give it to the patient to drink in the evening and in the morning, and she will get her period'. Only three deviations from lexical gender occur, all with the same feminine antecedent *creature* 'creature', referring to an infant: *Als die eerste creature van die vrouwe voort gebracht, ter werelt gecomen zijn sal, alsoo gheringhe als 't die vroevrouwe ontfangen hebben sal, besiet hoeveel knoopkens ghi sien sult aen 't peesken dat hem aen den nauel hanght, by den welcken het gheuoecht ende gheuest was.* 'When the first creature brought forth by the woman is born, as soon as the midwife has received it, check how many buttons you see on the ligament that hangs from its navel, through which it was fed and secured'. The pronominal references are consecutively with neuter gender (*'t*), ambiguous masculine/neuter gender (*hem*) and neuter gender (*het*). This neuter agreement may be motivated by a need for it to be clear that the sex of the new-born referent is not relevant for the instructions that are given here.

Table 4. Number of data per semantic class

semantic class of the referent	number of references
object	187 (28%)
bounded abstract	5 (0.7%)
mass	437 (65%)
unbounded abstract	3 (0.4%)
ambiguous object/mass	40 (6%)
total	*672 (100%)*

In the analyses that follow, the references to ambiguous object/mass referents are excluded, as they cannot be used to test the hypothesis.

4.2. References to masses and unbounded abstracts

Tables 5 and 6 show the pronominal agreements with referents that have a low degree of individuation, masses and unbounded abstracts respectively. The genders of the antecedents are shown on the left and the genders of the pronouns that refer to them are shown at the top. Ambiguous genders are indicated with a slash. For the antecedents, ambiguous gender means that the noun could be either of the two or three indicated genders, according to the dictionary and/or the adnominal marking. For the pronouns, it means that the pronoun has an ambiguous form with respect to gender, due to gender syncretisms in particular case forms, such as the masculine/feminine nominative form *die* of the demonstrative and relative pronoun.

Table 5. Gender of antecedents and pronouns referring to masses

MASS	pronoun					
antecedent	masc	masc/ fem	fem	masc/ neut	neut	*total*
masc	27	18	-	2	**22**	*69*
masc/fem	-	3	12	-	**5**	*20*
fem	-	7	29	-	**9**	*45*
masc/neut	13	4	**1**	1	26	*45*
fem/neut	-	3	4	-	23	*30*
neut	-	**1**	**4**	3	216	*224*
masc/fem/neut	-	-	2	-	2	*4*
total	*40*	*36*	*53*	*6*	*303*	*437*

Table 6. Gender of antecedents and pronouns referring to
unbounded abstracts

UNBND ABSTRACT	pronoun		
antecedent	masc	fem	neut	*total*
masc			**1**	*1*
masc/fem	1			*1*
fem		1		*1*
total	*1*	*1*	*1*	*3*

Note that, with masses and unbounded abstracts, deviations from lexical gender were expected with non-neuter antecedents, that is with masculine and feminine nouns (top three rows in Table 5, all rows in Table 6). The tables show that the pronouns mostly agree with the gender of their antecedents, but not always. The cases where the gender of the pronoun clearly deviates from that of the antecedent (cases of a gender 'switch') are marked in bold. A total of forty-two switches occur

with masses. These switches show a clear pattern. They are predominantly switches to neuter with masculine and feminine antecedents. With neuter antecedents, only very few switches occur. References to unbounded abstracts were very rare, but also there a switch to neuter is found with a masculine antecedent.

With the antecedents that have ambiguous lexical gender, it is in many cases uncertain whether the pronoun agrees with the lexical gender of the antecedent or not. However, it is interesting to note that with masculine/neuter antecedents and feminine/neuter antecedents, the majority of the references are with neuter pronouns. These could be either cases of lexical agreement with neuter nouns, or they could be switches to neuter gender with masculine and feminine nouns. It is not unlikely that some of these cases are switches to neuter, considering that such switches were found with unambiguously masculine and feminine nouns.

The same uncertainty exists with masculine/feminine antecedents (20 in total). Here, the use of masculine and feminine pronouns could be cases of lexical agreement with masculine and feminine nouns respectively or they could be switches to masculine and feminine gender. The latter seems unlikely however, considering that no switches to masculine gender were found with unambiguously feminine nouns and no switches to feminine gender were found with unambiguously masculine nouns. Because of the uncertainties with antecedents that have ambiguous gender, references to these antecedents are left out in the quantitative analyses that follow.

Note that the issue is different for pronouns with ambiguous gender. Pronouns can be in a case form that is ambiguous between two genders, for instance the masculine/feminine nominative form *die*. If this form does not conflict with the gender of the antecedent, for instance, if the antecedent is masculine in this example, the pronoun agrees with the gender of the antecedent, or the other way around, the pronoun cannot be considered to deviate from it. Such cases are counted as lexical agreements in the quantitative analyses below.

In Table 7, the total number of lexical and non-lexical agreements are shown for the different antecedents. The results for masses and unbounded abstracts are conflated here. The results are split up for antecedents that have a gender that conflicts with the low degree of individuation of the referent, that is masculine and feminine nouns, and antecedents that have a gender that does not conflict with this,

that is neuter nouns. Antecedents with ambiguous gender have been left out here. Non-lexical agreements are those cases where the pronoun evidently does not agree with the gender of the antecedent. Lexical agreements are those cases where the pronoun agrees with the gender of the antecedent.

Table 7. Lexical and non-lexical agreement with masses and unbounded abstracts

MASS/UNBOUNDED ABSTRACT	CONFLICT masculine and feminine antecedents	NO CONFLICT neuter antecedents
non-lexical	32 (28%)	5 (2%)
lexical	84 (72%)	219 (98%)
total	*116 (100%)*	*224 (100%)*

It is clear from the table that the agreement behavior is not the same for the different antecedents. With masculine and feminine antecedents, pronouns agree in lexical gender in only 72% of the cases, while they do so in 98% of the cases with neuter antecedents. The association between the gender of the antecedent, that is conflicting or not conflicting, and the type of agreement, that is lexical or non-lexical, is statistically significant (χ^2 (1)= 51, p<0.001).[11]

The 28% of non-lexical agreements with masculine and feminine nouns are all switches to neuter gender. They can therefore be called semantic agreements. They involve thirteen different nouns and twenty-seven unique antecedents.[12] Some examples are shown in (12) – (14) below.

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[11] As mentioned in Section 3 above, the category 'mass' includes both specific and unspecific masses, as there was no statistically significant difference between the two categories of masses. For specific and unspecific masses separately, the ratios of non-lexical to lexical agreement in case of conflict are as follows: with specific masses, 32% (N=21) non-lexical agreement versus 68% (N=45) lexical agreement. For unspecific masses, 23% (N=11) non-lexical agreement versus 77% (N=36) lexical agreement. A Chi square test reveals that the difference between the two categories is not statistically significant: χ^2 (1)= 0.957, p=0.328.

[12] Sequences of pronouns with the same antecedent were included. Out of the thirty-three cases of semantic agreement with neuter, twenty-seven are pronominal references to a unique antecedent and six are repetitions of neuter pronouns with the same antecedent.

In (12), a neuter clitic personal pronoun is used with the noun *zeem* 'honey', which is marked for masculine gender on the determiner and adjectives.

(12) *Ende* **dien** **clar-en** **ghesuiverd-en** **zeem** *doet*
　　　and　DET.SG.ACC.M　clear-SG.ACC.M　purified- SG.ACC.M　honey　put

　　　in eenen pot. Aldus sal　men-t　　orboren in den ipocras
　　　in a　　pot thus　shall one-3SG.ACC.N use　　in the hippocras

　　　ende　in　den　clareyt　voerseyt.
　　　and　in　the　claret　aforementioned

　　　'And put the clear, purified honey in a pot. As such, it will be used in the hippocras and in the aforementioned claret.'

　　　(*Een notabel boecxken van cokeryen*, recipe no. 172)

Example (13) below shows a sequence of pronouns in which a gender switch occurs. The antecedent is *medecijne* 'medicine', which is feminine according to the dictionary. The pronominal sequence shows a gender switch. First, a masculine/feminine relative pronoun is used, *de welke* 'that which', which agrees with the lexical gender of the antecedent, but later on a neuter clitic pronoun is used.

(13) ***Een***   ***wonderlijke medecijne de***   ***welke***
DET.SG.NOM.M/F/N   miraculous   medicine   DET.NOM.M/F   which

     dat fleercijn   *ende leemten*   *geneest ter*   *seluer tijt als*
     the rheumatism and   paralyses cures   at.the same   time when

     't   *genut is.*
     3SG.NOM.N   taken   is

     'A miraculous medicine which cures rheumatism and paralyses the moment it
     is taken.'

     (*Dat batement van recepten*, recipe no. 155)

Example (14) shows non-lexical neuter agreement with a demonstrative pronoun. The pronoun is used in reference to *ghymbere* 'ginger', which is marked for masculine gender on the adjective.

(14) *Dan neempt* ***witt-en***   ***ghymbere*** *ende tempert* ***dat***
     then take   white- SG.ACC.M ginger   and   mix   DEM.SG.ACC.N

     met verjuys.
     with verjus

     'Then take white ginger and mix that with verjus.'

     (*Een notabel boecxken van cokeryen*, recipe no. 4)

Example (15) shows witches to neuter in reference to a mass and in reference to an unbounded abstract. The first one occurs with the antecedent *wijn* 'wine', which is accompanied by a masculine/neuter determiner and which is masculine according to the dictionary. The second switch to neuter occurs with *die weedom* 'the pain',

which is accompanied by a masculine/feminine determiner and is feminine according to the dictionary.

(15) *Dan neemt eenen swelch van **den** **voorscreuen** **wijn***
   then take   a   gulp of DET.SG.DAT.M/N aforementioned wine

   *matelijcken werm, dat ghij 't lijden moecht, ende houw-**et***
   moderately warm that you it bear can   and hold-3SG.ACC.N

   *aen die side daer ghi **die** **weedom** geuoelt, ende **'t***
   on the side where you DET.SG.ACC.F pain feel   and 3SG.NOM.N

   sal terstont vergaen.
   will instantly disappear

   'Then take a gulp of the aforementioned wine, moderately warm, as you can bear it, and hold it to the side where you feel the pain, and it will disappear instantly.'

   (*Dat batement van recepten*, recipe no. 189)

As the examples show, semantic agreement was found with different types of pronouns. It was found with personal pronouns, both clitics and full forms, demonstrative pronouns and relative pronouns. The tendency towards semantic agreement may differ per pronoun type. In particular, the Agreement Hierarchy described in Section 1 predicts that relative pronouns are least inclined towards semantic agreement. Table 8 below shows the amount of lexical and semantic agreement per pronoun type.

Table 8. Lexical and semantic agreement per pronoun type for masses/unbounded abstracts with masculine and feminine antecedents

	clitic personal	full personal	demonstrative	relative
semantic	22 (35%)	2 (22%)	4 (18%)	4 (17%)
lexical	40 (65%)	7 (78%)	18 (82%)	19 (83%)
total	*62 (100%)*	*9 (100%)*	*22 (100%)*	*23 (100%)*

It appears that clitic personal pronouns have the highest tendency towards semantic agreement (35%). Full personal pronouns, demonstrative pronouns and relative pronouns all show a lower tendency towards semantic agreement (22%, 18% and 17% respectively). However, multiple chi square tests between all pronoun types reveal no statistically significant associations between the type of pronoun and the type of agreement. Even the difference between clitic personal pronouns and relative pronouns, which respectively show the highest and the lowest proportion of semantic agreement, is not statistically significant (Fisher's Exact, p=0.122).

4.3. References to objects and bounded abstracts

Tables 9 and 10 show the pronominal agreements with referents that have a high degree of individuation, objects and bounded abstracts respectively. With these referents, deviations from lexical gender were expected with non-masculine antecedents, so with feminine and neuter nouns (third and fifth row from the top in Table 9, second and third row in Table 10). Cases where the gender of the pronoun clearly deviates from the gender of the antecedent are marked in bold.

Table 9. Gender of antecedents and pronouns referring to objects

OBJECT	pronoun					
antecedent	masc	masc/ fem	fem	masc/ neut	neut	*total*
masc	40	4	**1**	5	**1**	*51*
masc/fem	1	1	4	0	0	*6*
fem	0	13	55	0	**2**	*70*
masc/neut	1	1	0	0	2	*4*
neut	0	**1**	0	4	49	*54*
masc/fem/neut	0	1	1	0	0	*2*
total	*42*	*21*	*61*	*9*	*54*	*187*

Table 10. Gender of antecedents and pronouns referring to
bounded abstracts

BND ABSTRACT	pronoun			
antecedent	masc/ fem	masc/ neut	neut	*total*
masc	1	2	0	*3*
fem	1	0	0	*1*
neut	0	0	1	*1*
total	*2*	*2*	*1*	*5*

The results for objects and bounded abstracts are very different from those for masses and unbounded abstracts. Hardly any deviations occur, and the few that occur go in different directions. Switches to masculine gender were expected, but only one switch to masculine/feminine gender is found.

The total number of lexical and non-lexical agreements with objects and bounded abstracts are shown in Table 11 below. The results are split up for antecedents with a gender that conflicts with the high degree of individuation of the

referent, that is feminine and neuter nouns, and antecedents whose gender does not conflict with the referent, that is masculine nouns. Antecedents with ambiguous gender have been left out.

Table 11. Lexical and non-lexical agreement with objects and bounded abstracts

OBJECT/BOUNDED ABSTRACT	CONFLICT feminine and neuter antecedents	NO CONFLICT masculine antecedents
non-lexical	3 (2%)	2 (4%)
lexical	123 (98%)	52 (96%)
total	*126 (100%)*	*54 (100%)*

The table shows that, with objects and bounded abstracts, the pronouns almost always agree lexically, regardless of the gender of the antecedent (conflicting or not conflicting). The association between the condition, conflicting or no conflicting gender of the antecedent, and the type of agreement is not statistically significant (Fisher's Exact, p=0.637).

Taking the results for all referents together, shown in Table 12 below, the percentage of non-lexical agreements in cases of a gender conflict, that is, with masculine and feminine nouns referring to masses/unbounded abstracts and neuter nouns referring to objects/bounded abstracts, comes to a total of 14%.[13] In the cases of no conflict, that is, with neuter nouns referring to masses/unbounded abstracts, and masculine nouns referring to objects/bounded abstracts, the percentage of non-lexical agreement comes down to a total of 3%.

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[13] Most non-lexical agreements in cases of conflict are semantic agreements. As shown in Tables 5, 6, 9 and 10, the gender switches that do not follow the semantic pattern are very few. The exact ratio is as follows: 13% (N=33) semantic agreement, 1% (N=2) non-lexical/non-semantic agreement and 86% (N=207) lexical agreement.

Table 12. Total lexical and non-lexical agreement (all referents)

ALL REFERENTS	GENDER CONFLICT	NO GENDER CONFLICT
non-lexical	35 (14%)	7 (3%)
lexical	207 (86%)	271 (97%)
total	*242 (100%)*	*278 (100%)*

5. Discussion

The results of this study show that Middle Dutch pronouns do not always agree with the lexical gender of the noun, but also show semantic gender agreement, based on the degree of individuation of the referent. As in present-day Dutch, neuter pronouns tend to be used for referents with a low degree of individuation, regardless of the gender of the antecedent noun. This finding indicates that this type of agreement did not develop in response to the loss of the Germanic three-gender system, as this was still in place in Middle Dutch, but already existed before this change. This finding is in line with the idea that the association between neuter gender and a low degree of individuation is an old Germanic feature, which possibly dates back to Proto-Indo-European (Lehmann 1958, Leiss 2000, Matasović 2004, Luraghi 2011).

What has not been found in the present study is semantic agreement of masculine pronouns with inanimate referents that have a high degree of individuation, that is, objects and bounded abstracts, which is found in present-day Dutch. This could mean that this type of agreement either does not exist at all in Middle Dutch or that it is very infrequent and could not be attested in this study. Based on the current data, it appears that semantic agreement takes place only with referents at the ends of the Individuation Hierarchy in Middle Dutch, with masses and unbounded abstracts at the right end and with human referents at the left end (recall the example of semantic agreement with *wif* 'woman' in Section 1), as illustrated in (16).

(16) The Individuation Hierarchy and semantic agreement in Middle Dutch

human – animal – object/bounded abstract – **unbounded abstract/mass**

This distribution of semantic agreement is more limited than what is seen in present-day Dutch, where semantic agreement occurs with referents from all categories on the hierarchy. However, the distribution mirrors the frequency distribution of semantic agreement observed in Dutch today. As mentioned in Section 2, the frequency of semantic agreement in present-day Dutch is not the same with all referents: it occurs mostly with referents at the ends of the hierarchy, which have a most saliently high or low degree of individuation. These referents appear to be the only ones that receive semantic agreement in Middle Dutch.

Semantic agreement does not only occur with fewer referents in Middle Dutch, but it seems to be generally less frequent compared to semantic agreement in present-day Dutch. Focusing on semantic agreement with masses, which is found in both time periods, a quantitative comparison can be made with Audring's (2009) findings for present-day Dutch. Table 13 below compares the ratio of semantic to lexical agreement with nouns referring to masses in the Middle Dutch texts with the ratio found for masses in the *Corpus Gesproken Nederlands* 'Corpus of Spoken Dutch' by Audring (2009). As the comparison involves written and spoken language, it should be viewed with some caution. However, it is generally believed that the difference between spoken and written language used to be much smaller than today. Therefore it is likely that the Middle Dutch texts closely resemble the spoken language of the time.

Table 13. Ratio of semantic to lexical agreement in Middle Dutch and
present-day Dutch[14]

MASS (CONFLICT)	**Middle Dutch texts** masculine and feminine antecedents	**Present-day Dutch** *CGN* common antecedents
non-lexical	27% (N=31)	50% (N=97)
lexical	73% (N=82)	50% (N=97)
total	*100% (N=113)*	*100% (N=194)*

The data in Table 13 indicate that semantic agreement with masses occurs almost twice as often today (50%) as in Middle Dutch (27%). This difference is statistically significant (χ^2 (1)= 14.958, p<0.001).

The comparison between Middle Dutch and present-day Dutch suggests that the ratio of semantic to lexical gender agreement has shifted over time. The fact that semantic agreement also occurs with objects in present-day Dutch may relate to this change. When semantic agreement is infrequent, it may only occur with referents that have an extremely high or low degree of individuation, such as humans and masses. When it increases, semantic agreement may occur with referents that have a more moderate degree of individuation as well, including objects.

Interestingly, De Vos & De Vogelaer (2011) found the same semantic agreement pattern as found for Middle Dutch in the Flemish dialect of Moerzeke. In their questionnaire study, participants showed semantic agreement with animate referents and with mass nouns, but not with objects. Although a quantitative comparison of the data is a bit difficult, as the Flemish data were elicited, it is interesting that semantic agreement with mass nouns occurred only in 15%

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[14] The numbers for present-day Dutch are recalculated from Audring (2009: 167). In Audring's study, references with masculine pronouns to common gender nouns were not counted as cases of lexical agreement, but were excluded from the quantitative analyses, because, strictly speaking, masculine pronouns do not agree with common gender. As this makes a quantitative comparison with the present data problematic, Audring's (2009: 92, 167) data were recalculated by counting these references as cases of lexical agreement. Also, Audring's results for specific and unspecific masses have been added up here.

