

*Mémoires de la Société Néophilologique de Helsinki*  
édités par Päivi Pahta, Annikki Liimatainen et Meri Larjavaara

Tome CI



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**Challenges in Categorization:**  
Corpus-based Studies of Adjectival Premodifiers  
in English

by

Turo Vartiainen

*Academic dissertation to be publicly discussed, by due permission of the Faculty of Arts at the University of Helsinki, in auditorium XIII, on the 14th of October, 2016, at 12 o'clock.*

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## Preface

Academic research is an inherently collaborative effort. Many people who have had a direct impact on the research presented in this thesis will find their names listed in the bibliography below, but there are also many others whom I wish to thank; people who have contributed to the work presented in this book in more indirect, yet important ways. Although a few short lines of thanks cannot properly express my gratitude to all of you, I wish to try anyway.

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As a member of the *Research Unit of Variation, Contacts and Change in English* (VARIENG), I have had the possibility to work with a number of experts on historical corpus linguistics. VARIENG has been, and continues to be, a wonderful research community, which has inspired many of the research questions that are presented in this thesis. On a more practical level, VARIENG has provided the necessary infrastructure and funding without which it would have been very difficult for me to focus on research. I also thank VARIENG for financially supporting the printing of this book; in the current economic situation, this kind of support is particularly appreciated.

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# Contents

Preface.....	v
Contents .....	vii
List of tables.....	x
List of figures .....	xii

## PART I: INTRODUCTION AND BACKGROUND

1. Introduction.....	1
1.1. Research questions.....	3
1.2. Structure of the thesis .....	3
1.3. Provenance of the studies and division of labour.....	5
2. Theories of Categorization .....	7
2.1. Relevance of categorization.....	7
2.2. The classical theory of categorization.....	11
2.3. Advances in the 19 <sup>th</sup> and 20 <sup>th</sup> centuries.....	14
2.4. Categories in linguistic research .....	19
2.5. Issues in word class categorization .....	28
2.6. Relevance of subjectivity/subjectification to categorization and category change.....	38
3. Methodology and data.....	44
3.1. Corpus linguistics .....	44
3.2. Corpora and databases .....	49
4. Concluding remarks .....	53

## PART II: STUDIES

### 5. Telicity and the premodifying *-ing* participle in English **Virhe. Kirjanmerkkiä ei ole määritetty.**

5.1. Introduction..... **Virhe. Kirjanmerkkiä ei ole määritetty.**

5.2. Adjectival and verbal participles **Virhe. Kirjanmerkkiä ei ole määritetty.**

- 5.3. Verbal participles ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 5.3.1. Telicity..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 5.3.2. Activities and accomplishments ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 5.3.3. Achievements ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 5.4. Concluding remarks..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
6. Premodifying *-ing* participles in the parsed BNC **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 6.1. Introduction..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 6.2. BNC-XML and the parsed BNC **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 6.3. Premodifying *-ing* participles in the BNC .... **Virhe. Kirjanmerkkiä ei ole määritetty.**
7. Subjectivity, indefiniteness and semantic change **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 7.1. Introduction..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 7.2. Theoretical background ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 7.3. Descriptive adjectives and article usage: A preliminary investigation  
..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 7.4. The effect of subjective expressions of degree on article usage ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 7.4.1. ART + *very* + ADJ + N-Sg **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 7.4.2. ART + *much* + ADJ-comp + N-Sg ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 7.5. Subjective and objective polysemies ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 7.5.1. *Moving*..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 7.5.2. *Glowing* ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 7.6. Diachronic studies..... **Virhe. Kirjanmerkkiä ei ole määritetty.**



- 7.6.1. *Outstanding* ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 7.6.2. *Key*..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 7.7. Conclusions..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
8. Evaluative nominals in Present-day English: A corpus-based study of the definiteness and syntactic distribution of subjective and objective NPs ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 8.1. Introduction..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 8.2. Subjectivity and subjective NPs **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 8.3. Methodology and data ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 8.4. Case studies ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 8.4.1. Definite and indefinite determiners with subjective and objective premodifiers ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 8.4.2. Subjective and objective nouns ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 8.4.3. Syntactic roles of indefinite subjective and objective NPs ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 8.6. Conclusion ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
9. A constructionist approach to category change: Constraining factors in the adjectivization of participles ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 9.1. Introduction..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 9.2. Theoretical background ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 9.3. Data..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 9.3.1. The constructions studied .. **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 9.3.2. Data selection, corpora, and databases .. **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 9.4. Case studies ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 9.4.1. The N-*Ving* construction... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- 9.4.2. The ADJ-*looking* construction..... **Virhe. Kirjanmerkkiä ei ole määritetty.**

9.5. Changes in degree modification patterns .....	<b>Virhe. Kirjanmerkkiä ei ole määritetty.</b>
9.6. Discussion and conclusions .....	<b>Virhe. Kirjanmerkkiä ei ole määritetty.</b>
PART III: CONCLUSION	
10. Summary of findings and concluding remarks .....	191
Bibliography .....	199