(N=117/651) of the cases.[15] This indicates that, as in Middle Dutch, the frequency of semantic agreement in this dialect is generally lower than in present-day Standard Dutch. This difference suggests that there could indeed be a connection between the frequency of semantic agreement and whether or not semantic agreement also occurs with referents that take a middle position on the Individuation Hierarchy.

If the ratio of semantic to lexical agreement has shifted over time, this raises the question of why such a shift has occurred. Lexical nominal gender has not disappeared in Dutch, as it has in English for instance, because nominal gender is still clearly marked on adnominal elements in Dutch and speakers are well aware of whether a noun is common or neuter. Nevertheless, it does appear to have become easier to overrule the lexical gender of the noun in pronominal agreement.

There are two likely causes for this increase of semantic agreement. Firstly, the conflation of masculine and feminine nominal gender could play a role, in the way suggested by Audring (2006; 2009). Uncertainty about agreement with common gender nouns, whether they should be referred to with a masculine or a feminine pronoun, may cause speakers to rely on semantic agreement rather than lexical agreement. However, this uncertainty only exists with common gender nouns, not with neuter nouns. Therefore, the conflation of masculine and feminine gender does not directly explain the rise of semantic agreement with neuter nouns referring to objects, which is precisely the type of agreement that exists in present-day Dutch but was not found for Middle Dutch.

Another possible cause for the increase of semantic agreement is a change in the general visibility of lexical gender, as proposed by Kraaikamp (2012: 207-208). There could be a relation between how frequently lexical gender is marked in the noun phrase and how likely pronouns are to agree semantically instead of lexically. This factor is related to the loss of the masculine-feminine distinction in Dutch, but it is not the same. As Dutch lost the distinctive marking for masculine and feminine

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[15] This is a recalculated number from De Vos & De Vogelaer (2011: 253). The percentage of 15% (N=117/651) is the ratio of semantic to (attempted) lexical agreement with mass nouns. In this recalculated number, the use of neuter pronouns is contrasted with the use of masculine and feminine pronouns for masculine and feminine nouns. Masculine pronouns are sometimes used for feminine nouns and vice versa, but as these agreements are not considered to be semantically motivated but errors due to the incipient conflation of masculine and feminine nominal gender in the Moerzeke dialect, they are counted as (attempted) lexical agreements.

gender in adnominal elements, leading to the conflation of these two genders, Dutch also lost gender marking entirely in some adnominal elements. Consequently, a notable difference between the Middle Dutch and present-day Dutch gender system is not only the number of nominal genders, but also the number of elements that mark gender. Table 14 below gives an overview of the most frequent adnominal elements and whether or not they mark gender in the two stages of the language.

Table 14. Adnominal gender marking in Middle Dutch and present-day Dutch

adnominal element	Middle Dutch	present-day Dutch
definite article	√	√
indefinite article	√	-
demonstrative determiners	√	√
possessive determiners	√	only 1SG.PL
attributive adjectives	√	only indefinite NPs

In Middle Dutch, the indefinite article marks gender, but no longer in present-day Dutch, where it is invariantly *een*. All possessive determiners mark gender in Middle Dutch, whereas only the first person plural possessive marks gender today (common *onze* and neuter *ons* 'our', but invariant *mijn* 'my', *jouw* 'your', etc.). Although the attributive adjective still marks gender in indefinite noun phrases (common–*e* and neuter –Ø suffix), it is now invariantly inflected with –*e* in definite contexts. As adnominal elements generally show lexical and not semantic gender agreement, the loss of these gender markers has led to a decrease of lexical gender marking in the Dutch noun phrase. It is possible that the resulting lower visibility of lexical gender has reduced the weight of lexical gender in the existing competition between lexical and semantic agreement in the pronoun.

The results from a questionnaire study by De Vogelaer & De Sutter (2011) on semantic agreement in Flemish dialects support the idea that there is a relation between adnominal gender marking and semantic agreement. This study compared semantic neuter agreement with masses in West and East Flemish dialects that differ in the extent to which gender is marked in the noun phrase, in particular the distinction between masculine and feminine gender, which was the focus of the

study. The distinction is sometimes still marked through an inflectional –*n* on the definite article and attributive adjective, but it is often deleted. The crucial difference between the dialects is whether the indefinite article still marks the distinction by a separate masculine form *ne(n)*, besides feminine *een* and neuter *e(en)*, or is invariantly *een*. Semantic agreement was found to be more frequent in those dialects where the indefinite article is invariant. De Vogelaer & De Sutter (2011) interpret this finding as an indication that semantic agreement is caused by the disappearance of the distinction between masculine and feminine nominal gender. However, it could be relevant that in the dialects without the masculine indefinite form, the indefinite article has become invariant and therefore no longer marks lexical gender at all. Considering this, the higher frequency of semantic agreement in these dialects may not be due to the loss of distinctive masculine and feminine forms, but rather to the complete loss of a gender marking element.

The picture that emerges is that changes in adnominal gender marking have allowed an existing semantic agreement pattern to gain ground in Dutch. A similar shift in agreement preference may have occurred in other Germanic varieties where agreement based on individuation has been observed. The relevant question that needs to be asked now is not what caused this type of agreement to develop, but rather what makes it surface more frequently.

6. Conclusion

This chapter reported on a corpus study of pronominal gender agreement in Middle Dutch. In present-day Dutch, pronouns show variation between lexical gender agreement and semantic gender agreement that is based on the degree of individuation of the referent. The same kind of semantic agreement is found in several other Germanic varieties. This study showed that this agreement variation existed already in Middle Dutch. In particular, neuter pronouns can agree semantically with referents that have a low degree of individuation, regardless of the gender of the antecedent noun. The fact that this occurs in Middle Dutch, where the original three-gender system is still in place, shows that this type of agreement did not develop in response to the change from three to two nominal genders, but existed already before this change. This finding supports the idea that the semantic interpretation of the genders along the lines of individuation is an old Germanic

feature which possibly dates back to Proto-Indo-European. What seems to have changed over time in Dutch is the frequency of semantic agreement, which has increased in proportion to lexical agreement. This shift in agreement preference is likely due to changes in adnominal lexical gender marking. The extent to which lexical gender is marked in the noun phrase and the resulting visibility of lexical gender may be a determining factor in the variation between the two kinds of agreement.

Chapter V

Semantic or lexical gender agreement: the effect of adnominal gender marking on pronominal agreement[*]

Abstract

This study investigates the effect of adnominal lexical gender marking on gender agreement variation in pronouns. Pronouns can show two kinds of gender agreement: lexical gender agreement, that is, agreement with the lexical gender of the antecedent noun, or semantic gender agreement, that is, agreement with the properties of the referent. The two kinds of gender agreement occur side by side in Dutch, with an increasing preference for semantic gender agreement. Dutch differs from earlier stages of the language in this respect and it differs also from German, which shows similar agreement variation, but with a strong preference for lexical gender agreement. These differences may be explained by the reduced visibility of lexical gender on adnominal elements in Dutch compared to German and earlier stages of Dutch. The experiment presented in this chapter investigates whether the variation between the two kinds of gender agreement in pronouns is influenced by lexical gender marking on the antecedent. The results show that the absence of lexical gender marking on the antecedent increases the likelihood of semantic agreement in pronouns. This finding reveals that the direct visibility of the noun's lexical gender affects the individual speaker's choice between semantic and lexical gender agreement in the pronoun. This effect can explain the synchronic variation between two the kinds of gender agreement, as well as a shift in the ratio between semantic and lexical gender agreement over time.

1. Introduction

This study is about variation between two types of pronominal gender agreement: agreement based on the lexically stored gender of the antecedent noun, henceforth called 'lexical gender agreement', or agreement based on certain properties of the referent, henceforth called 'semantic gender agreement'. In English, where nouns do not have lexically stored genders, pronominal agreement is exclusively semantic:

masculine and feminine pronouns are used with male and female referents respectively and neuter pronouns are used with inanimate referents and sometimes animals. In other Germanic languages, such as German, on the other hand, each noun has a lexically stored gender and pronominal agreement is generally based on this gender of the antecedent noun.

The history of English shows that gender systems can change from a predominantly lexical gender agreement system to a semantic agreement system. Old English had a lexical gender system like German, in which nouns were either masculine, feminine or neuter, and pronouns agreed with these nominal genders. However, as gender marking in the noun phrase was subject to deflection and was ultimately completely lost during the Middle English period, the lexical gender of nouns was no longer apparent to speakers and pronominal gender agreement became exclusively semantic (cf. Curzan 2003).

However, languages do not always show either lexical or semantic agreement in the pronoun. Also in languages with lexical nominal genders, semantic gender agreement exists. Semantic agreement already existed besides lexical gender agreement in Old English (Curzan 2003: 62) and this variation is also found in languages with lexical gender today. Semantic agreement can surface when the gender of the noun conflicts with the semantics of the referent. Such a conflict is possible in gender systems in which nominal gender is not systematically based on a semantic principle, which is the case in the Germanic languages. A conflict exists for instance with the German neuter noun *Mädchen* 'girl', for which pronominal agreement varies between neuter, in accordance with its lexical gender, and feminine, in accordance with the sex of the referent, as shown in (1) below (Corbett 1991: 228).

(1) Schau dir dieses Mädchen an, wie gut sie/es   Tennis
     look   you DEM.N girl(N)   at how well 3SG.F/3SG.N tennis

    spielt.
    plays

    'Look at this girl, how well she plays tennis.'

Besides the sex of the referent, another semantic agreement principle plays a role in the Germanic languages: the degree of individuation of the referent (Siemund 2002, 2008, Audring 2009). A distinction is made between referents with a high degree of individuation, things that are bounded in nature, such as concrete objects, and referents with a low degree of individuation, things that are unbounded, such as materials and liquids. Referents with a high degree of individuation tend to receive masculine or common gender pronouns, while referents with a low degree of individuation tend to receive neuter pronouns. This semantic gender distinction has been found in Dutch (Van Haeringen 1936, 1951, Fletcher 1987, Siemund 2002, Audring 2006, 2009), Flemish (De Vos & De Vogelaer 2011, De Vogelaer & De Sutter 2011, De Vos 2013, 2014), Frisian (Wahrig-Burfeind 1989), West Jutland Danish (Ringgaard 1973, Braunmüller 2000), and in English dialects, such as West Somerset English (Siemund 2002, 2008).

Examples of semantic agreement based on individuation from spoken Dutch are shown in (2) and (3) below (from the *Corpus Gesproken Nederlands* 'Corpus of Spoken Dutch', from Audring 2006: 95-99). Standard Dutch spoken in the Netherlands (subsequently referred to as 'Dutch') has two nominal genders, common and neuter, where common gender is a conflation of former masculine and feminine gender. In example (2), a masculine pronoun is used in reference to a neuter noun denoting a concrete object, while in example (3), a neuter pronoun is used with a common gender noun denoting a mass.

(2) Moet je nog wat informatie over dat **boek** hebben?
    need you more some information about DEM.N book(N) have

    Dan moet 'k **'m** nog niet gaan inleveren.
    then should I 3SG.M yet not go return

    'Do you need some more information about that book? Then I shouldn't return it yet.'

(3) 't zit toch ook bij **olijfolie** wel een beetje in
    it is in.fact also with olive.oil(C) PRT a bit about

    hoe **'t** geconserveerd wordt.
    how 3SG.N preserved is

    'In fact also with olive oil, it matters how it is preserved.'

The semantic agreement pattern can be described on the basis of the Individuation Hierarchy (Siemund 2002, Audring 2009). The hierarchy in (4) below, adapted from Audring (2009), shows the relevant semantic categories and the pronominal agreement pattern in Dutch.

(4)   The Individuation Hierarchy and Dutch pronouns (adapted from Audring 2009: 127)

human > animal > object / bounded abstract > specific mass > unbounded abstract / unspec. mass
(girl) (horse) (book) / (question) (my tea) (love) / (snow)

fem./masc.   *masculine*   *neuter*
common   *common*

The degree of individuation of entities decreases from left to right on the hierarchy. Entities with a high degree of individuation have a clearly bounded shape, are countable and have specific characteristics. These referents tend to receive masculine and common gender agreement, and feminine agreement if they are animate referents that are female. Entities with a low degree of individuation have unclear boundaries, are uncountable and have less specific characteristics. These referents tend to receive neuter agreement in the pronoun.

    The pronominal agreement pattern in standard English can be related to this hierarchy as well (Siemund 2002: 225). The only difference between English and Dutch is that the cut-off point between non-neuter and neuter agreement is situated further to the left on the hierarchy in English: masculine and feminine pronouns are

used with animate referents on the far left end of the hierarchy, while neuter pronouns are used with all other referents.

An important difference with English, however, is that in Dutch semantic agreement exists beside lexical gender agreement. Agreement targets in the Dutch noun phrase, determiners and attributive adjectives, show agreement with the lexical gender of the noun, as in example (2) above, in which the neuter demonstrative determiner *dat* agrees with the noun's neuter gender. A common gender noun would take the determiner *die*. This difference between agreement targets is cross-linguistically common. It is captured in Corbett's (1979) Agreement Hierarchy, which shows that the likelihood of semantic gender agreement is the highest in personal pronouns and the lowest in adnominal elements. While adnominal elements always agree with the lexical gender of the noun in Dutch, pronouns show variation between lexical and semantic agreement. The noun *boek* in example (2) can alternatively receive neuter agreement in the pronoun, and the noun *olijfolie* in example (3) can alternatively receive masculine agreement, in accordance with their lexical genders.

Apparently, semantic gender is able to override lexical gender in Dutch pronouns. In the *Corpus Gesproken Nederlands* ('Corpus of Spoken Dutch'), Audring (2009:169-170) found semantic agreement in more than half of all pronominal references. Although semantic agreement is not a new phenomenon, as it already existed in Middle Dutch, its frequency seems to have increased over time (Kraaikamp to appear) and may be increasing still, as younger speakers today appear to show semantic agreement more often than older speakers (Audring 2009: 168-169).

A question that arises is what determines the variation between lexical and semantic gender agreement in Dutch pronouns. As lexical nominal gender is still consistently marked in the noun phrase and has not disappeared, as it has in English, there exists a conflict between two bases for agreement. Certain factors are known to play a role, such as the distance between the pronoun and the antecedent. Corbett (1979: 220) observes that the further a pronoun is separated from its antecedent, the higher the likelihood of semantic agreement becomes, an effect that was corroborated for Dutch by Audring (2009: 165).

Another factor that affects the likelihood of semantic agreement is the degree of conflict between the referent and the gender of noun: the more conflicting a noun's gender is, the more likely it is for semantic agreement to occur. Audring (2009: 167) found that referents that have an extremely high or low the degree of individuation, that is, referents towards the ends of the Individuation Hierarchy, are more likely to receive semantic agreement when the noun's gender conflicts with them than referents with a more moderate degree of individuation. For instance, human referents, such as *meisje* 'girl', at the left end of the hierarchy, and unspecific masses, such as *olijfolie* 'olive oil', at the right end, receive semantic agreement in the large majority of pronominal references when the noun's gender conflicts with them, 94% and 88% respectively, while nouns denoting objects, such as *boek* 'book', which take a middle position on the hierarchy, receive semantic agreement in 52% of the cases.

In a corpus study of pronominal agreement in Flemish, De Vos (2013) found another factor to play a role in agreement variation: the discourse prominence of the antecedent/referent. De Vos found a higher ratio of semantic agreement with referents that have a lower referential status, that is, referents that are less 'given' in the discourse, as visible from kind of determiner used with the noun, such as a definite or indefinite article. Also, the likelihood of semantic agreement appears to higher when the antecedent is not the subject of the sentence, but an object or oblique noun phrase.

While the factors mentioned above all play a role in synchronic variation, they do not explain diachronic variation in the frequency of semantic agreement, as there is no reason to assume that the average distance of pronouns to their antecedents, the degree of individuation of referents or the discourse prominence of referents and antecedents have changed over time. Another factor that could play a role, in both synchronic and diachronic variation, is the marking of lexical gender on the antecedent, that is, whether or not the gender of the antecedent noun is expressed on an accompanying adjective or determiner. This factor could be relevant in diachronic as well as synchronic variation, as adnominal gender marking has been subject to changes over time.

The aim of this study is to investigate experimentally whether gender marking on the antecedent has an effect on agreement in the pronoun. This chapter is

organized as follows. The next section discusses the changes that took place in adnominal gender marking in Dutch and what has been proposed in the literature regarding the relation between these changes and pronominal agreement. This section concludes with the specific expectation for the present study. Section 3 describes the design of the experiment. The results of the experiment are presented in Section 4, followed by a discussion in Section 5. Section 6 concludes this chapter.

2. Diachronic change in Dutch nominal gender

The Dutch gender system has changed from a system with originally three nominal genders, masculine, feminine and neuter, to a system with two nominal genders, common and neuter. This change was the result of deflection in the noun phrase. While the definite article distinguished masculine, feminine and neuter gender in Middle Dutch (ca. 1200-1600), for example accusative masculine *dien*, feminine *die* and neuter *dat*, these forms have been reduced to two forms, common *de* and neuter *het*. This loss of form distinctions for masculine and feminine gender in the noun phrase has gradually led to the conflation of these two genders around the seventeenth century (Geerts 1966). Audring (2006, 2009) notes that this change from three to two nominal genders has created a mismatch between nominal and pronominal gender in Dutch, as there are still masculine, feminine and neuter personal pronouns. Audring argues that this has created uncertainty regarding agreement with common gender nouns, about whether they should receive masculine or feminine agreement in the pronoun. This uncertainty may have led speakers to resort to semantic instead of lexical gender agreement in the pronoun.

In line with this idea, De Vogelaer & De Sutter (2011) found a relation between lexical agreement and the preservation of the masculine-feminine distinction in Flemish dialects of Dutch that still mark masculine gender to a more or lesser extent. Their questionnaire study showed more lexical gender agreement in dialects that still mark masculine gender in the noun phrase than in dialects where the two genders have become almost indistinguishable. De Vos (2014: 202-203) observed this effect even more directly in her corpus study of Flemish, which showed that masculine nouns accompanied by a distinctively masculine determiner receive more correct masculine agreement in the pronoun than masculine nouns occurring without such a determiner. These findings support the idea that

uncertainty about the gender of former masculine and feminine nouns may cause semantic agreement to increase.

However, while the conflation of masculine and feminine gender may have instigated a rise in semantic agreement, it does not immediately explain the synchronic agreement variation observed in Dutch today. Uncertainty about the gender of common gender nouns does not seem to play a role anymore. The change from three to two genders was completed a long time ago and agreement with masculine pronouns seems to have become the default for these nouns, at least in the spoken language, where feminine pronouns are now used exclusively with female referents (cf. Audring 2009: 92). Also, uncertainty about agreement with common gender nouns does not immediately explain the agreement variation that is observed with neuter nouns.

Another factor that could play a role, which is related to the conflation of masculine and feminine nominal gender, is the general visibility of lexical gender in the noun phrase. Kraaikamp (2012: 207-8) suggests that there could be a relation between how often lexical gender is marked in the noun phrase and the frequency of semantic agreement in the pronoun. As the erosion of inflectional endings led to the conflation of masculine and feminine gender marking in the noun phrase, some adnominal elements lost their gender marking properties entirely. For example, the indefinite article and most possessive determiners have become completely invariant, so that they no longer mark gender at all. Table 1 below gives an overview of the most frequent adnominal elements and whether or not they mark gender in present-day Dutch compared to Middle Dutch.