## List of tables

Table 3.1.	Corpora and databases used in the empirical part of the thesis ..... 50
Table 6.1.	Adjectival and verbal participles. <b>Virhe. Kirjanmerkkiä ei ole määritetty.</b>
Table 6.2.	Statistics for the training data set based on texts A6G, B06 and C8A. <b>Virhe. Kirjanmerkkiä ei ole määritetty.</b>
Table 6.3.	Data included in the study ..... <b>Virhe. Kirjanmerkkiä ei ole määritetty.</b>
Table 7.1.	ART + ADJ + N-Sg in the BNC. <b>Virhe. Kirjanmerkkiä ei ole määritetty.</b>
Table 7.2.	The distribution of definite and indefinite articles with some high frequency adjectives ..... <b>Virhe. Kirjanmerkkiä ei ole määritetty.</b>
Table 7.3.	Article distribution in subjective adjectival premodifiers of different frequencies ..... <b>Virhe. Kirjanmerkkiä ei ole määritetty.</b>
Table 7.4.	Article distribution in objective adjectival premodifiers of different frequencies ..... <b>Virhe. Kirjanmerkkiä ei ole määritetty.</b>
Table 7.5.	ART + <i>very</i> + ADJ + N-Sg ..... <b>Virhe. Kirjanmerkkiä ei ole määritetty.</b>
Table 7.6.	The proportion of definite and indefinite articles in the ART + <i>very</i> + ADJ + N-Sg pattern ..... <b>Virhe. Kirjanmerkkiä ei ole määritetty.</b>
Table 7.7.	Article distribution in the ART + ADJ-comp + N-Sg construction with ten frequent adjectival modifiers ..... <b>Virhe. Kirjanmerkkiä ei ole määritetty.</b>
Table 7.8.	ART + <i>much</i> + ADJ-comp + N-Sg ..... <b>Virhe. Kirjanmerkkiä ei ole määritetty.</b>
Table 7.9.	Article distribution with subjective and objective senses of <i>moving</i> ..... <b>Virhe. Kirjanmerkkiä ei ole määritetty.</b>
Table 7.10.	Post-modified definite NPs with <i>moving</i> ..... <b>Virhe. Kirjanmerkkiä ei ole määritetty.</b>
Table 7.11.	Definite and indefinite articles with different senses of <i>glowing</i> ..... <b>Virhe. Kirjanmerkkiä ei ole määritetty.</b>
Table 7.12.	Positive and neutral readings of <i>outstanding</i> in singular NPs, 1910–2009 ..... <b>Virhe. Kirjanmerkkiä ei ole määritetty.</b>
Table 7.13.	<i>Outstanding</i> as ‘standing out in a positive way’ or ‘exceptionally good’ in singular NPs ..... <b>Virhe. Kirjanmerkkiä ei ole määritetty.</b>
Table 8.1.	The subjective and objective premodifiers studied <b>Virhe. Kirjanmerkkiä ei ole määritetty.</b>
Table 8.2.	The subjective nouns studied (words of offence). <b>Virhe. Kirjanmerkkiä ei ole määritetty.</b>
Table 8.3.	The objective nouns studied (professions) ..... <b>Virhe. Kirjanmerkkiä ei ole määritetty.</b>

- Table 8.4. Definite and indefinite determiners with subjective premodifiers..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- Table 8.5. Definite and indefinite determiners with objective premodifiers ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- Table 8.6. Definite determiners with subjective premodifiers **Virhe. Kirjanmerkkiä ei ole määritetty.**
- Table 8.7. Definite determiners with objective premodifiers **Virhe. Kirjanmerkkiä ei ole määritetty.**
- Table 8.8. Definite and indefinite determiners with subjective nouns ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- Table 8.9. Article use with objective nouns. **Virhe. Kirjanmerkkiä ei ole määritetty.**
- Table 8.10. Definite determiners with simple and premodified subjective NPs..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- Table 8.11. The distribution of indefinite NPs with subjective and objective premodifiers across syntactic roles..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- Table 8.12. The distribution of indefinite subjective NPs with a degree modifier across syntactic roles..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- Table 8.13. The distribution of indefinite NPs with subjective nouns across syntactic roles..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- Table 9.1. Corpora and databases used in the case studies **Virhe. Kirjanmerkkiä ei ole määritetty.**
- Table 9.2. *Awe-inspiring*: attributive and predicative uses (1830–2009) ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- Table 9.3. *Mind-boggling*: attributive and predicative uses (1960–2009) ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- Table 9.4. *Earth-shattering, gut-wrenching, heart-wrenching, jaw-dropping, mind-bending* and *mind-blowing*: attributive and predicative uses (1990–2009) ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- Table 9.5. *ADJ-looking*: attributive and predicative uses and human/inanimate referents (1700–1799) ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- Table 9.6. *Good-looking* and other *ADJ-looking* micro-constructions: human and inanimate referents (1830–2009). **Virhe. Kirjanmerkkiä ei ole määritetty.**
- Table 9.7. *Good-looking* and other *ADJ-looking* micro-constructions: attributive and predicative uses (1830–2009). **Virhe. Kirjanmerkkiä ei ole määritetty.**
- Table 9.8. The proportion of overtly expressed stimulus/agent arguments with *-ed* participles, (1830–2009) **Virhe. Kirjanmerkkiä ei ole määritetty.**
- Table 9.9. Adjectival *-ed* participles: frequency of *very* and (*very*) *much* (1830–2009) ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**

- Table 9.10. *Annoyed, surprised, and worried*: proportion of attributive and predicative uses with a degree modifier (1830–2009) ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- Table 9.11. *N-Ving* and *ADJ-looking*: proportion of attributive and predicative uses with a degree modifier (1830–2009) ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**



## List of figures

- Figure 6.1. Precision vs. recall trade-off for different variables. **Virhe. Kirjanmerkkiä ei ole määritetty.**
- Figure 6.2. The frequency of the premodifying *-ing* participle in different registers ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- Figure 6.3. The frequency of verbal participles in different registers and the proportion of verbal *-ing* participles of all premodifying *-ing* participles. **Virhe. Kirjanmerkkiä ei ole määritetty.**
- Figure 6.4. The number of unique participles in academic prose and fiction and the type/token ratio in academic prose and fiction ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- Figure 7.1. Prenominal *outstanding*: the proportion of positive readings and the proportion of indefinite NPs of the positive readings and all senses..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- Figure 7.2. The frequency of the definite and indefinite articles with *key* as a premodifier (1910–2009) ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- Figure 9.1. *Troubled*: Proportion of predicative uses and overtly expressed stimulus/agent arguments with predicatives, 1500–1710 (PCEME), 1710–1850 (CLMET), 1850–2009 (COHA) ..... **Virhe. Kirjanmerkkiä ei ole määritetty.**
- Figure 9.2. Adjectival *-ed* participles (*troubled* excluded): proportion of predicative uses and overtly expressed stimulus/agent arguments..... **Virhe. Kirjanmerkkiä ei ole määritetty.**



## **PART I: INTRODUCTION AND BACKGROUND**



## 1. Introduction

This thesis draws together a series of articles on premodifying *-ing* participles and adjectives in English. The studies are intended to contribute to our understanding of a variety of topics, including the meaning and function of participles and other adjectival premodifiers, their use in different registers, and their change over time. The overarching topic that connects all the articles thematically is linguistic categorization, which is here understood as a process of abstraction through which language users group linguistic elements together according to their form, meaning, function and patterns of use. Some of the articles discuss categories and categorization in terms of word classes (adjectives/verbs), while the focus of others is on semantic categorization (subjective/objective premodifiers) or the categorization of linguistic registers based on the distribution of premodified noun phrases. On the one hand, then, this thesis bears on the general discussion of the nature of linguistic categorization and category change. On the other hand, it continues a series of descriptions and analyses of adjectival premodifiers in contemporary research and the large reference grammars of Present-day English.