Table 1. Adnominal gender marking in Middle Dutch and present-day Dutch

adnominal element	Middle Dutch	present-day Dutch
definite article	√	√
indefinite article	√	-
demonstrative determiners	√	√
possessive determiners	√	only 1SG.PL
attributive adjectives	√	only indefinite NPs

Gender used to be marked on more adnominal elements than today (cf. grammars of Middle Dutch, e.g. Van Royen 1991, Mooijaart & Van der Wal 2008). The form of the indefinite article varied with the gender of the noun in Middle Dutch, for example accusative masculine *enen*, feminine *ene* and neuter *een*, while present-day Dutch uses the same form, *een,* with all nouns. The possessive determiners showed the same gender variation in Middle Dutch, for example accusative masculine *minen*, feminine *mine* and neuter *mijn* 'my', but possessive determiners have become invariant in present-day Dutch, except for the first person plural possessive, which distinguishes common *onze* versus neuter *ons* 'our'. The attributive adjective used to mark gender in both definite and indefinite noun phrases, but it is now invariantly inflected with *-e* in definite noun phrases. These changes in adnominal gender marking mean that nouns are now less frequently accompanied by an element that expresses their gender.

With respect to pronominal agreement with human referents, Geerts (1966: 134) already suggests that the presence of a gender-marking adnominal element favours lexical gender agreement in the pronoun. He gives an example of agreement with the neuter noun *ventje* 'boy, little guy' and observes that it is easier to refer to this noun with the masculine pronoun *hem* 'him' when the noun is combined with the indefinite article *een* (*een ventje*) than when it is combined with the definite article *het* (*het ventje*). Geerts' intuition is that it would be more common to use the neuter pronoun *het* in the latter case.

The experiment presented in this chapter investigates whether gender marking on the antecedent in fact influences the choice between lexical and semantic agreement in the pronoun. It is expected that if a noun is accompanied by a determiner that marks its gender, speakers are more likely to agree with the lexical gender of the noun than when the noun is not accompanied by such a determiner.

3. Method

3.1 Design

The experiment consists of a sentence completion task that elicits pronominal references to a neuter noun denoting an object, which is either combined with a determiner that marks its gender or with a determiner that does not mark gender. The test focuses on object referents, because the variation between lexical and

semantic agreement exists most clearly with this category: neuter nouns denoting objects receive semantic agreement in approximately half of the cases in Dutch (Audring 2009, cf. Section 1).

The design of the experiment was such that the effect of inter-speaker variation is minimized. Speakers can differ in their agreement preferences, in the sense that some speakers may be generally more inclined towards semantic agreement than others. Such inter-speaker variation could obscure an effect of the variable under investigation. Therefore, a repeated measures design was used: the same participant was tested on both conditions of the relevant test variable, the gender-marked antecedent and the unmarked antecedent (see Section 3.2 below). This way, if the two conditions yield different results, this difference cannot be attributed to inter-speaker variation. In addition to this, it was decided to test many subjects with only few test items, so that it is not the case that relatively large portions of the data come from single participants.

3.2. Test items

The nouns *boek* 'book' and *bord* 'plate' were used in the experiment, combined with either the possessive determiner *m'n* 'my', which does not mark gender, as the same form is used with common and neuter nouns, or the proximal demonstrative determiner *dit* 'this', which marks neuter gender, as this form is used only with neuter nouns, common nouns taking the form *deze* 'this'.

These two determiners were chosen, and not, for instance, the gender-neutral indefinite article *een* 'a' and the neuter definite article *het* 'the', because the demonstrative and possessive determiner have a similar effect on the specificity of the referent. This is relevant because specificity is a feature that affects the degree of individuation of the referent: a more specific referent has a higher degree of individuation than a less specific referent. Since the likelihood of semantic agreement varies with the degree of individuation of the referent (Audring 2009, cf. Section 1), it is crucial that the referents in this experiment do not differ in this respect.

In terms of discourse prominence, another factor involved in agreement variation (De Vos 2013, cf. Section 1), the possessive and demonstrative noun phrase used in the experiment can be considered to have similar discourse

prominence, as both noun phrases introduce a new referent and function as a direct object in the test sentence. Should any difference between the discourse status of the possessive and demonstrative noun phrase still play a role in the experiment, it is at least not likely to bias the results towards confirmation of the hypothesis. De Vos (2013) found a slightly higher ratio of lexical gender agreement with possessive noun phrases than with demonstrative noun phrases in her corpus. The expectation for this experiment is exactly the other way around: More lexical agreement is expected with the demonstrative noun phrase than with the possessive noun phrase, as the demonstrative determiner marks gender and the possessive determiner *m'n*, used in this experiment, does not.

3.3. Participants

A total of 117 native speakers of Dutch participated in this study, 59 men and 58 women. Their ages ranged between 18 and 31, with an average age of 22. The participants were all students at the University of Amsterdam, mostly science majors. Students of linguistics were not included.

3.4. Test

The test was designed in such a way that participants produce anaphoric pronouns while being unaware that these are the focus of the test. The design was inspired by the pronominal agreement test used by Braun & Haig (2010). The test consists of five incomplete sentences, presented in written form, which have to be completed using content words provided between brackets. The participants are told that the test is about forming sentences in spontaneous speech. They are asked to read each sentence out loud and complete it using the provided content words. The participants' responses are audio recorded by the experimenter. The test is short and the responses are provided orally, in order to minimize the chance of participants becoming aware of the focus of the test and giving overly conscious responses. The test contains two test sentences and three filler sentences. An example of a filler sentence is shown in (5) below:

(5) *Die gegevens zoek ik meteen wel op, want ik ... [zit, nu, toevallig, computer]*
'I will look up that information directly, because I … [sit, now, coincidentally, computer]

The typical response would be as in (5'):

(5') *Die gegevens zoek ik meteen wel op, want ik zit nu toevallig achter de computer.*
'I will look up that information directly, because I happen to be behind the computer now.'

Each sentence consists of two clauses of which the first clause and the first two words of the second clause are provided. In the test sentences, the first clause contains the test item, which serves as an antecedent to an object pronoun in the following clause. Examples of the test sentences are shown (6) and (7) below:

(6) *Ik heb m'n boek nog niet uit, maar ik .... [moet, vandaag, terugbrengen, bibliotheek]*
'I have not finished my book yet, but I … [have.to, today, return, library]

(7) *Ik heb dit bord net al gebruikt, dus ik .... [ga, eerst, omspoelen, keuken]*
'I already used this plate just now, so I … [go, first, rinse, kitchen]

Typical responses would be as in (6') and (7') (pronouns in bold):

(6') *Ik heb m'n boek nog niet uit, maar ik moet **het/hem** vandaag terugbrengen naar de bibliotheek.*
'I have not finished my book yet, but I have to return it to the library today'.

(7') *Ik heb dit bord net al gebruikt, dus ik ga **het/hem** eerst omspoelen in de keuken.*
'I already used this plate just now, so I will rinse it in the kitchen first'.

The test sentences are constructed in such a way that a personal pronoun is most likely to be used. The position where the pronoun should be used is always fourth in the clause, directly after the auxiliary verb. The distance between the test item and the position of the pronoun is always six words. The antecedent varies in whether or not it is marked for gender. In one test sentence the antecedent is not marked, as in (6), while in the other test sentence it is marked, as in (7).

Two versions of the test are used in order to control for item and order effects. In test version 1, *bord* is marked for gender (*dit bord*), while *boek* is unmarked (*m'n boek*), as in example (6) and (7) above. This is the other way around in test version 2: *boek* is marked for gender (*dit boek*), while *bord* is unmarked (*m'n bord*). The order in which the marked and unmarked item are presented varies in the different test versions. The gender-marked antecedent comes first in test version 1, while it comes last in the other version. The test versions are distributed evenly over the participants.

The two test sentences are separated by two filler sentences and the test starts with a filler sentence for practice. The fillers do not contain any pronouns and are not completed with pronouns. In order to distract the participants from the actual focus of the test, all sentences, both the filler sentences and test sentences, are completed with a clause ending in a directional phrase. The preposition that should be used in this phrase differs per sentence and is not provided between brackets. This was to make participants think that prepositions are the focus of the test.

4. Results

A total of 212 responses from 106 participants were obtained and included in the analysis. The responses from eleven participants had to be excluded, because the participant either repeated the noun phrase instead of using a pronoun (this occurred six times), misread the test item (once) or produced an ungrammatical word order in which the pronoun did not follow directly after the auxiliary (four times). The latter happened when a participant simply read the first two words between brackets out loud without first forming the sentence in their mind. In case of such an erroneous response, both responses from the participant were excluded from the dataset. The balanced ratio of male and female participants and the ratio of test version 1 and 2 is well maintained in the final dataset. The final dataset contains responses from 52

men and 54 women. Test version 1 was used 54 times and test version 2 was used 52 times.

Personal pronouns were used in the large majority of cases, as expected. Eight participants used a demonstrative pronoun instead of a personal pronoun in one of the test sentences. This occurred with both test sentences and involved both the neuter and common demonstrative pronoun. In the analyses that follow, the responses with a neuter demonstrative are subsumed under the responses with neuter personal pronouns and those with a common demonstrative are subsumed under the responses with masculine personal pronouns.

The participants used both neuter and masculine pronouns to refer to the neuter nouns *boek* and *bord*. This confirms that there is variation with these object nouns between lexical gender agreement with neuter and semantic gender agreement with masculine pronouns. In total, there were 120 responses with a neuter pronoun (57%) and 92 responses with a masculine pronoun (43%).

The items *boek* and *bord* received neuter and masculine pronouns in similar ratios. Figure 1 below shows the percentages of neuter and masculine pronouns used with *boek* and with *bord*.
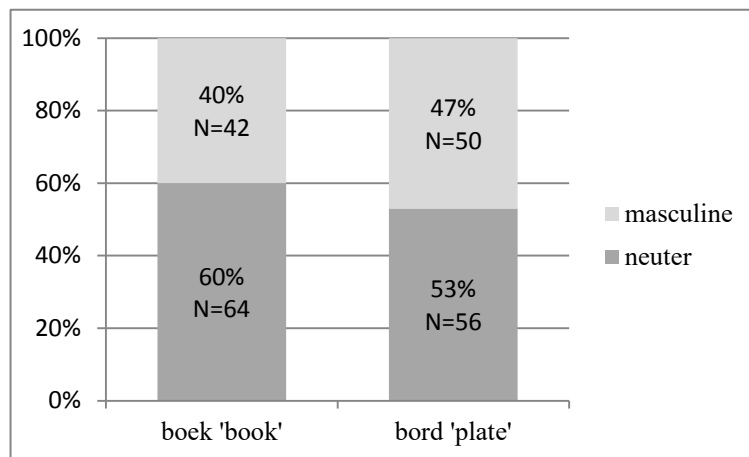
Figure 1. Percentages of neuter and masculine pronouns used
with *boek* 'book' and with *bord* 'plate'

The item *boek* receives slightly more references with neuter pronouns than *bord*, but this difference between the two nouns is not statistically significant (χ^2 (1) = 1.229, p=0.268).

Figure 2 below shows the results for the variable under investigation, the percentage of neuter and masculine pronouns used with the antecedent that is marked for neuter gender (*dit* NOUN) and with the antecedent that has no gender marking (*m'n* NOUN).
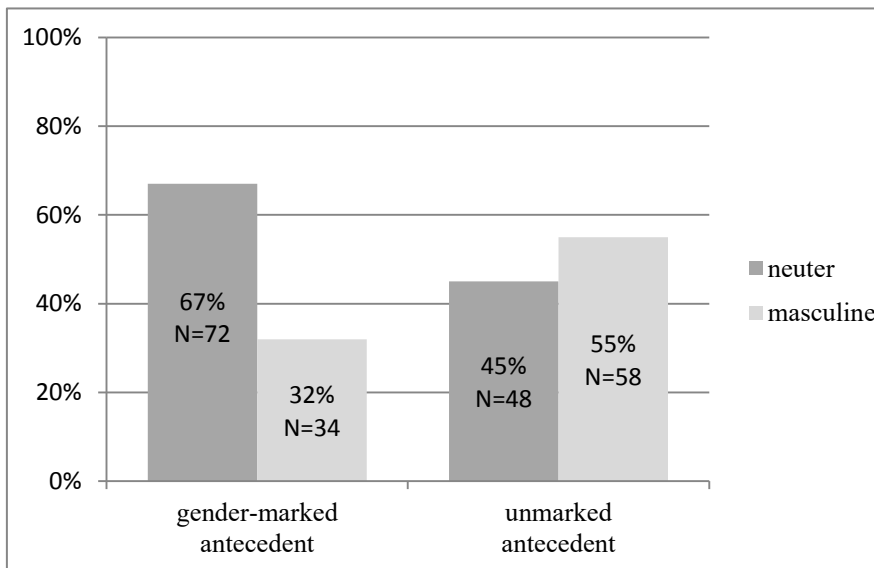
Figure 2. Percentage of neuter and masculine pronouns used with the gender-marked antecedent (*dit* NOUN) and the unmarked antecedent (*m'n* NOUN)

The responses with the gender-marked antecedent and the unmarked antecedent are different. The marked antecedent receives more references with neuter pronouns, that is, lexical gender agreement, than the unmarked antecedent. The marked antecedent receives neuter agreement in 67% of the cases, while the unmarked antecedent receives neuter agreement in 45% of the cases.

Because the experiment has a repeated measures design, in which the same participant is tested on both the gender-marked antecedent and the unmarked antecedent, the results are analysed using a McNemar test for repeated measures. This test takes the response pairs per participant as the outcome variable, that is, the

combination of the participant's response to the marked and unmarked antecedent. These response pairs are shown in Table 2 below.

	unmarked antecedent			
		neuter	masculine	*total*
gender-marked antecedent	neuter	45	27	*72*
	masculine	3	31	*34*
	total	*48*	*58*	*106*

Table 2. Frequencies of the response pairs. Contingency table for the McNemar test.

Many participants responded with the same pronoun to both the marked and unmarked antecedent (upper left cell and bottom right cell in Table 2). 45 out of a 106 participants (42%) consistently used neuter pronouns and 31 participants (29%) consistently used masculine pronouns. A total of 30 participants (28%) showed variation in their pronoun choice (upper right cell and bottom left cell). In these cases of variation, the large majority, 27 participants (90%), used a neuter pronoun with the marked antecedent and a masculine pronoun with the unmarked antecedent. Only three participants (10%) showed the reverse pattern. The McNemar test confirms that if speakers vary in their pronoun choice, they are significantly more likely to use a neuter pronoun with the gender-marked antecedent and a masculine pronoun with the unmarked antecedent than the other way around (Exact sign. $p < 0.001$).

5. Discussion

The results presented in this chapter first of all confirm that there is gender agreement variation in Dutch pronouns. The results are in line with the earlier observation that there is a tendency to use masculine pronouns with nouns denoting concrete objects, regardless of the noun's lexical gender.

The results of the experiment reveal that pronominal agreement is affected by gender marking on the antecedent. If the antecedent noun is accompanied by a

determiner that shows the noun's gender, pronouns are more likely to agree with this gender than when there is no such gender marking on the antecedent. This effect does not have to do with a loss of knowledge or uncertainty about the gender of the noun, as may be the case with common gender nouns in Dutch, as the nouns used in the experiment, *boek* and *bord*, are neuter nouns for which no uncertainty exists. They are frequent nouns and they always receive neuter agreement in the noun phrase. The effect is therefore more likely to be what may be called a 'reminder' effect for lexical gender. The effect may work in a similar way as the distance effect. Both relate to the salience of the noun's gender to the speaker at the moment he/she chooses a pronoun. The longer ago the antecedent noun was expressed or the less explicit its lexical gender is marked, the less salient the noun's gender becomes, making it easier for semantic gender to overrule it.

It should be noted that, as all other effects on pronominal agreement variation, the observed effect of gender marking is probabilistic, not deterministic: a gender-marked noun does not always receive lexical agreement in the pronoun and an unmarked noun does not always receive semantic agreement in the pronoun. Many participants did not show variation in their pronoun choice and either agreed lexically with the both the gender-marked and unmarked antecedent or they agreed semantically with both antecedents. This confirms that there is inter-speaker variation in pronominal agreement: some speakers are more inclined towards semantic agreement than others. This variation is expected considering that there are also differences between generations of speakers, with younger speakers generally showing more semantic agreement than older speakers (Audring 2009).

The effect of adnominal marking was found with object referents, but it is likely that it exists with other referents as well, although this is open to future research. As mentioned in Section 1, the likelihood of semantic agreement is different for different referents on the Individuation Hierarchy. Object referents receive semantic agreement in approximately half the cases, but unspecific masses, such as *limonade* 'lemonade', receive a much higher ratio of semantic agreement (Audring 2009). This is explained by the extremely low position of unspecific masses on the Individuation Hierarchy. In light of the present findings an additional factor may be considered to play a role here: unspecific masses are referred to with bare nouns, possibly combined with an adjective, but never with a determiner. A

mass noun combined with a determiner, e.g. *de limonade* 'the lemonade', refers to a specific mass, which has a higher degree of individuation (cf. the Individuation Hierarchy presented in Section 2). Consequently, nouns referring to unspecific masses are infrequently marked for gender. They only carry gender marking when combined with an adjective, e.g. *koude limonade* 'cold lemonade'. This factor may contribute to the high ratio of semantic agreement with unspecific masses.

The effect of adnominal marking on pronominal agreement that is now observed in synchronic agreement variation may also play a role in diachronic change in pronominal agreement. If a speaker's choice between lexical and semantic agreement in the pronoun is influenced by gender marking on the antecedent, then an overall decrease of gender marking in the noun phrase is likely to cause a shift in agreement preference. As discussed in Section 2, Dutch has lost gender markers in the noun phrase, as some determiners that used to show a gender distinction have become invariant. The determiner *mijn* 'mine', used in the experiment as a gender-neutral determiner, is an example of this. The present findings show that this loss of adnominal gender marking could have played a role in the increase of semantic agreement in Dutch.

Similarly, the effect of adnominal marking may explain differences in pronominal agreement between related languages, such as German and Dutch. Both varieties show semantic agreement of pronouns within a gender system that has lexical nominal gender. However, semantic agreement is much less frequent in German than in Dutch (Kraaikamp 2016). This difference between the two languages may be explained by differences in gender marking. Lexical gender is more visible in German compared to Dutch. German has preserved more gender marking on determiners and is quite similar to Middle Dutch (see Section 2) in this respect.

Related to the preservation of gender markers, German, as Middle Dutch, also still distinguishes three nominal genders. This means that a mismatch between nominal and pronominal gender and uncertainty about agreement with former masculine and feminine nouns does not play a role in German as it may in Dutch, in the way proposed by Audring (2009). It is possible that the mismatch situation and the loss of gender markers both contributed to the increase of semantic agreement in Dutch. However, it should be noted that the loss of the three-gender system has

followed from the loss of adnominal gender markers. Therefore, it is possible that the loss of gender markers alone is responsible for the high frequency of semantic agreement in Dutch. Also, because the present experiment focused on semantic agreement with neuter nouns, for which no uncertainty regarding their gender exists, the effect of adnominal gender marking is clearly not dependent on uncertainty about nominal gender, but is an effect on its own.

A question that arises with the present findings is whether Dutch could be moving towards a system where pronominal agreement is exclusively semantic, as in present-day English. However, it seems likely that as long as lexical gender is marked in the noun phrase there will be a competition, and consequently variation, between lexical and semantic agreement in the pronoun. There are two plausible developments that could change this situation. One is that further deflection could eventually lead to the complete loss of lexical gender from the noun phrase, as happened in the history of English (Curzan 2003). However, there are no signs of such a radical deflection process taking place in present-day Dutch. Another possible development is that while gender distinctions are preserved on adnominal elements, semantic agreement moves up the Agreement Hierarchy (cf. Section 2) and starts involving agreement within the noun phrase. A combination of this process and deflection appears to have taken place in in the Danish dialect of West Jutland. Lexical gender distinctions have completely disappeared from the noun phrase in this dialect. The demonstrative pronouns, common *den* and neuter *det*, shows semantic gender agreement based on individuation. The demonstrative pronouns are also used as demonstrative determiners, and within the noun phrase, they show the same semantic agreement as in the pronominal domain (Ringgaard 1973, Braunmüller 2000).

In Dutch, gender agreement in the noun phrase is based on the lexically stored gender of the noun and is mostly invariant. However, there is some limited agreement in the noun phrase that could be called semantic agreement. It is found with a particular set of nouns that have variable gender, for example common *de steen* 'the stone', denoting the object, versus neuter *het steen* 'the stone', denoting the material, a mass (see Kraaikamp 2012, Semplicini 2012). However, there are no indications that nominal gender variation is becoming more widespread. It seems rather that the ties between nouns and their lexical genders are quite strong, despite

the abundant and long-existing agreement variation in the pronoun. Notably, the pronominal agreement variation does not seem to affect the acquisition of nominal gender by children. Children acquiring Dutch exclusively overgeneralize common gender, which is the most frequent and default nominal gender, while neuter gender is gradually acquired for each neuter noun (Blom, Poliśenská & Weerman 2008). Interestingly, neuter gender does seem to be acquired faster for neuter nouns denoting masses than for neuter nouns denoting objects, but still, children never overgeneralize neuter gender with common gender nouns (Roodenburg & Hulk 2009). An increase of semantic agreement in the noun phrase may originate with adults instead, but it seems that further deflection of lexical gender markers, as in West Jutish, is a prerequisite for such a process to occur.

6. Conclusion

The findings presented in this chapter demonstrate that the variation between semantic and lexical gender agreement in Dutch pronouns is affected by the presence or absence of gender marking on the antecedent. Semantic agreement is more likely when the antecedent carries no gender marking than when the noun's gender is explicitly marked on the accompanying determiner. This result shows that gender marking in the noun phrase plays a role in the synchronic variation between lexical and semantic gender agreement in pronouns. The effect likely also plays a role in diachronic variation between the two kinds of gender agreement. The effect can explain the observed increase of semantic agreement in Dutch over time, since deflection has caused many determiners to lose their gender marking properties in Dutch, leading to a reduced visibility of lexical gender in the Dutch noun phrase.

Chapter VI
Conclusion

This dissertation departed from the observation that pronominal gender agreement in Dutch varies between agreement that is based on the lexical gender of the antecedent noun and semantic agreement that is based on the degree of individuation of the referent. The aim of this thesis was to investigate the origin of semantic gender agreement based on individuation, when it has developed in Dutch and what factors could be involved in its surfacing. The previous four chapters each focused on a research question that contributes to this aim. These questions were formulated in Chapter I and are repeated here:

(i) How deeply rooted is the association of common and masculine gender with the meaning of high individuation and neuter gender with the meaning of low individuation in Dutch? Is this semantic association restricted to pronominal gender or can it be found in nominal gender as well? Could the association go back to a semantic origin of the gender system?

(ii) Does semantic agreement based on individuation also exist in Germanic varieties that still distinguish the original three nominal genders?

(iii) Did semantic agreement based on individuation develop in Dutch after the change from a three-gender system to a two-gender system or did it exist already before this change?

(iv) Is there a relation between the extent to which lexical gender is marked in the noun phrase and the ratio of semantic gender agreement in pronouns?

Section 1 of this concluding chapter summarizes how these research questions have been answered by the studies presented in the previous chapters. Sections 2 and 3 of this chapter address remaining issues that have not been discussed in detail in the previous chapters: Section 2 discusses the relation between gender agreement based

on individuation and gender agreement based on sex, and Section 3 discusses the divergent development of semantic agreement in Dutch compared to semantic agreement in English. Section 4 concludes this dissertation with suggestions for future research.

1. Answers to the research questions

The research questions that formed the basis of this dissertation each addressed an issue that relates to the question of the origin and rise of pronominal gender agreement based on individuation. Below, each research question is answered on the basis of the findings from the studies presented in the previous chapters.

The first research question, or set of questions, explored to what extent the semantic association of the genders in Dutch is restricted to pronouns or forms a more integral part of the Dutch gender system:

(i)   How deeply rooted is the association of common and masculine gender with the meaning of high individuation and neuter gender with the meaning of low individuation in Dutch? Is this semantic association restricted to pronominal gender or can it be found in nominal gender as well? Could the association go back to a semantic origin of the gender system?

It was shown in Chapter II that the semantic interpretation of the genders along the lines of individuation can be found in nominal gender assignment as well, despite the fact that the gender of most Dutch nouns is not semantically motivated. It can be found particularly in cases where the gender of the noun is variable and the noun does not have one lexically stored gender, such as double gender nouns (e.g. *de/het steen* 'the stone') and productive nominalizations from adjectives (e.g. *de/het leuke* 'the fun one/thing'). The association between neuter gender and low individuation is also visible in pronominal reference to non-nominal antecedents, such as predicates and clauses. It seems therefore that the association of the genders with different degrees of individuation is not an innovation in Dutch pronouns, but has always been part of the gender system. There are in fact indications that the semantic interpretation of the genders goes back to Proto-Indo-European and originates from an originally semantic gender assignment system. In line with this, semantic

agreement based on individuation has been found not only in Dutch, but also in other Germanic varieties and in Romance dialects. It is possible that the semantic basis of the gender system has become disrupted in the nominal domain, ever since nominal gender became an invariable, lexically stored feature of nouns.

The second research question related to the hypothesis that agreement based on individuation developed in Dutch pronouns in response to the loss of the three-way nominal gender system. This kind of agreement has indeed so far only been attested in Germanic varieties that changed to a two-gender system, or are currently moving towards a two-gender system, or that lost lexical gender altogether, viz. Helgoland Frisian, City Frisian (Wahrig-Burfeind 1989), Flemish (De Vos & De Vogelaer 2011, De Vogelaer & De Sutter 2011, De Vos 2014), West Jutland Danish (Ringgaard 1973, Braunmüller 2000) and West Somerset English (Siemund 2002, 2008). Therefore, the second research question aimed to investigate whether the loss of the three-gender system is in fact a necessary condition for agreement based on individuation to occur:

(ii)   Does semantic agreement based on individuation also exist in Germanic varieties that still distinguish the original three nominal genders?

Chapter III showed that semantic agreement based on individuation exists not only in Dutch, but also in German, a Germanic variety that still distinguishes three nominal genders. Pronoun elicitation experiments were conducted with speakers of Dutch and speakers of German, eliciting pronominal references to referents with varying degrees of individuation, viz. animals, objects, abstracts and masses. The experiment included two kinds of reference tests: an anaphoric reference test, with an explicit nominal antecedent, and a deictic reference test, where the referent was presented on a picture. The results showed semantic neuter agreement with masses and abstract referents, and semantic masculine agreement with animals, both in Dutch and in German. Semantic agreement was more likely in deictic reference than in anaphoric reference in both languages. A notable difference between the two languages was that speakers of German did not show semantic agreement with object referents, while speakers of Dutch did, and that overall the frequency of semantic agreement was much lower in German than in Dutch. It was proposed that

this difference is due to the higher visibility of lexical gender in adnominal marking in German than in Dutch. The findings of the experiment suggest that semantic agreement based on individuation is a shared Germanic feature and that the difference between Dutch and German with respect to this kind of agreement is mainly one of degree.

The third research question focused on the diachrony of semantic agreement in Dutch and the issue of whether or not agreement based on individuation already existed before the distinction between masculine and feminine nominal gender was lost:

(iii) Did semantic agreement based on individuation develop in Dutch after the change from a three-gender system to a two-gender system or did it exist already before this change?

Semantic agreement based on individuation already existed beside lexical gender agreement when Dutch still distinguished three nominal genders. Chapter IV presented a corpus study of pronominal agreement in Middle Dutch recipe books from the early 16th century. The results showed that there is semantic neuter agreement with referents of low individuation, viz. masses, in Middle Dutch. Semantic agreement with inanimate referents of high individuation, viz. objects, was not found. It appears that semantic agreement occurred with referents on the far ends of the Individuation Hierarchy at this time: animate referents on the left end and lowly individuated referents on the right end. A comparison of the frequency of semantic agreement in Middle Dutch to that in present-day Dutch suggests that semantic agreement has increased over time.

The fourth research question concerned the causes behind changes in the ratio of lexical to semantic agreement over time. Certain factors are known to have an effect on the variation between the two kinds of agreement, such as the distance between the pronoun and its antecedent (Corbett 1991, Audring 2009) or the kind of referent involved (Audring 2009), but these factors are unchanging and hence cannot explain diachronic change. The conflation of masculine and feminine nominal gender may have played a role in the increase of semantic agreement, as this change may have led to a period of uncertainty about lexical agreement with former

masculine and feminine nouns. However, a factor that has been more or less concomitant with the change from three to two genders and that also could have played a role is the reduced visibility of the remaining lexical genders. While some adnominal elements still clearly mark lexical gender in Dutch, such as the definite article, other elements have lost their gender marking properties over time, leading to a reduced visibility of lexical gender in the Dutch noun phrase. The fourth research question asked whether lexical gender marking in the noun phrase has an effect on pronominal agreement:

(iv) Is there a relation between the extent to which lexical gender is marked in the noun phrase and the ratio of semantic gender agreement in pronouns?

There is a relation between gender marking in the noun phrase and the likelihood of semantic gender agreement in the pronoun. Chapter V presented a pronoun elicitation experiment with speakers of Dutch testing pronominal agreement with object referents. The test sentences contained well-known neuter nouns as antecedents to the pronouns and varied in one crucial aspect: the noun was accompanied by either a determiner carrying explicit neuter gender marking or a determiner without gender marking. The results showed that the likelihood of semantic agreement is higher when there is no gender marking on the antecedent. This finding reveals that the direct visibility of a noun's lexical gender supports lexical gender agreement in the pronoun, or the other way around, the absence of lexical gender marking makes semantic agreement surface more easily in the pronoun. This effect not only explains synchronic variation between lexical and semantic agreement, but it can also explain diachronic change towards more semantic agreement in a language that still has lexical gender.

The answers to research questions (i), (ii) and (iii) indicate that semantic gender agreement based on individuation is not an innovation in Dutch pronouns, but is an older Germanic feature that surfaces in varying degrees in different varieties. Particularly semantic neuter agreement with referents of low individuation was found to exist not only in present-day Dutch but also in Middle Dutch and in German. The extent to which semantic gender agreement surfaces, that is, its ratio compared to lexical gender agreement and the kind of referents with which it occurs,

appears to depend on the strength of the lexical gender system in question. The answer to research question (iv) indicates that this involves the visibility of lexical gender in adnominal marking.

2. Agreement based on sex and agreement based on individuation

The results of this thesis indicate that semantic masculine agreement with inanimate referents of high individuation has developed later in Dutch than semantic neuter agreement with referents of low individuation. The former kind of agreement also appears to be shared less widely in present-day Germanic varieties than the latter. Semantic masculine agreement with objects was not found in German in the present study and previous studies did not find this type of agreement in Flemish either (De Vos & De Vogelaer 2011, De Vos 2014). This discrepancy between the two kinds of semantic agreement can be explained by the relative positions of the referents involved on the Individuation Hierarchy, shown in (1).

(1)   The Individuation Hierarchy[1]

human   >   animal   >   object   >   abstract   >   mass

While inanimate referents with a low degree of individuation, viz. masses, are positioned at the right end of the hierarchy, inanimate referents with a high degree of individuation, viz. objects, take a middle position on the hierarchy, following

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[1] This version of the Individuation Hierarchy is an adaptation of the hierarchies in Sasse 1993: 659 and Audring 2006: 102, 2009: 127. Audring (2006, 2009) distinguishes between bounded abstracts and unbounded abstracts, and between specific and unspecific masses, whereby bounded abstracts are grouped with objects, and unbounded abstracts are grouped with unspecific masses. Sasse (1993), on the other hand, presents abstracts as one separate category. The results of the experiment presented in Chapter III showed that bounded abstracts are not treated the same as objects in Dutch nor in German. Rather, bounded abstracts receive similar semantic agreement as unbounded abstracts, that is, neuter agreement in Dutch and neuter or feminine agreement in German. Nevertheless, bounded and unbounded abstracts are conceptually distinct entities that have different degrees of individuation and therefore it makes sense to separate them on a detailed hierarchy of individuation. The same applies to specific and unspecific masses. However, as the present data do not indicate what the relative positions of these subcategories should be, in particular the position of specific masses in relation to abstracts, the hierarchy presented here abstracts away from these details.

animate referents. As noted by Audring (2009: 167-168), semantic agreement is more likely with referents at the extreme ends of the hierarchy than with those towards the middle. The potential conflict between the lexical gender of the antecedent noun and the referent is more prominent with referents that have an extremely high or low degree of individuation than with referents with a more moderate degree of individuation.

The varieties that do not show semantic masculine agreement with inanimate referents do show semantic masculine agreement with animate referents, viz. humans and animals. Semantic masculine agreement with animals was found in German in the experiment presented in Chapter III and it has also been found in Flemish by De Vos (2014: 59-62). Semantic agreement with animate referents is usually analysed as agreement that is based on the sex of the referent (e.g. Audring 2009: 117, De Vos 2014: 62). Sex-based agreement relates to agreement based on individuation in the sense it makes a further distinction between referents on the far left end of the Individuation Hierarchy: masculine pronouns are used for male referents of high individuation and feminine pronouns are used for female referents of high individuation. In Dutch, where semantic masculine agreement occurs also with inanimate referents of high individuation, masculine pronouns serve a double semantic role: they are pronouns of high individuation as well as pronouns with the more specific meaning of male sex, which applies only to a subset of referents with a high degree individuation.

A question that arises is when masculine pronouns agree on the basis of male sex and when they agree on the basis of high individuation, in other words, at what point on the Individuation Hierarchy agreement based on sex ends and agreement based on high individuation begins. This is not immediately clear, as masculine agreement with animate referents is not necessarily always based on sex, but could be based on high individuation as well. This question is relevant for the analysis of semantic masculine agreement in varieties where this agreement occurs only with animate referents, viz. German and Flemish, as it explores the issue of whether there is masculine agreement on the basis of high individuation in these varieties at all. The question also relates to the issue of whether the development of semantic masculine agreement with inanimate referents of high individuation in Dutch can be considered an extension of semantic agreement that was already taking place on the

left end of the Individuation Hierarchy or a more innovative kind of pronominal agreement that involves the adoption of a broader semantic interpretation of the masculine pronoun.

The answer to this question lies in the analysis of semantic masculine agreement with animate referents and on exactly what property of the referent the masculine agreement is based. There could be a difference between semantic masculine agreement with humans and semantic masculine agreement with animals in this respect, which makes it useful to tease these two apart. Focusing on agreement with humans first, it is relevant to note that it is possible to use masculine pronouns in Dutch when the sex of a human referent is unknown and irrelevant. Examples of this are shown below, where in (2) a masculine pronoun is used to refer to an unspecific student in a university document and in (3) a masculine pronoun is used to refer to an unspecific doctor on a website for patients.[2]

(2) Elke student   dient zich   voor elk vak   dat hij   wil
     every student(C) should 3SG.REFL for   each course that 3SG.M wants

     volgen aan te melden
     follow on   to report

     'Every student has to register for each course he wants to take.'

     (Example from Onderwijs- en examenregeling voor de bacheloropleidingen

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[2] The examples in (2) and (3) involve common gender nouns, as most nouns referring to humans are common gender in Dutch. This means that the agreement with masculine pronouns is not necessarily based on semantics but can be motivated by the lexical gender of the noun as well. However, the pronominal agreement found with neuter nouns referring to humans, such as meisje 'girl', shows that with human referents pronominal agreement is commonly based on semantics: the neuter noun meisje 'girl' is usually pronominalized by feminine personal pronouns and rarely by the neuter personal pronoun het 'it', despite the fact that neuter agrees with the lexical gender of the noun. This indicates that semantic agreement is the norm in pronominal reference to humans. Note also that it is the same noun, *student* 'student', that is referred to by a masculine pronoun in (2) and by a feminine pronoun in (4), which makes it more likely that the agreement is based on the referent, rather than the gender of the noun.

van de Faculteit der Geesteswetenschappen 'Teaching and exam regulations for the bachelor programs of the Humanties Faculty', University of Amsterdam, 2013–2014, p. 5)

(3) Als u de oorzaak van uw klachten wilt weten is het nodig
   if you the cause of your symptoms want know is it necessary

   dat u naar uw huis-arts gaat. Uw arts probeert
   that you to your family-doctor(C) go your doctor(C) tries

   samen met u de diagnose te stellen. Dit betekent dat hij
   together with you the diagnosis to determine this means that 3SG.M

   uitzoekt wat er precies aan de hand is.
   investigates what PART exactly at the hand is

   'If you want to know the cause of your symptoms it is necessary that you go to your family doctor. Your doctor tries to make the diagnosis together with you. This means that he investigates what exactly is the matter.'

   (Example   from   http://www.reumafonds.nl/informatie-voor-doelgroepen/patienten/heb-ik-reuma/aanvullend-onderzoek/diagnose)

This kind of masculine agreement could be analysed as agreement based on the high degree of individuation of the human referent. On the other hand, the agreement could still be based on sex, with the referent conceptualized as a default male. The latter analysis is in fact more likely, because the high-individuation analysis contrasts with another observation regarding agreement with humans: if a human referent is known to be female, agreement with masculine pronouns is impossible. When a similarly unspecific student as in example (2) above is unmistakably female, as in (4), feminine agreement occurs, and agreement with masculine pronouns, as in (4'), is suddenly excluded:

(4) Als een student   zwanger is, kijkt   ze   met   haar
     if   a   student(C) pregnant is   looks 3SG.F with 3SG.F.POSS

     studie-begeleider wat   ze   kan doen.
     study-adviser   what 3SG.F can do

     'If a student is pregnant, she and her student adviser evaluate what she can do.'

     (Example   from   Dutch   newspaper   *NRC*,   12-10-2002.   Accessed   via
     http://nrc.nl//krant/article1552190.ece)

(4') Als een student   zwanger is, kijkt *hij   met *zijn
      if   a   student(C) pregnant is   looks 3SG.M with   3SG.M.POSS

      studie-begeleider wat   *hij   kan doen.
      study-adviser   what 3SG.M can do

      'If a student is pregnant, he and his student adviser evaluate what he can do.'

The impossibility of using masculine pronouns with human referents that are female indicates that masculine pronouns are necessarily connected to the meaning of male sex when they refer to humans and are not used with the broader meaning of high individuation.

Agreement with animal referents is different. It seems that semantic masculine agreement with animals is not always based on sex. When an animal is known to be female, for example in the case of a female family pet or a cow, agreement with masculine pronouns is possible in Dutch, as illustrated in (5) and (6) below (Haeseryn et al. 1997: §3.3.3): [3]

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[3] The examples (5) and (6) involve common gender nouns, but note that masculine agreement occurs with neuter nouns referring to animals as well, such as the neuter noun *paard* 'horse' or *schaap* 'sheep'. (See the results of the pronoun elicitation experiment presented in Chapter III.)