Categories and categorization are at the heart of linguistic analysis: word classes like Noun, Verb and Adjective form the basis of structural description in most linguistic frameworks, both formal and functional. However, questions of what kinds of entities word classes and other linguistic categories actually are and how they are organised have attracted relatively little attention in the history of linguistics (Aarts 2007a: 10). In recent decades, however, there has been growing interest in categorization thanks to new insights from the fields of philosophy and psychology. The received view of the ontology of categories has been called into question by the notion of family resemblance (Wittgenstein 1953) and prototype theory (e.g. Rosch 1978, Taylor 2003), which both propose that the traditional way of conceptualising all categories as discrete entities with sharp boundaries cannot be right. Instead, categories may exhibit both intra- and inter-categorical gradience, and membership in a category is not determined by a set of properties that can be listed as necessary and sufficient conditions for category inclusion. These insights have had a significant impact on the field of linguistics, where new kinds of research questions have begun to be asked. Especially interesting and relevant to the topic of this thesis is the recent and still ongoing debate over the ontology of word classes, which has focused on gradience within and between categories (see e.g. Newmeyer 1998; Aarts 2004, 2007a, 2007b; Denison 2001, 2006, 2010; Croft 2007; Traugott and Trousdale 2010).

This thesis started out as a study of a category that exhibits both adjectival and verbal properties in Present-day English: the premodifying *-ing* participle

(e.g. an *interesting* play, the *advancing* enemy). The first two studies, which are presented in Chapters 5 and 6, focus solely on the structure, meaning and use of *-ing* participles. However, the research questions addressed in Chapters 7, 8 and 9 are more global in nature, and the data explored in these studies are consequently more varied: Chapter 7 examines adjectives more generally, while Chapters 8 and 9 include analyses of nouns and *-ed* participles in addition to *-ing* participles. The investigation of these additional data is motivated by two reasons: first, as research progressed it became clear that some of the results obtained for the *-ing* participles were not limited to participles only, and hence they should also be discussed in relation to other word classes and constructions. Second, considering the general nature of the research questions addressed in these chapters, the inclusion of the additional data serves to substantiate the argumentation. Nevertheless, *-ing* participles are discussed in every article included in this thesis, even if they do not hold centre stage in all of them.

All the studies included in this thesis follow the principles of empirical, usage-based linguistics, and they make extensive use of both synchronic and diachronic corpora. However, with the exception of Chapter 9, which follows the tenets of Construction Grammar, they are not tied to a specific linguistic theory. Instead, the data are discussed from different perspectives, and the analyses adopt insights from several theoretical frameworks, exploring how existing theories can be applied to the study of adjectival premodifiers in new ways. For example, in Chapters 7 and 8 the data are analysed in terms of subjectivity and subjectification on the one hand, and the current theories of information structure on the other. To my knowledge, the distribution and semantic change of adjectival premodifiers has not been discussed from this perspective in previous literature, and it is my hope that the explorative nature of the research introduced in these chapters may provide new perspectives to the contemporary research of premodifiers.

The research presented in this thesis was carried out under the aegis of the *Research Unit for Variation, Contacts and Change in English* (VARIENG), and the individual research questions have been influenced by the topics of research that have formed the backbone of the VARIENG community: (diachronic) corpus linguistics, corpus compilation and corpus annotation. All the studies included in this thesis are corpus-based, and many of them discuss how the findings could be applied to more practical tasks, such as corpus annotation and automatic register analysis. However, practical applications only serve a secondary purpose (Chapter 6 being something of an exception), and the main aim of the studies is to provide new information about adjectival premodifiers, especially *-ing*

participles, which are in many ways interesting from the perspective of categorization: not only do they allow for analyses at different levels of linguistic organisation but they also bear on some central questions regarding the nature of linguistic categories.

### 1.1. Research questions

The most important research questions investigated in this thesis are listed below. The chapters where these questions are explored in more detail are indicated in parentheses.

- (1) Should all premodifying *-ing* participles be categorized as members of a single word class? Are there grounds for analysing *-ing* participles as adjectives and verbs? (especially Chapters 5 and 6; also 7)
- (2) How should *-ing* participles be analysed semantically? (Chapters 5 and 7 in particular)
- (3) Are there preferred structures where subjective adjectives and participles are used? Can knowledge of these structures be used to study semantic change (Chapters 7, 8 and 9)?
- (4) How should category change of complex *-ing* participles (e.g. *awe-inspiring*, *modest-looking*) be described and analysed? How can a constructionist network model contribute to research on category change? (Chapter 9)
- (5) How well-suited are the current theories of context types to the study of the category change of participles? What is the role of ambiguous contexts in category change? (Chapter 9)

### 1.2. Structure of the thesis

This thesis is structured as follows. Part II provides a survey of the relevant literature on categorization theory and word class categorization in English. Chapter 2 starts with a general discussion on the relevance of categorization to humans. It also introduces the most influential theories of categorization: the classical “Aristotelian” theory as opposed to some modern developments, such as prototype theory, which have challenged the way we think about both conceptual

and linguistic categories. The chapter also includes a survey of linguistic categories and word classes as they have been understood in recent research. This historical review is by no means intended to provide a comprehensive account of the recent history of linguistics; the point is rather to illustrate trends in research and problems in linguistic categorization by means of relevant and influential theories and studies (for detailed discussions of the history of linguistics in the Western world and in the United States, see e.g. Seuren 1998 and Newmeyer 1986, respectively). I will conclude Chapter 2 by connecting the general issues in categorization and category change to semantic subjectivity and subjectification, which will hold a central role in the studies reported in Chapters 7 and 8.

Chapter 3 focuses on methodological questions with special reference to corpus linguistics. After a review of corpus linguistics as a methodology, the chapter introduces the corpora and databases used in the empirical part of this thesis. Chapter 4 concludes Part I by providing a short summary of the previous discussion in anticipation to the studies presented in Chapters 5 to 9.