(5) Daar ligt de   kat.   Hij   heeft gisteren   gejongd.
     there lies DET.C cat(C) 3SG.M has   yesterday birthed

     'The cat is lying over there. He gave birth yesterday.'

     (Example from Haeseryn et al. 1997: §3.3.3)

(6) Zie je   die   koe? Hij   staat net met zijn   kop naar
     see you DEM.C cow(C) 3SG.M stands just with 3SG.M.POSS head to

     deze kant.
     this side

     'Do you see that cow? He is just now standing with his head facing this side.'

     (Example from http://taaladvies.net/taal/advies/vraag/1631/)

This use of masculine pronouns in reference to female animals can already be observed in early 17th century Dutch, for instance in Bredero's *Klucht van de koe* (Geerts 1966: 198-199):

(7) O   seker   't is een moye gladde koe,   hij   is al   wel
     oh certainly it is a   nice smooth cow(C) 3SG.M is already well

     gemiest, hij   het vrij wat op   zijn   schilde
     fatted   3SG.M has quite some on   3SG.M.POSS shoulders

     'Oh certainly, it is a nice, smooth cow, he is well fatted, he has quite a lot on his shoulders'

     (G. A. Bredero, Klucht van de koe, 1619. Accessed via dbnl.nl.)

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This indicates that masculine pronouns can carry the broader meaning of high individuation instead of the more specific meaning of male sex in reference to animals. In those cases where no sex agreement is intended, masculine agreement with animals is the same kind of agreement as masculine agreement with inanimate referents of high individuation. This means that the development of semantic masculine agreement with inanimate referents in Dutch can be analysed as an extension of the semantic use of masculine that already exists on the left side of the Individuation Hierarchy, as illustrated in (8).

(8) The Individuation Hierarchy and semantic gender agreement in Dutch

human	>	animal	>	object	>	abstract	>	mass

masc/fem			neut
	masc	→	
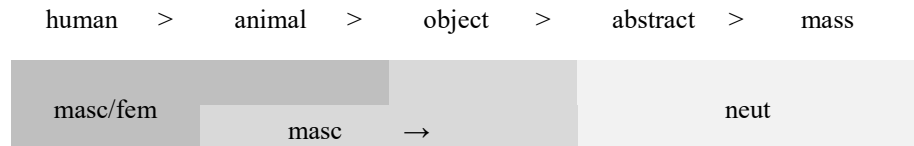
The analysis above applies to Dutch, but agreement with animals is a little different in Flemish. The standard reference grammar by Haeseryn et al. (1997) notes that the use of masculine pronouns with female animals is not as common there as it is in Dutch (Haeseryn et al. 1997: §3.3.3). This does not mean that semantic agreement with animals does not exist at all in Flemish: corpus data by De Vos (2014: 59-63) show that semantic masculine agreement with animal referents that are not distinctively female certainly exists also in Flemish. However, as De Vos's (2014) data do not include references to distinctively female animals, it is not certain to what extent masculine agreement with female referents may occur in Flemish. The observation that masculine agreement with female animals is less common in Flemish is likely not because the semantic agreement pattern with animals is different in Flemish than in Dutch, but because nouns that typically refer to female animals, such as *koe* 'cow', are feminine nouns in Flemish. Therefore, using feminine pronouns with nouns such as *koe* 'cow' constitutes agreement with the lexical gender of the noun as well as semantic agreement with the sex of the referent. It seems likely that under this circumstance deviation from lexical gender is not strongly motivated. The same situation exists in German, where animal nouns that typically have female referents, such as *Kuh* 'cow', are feminine nouns. What is

important for the present analysis of semantic masculine agreement with animals is that De Vos (2014: 60-61) not only found semantic masculine agreement with animal referents whose gender can be assumed to be known to the speaker, but with animal referents whose gender appears to be unknown to the speaker as well. This indicates that in Flemish, as in Dutch, semantic masculine agreement with animals is not always based on sex but can instead be based on the referent's high degree of individuation. The exact nature of semantic masculine agreement with animals in Flemish and in German, specifically to what extent semantic masculine agreement could also occur with distinctively female animals in these varieties, deserves further investigation.

3. Spread of semantic agreement in different directions

It is noteworthy that semantic agreement in Dutch has not developed in the same direction as semantic agreement in English. Whereas masculine agreement has spread to include inanimate referents of high individuation in Dutch, all inanimate referents receive neuter agreement in English. Apparently, semantic agreement can spread in different ways when the lexical gender system weakens or is completely lost: either masculine agreement spreads towards the right on the Individuation Hierarchy or neuter agreement spreads towards the left.

It is not immediately clear why Dutch and English have developed in different directions, but something that could have played a role is how their nominal gender systems changed. While Dutch has always preserved a distinction between common and neuter nouns in adnominal marking, English has lost all gender distinctions in the noun phrase. Interesting in this respect are the Southwestern dialects of English, such as West Somerset English, which show a pronominal agreement pattern similar to Dutch, viz. masculine pronouns for inanimate referents of high individuation and neuter for those of low individuation (Siemund 2002, 2008). As Standard English, these dialects no longer have lexical gender, but the demonstrative determiners show gender agreement inside the noun phrase, based on the same semantic distinction shown in the pronouns, for example *this water*, with a mass noun, but *theäse tree* 'this tree', with a count noun (Siemund 2008: 24). Other Germanic varieties that are known to show semantic masculine agreement with inanimate referents, Helgoland Frisian (Wahrig-Burfeind 1989) and West Jutland Danish (Ringgaard 1973), also

show gender agreement in the noun phrase, on the basis of lexical gender in the case of Helgoland Frisian or on the basis of semantics in the case of West Jutish. Possibly, the preservation of gender distinctions in the noun phrase makes semantic agreement move in a different direction than when all gender agreement in the noun phrase is lost. The existence of common or masculine nouns referring to inanimate entities perhaps supports the association between masculine gender and inanimate referents in pronominal agreement.

Afrikaans may be another case in point. It inherited its gender system from Dutch, but is like Standard English in having lost all gender agreement in the noun phrase. In accordance with the proposed hypothesis, pronominal agreement is largely similar to the English system, with masculine and feminine pronouns being used for humans and animals, and the neuter pronoun being used for all inanimate referents. However, particularly in spoken language, masculine pronouns can be used with inanimate referents as well in Afrikaans (Ponelis 1979, Donaldson 1993). According to Ponelis (1979: 68-69, 585-590), this use of masculine is increasing, and it is influenced by both semantic and stylistic factors. Masculine agreement with inanimate referents is more likely in affective, lively speech and it mostly occurs with countable referents. Although the latter suggests that Afrikaans exhibits a semantic agreement pattern that is very similar to Dutch, which is also noted by Siemund (2008) and Audring (2009), an important difference is that masculine agreement in Afrikaans is not restricted to countable referents, but occurs with mass referents as well. It seems that, instead of being directly motivated by the semantic properties of the referent, masculine agreement in Afrikaans is primarily an expression of affectivity, which may be more likely with countable referents than with mass referents (T. Biberauer, personal communication). The possible intertwining of these factors and their diachronic development in Afrikaans deserve further investigation.

It is yet unclear whether Flemish corroborates the hypothesis or not. Flemish, like Dutch, still has gender agreement in the noun phrase and would therefore be expected to show a semantic agreement pattern that is similar to Dutch. Although Flemish primarily shows semantic neuter agreement with referents of low individuation (De Vos & De Vogelaer 2011, De Vos 2014), De Vos (2014) observes non-lexical neuter agreement with referents of high individuation in Flemish as well,

that is, neuter pronouns used with masculine and feminine nouns referring to objects. This indicates that Flemish could be developing in a different direction than Dutch, towards semantic neuter agreement with all inanimate referents. However, as Flemish is in the middle of losing the distinction between masculine and feminine nouns, which is evidenced by the many deviations to masculine and feminine gender found in Flemish as well, it is not certain that all deviations to neuter gender are semantically motivated (De Vos 2014: 66-77). Part of the neuter agreement could be a temporary side-effect of the current gender confusion in Flemish and could be motivated by the avoidance of masculine and feminine pronouns altogether, because of uncertainty about the masculine or feminine gender of the antecedent noun. If this is the case, semantically motivated agreement in Flemish could still be moving in the same direction as in Dutch.

4. Future research

The previous sections raised several issues that are worth investigating further: questions regarding the basis of semantic agreement with animals and the ways in which semantic agreement can spread along the Individuation Hierarchy. Another question that is still open for future research is when semantic masculine agreement started occurring with object referents in Dutch. The absence of this type of agreement in the Middle Dutch corpus studied in Chapter IV suggests that it developed after the mid sixteenth century. A first step towards answering this question would be a corpus study of pronominal agreement in Early Modern Dutch. Geerts 1966 is a study of gender agreement in this period, including texts from ca. 1550 to 1700, and focuses on the conflation of masculine and feminine nominal gender. Unfortunately, however, the data in Geerts 1966 do not give insight into the ratio and kind of semantic agreement that may have taken place at this time, as it is not a systematic frequency study of pronominal agreement. A complicating factor in researching pronominal agreement in Early Modern Dutch is that this period marks the beginning of language standardization in Dutch, which means that written language started to be shaped according to prescriptive language norms. It is therefore possible that the semantic agreement that may have existed in the spoken language does not surface in the writings of that time.

A final issue relates to the central theme of this dissertation, which is the occurrence of semantic gender agreement in a lexical gender system that is no longer based on semantics. Gender agreement in such a system can be focused either on the lexical gender of nouns or on the semantic gender associated with the real-world entities that are referred to. The lexical gender system has its most important exponents in adnominal agreement targets and it appears that if the lexical gender system loses some of these exponents, semantic agreement can gain ground. Pronouns tend to be the starting point of such a development and for this reason, pronouns tend to be seen as innovators in gender systems. However, while change towards more semantic agreement may start with pronouns, they are more likely conservative elements that preserve and reflect the semantic basis of a gender system. Pronouns are particularly apt at this conservative role, because of all the agreement targets, they are the least bound to lexical gender: they are not always in an agreement relation with a noun (non-nominal antecedents) or they have only an indirect agreement relation with a noun (deictic reference), and when pronouns do stand in a direct agreement relation with a noun (anaphoric reference), they still have a connection with the real-world referent at the same time. These properties make pronouns exceptional agreement targets, which makes it possible for them to preserve the seeds of a semantic system and make it grow again when the lexical gender system fades.

It deserves further investigation to what extent pronouns show the same behaviour in lexical gender systems outside the Indo-European language family. The Agreement Hierarchy (Corbett 1979) already indicates that pronouns are cross-linguistically always the first and most likely agreement targets to show semantic gender agreement within a lexical gender system. The expectation would be that the semantic agreement observed in pronouns has always existed beside lexical gender agreement and can be attested in the oldest sources. The Agreement Hierarchy further indicates that semantic agreement can gradually spread from pronouns to other agreement targets, including, as a final step, adnominal elements. However, if the semantic agreement in pronouns relates to an older semantic interpretation of the genders, it may, on close inspection, also be found with adnominal elements, particularly in the exceptional cases where nominal gender is variable within the lexical gender system.

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Appendix
Middle Dutch corpus data

This appendix contains the data from the historical corpus study presented in Chapter IV. The data sources are *Een notabel boecxken van cokeryen* (NB) and *Dat Batement van recepten* (BR). Section I shows the references to masses and unbounded abstracts in Tables 1 – 7. Section II shows the references to objects and bounded abstracts in Tables 8 – 13. Section III shows the references to ambiguous object/mass referents in Tables 14 – 16. Section IV shows the references to animate referents in Tables 17 – 20. The tables are sorted by the genders of the antecedents and the data within the tables are alphabetically ordered by noun.

Section I. References to masses and unbounded abstracts

Table 1. Masses and unbounded abstracts – masculine antecedents

Recipe no.		antecedent noun	gender noun	pronoun	gender pronoun	kind of agreement
NB	41	ajuyn	masc	relative	masc/fem	lexical
NB	41	ajuyn	masc	clitic	masc	lexical
NB	140	ajuyn	masc	dem	masc/fem	lexical
NB	140	ajuyn	masc	clitic	masc	lexical
BR	97	benium	masc	clitic	neut	semantic
NB	16	cabbillau	masc	dem	masc	lexical
NB	171	caneel	masc	relative	masc/fem	lexical
NB	79	case	masc	clitic	masc	lexical
NB	79	case	masc	dem	neut	semantic
NB	101	case	masc	dem	masc/fem	lexical
NB	131	case	masc	clitic	masc	lexical
NB	131	case	masc	clitic	masc	lexical
BR	239	dranck	masc	relative	masc/fem	lexical
BR	3	electuarij	masc	relative	neut	semantic

NB	175	ghimbere	masc	relative	masc/fem	lexical
NB	81	ghymbere	masc	dem	masc	lexical
NB	4	ghymbere	masc	dem	neut	semantic
BR	122	honich	masc	clitic	masc	lexical
BR	124	honich	masc	relative	masc/fem	lexical
BR	124	honich	masc	dem	masc/fem	lexical
BR	125	honich	masc	personal	masc	lexical
BR	124	honichs	masc	clitic	neut	semantic
BR	160	hontsdreck	masc	relative	masc/fem	lexical
BR	160	hontsdreck	masc	clitic	neut	semantic
BR	160	hontsdreck	masc	clitic	neut	semantic
BR	160	hontsdreck	masc	clitic	neut	semantic
BR	78	inct	masc	clitic	neut	semantic
BR	78	inct	masc	clitic	neut	semantic
BR	78	inct	masc	clitic	neut	semantic
BR	78	inct	masc	clitic	neut	semantic
BR	78	inct	masc	clitic	neut	semantic
BR	244	iulep	masc	relative	neut	semantic
BR	253	mastick	masc	dem	masc/fem	lexical
NB	55	rogghe	masc	personal	masc	lexical
NB	55	rogghe	masc	clitic	masc	lexical
NB	132	roghe	masc	dem	masc/fem	lexical
NB	143	roghe	masc	dem	masc	lexical
BR	23	roock	masc	relative	masc/fem	lexical
BR	23	roock	masc	dem	masc/neut	lexical
BR	181	roock	masc	relative	masc/fem	lexical
BR	209	roock	masc	relative	masc/fem	lexical
NB	154	sofferaen	masc	dem	neut	semantic
BR	104	steen	masc	clitic	masc	lexical
BR	104	steen	masc	personal	masc	lexical
BR	104	steen	masc	dem	masc/neut	lexical
BR	104	steen	masc	personal	masc	lexical

BR	104	steen	masc	dem	masc/fem	lexical
BR	104	steen	masc	clitic	masc	lexical
NB	166	tornisol	masc	dem	neut	semantic
NB	171	tornisol	masc	clitic	neut	semantic
BR	97	vernis	masc	personal	masc	lexical
BR	97	vernis	masc	personal	neut	semantic
NB	10	visch	masc	clitic	masc	lexical
NB	10	visch	masc	clitic	masc	lexical
NB	10	visch	masc	clitic	neut	semantic
NB	11	vysch	masc	clitic	masc	lexical
NB	11	vysch	masc	clitic	masc	lexical
BR	19	weedom	masc	clitic	neut	semantic
BR	29	wijn	masc	relative	masc/fem	lexical
BR	246	wijn	masc	clitic	masc	lexical
BR	19	wijn	masc	clitic	neut	semantic
NB	165	wijn	masc	clitic	masc	lexical
NB	166	wijn	masc	dem	masc	lexical
BR	62	wijnazijn	masc	relative	masc/fem	lexical
NB	168	wine	masc	dem	masc	lexical
NB	171	wine	masc	clitic	masc	lexical
NB	170	zeem	masc	dem	masc/fem	lexical
NB	172	zeem	masc	clitic	masc	lexical
NB	172	zeem	masc	clitic	neut	semantic
NB	172	zeem	masc	clitic	neut	semantic

Table 2. Masses and unbounded abstracts – feminine antecedents

Recipe no.		antecedent noun	gender noun	pronoun	gender pronoun	kind of agreement
NB	126	bloeme	fem	dem	masc/fem	lexical
NB	132	bloeme	fem	dem	masc/fem	lexical
BR	104	calamine	fem	clitic	fem	lexical
BR	48	confectie	fem	clitic	neut	semantic
BR	80	gomme	fem	personal	fem	lexical
BR	140	gomme	fem	clitic	fem	lexical
BR	140	gomme	fem	clitic	fem	lexical
NB	10	jeleyen	fem	clitic	fem	lexical
NB	10	jeleyen	fem	clitic	fem	lexical
NB	10	jeleyen	fem	personal	fem	lexical
BR	70	looge	fem	relative	fem	lexical
BR	251	materie	fem	clitic	fem	lexical
BR	251	materie	fem	clitic	neut	semantic
BR	155	medecijne	fem	relative	fem	lexical
BR	155	medecijne	fem	clitic	neut	semantic
BR	185	mengelinge	fem	clitic	fem	lexical
BR	185	mengelinge	fem	clitic	fem	lexical
BR	185	mengelinge	fem	clitic	neut	semantic
BR	204	munte	fem	dem	masc/fem	lexical
BR	217	myrrhe	fem	clitic	fem	lexical
BR	154	olie	fem	relative	fem	lexical
BR	154	olie	fem	clitic	neut	semantic
BR	224	persinghe	fem	clitic	neut	semantic
BR	243	plueresie	fem	clitic	fem	lexical
BR	42	rose	fem	relative	masc/fem	lexical
BR	42	rose	fem	clitic	fem	lexical
BR	48	rosette	fem	relative	fem	lexical
BR	74	salue	fem	relative	fem	lexical

BR	67	salue	fem	relative	neut	semantic
BR	164	salue	fem	relative	neut	semantic
BR	164	salue	fem	clitic	fem	lexical
NB	139	sane	fem	dem	masc/fem	lexical
NB	139	sane	fem	clitic	fem	lexical
NB	58	sause	fem	clitic	fem	lexical
NB	58	sause	fem	clitic	fem	lexical
NB	138	sause	fem	clitic	fem	lexical
BR	43	schilderije	fem	clitic	fem	lexical
BR	43	schilderije	fem	personal	neut	semantic
BR	171	schorsse	fem	clitic	fem	lexical
BR	171	schorsse	fem	clitic	fem	lexical
BR	187	serpentine	fem	relative	masc/fem	lexical
BR	42	verwe	fem	relative	masc/fem	lexical
BR	42	verwe	fem	clitic	fem	lexical
BR	179	wijnruyte	fem	clitic	fem	lexical
BR	179	wijnruyte	fem	clitic	fem	lexical
NB	74	yeleye	fem	clitic	fem	lexical

Table 3. Masses and unbounded abstracts – masculine/feminine antecedents

Recipe no.		antecedent noun	gender noun	pronoun	gender pronoun	kind of agreement
BR	143	olie	masc/fem	personal	fem	lexical
BR	144	olie	masc/fem	personal	fem	lexical
BR	144	olie	masc/fem	personal	fem	lexical
BR	143	olie	masc/fem	dem	fem	lexical
BR	143	olye	masc/fem	personal	fem	lexical
BR	143	olye	masc/fem	clitic	fem	lexical
BR	143	olye	masc/fem	clitic	neut	semantic
BR	143	olye	masc/fem	clitic	neut	semantic
BR	143	olye	masc/fem	clitic	neut	semantic