The studies included in Part II address various questions regarding the categorization, grammar and use of adjectival premodifiers. Chapter 5 starts by taking issue with the semantic analysis of *-ing* participles in *A Comprehensive Grammar of the English Language* (Quirk et al. 1985). The study discusses some morphosyntactic differences between adjectival and verbal *-ing* participles and investigates the meaning of verbal *-ing* participles from the perspective of aspectual theory. Chapter 6 continues this line of inquiry, exploring the use of adjectival and verbal *-ing* participles in different registers. This chapter also introduces the register as a relevant factor in categorization: adjectival and verbal participles are used with different frequencies in different registers, a tendency which can be taken as further evidence of a category split. Chapter 7 studies the relevance of subjectivity to the distribution of adjectival *-ing* participles and other adjectives in definite and indefinite noun phrases and investigates the subjectification of some *-ing* participles in more detail. Chapter 8 extends the research question studied in Chapter 7 to subjective nouns and examines what the typical syntactic functions of subjective NPs are in discourse. Finally, Chapter 9 concludes part III by presenting a synchronic and diachronic analysis of three participle constructions in the framework of Construction Grammar. The data are studied with special reference to the role of context in language change, and the results of the study suggest that ambiguous contexts of use, which are typically considered to facilitate language change, may also promote stability by maintaining a connection to the source structure of the construction undergoing change.

The individual studies are followed by conclusions in Chapter 10, which includes a summary of the most important results of this thesis as well as suggestions for future research.

### **1.3. Provenance of the studies and division of labour**

The studies presented in Chapters 5 to 9 have all been published in peer-reviewed journals or edited volumes. The original publications are listed below, and they are reprinted in this thesis with the kind permission of the publishers. With the exception of Chapter 6 (*Premodifying participles in the parsed BNC*), which was co-written with Jeffrey Lijffijt, I am the sole author of all the studies. In the study reported in Chapter 6, Jeffrey Lijffijt was responsible for writing the script with which the data were extracted, and he also wrote section 6.2. in its entirety. I was responsible for the planning of the research question and the linguistic analysis of the data, and I also wrote the article apart from section 6.2.

#### **Chapter 5**

Vartiainen, Turo. 2012. Telicity and the premodifying *-ing* participle in English. In Sebastian Hoffmann, Paul Rayson and Geoffrey Leech (eds.), *English corpus linguistics: Looking back, moving forward*, 217–233. Amsterdam: Rodopi.

#### **Chapter 6**

Vartiainen, Turo and Jeffrey Lijffijt. 2012. Premodifying *-ing* participles in the parsed BNC. In Joybrato Mukherjee and Magnus Huber (eds.), *Corpus linguistics and variation in English: Theory and description*, 247–258. Amsterdam: Rodopi.

#### **Chapter 7**

Vartiainen, Turo. 2013. Subjectivity, indefiniteness and semantic change. *English Language and Linguistics* 17(1): 157–179.

#### **Chapter 8**

Vartiainen, Turo. 2016a. Evaluative nominals in Present-day English: A corpus-based study of the definiteness and syntactic distribution of subjective and objective NPs. *Folia Linguistica* 50(1): 243–268.

**Chapter 9**

Vartiainen, Turo. 2016b. A constructionist approach to category change: Constraining factors in the adjectivization of participles. *Journal of English Linguistics* 44(1): 34–60.



## 2. Theories of Categorization

### 2.1. Relevance of categorization

Categorization is a fundamental cognitive process by which humans obtain and organise knowledge (Mareschal and Quinn 2001: 443; Cohen and Lefebvre 2005: 2). Our everyday lives are full of situations where we categorize different entities and properties into groups. For example, most of us drink our morning coffee from a *cup* or a *mug* instead of a *glass* or another kind of container. We differentiate buses from other vehicles – an important skill if we take the bus to work every morning. We choose our attire depending on the weather; if it is cold and moist we wear a *coat* and a *scarf*. If the weather is hot and sunny, we will need a *t-shirt* and *sunglasses*. These choices, and countless others that we make during the day, all require categorization: acts of conscious or unconscious differentiating and grouping of things and properties. It is important to note that categories like *cup*, *mug* or *bus* are in fact abstractions over sets of instances (Harnad 2005: 20). *Buses*, for example, come in different shapes and sizes, makes and models, and we perceive them at different angles, either as stationary or moving. Yet we typically have no problem in identifying a bus when we see one. The ability to abstract away from instances and to form categories allows us to make sense of the world so that the stimuli we receive do not overwhelm us; if we only paid attention to minute details, we would not be able to function properly (Rosch 1978).

The ability to form categories has also been a key feature in human biological and cultural evolution (e.g. Tomasello 1999; Vidic and Haaf 2004: 187). Arguably, it must have been crucially important for our ancestors to be able to distinguish dangerous animal species from harmless ones or poisonous plants from edible ones. Likewise, categorizing other humans as members of certain social groups, such as the family or the tribe, has facilitated the survival of both the individual and the species, and social categorization continues to be highly relevant in our modern society. For example, people's identities are in part constructed in terms of in-group and out-group relations. In-groups are typically defined in positive terms, which helps the group members reinforce their self-esteem. Out-groups, by contrast, are perceived more critically, and the evaluation of their members is often based on negative stereotypes (see e.g. Tajfel 1974; Tajfel and Turner 1986). An interesting linguistic consequence of this intergroup categorization is that both the desirable qualities of the in-group and the undesirable qualities of the out-group are usually described in a relatively abstract way (e.g. *we are smart, they are stupid*), whereas the undesirable qualities of the

in-group and the desirable qualities of the out-group are described in more concrete terms (e.g. *we should spend less money on candy, one of them paid for my coffee last Tuesday*; see Maass et al. 1989). The propensity to divide people into categories is deeply entrenched in us even when the categorization serves no purpose at all. For example, in a classic study by Billig and Tajfel (1973) the test subjects were divided into two groups on a completely random basis. They were then told that the group division had no significance whatsoever: the subjects would in no way benefit from group membership. Despite this, the subjects exhibited strong in-group favouritism in subsequent testing, suggesting that the mere mention of a “group” was enough to trigger the kind of group behaviour that the researchers only assumed to become evident in truly meaningful in-group vs. out-group distinctions (see also Hornsey 2008).