BR	214	petercelye	masc/fem	clitic	fem	lexical
NB	31	petercelye	masc/fem	dem	masc/fem	lexical
NB	31	petercelye	masc/fem	clitic	fem	lexical
BR	133	seepen	masc/fem	dem	masc/fem	lexical
BR	19	tantsweere	masc/fem	personal	masc	lexical
NB	135	terwe	masc/fem	dem	masc/fem	lexical
NB	135	terwe	masc/fem	possessive	fem	lexical
NB	169	tornisol	masc/fem	possessive	fem	lexical
BR	215	wortel	masc/fem	clitic	fem	lexical
BR	215	wortel	masc/fem	personal	fem	lexical
BR	215	wortel	masc/fem	clitic	neut	semantic
BR	215	wortel	masc/fem	clitic	neut	semantic

Table 4. Masses and unbounded abstracts – neuter antecedents

Recipe no.		antecedent noun	gender noun	pronoun	gender pronoun	kind of agreement
BR	169	azijn	neut	relative	masc/fem	nonlexical
BR	39	azuer	neut	relative	neut	lexical
NB	4	blancmengier	neut	dem	masc/neut	lexical
BR	116	bloet (hasenbloet)	neut	clitic	neut	lexical
BR	116	bloet (hasenbloet)	neut	clitic	neut	lexical
NB	20	broot	neut	clitic	neut	lexical
NB	21	broot	neut	clitic	neut	lexical
NB	22	broot	neut	clitic	neut	lexical
NB	23	broot	neut	clitic	neut	lexical
NB	23	broot	neut	clitic	neut	lexical
NB	32	broot	neut	dem	neut	lexical
NB	32	broot	neut	clitic	neut	lexical
NB	38	broot	neut	dem	neut	lexical
NB	38	broot	neut	clitic	neut	lexical

NB	40	broot	neut	dem	neut	lexical
NB	40	broot	neut	clitic	neut	lexical
NB	40	broot	neut	dem	neut	lexical
NB	40	broot	neut	clitic	neut	lexical
NB	40	broot	neut	clitic	neut	lexical
NB	41	broot	neut	dem	neut	lexical
NB	41	broot	neut	clitic	neut	lexical
NB	41	broot	neut	clitic	neut	lexical
NB	41	broot	neut	clitic	neut	lexical
NB	46	broot	neut	dem	neut	lexical
NB	49	broot	neut	dem	neut	lexical
NB	79	broot	neut	dem	neut	lexical
NB	163	broot	neut	dem	neut	lexical
NB	163	broot	neut	dem	neut	lexical
NB	174	broot	neut	clitic	neut	lexical
NB	53	broot (bruynbroot)	neut	dem	neut	lexical
NB	174	broot (witbroot)	neut	clitic	neut	lexical
NB	174	broot (witbroot)	neut	clitic	neut	lexical
NB	174	broot (witbroot)	neut	clitic	neut	lexical
NB	174	broot (witbroot)	neut	dem	neut	lexical
NB	174	broot (witbroot)	neut	dem	neut	lexical
NB	54	broot (wittebroot)	neut	clitic	neut	lexical
NB	54	broot (wittebroot)	neut	clitic	neut	lexical
NB	139	broot (wittebroot)	neut	dem	neut	lexical
BR	48	calckwater	neut	relative	neut	lexical
NB	85	candeel	neut	clitic	neut	lexical
NB	85	candeel	neut	clitic	neut	lexical
NB	85	candeel	neut	clitic	neut	lexical

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NB	85	candeel	neut	clitic	neut	lexical
NB	85	candeel	neut	clitic	neut	lexical
NB	85	candeel	neut	clitic	neut	lexical
BR	88	cisternewater	neut	clitic	neut	lexical
BR	80	coperroot	neut	clitic	neut	lexical
BR	101	cruyt	neut	clitic	neut	lexical
BR	101	cruyt	neut	clitic	neut	lexical
BR	220	cruyt	neut	relative	neut	lexical
BR	230	cruyt	neut	relative	neut	lexical
NB	41	cruyt	neut	clitic	masc/neut	lexical
BR	176	cruyt (ooghentroostcruyt)	neut	relative	neut	lexical
BR	100	deech	neut	relative	neut	lexical
BR	104	deech	neut	relative	neut	lexical
BR	134	deech	neut	relative	neut	lexical
BR	237	doordouwsel	neut	clitic	neut	lexical
NB	41	gerecht	neut	clitic	neut	lexical
BR	40	gout	neut	clitic	neut	lexical
BR	40	gout	neut	clitic	neut	lexical
BR	40	gout	neut	dem	neut	lexical
BR	46	gout	neut	relative	neut	lexical
BR	46	gout	neut	relative	neut	lexical
BR	46	gout	neut	clitic	neut	lexical
BR	46	gout	neut	clitic	neut	lexical
BR	50	hayr	neut	clitic	neut	lexical
BR	53	hayr	neut	personal	neut	lexical
BR	250	hayr	neut	clitic	neut	lexical
BR	48	hout (brisiliehout)	neut	clitic	neut	lexical
BR	27	ijser	neut	dem	neut	lexical
BR	12	lemmets	neut	clitic	neut	lexical
BR	232	lijnsaet	neut	clitic	neut	lexical
BR	103	loot	neut	clitic	neut	lexical

BR	103	loot	neut	clitic	neut	lexical
BR	105	meel	neut	relative	neut	lexical
NB	154	melcke (amandelenmelcke)	neut	relative	neut	lexical
BR	226	merch	neut	clitic	neut	lexical
BR	48	papier	neut	clitic	neut	lexical
BR	48	papier	neut	clitic	neut	lexical
BR	252	papier	neut	clitic	neut	lexical
BR	39	parkement	neut	relative	neut	lexical
BR	39	parkement	neut	clitic	neut	lexical
BR	39	parkement	neut	clitic	neut	lexical
BR	39	parkement	neut	clitic	neut	lexical
NB	110	peper	neut	clitic	neut	lexical
BR	28	perkement	neut	dem	neut	lexical
BR	28	perkement	neut	clitic	neut	lexical
BR	28	perkement	neut	clitic	neut	lexical
BR	28	perkement	neut	clitic	neut	lexical
BR	28	perkement	neut	clitic	neut	lexical
BR	28	perkement	neut	clitic	neut	lexical
BR	102	pertshaer	neut	clitic	neut	lexical
BR	102	pertshaer	neut	clitic	neut	lexical
BR	102	pertshaer	neut	clitic	neut	lexical
BR	102	pertshaer	neut	clitic	neut	lexical
BR	5	poeder	neut	clitic	neut	lexical
BR	5	poeder	neut	clitic	neut	lexical
BR	7	poeder	neut	clitic	neut	lexical
BR	155	poeder	neut	clitic	neut	lexical
BR	155	poeder	neut	personal	neut	lexical
BR	243	poeder	neut	clitic	neut	lexical
BR	125	poeder (nagelpoeder)	neut	dem	neut	lexical
BR	74	quicsiluer	neut	clitic	neut	lexical
NB	24	raeptsmout	neut	clitic	neut	lexical

NB	24	raeptsmout	neut	clitic	neut	lexical
NB	24	raeptsmout	neut	clitic	neut	lexical
NB	24	raeptsmout	neut	clitic	neut	lexical
NB	24	raeptsmout	neut	clitic	neut	lexical
NB	24	raeptsmout	neut	clitic	neut	lexical
NB	133	raeptsmout	neut	clitic	neut	lexical
NB	147	rijs	neut	clitic	neut	lexical
NB	147	rijs	neut	clitic	neut	lexical
NB	147	rijs	neut	clitic	neut	lexical
NB	147	rijs	neut	clitic	neut	lexical
NB	147	rijs	neut	clitic	neut	lexical
NB	147	rijs	neut	clitic	neut	lexical
NB	147	rijs	neut	clitic	neut	lexical
NB	147	rijs	neut	clitic	neut	lexical
NB	147	rijs	neut	clitic	neut	lexical
NB	147	rijs	neut	clitic	neut	lexical
NB	147	rijs	neut	clitic	neut	lexical
BR	123	saet	neut	clitic	fem	nonlexical
BR	123	saet	neut	clitic	fem	nonlexical
BR	123	saet	neut	clitic	fem	nonlexical
BR	105	sandael	neut	relative	neut	lexical
BR	35	sap	neut	relative	neut	lexical
BR	176	sap	neut	clitic	neut	lexical
BR	176	sap	neut	clitic	neut	lexical
BR	176	sap	neut	clitic	neut	lexical
BR	178	sap	neut	clitic	neut	lexical
BR	182	sap	neut	relative	neut	lexical
BR	16	scharlaken	neut	dem	neut	lexical
BR	16	scharlaken	neut	clitic	neut	lexical
BR	17	sendael	neut	clitic	neut	lexical
BR	17	sendael	neut	personal	neut	lexical
BR	75	siluer	neut	clitic	neut	lexical

BR	75	siluer	neut	clitic	neut	lexical
NB	146	soopken	neut	clitic	neut	lexical
NB	1	sop	neut	dem	neut	lexical
NB	12	sop	neut	dem	neut	lexical
NB	72	sop	neut	dem	neut	lexical
NB	79	sop	neut	dem	neut	lexical
NB	74	sop (vleeschsop)	neut	dem	neut	lexical
NB	74	sop (vleeschsop)	neut	clitic	neut	lexical
NB	74	sop (vleeschsop)	neut	clitic	neut	lexical
NB	164	sope	neut	relative	neut	lexical
NB	47	sope (vleessope)	neut	clitic	masc/neut	lexical
NB	175	sout	neut	relative	neut	lexical
BR	43	ten	neut	clitic	neut	lexical
BR	43	ten	neut	clitic	fem	nonlexical
BR	43	ten	neut	clitic	neut	lexical
BR	43	ten	neut	clitic	neut	lexical
BR	43	ten	neut	relative	neut	lexical
BR	43	ten	neut	clitic	neut	lexical
BR	46	tens	neut	clitic	neut	lexical
BR	46	tens	neut	clitic	neut	lexical
NB	47	venisoen	neut	dem	neut	lexical
NB	48	venisoen	neut	clitic	neut	lexical
BR	41	vijlsel	neut	clitic	neut	lexical
BR	41	vijlsel	neut	clitic	neut	lexical
BR	116	vleesch	neut	relative	neut	lexical
BR	116	vleesch	neut	clitic	neut	lexical
BR	116	vleesch	neut	clitic	neut	lexical
BR	116	vleesch	neut	clitic	neut	lexical
NB	35	vleesch	neut	relative	neut	lexical
NB	79	vleesch	neut	clitic	neut	lexical
NB	79	vleesch	neut	clitic	neut	lexical
NB	79	vleesch	neut	clitic	neut	lexical

NB	84	vleesch	neut	clitic	neut	lexical
NB	94	vleesch	neut	relative	neut	lexical
NB	94	vleesch	neut	clitic	neut	lexical
NB	130	vleesch	neut	dem	neut	lexical
NB	163	vleesch (calfvleesch)	neut	dem	neut	lexical
NB	163	vleesch (calfvleesch)	neut	clitic	neut	lexical
NB	163	vleesch (calfvleesch)	neut	clitic	neut	lexical
NB	108	vleesch (hertenvleesch)	neut	dem	neut	lexical
NB	108	vleesch (hertenvleesch)	neut	clitic	neut	lexical
NB	108	vleesch (hertenvleesch)	neut	clitic	neut	lexical
NB	135	vleessche (hertenvleesche)	neut	relative	neut	lexical
NB	93	vleesch (rintvleesch)	neut	dem	neut	lexical
NB	130	vleesch (verckensvleesch)	neut	relative	neut	lexical
NB	130	vleesch (verckensvleesch)	neut	personal	neut	lexical
NB	153	vleesch (verckenvleesch)	neut	relative	neut	lexical
NB	146	vleesken	neut	clitic	neut	lexical
NB	146	vleesken	neut	clitic	neut	lexical
BR	8	water	neut	relative	neut	lexical
BR	17	water	neut	clitic	neut	lexical
BR	17	water	neut	clitic	neut	lexical
BR	17	water	neut	clitic	neut	lexical
BR	25	water	neut	dem	neut	lexical
BR	25	water	neut	clitic	neut	lexical
BR	25	water	neut	clitic	neut	lexical
BR	53	water	neut	relative	neut	lexical
BR	90	water	neut	clitic	neut	lexical
BR	90	water	neut	clitic	neut	lexical
BR	97	water	neut	clitic	neut	lexical

BR	102	water	neut	clitic	neut	lexical
BR	102	water	neut	clitic	neut	lexical
BR	113	water	neut	clitic	neut	lexical
BR	123	water	neut	relative	neut	lexical
BR	153	water	neut	relative	neut	lexical
BR	153	water	neut	clitic	neut	lexical
BR	153	water	neut	clitic	neut	lexical
BR	183	water	neut	relative	neut	lexical
BR	183	water	neut	relative	neut	lexical
BR	232	water	neut	relative	neut	lexical
BR	252	water	neut	relative	neut	lexical
BR	254	water	neut	dem	neut	lexical
BR	254	water	neut	personal	neut	lexical
BR	254	water	neut	clitic	neut	lexical
BR	255	water	neut	personal	neut	lexical
BR	255	water	neut	personal	neut	lexical
BR	255	water	neut	personal	neut	lexical
NB	15	water	neut	clitic	neut	lexical
NB	18	water	neut	clitic	neut	lexical
BR	257	water (betoniewater)	neut	personal	neut	lexical
BR	6	water (putwater)	neut	clitic	neut	lexical
BR	133	water (rooswater)	neut	clitic	neut	lexical
BR	133	water (rooswater)	neut	clitic	neut	lexical
BR	223	water (rooswater)	neut	clitic	neut	lexical
BR	208	waters	neut	clitic	neut	lexical
BR	208	waters	neut	clitic	neut	lexical
BR	162	wieroock	neut	clitic	neut	lexical
BR	162	wieroock	neut	clitic	neut	lexical

Table 5. Masses and unbounded abstracts – masculine/neuter antecedents

Recipe no.		antecedent noun	gender noun	pronoun	gender pronoun	kind of agreement
NB	75	ajuyn	masc/neut	relative	masc/fem	uncertain
NB	75	ajuyn	masc/neut	personal	masc	uncertain
NB	75	ajuyn	masc/neut	clitic	masc	uncertain
NB	43	ajuyn	masc/neut	dem	neut	uncertain
NB	137	ajuyns	masc/neut	dem	masc	uncertain
NB	142	ajuyns	masc/neut	dem	masc/fem	uncertain
BR	48	aluyn (cliefaluyn)	masc/neut	relative	neut	uncertain
BR	119	aluyn (pluymaluyn)	masc/neut	clitic	neut	uncertain
BR	61	aluyn (rockaluyn)	masc/neut	clitic	neut	uncertain
BR	32	aluyn (steenaluyn)	masc/neut	clitic	masc/neut	uncertain
BR	32	aluyn (steenaluyn)	masc/neut	clitic	neut	uncertain
BR	13	azijn	masc/neut	relative	masc/fem	uncertain
NB	119	case	masc/neut	relative	masc/fem	uncertain
NB	119	case	masc/neut	personal	masc	uncertain
NB	119	case	masc/neut	dem	masc	uncertain
BR	54	cattenmes	masc/neut	relative	neut	uncertain
BR	54	cattenmes	masc/neut	clitic	neut	uncertain
BR	256	fenijn	masc/neut	relative	neut	uncertain
BR	38	inct	masc/neut	relative	neut	uncertain
BR	95	lijm	masc/neut	relative	neut	uncertain
NB	20	merswijn	masc/neut	clitic	masc	uncertain
NB	20	merswijn	masc/neut	clitic	masc	uncertain
NB	20	merswijn	masc/neut	personal	masc	uncertain
NB	20	merswijn	masc/neut	clitic	masc	uncertain
BR	118	olie	masc/neut	clitic	fem	nonlexical
BR	28	papier	masc/neut	dem	neut	uncertain

BR	28	papier	masc/neut	personal	neut	uncertain
NB	166	pulver	masc/neut	clitic	neut	uncertain
NB	166	pulver	masc/neut	clitic	neut	uncertain
NB	52	rijs	masc/neut	dem	neut	uncertain
NB	76	rijs	masc/neut	dem	neut	uncertain
NB	76	rijs	masc/neut	dem	neut	uncertain
BR	201	smeer (verckens smeer)	masc/neut	clitic	neut	uncertain
BR	201	smeer (verckens smeer)	masc/neut	clitic	neut	uncertain
BR	123	suyker	masc/neut	clitic	neut	uncertain
BR	231	suyker	masc/neut	relative	neut	uncertain
NB	159	suykere (rootsuyckere)	masc/neut	clitic	neut	uncertain
NB	159	suykere (rootsuyckere)	masc/neut	clitic	neut	uncertain
NB	80	wiltbraet	masc/neut	clitic	neut	uncertain
NB	80	wiltbraet	masc/neut	clitic	neut	uncertain
NB	55	wyltbrade	masc/neut	dem	neut	uncertain
NB	87	zeem	masc/neut	clitic	masc	uncertain
NB	87	zeem	masc/neut	personal	masc	uncertain
NB	87	zeem	masc/neut	personal	masc	uncertain
NB	87	zeem	masc/neut	clitic	masc	uncertain

Table 6. Masses and unbounded abstracts – feminine/neuter antecedents

Recipe no.		antecedent noun	gender noun	pronoun	gender pronoun	kind of agreement
NB	131	botere	fem/neut	clitic	fem	uncertain
NB	149	botere	fem/neut	dem	masc/fem	uncertain
NB	151	botere	fem/neut	clitic	fem	uncertain
NB	151	botere	fem/neut	personal	fem	uncertain
BR	199	melck	fem/neut	relative	fem	uncertain
BR	199	melck	fem/neut	personal	neut	uncertain

NB	78	melck	fem/neut	dem	neut	uncertain
NB	135	melck	fem/neut	relative	neut	uncertain
NB	135	melck	fem/neut	dem	neut	uncertain
NB	135	melck	fem/neut	clitic	neut	uncertain
NB	135	melck	fem/neut	clitic	neut	uncertain
NB	147	melck (amandelenmelck)	fem/neut	dem	neut	uncertain
BR	253	melck (vrouwenmelck)	fem/neut	dem	masc/fem	uncertain
NB	155	merch	fem/neut	clitic	neut	uncertain
NB	155	merch	fem/neut	dem	neut	uncertain
BR	154	olie	fem/neut	relative	masc/fem	uncertain
BR	5	poeder	fem/neut	relative	neut	uncertain
BR	20	poeder	fem/neut	relative	neut	uncertain
BR	21	poeder	fem/neut	relative	neut	uncertain
BR	164	poeder	fem/neut	relative	neut	uncertain
BR	177	poeder	fem/neut	relative	neut	uncertain
BR	191	poeder	fem/neut	clitic	neut	uncertain
BR	205	poeder	fem/neut	clitic	neut	uncertain
BR	212	poeder	fem/neut	clitic	neut	uncertain
BR	232	poeder	fem/neut	relative	neut	uncertain
NB	168	poeder	fem/neut	dem	neut	uncertain
NB	167	poedere	fem/neut	clitic	neut	uncertain
NB	167	poedere	fem/neut	dem	neut	uncertain
NB	1	poedere (ghymberepoedere)	fem/neut	clitic	neut	uncertain
NB	131	poedere (Lombaertspoedere)	fem/neut	dem	neut	uncertain