Categorization has also been extensively studied in the field of developmental psychology. The significance of categorization can already be seen in the behaviour of neonates, suggesting that some of the categorization skills that are especially important for our survival already develop in utero. For example, Goren et al. (1975) found that newborn babies with a mean age of nine minutes paid more attention to head-shaped stimuli whose configuration resembled a human face than to stimuli with garbled configurations (see Mondloch et al. 1999 for similar results). Moreover, in a study by Bushnell et al. (1989) neonates were able to distinguish their mother’s face from other faces at the age of four days (see also Pascalis et al. 1995). In other words, neonates must already have formed some kind of primitive categories for *human face* and *mother*. Both results have been interpreted in evolutionary terms: considering the helpless state in which children are born into this world, it is crucial that they are able to recognize a human face, especially that of their mother’s (see Pascalis and Kelly 2009).<sup>1</sup>

Other studies on neonate and infant categorization have found that neonates prefer human speech to other auditory stimuli, and that they prefer their mother’s voice to the voice of other women (DeCasper and Fifer 1982; Ferry et al. 2010). Like face recognition, these are examples of perceptual biases that can be taken as instances of early categorization, even if the distinctions made are relatively rudimentary. Indeed, categorization in early development seems to be largely based on perception, but in later development these categories become enriched

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<sup>1</sup> The neonates’ predisposition to human faces and face-like objects is probably a consequence of their touching their own face in utero (Pascalis and Kelly 2009: 202–203).

and less dependent on visual or auditory stimuli (see e.g. Mareschal and Quinn 2001: 447; French et al. 2004). As children develop, their categorizations become more complex, and the categories they form are based on information from various sensory domains (Westermann and Mareschal 2014).

Interestingly, categorization is also affected by category labels (words that name entities; e.g. *daddy*, *doggy*) even before children produce their first words. Infants have been found to pay more attention to a target object that is given a name than to an unnamed object (Waxman 1999), and this heightened attention has been taken as evidence of a label's facilitative effect on categorization. Plunkett et al. (2008) found that when 10-month-old infants were exposed to a category label (an auditory stimulus) that was congruent with a visual stimulus (an image in a cartoon drawing), they formed the category as expected. However, when the category label did not match the visual stimulus, categorization was inhibited. In other words, as children's capacity to understand and produce language evolves, their categorization capabilities become affected and enriched by language. As Westermann and Mareschal (2014) put it, children move "from perceptual to language-mediated categorization".

When it comes to the learning of lexical categories, many studies have shown that English-speaking children generally learn nouns earlier than verbs or adjectives (e.g. Gentner 1981; McDonough et al. 2011; see also Gentner and Boroditsky 2001 for similar results on other languages). Gentner (1981: 55) explains this preference by perceptual and semantic factors, pointing out that all children's early nouns are either concrete or proper nouns. Abstract and relational nouns are learned later in development, and children may at first understand relational nouns as non-relational. For instance, Keil (1989, as reported in Gentner and Boroditsky 2001: 222) found that pre-schoolers typically understood the noun *uncle* as 'a friendly man with a pipe', and the relational kinship meaning was only acquired later. In other words, the organisation of children's lexical categories becomes more complex as their cognitive development progresses.<sup>2</sup>

More recently, Golinkoff and Hirsh-Pasek (2008) have suggested that the ease of vocabulary learning is connected to the "imageability" of the concepts denoted by the words. According to this view, children will learn a word earlier if it is easy for them to form a mental image of its referent. This hypothesis not only explains why concrete nouns are learned before abstract nouns but also why instrument and action verbs (e.g. *eat*, *jump*, *hug*) are learned earlier than path

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<sup>2</sup> Indeed, it has been suggested that the low number of verbs and adjectives in children's early vocabulary is a consequence of the late development of relational meanings in general (see Stolt et al. 2008: 262).

verbs (e.g. *exit*, *ascend*) or mental verbs (e.g. *think*, *believe*) (Golinkoff and Hirsh-Pasek 2008: 400). From the perspective of categorization theory, these results emphasise the role of the child's general cognitive development in the formation of linguistic categories, but they are also interesting from another perspective: the difficulty of learning certain kinds of nouns and verbs can be taken as an indication of intra-categorical gradience, at least in those models of language where semantics is assumed to play a role in word class categorization. If all category members were equally good representatives of their category, there would be no reason to assume that some of them would be harder to learn than others (see sections 2.3 and 2.4).

Considering the fundamental importance of categorization to humans and the extensive body of psychological research on categorization, it is somewhat surprising that there is still no consensus on what kinds of entities categories actually are and what role categorization plays in language and language acquisition. Furthermore, the extent to which one's first language affects categorization is still debated. Is categorization simply a discovery procedure, where we map pre-existing, immutable properties of the real world onto our conceptual scaffolding, or is our role as the actual categorizers more important than that? To what extent are the categories that we form affected and constrained by our perceptual and cognitive capacities? What about language, then? Are linguistic categories part of our biological make-up, and is language structure primarily constrained by biology (e.g. Chomsky's "Universal Grammar", Pinker's "language instinct"),<sup>3</sup> or is linguistic categorization guided by our general cognitive capacities and learning mechanisms?

These questions are fundamental to the contemporary theories of language, and the answers to them vary dramatically depending on one's theoretical bent. Because of this, I will now move on to review the relevant literature on categorization theory. I will first introduce the "classical" theory of categorization, which has influenced philosophical and linguistic discussions since antiquity. I will then continue to investigate some influential studies that have had a significant impact on the theory of categorization. These new ideas first took form in Wittgenstein's philosophical work (1953), and they were further elaborated and developed by cognitive psychologists in the 1960s and 1970s (most significantly by Eleanor Rosch and her colleagues). As will be discussed below, part of the linguistic community has embraced these new theories and

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<sup>3</sup> See e.g. Chomsky (1986, 1995); Pinker (1994). See also Dąbrowska (2015) for a recent discussion of Chomsky's Universal Grammar.

studied them with great enthusiasm, while others have downplayed their significance and kept the classical theory of categorization at the heart of their work.

## 2.2. The classical theory of categorization

The origin of the so-called “classical theory” of categorization is typically traced back to Aristotle’s work, especially to his two treatises *Categories* (Κατηγορίαι) and *Metaphysics* (Τὰ μετὰ τὰ φυσικά; see e.g. Lakoff 1987: 6; Taylor 2003: 20; Aarts 2007a: 11). Aristotle’s theory of categorization has been highly influential in the Western world; as Lakoff (1987: 6) puts it, the classical theory was accepted as “an unquestionable, definitional truth”. In other words, practically all work involving categorization, both in philosophy and in other disciplines, such as linguistics, has been based on a philosophical position that remained unchallenged and untested for over two thousand years.

To be completely accurate, the central ideas of the classical theory of categorization are already expressed in Plato’s *Statesman* (Πολιτικός). Consider the following quotes (emphases mine):

“It was very much as if, in undertaking to divide the human race into two parts, one should make the division as most people in this country do; **they separate the Hellenic race from all the rest as one**, and to all the other races, which are countless in number and have no relation in blood or language to one another, **they give the single name “barbarian”**; then, because of this single name, they think it is a single species.” (262c–262d)

“But indeed, my most courageous young friend, perhaps, if there is any other animal capable of thought, such as **the crane** appears to be, or any other like creature, and it perchance gives names, just as you do, **it might in its pride of self oppose cranes to all other animals, and group the rest, men included, under one head, calling them by one name, which might very well be that of beasts.**” (263d)

“The tame walking animals which live in herds are **divided by nature** into two classes. [...] one class is naturally without horns, and the other has horns.” (265b)

“... when a person at first sees only the unity or common quality of many things, he must not give up until he sees all **the differences in them**, so far

as they exist in classes; and conversely, when all sorts of dissimilarities are seen in a large number of objects he must find it impossible to be discouraged or to stop until he has gathered into one circle of **similarity** all the things which are related to each other and has included them in some sort of class **on the basis of their essential nature**.<sup>4</sup> (285a–285b)

In the above quotes a mysterious stranger educates Socrates about categorization. He makes three points which are central to the classical theory of categorization. First, in 262c–262d and 263d, he implies that categories are objective: they exist independently of the categorizer. If this were not the case, all categories would be unstable. The example the stranger gives is, interestingly enough, a distinction between an in-group and an out-group. He points out that the Hellenes categorize themselves as one group and all other people as barbarians. However, if a crane was intelligent enough, it could make a similar distinction with one significant difference: now the Hellenes would be included in the out-group (“beasts”). In other words, categories would be subject to constant variation, which to Plato was unacceptable. Aristotle gives a similar example in *Metaphysics* (IV 5, 1009a), pointing out that people may form entirely opposite judgements of things (e.g. that the same orange may taste sweet to one person and bitter to another), and he argues that both judgements cannot be true at the same time. In philosophy, this position is known as the “law of the excluded middle”: “it is impossible at once to be and not to be” (*Metaphysics* III, 996b; see e.g. Whitehead and Russell 1963: 7–8).

In Plato’s *Statesman*, the true ontology of categories is discussed in 265b and 285a–285b. Here, Plato argues that categories are the way they are “on the basis of their essential nature”. For example, tame walking animals with horns are “by nature” distinct from those without horns. According to Plato, these true categories can be discovered by carefully studying the similarities and differences between entities. So, the essential properties that make up a category are pre-given, and the role of the human in the categorization process is to discover these properties: the necessary and sufficient conditions for category membership. An example of such conditions is given by Aristotle in *Metaphysics*. *Man*, according to Aristotle, is a “two-footed animal”. The category *man* therefore includes all

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<sup>4</sup> Plato: *Statesman*, 285a–285b. Plato in Twelve Volumes, Vol. 12 translated by Harold N. Fowler. Cambridge, MA, Harvard University Press; London, William Heinemann Ltd. 1921.

two-footed animals and nothing more. Conversely, an entity either is man or it is not, and that is the end of it; there is no gradience within or between categories.

The basic tenets of the classical theory of categorization can now be summarized:

- i) Categories exist objectively, i.e. independently of the categorizer.
- ii) Category membership is determined by necessary and sufficient conditions (e.g. *two-footed* + *animal* = *man*).
- iii) Categories have sharp boundaries. (the law of the excluded middle)
- iv) Category membership is not a matter of degree: all members are equally representative of their category.<sup>5</sup> (the law of the excluded middle)

As we shall see below, the classical theory of categorization has been heavily criticized in recent decades, and I agree that it is an untenable position when taken in its original form. However, as argued in Aarts (2007a), some of the basic ideas of the classical theory can be useful in linguistic analysis if they are interpreted from a different perspective. For instance, necessary and sufficient conditions can be reinterpreted as contributing to the prototype or exemplar-based organisation of a word class (see below), and discrete category boundaries can be used to focus attention on the central members of the category (see also Taylor 1998; 184–185). This is also what I have done in Chapters 5 and 6, where *-ing* participles are divided into two groups, adjectival and verbal participles, according to their distribution. The reader should bear in mind that this division should not be understood as an acceptance of the classical theory of categorization: I do not believe that categories like Adjective or Verb are pre-given or that we can arrive at these categories by discovering the necessary and sufficient properties on which they are based. Indeed, the diachronic studies in Chapters 7 and 9 show that category change from verbal to adjectival participles is a gradual process, which in itself challenges the classical idea that categories have no internal structure. Furthermore, the constructionist approach taken in Chapter 9 assumes that word classes are in fact emergent categories (see section 2.5 below; also Hopper 1987): they arise from actual patterns of use and should be understood as epiphenomenal rather than fundamental. I will return to this

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<sup>5</sup> This last claim is only true of entities (or “substances”, using Aristotle’s terminology). It does not concern qualities or quantities (*Categories*, Chapter 1).

issue in more detail at the end of this chapter, where I discuss how the studies included in this thesis relate to categorization theory.

### 2.3. Advances in the 19<sup>th</sup> and 20<sup>th</sup> centuries

The classical theory of categorization was generally accepted as a basic truth in all Western science until the mid-20th century. However, glimpses of a new theory of categorization can already be seen in the works of William Whewell (1843) and John Stuart Mill (1843) (see Sowa 2013). Whewell argued that some biological categories are in fact imprecise; for example, in the rose tree family, “the ovules are *very rarely* erect and the stigmata are *usually* simple” (Wilkins 2009: 55; emphasis mine). Whewell makes an astonishing departure from the classical theory by coming to the conclusion that a category like the *rose tree* is not separated from other categories in any precise way. A discrete boundary is not something that defines a category; rather, the category is organised on the basis of the similarities shared by its members: “[the class] is determined not by a boundary line without, but by a central point within; not by what it strictly excludes, but what it eminently includes...” (Whewell 1858 [1843]: 122).