Table 7. Masses and unbounded abstracts – masculine/feminine/neuter antecedents

Recipe no.		antecedent noun	gender noun	pronoun	gender pronoun	kind of agreement
BR	55	olie	masc/fem/neut	clitic	fem	uncertain
BR	130	olie	masc/fem/neut	clitic	fem	uncertain

BR	110	sneeu	masc/fem/neut	dem	neut	uncertain
BR	110	sneeu	masc/fem/neut	dem	neut	uncertain

Section II. References to objects and bounded abstracts

Table 8. Objects and bounded abstracts – masculine antecedents

Recipe no.		antecedent noun	gender noun	pronoun	gender pronoun	kind of agreement
NB	81	ael	masc	dem	masc	lexical
NB	81	ael	masc	personal	masc	lexical
NB	81	ael	masc	clitic	masc	lexical
NB	81	ael	masc	clitic	masc	lexical
NB	81	ael	masc	clitic	masc	lexical
NB	81	ael	masc	personal	masc/neut	lexical
NB	81	ael	masc	clitic	masc	lexical
NB	81	ael	masc	personal	masc	lexical
BR	148	appel	masc	relative	masc	lexical
BR	55	baert	masc	personal	masc	lexical
NB	91	capuyn	masc	dem	masc	lexical
NB	91	capuyn	masc	clitic	masc	lexical
NB	72	carper	masc	dem	masc	lexical
NB	72	carper	masc	clitic	masc	lexical
NB	72	carper	masc	clitic	masc	lexical
NB	72	carper	masc	possessive	masc/neut	lexical
NB	82	carpere	masc	dem	masc	lexical
NB	82	carpere	masc	personal	masc	lexical
NB	82	carpere	masc	clitic	masc	lexical
NB	82	carpere	masc	clitic	masc	lexical
NB	82	carpere	masc	possessive	masc/neut	lexical
BR	183	crop	masc	relative	masc/fem	lexical
BR	184	crop	masc	personal	masc	lexical

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BR	128	dach	masc	relative	masc/fem	lexical
BR	10	doec (snutdoec)	masc	clitic	masc	lexical
BR	10	doec (snutdoec)	masc	personal	masc	lexical
BR	10	doeck (snutdoeck)	masc	personal	masc	lexical
BR	151	doyer	masc	clitic	fem	lexical
BR	11	draet	masc	clitic	masc	lexical
BR	11	draet	masc	clitic	masc	lexical
BR	9	draet	masc	clitic	neut	lexical
BR	126	hals	masc	clitic	masc	lexical
NB	41	ketele	masc	relative	masc/fem	lexical
BR	94	koecke	masc	relative	masc/fem	lexical
BR	94	koecke	masc	personal	masc	lexical
BR	133	pot	masc	clitic	masc	lexical
BR	185	pot	masc	clitic	masc	lexical
BR	209	pot	masc	relative	masc/neut	lexical
BR	252	pot	masc	dem	masc	lexical
NB	74	pot	masc	dem	masc	lexical
NB	80	pot	masc	clitic	masc	lexical
NB	157	pot (quaertpot)	masc	clitic	masc	lexical
BR	114	rinc	masc	clitic	masc	lexical
BR	114	rinck	masc	relative	masc/fem	lexical
BR	114	rinck	masc	personal	masc	lexical
BR	114	rinck	masc	personal	masc/neut	lexical
NB	141	roost	masc	clitic	masc	lexical
NB	141	roost	masc	clitic	masc	lexical
BR	8	spieghel	masc	dem	masc	lexical
BR	5	tant	masc	personal	masc	lexical
BR	5	tant	masc	clitic	masc	lexical
BR	143	tijt	masc	relative	masc/neut	lexical
BR	143	tijt	masc	relative	masc/neut	lexical
NB	133	trechtere	masc	clitic	masc	lexical

Table 9. Objects and bounded abstracts – feminine antecedents

Recipe no.		antecedent noun	gender noun	pronoun	gender pronoun	kind of agreement
BR	227	borst	fem	clitic	fem	lexical
BR	227	borst	fem	clitic	fem	lexical
BR	227	borst	fem	clitic	fem	lexical
BR	227	borst	fem	clitic	neut	nonlexical
BR	199	borst	fem	dem	masc/fem	lexical
NB	140	borst	fem	dem	masc/fem	lexical
NB	140	borst	fem	dem	masc/fem	lexical
NB	140	borst	fem	clitic	fem	lexical
NB	140	borst	fem	clitic	fem	lexical
NB	162	braseme	fem	clitic	fem	lexical
BR	31	druyue	fem	clitic	fem	lexical
BR	118	druyue	fem	clitic	fem	lexical
BR	72	exterooge	fem	dem	fem	lexical
BR	72	exterooge	fem	personal	fem	lexical
BR	88	fiole	fem	relative	masc/fem	lexical
BR	88	fiole	fem	dem	neut	nonlexical
BR	80	galnote	fem	personal	fem	lexical
BR	151	hinne	fem	clitic	fem	lexical
BR	151	hinne	fem	clitic	fem	lexical
BR	151	hinne	fem	personal	fem	lexical
BR	151	hinne	fem	personal	fem	lexical
BR	151	hinne	fem	clitic	fem	lexical
BR	151	hinne	fem	clitic	fem	lexical
BR	12	keerse	fem	relative	masc/fem	lexical
BR	12	keerse	fem	dem	masc/fem	lexical
BR	12	keerse	fem	clitic	fem	lexical
BR	12	keerse	fem	clitic	fem	lexical
BR	110	keerse	fem	clitic	fem	lexical

BR	111	keerse	fem	relative	masc/fem	lexical
BR	111	keerse	fem	clitic	fem	lexical
BR	110	keerse	fem	clitic	fem	lexical
BR	110	keerse	fem	clitic	fem	lexical
BR	112	keerse	fem	clitic	fem	lexical
BR	113	keerse	fem	relative	masc/fem	lexical
BR	111	keerse	fem	clitic	fem	lexical
BR	113	keerse	fem	clitic	fem	lexical
BR	112	keerse	fem	clitic	fem	lexical
BR	113	keerse	fem	clitic	fem	lexical
BR	113	keerse	fem	clitic	fem	lexical
NB	21	lampreye	fem	dem	masc/fem	lexical
NB	21	lampreye	fem	possessive	fem	lexical
NB	21	lampreye	fem	possessive	fem	lexical
NB	21	lampreye	fem	clitic	fem	lexical
NB	21	lampreye	fem	clitic	fem	lexical
NB	21	lampreye	fem	possessive	fem	lexical
NB	21	lampreye	fem	clitic	fem	lexical
NB	21	lampreye	fem	clitic	fem	lexical
NB	21	lampreye	fem	clitic	fem	lexical
NB	21	lampreye	fem	possessive	fem	lexical
NB	21	lampreye	fem	clitic	fem	lexical
BR	45	letter	fem	relative	masc/fem	lexical
BR	45	letter	fem	clitic	fem	lexical
BR	44	letter	fem	clitic	fem	lexical
BR	106	malue	fem	personal	fem	lexical
BR	107	manieren	fem	relative	masc/fem	lexical
BR	94	peere	fem	clitic	fem	lexical
BR	94	peere	fem	clitic	fem	lexical
BR	224	plaester	fem	personal	fem	lexical
BR	224	plaester	fem	relative	masc/fem	lexical
BR	86	plaetse	fem	relative	masc/fem	lexical

BR	23	side	fem	relative	masc/fem	lexical
NB	123	taerte	fem	clitic	fem	lexical
NB	123	taerte	fem	clitic	fem	lexical
NB	123	taerte	fem	clitic	fem	lexical
NB	123	taerte	fem	clitic	fem	lexical
NB	123	taerte	fem	clitic	fem	lexical
NB	123	taerte	fem	clitic	fem	lexical
NB	123	taerte	fem	personal	fem	lexical
BR	20	vere	fem	clitic	fem	lexical
BR	20	vere	fem	clitic	fem	lexical
BR	20	vere	fem	clitic	fem	lexical

Table 10. Objects and bounded abstracts – neuter antecedents

Recipe no.		antecedent noun	gender noun	pronoun	gender pronoun	kind of agreement
BR	63	aensicht	neut	personal	neut	lexical
BR	198	aensicht	neut	clitic	neut	lexical
BR	58	aensicht	neut	clitic	neut	lexical
BR	59	aensicht	neut	personal	neut	lexical
BR	8	becken	neut	clitic	neut	lexical
BR	227	doecxken	neut	clitic	neut	lexical
BR	227	doecxken	neut	dem	neut	lexical
BR	228	doecxken	neut	clitic	neut	lexical
BR	228	doecxken	neut	clitic	neut	lexical
BR	13	ey	neut	clitic	neut	lexical
BR	13	ey	neut	clitic	neut	lexical
BR	13	ey	neut	clitic	neut	lexical
BR	13	ey	neut	clitic	neut	lexical
BR	13	ey	neut	clitic	neut	lexical
BR	13	ey	neut	clitic	neut	lexical
BR	115	ey	neut	dem	neut	lexical

BR	31	gelas	neut	clitic	neut	lexical
BR	31	gelas	neut	clitic	neut	lexical
BR	118	gelas	neut	clitic	neut	lexical
BR	118	gelas	neut	clitic	neut	lexical
BR	130	gelas	neut	relative	neut	lexical
BR	138	gelas	neut	clitic	neut	lexical
BR	138	gelas	neut	relative	neut	lexical
BR	154	gelas	neut	clitic	neut	lexical
BR	154	gelas	neut	relative	masc/fem	semantic
BR	176	gelas	neut	dem	neut	lexical
BR	179	ghebreck	neut	dem	neut	lexical
BR	162	ghemechte	neut	dem	masc/neut	lexical
BR	161	ghemechte	neut	dem	masc/neut	lexical
BR	241	herte	neut	dem	neut	lexical
BR	50	hooft	neut	clitic	neut	lexical
BR	50	hooft	neut	clitic	neut	lexical
BR	232	hooft	neut	clitic	neut	lexical
NB	143	hooft	neut	dem	neut	lexical
BR	12	huysken	neut	clitic	neut	lexical
BR	12	huysken	neut	relative	neut	lexical
BR	21	ijser	neut	clitic	neut	lexical
BR	15	laken	neut	possessive	masc/neut	lexical
BR	15	laken	neut	possessive	masc/neut	lexical
BR	15	laken	neut	relative	neut	lexical
BR	15	laken	neut	personal	neut	lexical
BR	102	potken	neut	clitic	neut	lexical
BR	173	schaepshooft	neut	clitic	neut	lexical
BR	12	stoxken	neut	clitic	neut	lexical
NB	47	stuck	neut	dem	neut	lexical
BR	231	vadt	neut	relative	neut	lexical
BR	143	vat	neut	clitic	neut	lexical
BR	143	vat	neut	clitic	neut	lexical

BR	143	vat	neut	clitic	neut	lexical
BR	143	vat	neut	clitic	neut	lexical
BR	143	vat	neut	clitic	neut	lexical
NB	167	vat	neut	relative	neut	lexical
BR	81	vel (gheytevel)	neut	clitic	neut	lexical
BR	81	vel (gheytevel)	neut	clitic	neut	lexical
BR	81	vel (gheytevel)	neut	personal	neut	lexical

Table 11. Objects and bounded abstracts – masculine/feminine antecedents

Recipe no.		antecedent noun	gender noun	pronoun	gender pronoun	kind of agreement
BR	118	camer	masc/fem	clitic	fem	uncertain
BR	34	citroen	masc/fem	clitic	fem	uncertain
BR	8	sterre	masc/fem	personal	fem	uncertain
BR	162	tichel	masc/fem	dem	masc/fem	uncertain
BR	162	tichel	masc/fem	clitic	fem	uncertain
BR	11	voet	masc/fem	dem	masc	uncertain

Table 12. Objects and bounded abstracts – masculine/neuter antecedents

Recipe no.		antecedent noun	gender noun	pronoun	gender pronoun	kind of agreement
BR	37	boeck	masc/neut	clitic	masc	uncertain
BR	37	boeck	masc/neut	personal	neut	uncertain
BR	175	coffer	masc/neut	relative	neut	uncertain
NB	128	scheel	masc/neut	relative	masc/fem	uncertain

Table 13. Objects and bounded abstracts – masculine/feminine/neuter antecedents

Recipe no.		antecedent noun	gender noun	pronoun	gender pronoun	kind of agreement
BR	2	schotel	masc/fem/neut	dem	masc/fem	uncertain
BR	23	schotel	masc/fem/neut	clitic	fem	uncertain

Section III. References to ambiguous object/mass referents

Table 14. Ambiguous object/mass – masculine antecedents

Recipe no.		antecedent noun	gender noun	pronoun	gender pronoun	kind of agreement
NB	14	palinck	masc	clitic	masc	lexical
NB	68	palinck	masc	clitic	masc	lexical
NB	68	palinck	masc	clitic	masc	lexical
NB	68	palinck	masc	possessive	masc/neut	lexical
NB	68	palinck	masc	clitic	masc	lexical
NB	144	snoeck	masc	clitic	masc	lexical
NB	144	snoeck	masc	clitic	masc	lexical
NB	144	snoeck	masc	clitic	masc	lexical
NB	15	visch	masc	personal	masc	lexical
NB	15	visch	masc	clitic	masc	lexical
NB	16	visch	masc	clitic	masc	lexical
NB	16	visch	masc	personal	masc	lexical
NB	16	visch	masc	clitic	masc	lexical
NB	16	visch	masc	personal	masc	lexical
NB	17	visch	masc	clitic	masc	lexical
NB	17	visch	masc	personal	masc	lexical
NB	17	visch	masc	clitic	masc	lexical
NB	17	visch	masc	clitic	masc	lexical
NB	17	visch	masc	personal	masc	lexical
NB	24	visch	masc	relative	masc/fem	lexical

NB	40	visch	masc	clitic	masc	lexical
NB	40	visch	masc	clitic	masc	lexical
NB	40	visch	masc	clitic	masc	lexical
NB	40	visch	masc	personal	masc	lexical
NB	40	visch	masc	personal	masc	lexical
NB	64	vissche	masc	personal	masc	lexical
NB	40	vysch	masc	personal	masc	lexical

Table 15. Ambiguous object/mass – feminine antecedents

Recipe no.		antecedent noun	gender noun	pronoun	gender pronoun	kind of agreement
NB	51	bille	fem	dem	neut	nonlexical/ semantic
NB	51	bille	fem	clitic	neut	nonlexical/ semantic
NB	51	bille	fem	clitic	neut	nonlexical/ semantic
BR	34	smette	fem	clitic	neut	nonlexical/ semantic
BR	35	smette	fem	clitic	fem	lexical
NB	143	spise	fem	clitic	fem	lexical
BR	154	wonde	fem	clitic	neut	nonlexical/ semantic
BR	216	wortel	fem	relative	masc/fem	lexical

Table 16. Ambiguous object/mass – neuter antecedents

Recipe no.		antecedent noun	gender noun	pronoun	gender pronoun	kind of agreement
BR	32	laken	neut	personal	neut	lexical
BR	34	laken	neut	possessive	masc/neut	lexical
BR	34	laken	neut	clitic	neut	lexical
BR	34	laken	neut	clitic	neut	lexical
BR	39	vel	neut	clitic	neut	lexical

Section IV. References to animate referents

Table 17. Animate referents – masculine antecedents

Recipe no.		antecedent noun	gender noun	pronoun	gender pronoun	kind of agreement
BR	177	man	masc	relative	masc	lexical
BR	258	man	masc	dem	masc/neut	lexical
BR	9	persoone	masc	relative	masc/neut	lexical
BR	258	worm	masc	personal	masc	lexical

Table 18. Animate referents – feminine antecedents

Recipe no.		antecedent noun	gender noun	pronoun	gender pronoun	kind of agreement
BR	107	creature	fem	clitic	neut	nonlexical
BR	107	creature	fem	personal	masc/neut	nonlexical
BR	107	creature	fem	personal	neut	nonlexical
BR	66	egedisse	fem	clitic	fem	lexical
BR	212	hinne	fem	possessive	fem	lexical
BR	207	paciente	fem	personal	fem	lexical
BR	210	paciente	fem	personal	fem	lexical
BR	210	paciente	fem	possessive	fem	lexical
BR	210	paciente	fem	personal	fem	lexical
BR	210	paciente	fem	personal	fem	lexical
BR	210	paciente	fem	personal	fem	lexical
BR	210	paciente	fem	personal	fem	lexical
BR	105	vrouwe	fem	personal	fem	lexical
BR	105	vrouwe	fem	clitic	fem	lexical
BR	105	vrouwe	fem	clitic	fem	lexical
BR	105	vrouwe	fem	clitic	fem	lexical
BR	105	vrouwe	fem	personal	fem	lexical
BR	107	vrouwe	fem	clitic	fem	lexical

BR	107	vrouwe	fem	possessive	fem	lexical
BR	198	vrouwe	fem	personal	fem	lexical
BR	198	vrouwe	fem	personal	fem	lexical
BR	199	vrouwe	fem	possessive	fem	lexical
BR	199	vrouwe	fem	possessive	fem	lexical
BR	199	vrouwe	fem	possessive	fem	lexical
BR	199	vrouwe	fem	possessive	fem	lexical
BR	199	vrouwe	fem	personal	fem	lexical
BR	199	vrouwe	fem	personal	fem	lexical
BR	208	vrouwe	fem	personal	fem	lexical
BR	208	vrouwe	fem	personal	fem	lexical
BR	208	vrouwe	fem	personal	fem	lexical
BR	209	vrouwe	fem	relative	masc/fem	lexical
BR	209	vrouwe	fem	relative	masc/fem	lexical
BR	215	vrouwe	fem	relative	masc/fem	lexical
BR	215	vrouwe	fem	possessive	fem	lexical
BR	215	vrouwe	fem	clitic	fem	lexical
BR	215	vrouwe	fem	personal	fem	lexical
BR	216	vrouwe	fem	relative	fem	lexical
BR	217	vrouwe	fem	personal	fem	lexical
BR	220	vrouwe	fem	possessive	fem	lexical
BR	220	vrouwe	fem	personal	fem	lexical
BR	220	vrouwe	fem	personal	fem	lexical
BR	221	vrouwe	fem	possessive	fem	lexical
BR	222	vrouwe	fem	relative	masc/fem	lexical
BR	223	vrouwe	fem	relative	masc/fem	lexical
BR	223	vrouwe	fem	reflexive	fem	lexical
BR	223	vrouwe	fem	reflexive	fem	lexical

Table 19. Animate referents – neuter antecedents

Recipe no.		antecedent noun	gender noun	pronoun	gender pronoun	kind of agreement
BR	215	kint	neut	personal	masc/neut	lexical
BR	108	kint	neut	relative	neut	lexical
BR	215	peert	neut	clitic	neut	lexical
BR	90	peert	neut	personal	neut	lexical

Table 20. Animate referents – masculine/feminine antecedents

Recipe no.		antecedent noun	gender noun	pronoun	gender pronoun	kind of agreement
BR	258	slanghe	masc/fem	personal	fem	lexical
BR	258	slanghe	masc/fem	personal	fem	lexical

Summary

Semantic versus lexical gender: synchronic and diachronic variation in Germanic gender agreement

Most Germanic languages, including Dutch, have a gender system in which each noun belongs to a certain gender. These nominal genders are reflected by gender agreement on associated words, such as determiners, adjectives and pronouns. However, pronouns do not always show gender agreement with their antecedent noun. A familiar example of this is when a masculine or feminine pronoun is used with a neuter noun that refers to a human being. For example, in Dutch the masculine pronoun *hij/hem* 'he/him' can be used with the neuter noun *jongetje* 'boy' or the feminine pronoun *zij/haar* 'she/her' with the neuter noun *meisje* 'girl'. In these cases the pronoun shows what is called 'semantic gender agreement', agreement that is based on the properties of the referent rather than the lexical gender of the noun. Another, perhaps less familiar, kind of semantic gender agreement that occurs in Dutch involves inanimate referents. Examples of this are shown in (1) and (2) below, where in (1) a masculine pronoun (*hem*) is used with a neuter noun, *boek* 'book', and in (2) a neuter pronoun (*het*) is used with a common gender noun, *gember* 'ginger':

(1) *Ik heb m'n boek nog niet uit, maar ik moet hem terugbrengen naar de bibliotheek.*
    'I have not finished my book yet, but I have to return it to the library.'