Mill (1843), while disagreeing with Whewell in some respects, also argued that the members of a category may not be on an equal footing. Mill suggests that while all category members share some properties, not all properties are shared by every member; categories include exceptional cases which do not possess all the features that are considered to make up the class (the “necessary” features for category inclusion). Taken together, Whewell’s and Mill’s suggestions challenge the central ideas of the classical theory of categorization: categories may have fluid boundaries, and category membership is a matter of degree. To use Whewell’s example, some roses resemble the “central point” of the *rose* category more than other roses do, while at the category boundary the distinction between roses and non-roses is fuzzy. Furthermore, it may not be possible to identify the defining features of a category; if categories admit exceptional members, as argued by Mill, then it is unlikely that category membership could be defined in terms of necessary and sufficient conditions.

To my knowledge, Whewell’s and Mill’s discussions on categorization did not have an immediate impact on the philosophical foundations of scientific research.<sup>6</sup> It was not until the mid-1900s that the ontology of categories started to

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<sup>6</sup> It should be pointed out, however, that some biologists were already quite receptive to the idea of gradient categories in the 19th century. For example, in *On the Origin of*



attract more interest. This was thanks to the publication of Ludwig Wittgenstein's major work *Philosophical Investigations* (1953). While Whewell and Mill had discussed the categorization of biological species, Wittgenstein directly addressed language. In his famous example, Wittgenstein discussed the category of *games*. He argued that it is not possible to define *games* in terms of properties that are shared by all games. For instance, games of chance are very different from games that require skill, and *skill in chess* is very different from *skill in tennis*. Furthermore, some games include competition, while others are only played for fun. Wittgenstein argued that it is impossible to come up with a property, or a set of properties, that would distinguish *games* from other categories. Skill, luck, amusement, competition – any one of these is surely a property of countless games, but none of them constitutes a necessary condition for something to be called a *game*.

Wittgenstein proposed that categories are in fact organised similarly to families, where some family members share certain distinguishable properties that are not obvious in other members. Indeed, two people may be related by blood, but this does not mean that they have any perceptible features in common; yet, nobody would deny that the members of a family form a coherent category. Wittgenstein's theory of *family resemblance* states that the properties that are relevant for category inclusion overlap at different places; some category members have several properties in common, while others share only few properties or even no properties at all. Nevertheless, all category members form a "complicated network" based on "overlapping and criss-crossing" similarities (§66). Wittgenstein also makes another distinction that is important for categorization theory. He points out that we may use words like *game* with no problems whatsoever even if the concept of *game* is not explicitly defined and clearly bounded (§68).<sup>7</sup> Wittgenstein argues that we can certainly *draw* a line between games and non-games, but this is by no means a prerequisite for a felicitous use of the word *game*.<sup>8</sup> Similarly, we do not have any problems in

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*Species* (1859), Darwin argued that the difference between humans and the "lower animals" was "one of degree and not in kind" (see Corning 2002: 19).

<sup>7</sup> In fact, Otto Jespersen had already made a similar point in *The Philosophy of Grammar*: "What qualities are connoted by the word 'dog'? In this and a great many other cases we apply class-names without hesitation, though very often we should be embarrassed if asked what we 'mean' by this or that name or why we apply it in particular instances." (Jespersen 2004 [1924]: 190).

<sup>8</sup> Suits (1967: 156) is a good example of an attempt at defining *games* in accordance with the classical theory: "To play a game is to engage in an activity directed toward bringing about a specific state of affairs, using only means permitted by specific rules, where the

speaking of *towns*, even though it is impossible to determine how many streets and houses are necessary for a settlement to be called a *town*, and the difference between a *town* and a *city* is likewise fuzzy. To summarize, Wittgenstein suggested that our conceptualisations may not always be precise, and the categories we form may not have sharp boundaries; however, this does not mean that they are somehow defective.

Wittgenstein's ideas raised new questions about the structure of categories and the role of the human in the categorization process. Just five years after the publication of *Philosophical Investigations*, Roger Brown (1958) suggested that there is a particular level of categorization that is especially salient for our communicative purposes. He pointed out that a ten-cent coin is typically referred to as *a dime* or *money* instead of *a metal object* or *a particular 1952 dime* (Brown 1958: 14). Brown proposed that our categorizations, and the labels that we use for the categories, reflect their salience and usefulness in communication. In other words, categories are not just "out there" for us to find as the classical theory would have it; instead, there are some categories that enjoy a privileged status. For example, although both *apples* and *oranges* are different kinds of *fruit*, we usually speak of *apples* and *oranges* in everyday conversation because they are more informative and useful for our purposes in a typical communicative situation.

Brown's observations were further studied and developed by his student, Eleanor Rosch, in a series of experiments in the 1970s. Rosch divided the category space according to three levels of abstraction: i) the basic level, ii) the subordinate level, and iii) the superordinate level. The *basic level* was the level identified by Brown. Basic level categories, such as *car*, *apple* or *bird*, maximize both the similarity between the category members and the dissimilarity between them and the members of other categories (e.g. Rosch 1978; Mervis and Rosch 1981; Oakes and Rakison 2003). For instance, barring truly exceptional cases, all *cars* are relatively similar to one another, and they are also different from other motor vehicles, such as *motorcycles* or *boats*. Similarly, it is easy to identify most

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means permitted by the rules are more limited in scope than they would be in the absence of the rules, and where the sole reason for accepting such limitation is to make possible such activity." However, I wonder if this definition does not also hold for many other activities, such as *marriage* or *voting*. See also Wierzbicka (1996: 157–160), who laments that Wittgenstein's ideas have acquired "the status of unchallengeable dogma in much of the current literature on meaning" (1996:158). Wierzbicka's comment is somewhat ironic, considering that the classical theory had reigned for well over two thousand years before the publication of *Philosophical Investigations* in 1953.

*birds* as birds and to differentiate them from other animals, say, *dogs*. Subordinate categories, on the other hand, are more exclusive than basic level categories, e.g. *racing car* or *robin*, while superordinate categories are more abstract, e.g. *vehicle* or *animal*.