(2) *Je kunt verse gember bijna overal krijgen, maar ik vind het vaak te duur.*
    'You can get fresh ginger almost everywhere, but I think it is often too expensive.'

The agreement pattern that these examples illustrate involves the degree of individuation of the referent. Masculine and common gender pronouns, on the one hand, tend to be used with referents that have a high degree of individuation, that is, referents that have a clearly bounded shape, such as the object *boek* 'book' in (1).

Neuter gender pronouns, on the other hand, tend to be used with referents that have a low degree of individuation, that is, referents with unclear boundaries, such as the mass *gember* 'ginger' in (2).

The aim of this dissertation is to investigate the origin of this semantic agreement pattern in Dutch, when it has developed and what factors could be involved in its surfacing. This work consist of four separate studies that are intended to shed light on the roots of the phenomenon. The first study explores the semantic underpinnings of the Dutch gender system. The second study is an experimental study that compares the agreement behaviour in Dutch with that in German. The third study is a historical corpus study of pronominal gender agreement in Middle Dutch. The fourth and final study is an experimental study that investigates the effect of adnominal gender marking on pronominal agreement variation.

The first study shows that the association of common and neuter gender with a high and a low degree of individuation, respectively, not only exists in pronouns, but can be found in nominal gender as well. Although nominal gender assignment is largely semantically arbitrary in Dutch, a semantic pattern surfaces in certain cases. This occurs in particular when the gender of the noun is not fixed but variable. The association between neuter gender and a low degree of individuation is also visible when the antecedent is not a noun, but, for instance, a predicate. These observations indicate that the semantic interpretation of the genders is not an innovation in Dutch pronouns, but something that has long existed. There are in fact indications that the semantic interpretation of the genders goes back to their roots in Proto-Indo-European. In line with this, semantic agreement based on individuation has been found not only in Dutch, but also in other Germanic varieties, including dialects of English, Frisian and Danish, and in Romance dialects. The Indo-European gender system possibly had a semantic basis, which has become disrupted in the nominal domain ever since nominal gender became an invariable, lexically stored feature of nouns. The lexical gender of nouns is consequently no longer always in line with their meanings and as a result of this, a conflict can arise between the lexical gender of nouns and the semantic gender associated with their referents.

The second, experimental, study is aimed at investigating the possible relation between pronominal agreement based on individuation and a change that took place in the Dutch nominal gender system: the change from three to two nominal genders

as a result of the conflation of masculine and feminine gender into one common gender. Agreement based on individuation has so far only been attested in Germanic varieties in which masculine and feminine gender have conflated, as in Dutch, or that lost lexical gender altogether. The second study investigates whether agreement based on individuation exist also in German, a Germanic variety that still distinguishes the original three nominal genders, and how pronominal agreement in German compares to that in Dutch. This study involves pronoun elicitation experiments in Dutch and in German, in which native speakers of each language are prompted to refer to particular referents that differ in their degree of individuation. The results show that both speakers of German and speakers of Dutch are inclined to show semantic neuter agreement with masses and abstract referents, and semantic masculine agreement with animal referents. However, semantic masculine agreement with object referents is shown only by speakers of Dutch and also the frequency of semantic agreement is overall much higher in Dutch than in German. The findings of this study suggest that semantic agreement based on individuation is a shared Germanic feature and that the difference between Dutch and German with respect to this kind of agreement is mainly one of degree.

The third, corpus, study investigates the diachrony of agreement based on individuation in Dutch and focuses on the question whether or not this kind of agreement already existed in Dutch before the distinction between masculine and feminine nominal gender was lost. This study is a corpus study of pronominal agreement in Middle Dutch recipe books from the early 16th century. The results show that semantic agreement based on individuation existed already in Middle Dutch, in particular, semantic neuter agreement with mass referents. Semantic agreement with object referents is not attested in the corpus. It appears that in Middle Dutch, semantic agreement occurs only with referents that have either a very high degree of individuation, that is, animate referents, or that have an extremely low degree of individuation, that is, masses. A comparison of the frequency of semantic agreement in Middle Dutch to that in present-day Dutch suggests that semantic agreement has generally increased over time.

The final, experimental, study investigates a factor that could play a role in the diachronic increase of semantic gender agreement, as well as the synchronic variation in its frequency between languages such as Dutch and German: the

visibility of lexical gender in the noun phrase. Dutch has changed over time in this respect and now differs from German, as deflection has led to a loss of lexical gender marking on several elements inside the noun phrase, such as the indefinite article and possessive determiners. The fourth, final, study investigates whether there is a relation between lexical gender marking in the noun phrase and the choice between semantic and lexical gender agreement in pronouns. This study involves a pronoun elicitation experiment with speakers of Dutch in which the test sentences vary in one crucial aspect: the antecedent noun is accompanied by either a determiner carrying explicit gender marking or a determiner without gender marking. The results show that the likelihood of semantic agreement is higher when there is no gender marking on the antecedent. This finding reveals that the absence of lexical gender marking in the noun phrase makes semantic agreement surface more easily in pronouns. This effect can explain both the synchronic variation between semantic and lexical gender agreement and the shift in the frequency of semantic agreement in Dutch over time.

The results of the four studies that are presented in this dissertation indicate that the semantic gender agreement that is observed in Dutch pronouns today relates to an existing semantic interpretation of the genders, which possibly goes back to the semantic roots of the gender system. Pronominal agreement based on individuation existed already in Middle Dutch and it surfaces in varying degrees in other Germanic varieties, including German. The rigid nature of the lexical gender system, that is, the fact that the lexical gender of nouns is largely fixed and invariable, creates a conflict between the lexical gender of nouns and the semantic gender that is associated with their referents. The extent to which semantic gender agreement can surface in pronouns, that is, the ratio of semantic to lexical gender agreement in pronouns, appears to depend on the visibility of lexical gender in the noun phrase. As this aspect of the lexical gender system varies both synchronically and diachronically, it can explain both the variation in the ratio of semantic to lexical gender agreement between languages and the increase of semantic gender agreement in Dutch over time.

Samenvatting

Semantisch versus lexicaal geslacht: synchrone en diachrone variatie in Germaanse geslachtscongruentie

De meeste Germaanse talen, waaronder het Nederlands, hebben een geslachtssysteem waarin elk nomen tot een bepaald geslacht behoort. Deze lexicale geslachten zijn terug te zien in congruentie op andere elementen, zoals lidwoorden, bijvoeglijke naamwoorden en voornaamwoorden. Voornaamwoorden vertonen echter niet altijd congruentie met het woordgeslacht van het antecedent. Een bekend voorbeeld hiervan is het gebruik van een mannelijk of vrouwelijk voornaamwoord bij een onzijdig zelfstandig naamwoord dat verwijst naar een persoon. Zo kan in het Nederlands een mannelijk voornaamwoord *(hij/hem*) gebruikt worden bij een onzijdig nomen zoals *jongetje* of een vrouwelijk voornaamwoord (*zij/haar*) bij een onzijdige nomen zoals *meisje*. In dit geval vertoont het voornaamwoord zogenaamde 'semantische congruentie', congruentie die gebaseerd is op de eigenschappen van de referent in plaats van het lexicale geslacht van het zelfstandig naamwoord. Een ander, wellicht minder bekend, soort semantische congruentie in het Nederlands treedt op bij onbezielde referenten. De voorbeelden (1) en (2) hieronder laten dit fenomeen zien. In (1) wordt een mannelijk voornaamwoord, *hem*, gebruikt bij het onzijdige nomen *boek* en in (2) wordt een onzijdig voornaamwoord, *het*, gebruikt bij het commune nomen *gember*.

(1)   *Ik heb m'n boek nog niet uit, maar ik moet hem terugbrengen naar de bibliotheek.*

(2)   *Je kunt verse gember bijna overal krijgen, maar ik vind het vaak te duur.*

Deze voorbeelden illustreren een congruentiepatroon dat te maken heeft met de individueringsgraad van de referent. Referenten met een hoge mate van individuering hebben een duidelijk begrensde vorm, zoals personen, dieren en voorwerpen. Het *boek* in (1) is een voorbeeld hiervan. Referenten met een lage individueringsgraad hebben daarentegen juist een vage begrenzing, zoals abstracte

zaken en stoffen. Een voorbeeld hiervan is de *gember* in (2). In het Nederlands bestaat de tendens om met mannelijke en commune voornaamwoorden te verwijzen naar referenten die een hoge individueringsgraad bezitten en met onzijdige voornaamwoorden naar referenten die een lage individueringsgraad bezitten.

Dit proefschrift heeft als doel uit te zoeken wat de oorsprong van dit semantische congruentiepatroon in het Nederlands is, wanneer het zich heeft ontwikkeld en welke factoren betrokken zouden kunnen zijn bij het verschijnen ervan. Dit werk bestaat uit vier verschillende onderzoeken die bedoeld zijn om de wortels van dit fenomeen te ontdekken. Het eerste onderzoek verkent in hoeverre semantiek nog meer een rol speelt in het Nederlandse geslachtssysteem en of het systeem mogelijk een semantische oorsprong heeft. Het tweede onderzoek is een experimenteel onderzoek waarin het verwijsgedrag in het Nederlands wordt vergeleken met dat in het Duits. Het derde onderzoek is een historisch corpusonderzoek naar het voornaamwoordgebruik in het Middelnederlands. Het vierde, laatste, onderzoek betreft een experiment waarin het effect wordt onderzocht van geslachtsmarkering rond het nomen op de congruentie in voornaamwoorden.

Het resultaat van het eerste onderzoek laat zien dat de connectie tussen commuun geslacht en een hoge individueringsgraad, enerzijds, en onzijdig geslacht en een lage individueringsgraad, anderzijds, niet alleen bestaat bij voornaamwoorden, maar ook in het nominale domein. Hoewel de geslachtstoekenning aan zelfstandige naamwoorden grotendeels arbitrair is in het Nederlands, is er in sommige gevallen toch een semantisch patroon zichtbaar. Dit is met name het geval wanneer het geslacht van een zelfstandig naamwoord niet vastligt, maar kan variëren. Daarnaast is de connectie tussen onzijdig geslacht en lage individuering ook te zien in gevallen waarin het antecedent van een voornaamwoord geen zelfstandig naamwoord is maar, bijvoorbeeld, een predicaat. De bevindingen duiden erop dat de semantische interpretatie van de geslachten geen innovatie is van de voornaamwoorden, maar al langer onderdeel is van het Nederlandse geslachtssysteem. Er zijn zelfs aanwijzingen dat de semantische interpretatie van de geslachten teruggaat op hun oorsprong in het Proto-Indo-Europees. Wat hiermee in overeenstemming is, is dat semantische congruentie op basis van individuering niet alleen in het Nederlands wordt gevonden, maar ook in andere Germaanse talen, waaronder dialecten van het Engels, Fries en Deens, en in

Romaanse dialecten. De mogelijkheid bestaat dat het Proto-Indo-Europese geslachtssysteem een semantische basis had die verstoord is geraakt doordat nominaal geslacht niet langer een variabele waarde is, maar veelal een onveranderlijk, lexicaal opgeslagen kenmerk van zelfstandige naamwoorden. Dit maakt dat het geslacht van nomina niet altijd meer in overeenstemming is met hetgeen waarnaar ze verwijzen. Als gevolg hiervan kan er een conflict ontstaan tussen het lexicale geslacht van zelfstandige naamwoorden en het semantische geslacht dat bij hun referent past.

Het tweede, experimentele, onderzoek richt zich op de mogelijke relatie tussen het optreden van semantische congruentie op basis van individuering in voornaamwoorden en een verandering in nominale geslachtssysteem van Nederlands: de verandering van drie naar twee nominale geslachten door het samenvallen van het mannelijke en vrouwelijke woordgeslacht tot één commuun geslacht. Congruentie op basis van individuering is tot nu toe alleen gevonden in Germaanse talen waarin mannelijk en vrouwelijk geslacht, net als in het Nederlands, zijn samengevallen of waarin de woordgeslachten helemaal verdwenen zijn. Het tweede onderzoek bekijkt of semantische congruentie op basis van individuering ook plaatsvindt in het Duits, een Germaanse taal die nog wel drie woordgeslachten onderscheidt, en in hoeverre het verwijsgedrag in het Duits verschilt van dat in het Nederlands. Dit onderzoek betreft een Nederlandstalig en een Duitstalig voornaamwoord-elicitatie-experiment, waarin moedertaalsprekers van de twee talen worden uitgelokt om te verwijzen naar bepaalde referenten die van elkaar verschillen qua individueringsgraad. Uit dit onderzoek blijkt dat sprekers van het Duits, net als sprekers van het Nederlands, geneigd zijn onzijdige voornaamwoorden te gebruiken voor stoffen en abstracta, en mannelijke voornaamwoorden voor dieren. Het gebruik van mannelijke voornaamwoorden voor voorwerpen wordt echter alleen bij sprekers van het Nederlands gezien en ook is in het algemeen de frequentie waarmee semantisch gecongrueerd wordt veel hoger in het Nederlands dan in het Duits. De resultaten van dit onderzoek geven aan dat semantische congruentie op basis van individueringsgraad een gedeeld Germaans kenmerk is en dat het verschil tussen het Nederlands en het Duits met betrekking tot dit soort congruentie voornamelijk gradueel van aard is.

Het derde onderzoek betreft een corpusonderzoek naar de diachrone ontwikkeling van semantische congruentie in het Nederlands, gericht op de vraag of congruentie op basis van individuering al bestond in het Nederlands voordat het onderscheid tussen het mannelijke en vrouwelijke woordgeslacht verdwenen was. Dit onderzoek richt zich op het Middelnederlands en kijkt naar het gebruik van voornaamwoorden in Middelnederlandse receptenboeken uit het begin van de zestiende eeuw. De resultaten laten zien dat semantische congruentie op basis van individuering al in het Middelnederlands bestond, met name het gebruik van onzijdige voornaamwoorden voor stoffen. Het gebruik van mannelijke voornaamwoorden voor objecten wordt niet vertoond in het corpus. Semantische congruentie lijkt in het Middelnederlands alleen voor te komen bij referenten die ofwel heel hooggeïndividueerd zijn, zoals bezielde referenten, ofwel heel laaggeïndividueerd, zoals stoffen. Als de frequentie waarmee semantische congruentie voorkomt in het Middelnederlands wordt vergeleken met die in het huidige Nederlands, lijkt het erop dat semantische congruentie met de tijd is toegenomen.

Het laatste, experimentele, onderzoek, richt zich op een factor die een rol zou kunnen spelen bij zowel de diachrone toename van semantische congruentie als de synchrone variatie in de frequentie ervan tussen talen als het Nederlands en het Duits: de zichtbaarheid van lexicaal geslacht in het nominale domein. Het Nederlands is wat dit betreft veranderd en verschilt hierin nu van het Duits. Deflectieprocessen hebben in het Nederlands namelijk geleid tot een verlies van geslachtsmarkering op verscheidene elementen rond het nomen, zoals het onbepaalde lidwoord en de bezittelijke voornaamwoorden. In het vierde, laatste, onderzoek wordt gekeken of er een relatie bestaat tussen de markering van lexicaal geslacht in het nominale domein en de keuze tussen semantische en lexicale congruentie in het voornaamwoord. Dit onderzoek betreft een voornaamwoord-elicitatie-experiment met sprekers van het Nederlands, waarbij de testzinnen van elkaar verschillen in één cruciaal opzicht: Het antecedent van het voornaamwoord bevat een element dat het geslacht van het nomen markeert of een element dat dit juist niet doet. De resultaten laten zien dat de kans op semantische congruentie hoger is als het antecedent geen geslachtsmarkering bevat. Deze bevinding laat zien dat de afwezigheid van geslachtsmarkering in het nominale domein semantische

congruentie makkelijker naar boven laat komen. Dit effect kan zowel de synchrone variatie tussen semantische en lexicale geslachtscongruentie verklaren als de toename van semantische congruentie in het Nederlands door de tijd heen.

De resultaten van de vier onderzoeken die in dit proefschrift beschreven worden geven aan dat de semantische congruentie die tegenwoordig bij Nederlandse voornaamwoorden gezien wordt geen geïsoleerd fenomeen is, maar verband houdt met een bestaande semantische interpretatie van de geslachten, die mogelijk teruggaat op de semantische wortels van het geslachtssysteem. Congruentie op basis van individuering bestond al in het Middelnederlands en verschijnt in wisselende mate in andere Germaanse talen, waaronder het Duits. De starre aard van het lexicale geslachtssysteem, dat wil zeggen, het feit dat het lexicale geslacht van zelfstandige naamwoorden grotendeels vastligt en niet kan variëren, schept een conflict tussen het lexicale geslacht van nomina en het semantische geslacht dat geassocieerd wordt met hun referent. De mate waarin semantische congruentie kan verschijnen in voornaamwoorden, oftewel de ratio van semantische congruentie ten opzicht van lexicale congruentie bij voornaamwoorden, blijkt afhankelijk te zijn van de zichtbaarheid van lexicaal geslacht in het nominale domein. Aangezien dit aspect van het lexicale geslachtssysteem zowel synchrone als diachrone variatie vertoont, kan dit zowel het verschil in het voorkomen van semantische congruentie tussen talen verklaren als de toename ervan in het Nederlands door de tijd heen.

Biography

Margot Kraaikamp was born in Naarden, The Netherlands, on October 10th 1981. She graduated from high school St.Vituscollege in Bussum, with a focus on science and language courses, in 2000. After high school, Margot attended medical school at the University of Amsterdam (UvA), from which she graduated with a master's degree in 2004. Having a strong interest in the history of languages and a desire to explore the field of linguistics, Margot started the bachelor English Language and Culture at the UvA in 2004, which she combined with courses on language acquisition and language change from the bachelor's programme of Dutch Linguistics. Margot had found her field. An intended intermezzo during medical studies became a permanent career switch. Margot graduated cum laude in 2007 and followed up her bachelor's studies with the research master Linguistics at the UvA. She focused on topics pertaining to language change, including grammaticalization, analogy and cognitive models of language. During her master's studies, Margot held several jobs at the UvA, as a research assistant at the department of General Linguistics and as a teaching assistant at the department of Dutch Linguistics. Margot graduated cum laude with a master's degree in 2010. Later that year, Margot started a joint appointment as a lecturer and a PhD candidate at the UvA. This dissertation is the result of Margot's PhD research.