The finding that categories have internal structure that in part depends on the categorizer is obviously at odds with the classical theory, which states that category membership is an either/or matter. This, however, was not the only challenge that the classical theory faced. Rosch and her colleagues provided compelling empirical evidence to suggest that many categories are centred around a *prototype*, i.e. an abstract summary representation that shares the most features with the other category members while sharing only few features with the members of other categories (Rosch and Mervis 1975; Gardner 1985: 346–347). These abstractions are based on people’s experiences with representative examples of a category (or “exemplars”, see e.g. Medin and Schaffer 1978).<sup>9</sup> Rosch found in an experimental setting that prototypical category members were identified more quickly than non-prototypical members (Rosch et al. 1976), their evaluation was facilitated by the priming of the superordinate category (Rosch 1975a, 1975b), and they were more often named as an example of the superordinate class than non-prototypical members (Rosch 1975a). For example, *chairs* and *tables* were discovered to be prototypical instances (or exemplars) of the superordinate category *furniture*, while *cuckoo clocks* and *telephones* were found to be more marginal members of the category.

Prototype effects have been observed in many domains. For example, in Rosch (1973) the informants agreed that a *car* is a better example of a *vehicle* than a *tricycle*, and *football* is a better example of a *sport* than *weight-lifting*. Similarly, Fehr and Russell (1984) found that *love*, *hate* and *anger* are among the most prototypical emotions, while *calmness*, *boredom* and *respect* are non-prototypical. Even categories that would appear to be classically defined may show prototype effects. Armstrong et al. (1983) found that both *even* and *odd numbers* as well as *plane geometry figures* revealed prototype structures. Their

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<sup>9</sup> It should be pointed out that while prototype theory postulates an abstract central representation for each category, *exemplar models of categorization* assume that categories are formed around concrete exemplars and that categorization takes place by comparing new instances to these exemplars (see e.g. Medin and Schaffer 1978; Nosofsky 1992). Although the difference in the two approaches may at first glance seem significant, it could be argued that they actually represent two sides of the same phenomenon: the exemplar model emphasises the fact that categories are based on experience, while prototype theory focuses on our ability to form abstractions of these exemplars. See also Croft and Cruse (2004: 81–82) for a discussion.

informants rated 3 and 7 as better exemplars of *odd numbers* than 447 or 501, and they also considered *squares* and *triangles* to be more representative of *geometrical figures* than *ellipses* or *trapezoids*. A prototype effect was also acquired in a reaction time test. The subjects' reaction times were faster when they were required to assess a statement that included a prototypical member of a category (e.g. *seven is an odd number*) than when the category member was non-prototypical (e.g. *447 is an odd number*).

The challenge that prototype theory poses to the classical theory mainly concerns the internal structure of a category, and the experiments performed since the 1970s provide ample evidence for the view that categories have both central and marginal members, which is of course at odds with the classical idea that all category members are on an equal footing. However, prototype theory actually says very little about the nature of category boundaries. As Geeraerts (1997: 150) points out, graded membership does not in itself imply fuzzy boundaries: an *ostrich* may be a non-prototypical bird, but it is a bird nonetheless. Similarly, the existence of (non-prototypical) flying mammals (*bats*) does not imply that the categories of *birds* and *mammals* overlap.

Nevertheless, there is also experimental evidence to suggest that category boundaries may indeed be fuzzy. For example, many studies on colour perception have shown that even though people in general agree as to what constitute the "focal colours" in the colour spectrum, it is typically extremely difficult to state where one colour ends and another one begins (Berlin and Kay 1969; Heider 1972; Rosch 1974; Mervis et al. 1975). Similarly, certain categories of objects which are in part organised according to their shape may have fuzzy boundaries. In a classic study, Labov (1973) asked his students to describe different kinds of containers. He found that when the prototypical shape and function of the container (say, a *cup*) was altered, the likelihood of it being described as a *cup* decreased while the probability of other descriptions (*mug*, *bowl*, *vase*) increased.

In sum, the new developments in categorization theory make the following claims, which each pose a challenge to the classical theory:

- i) Categories have internal structure, which means that some category members are better representatives of the category than others.
- ii) Category membership is not determined by necessary and sufficient conditions. Category members may be connected through family resemblance.
- iii) The existence of a psychologically favoured level of categorization (the basic level) suggests that categories are not objective and given

by nature. Instead, categories should be studied as subjectively construed entities.

The next section focuses on how categories have been understood in linguistic research in the late 20th and the 21st centuries. This section also includes a discussion of how the studies presented in the empirical part of this thesis relate to categorization.

## 2.4. Categories in linguistic research

The trends and developments in categorization theory have also influenced the field of linguistics. With few exceptions, all linguistic research carried out before the 1970s followed the tenets of the classical theory of categorization with its well-defined, objectively existing classes and dichotomous structure.<sup>10</sup> For example, in phonology the term *natural class* is used to describe the group behaviour of phonemes and phones, which immediately brings the objectivist foundation of the classical theory to mind. Similarly, the adoption of *distinctive features*, one of the most significant advances of twentieth-century phonological theory, led to the categorization of sounds into neat and clearly defined classes by a limited set of binary features (e.g. Trubetzkoy 1939; Jakobson et al. 1952; Halle 1962; Chomsky and Halle 1968). In other words, a phoneme is either marked for a certain feature or it is not; there is no gradience. In English, for example, the feature [±nasal] can be used to set apart nasal consonants from oral consonants. The nasal consonants /n/, /m/ and /ŋ/ are marked for nasality, while oral consonants, such as /t/, /p/ or /k/, are unmarked. In other words, the feature

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<sup>10</sup> One of the notable exceptions is Jespersen (1924), who suggested that the difference between proper and common names (i.e. nouns) is a matter of “degree rather than of kind” (1924: 70–71). Likewise, he pointed out the hybrid nature of participles and infinitives, suggesting that they should be treated as “verbids”, that is, “a separate class intermediate between nouns and verbs” (1924: 87). Another early exception is Whorf (1945). Whorf argued that categories may be language-specific and thus subjective: “The mistakes in English gender made by learners of the language, including those whose own languages are without gender, would alone show that we have here covert grammatical categories, and *not reflections in speech of natural and non-cultural differences.*” (Whorf 1945: 3; emphasis mine). However, it is much more common to find claims to the contrary. For instance, structuralists like Joos (1950: 701–703), Hockett (1955: 17), and Jakobson (1959) emphasised the discrete nature of linguistic categories. As Jakobson puts it: “Grammar, a real *ars obligatoria*, imposes upon the speaker its yes-or-no decisions.” (Jakobson 1959: 141).

[+nasal] is a necessary condition for a phoneme to be included in the category of nasal consonants.

The classical theory is also central to what is arguably the most influential linguistic theory of the twentieth century, generative grammar. Generative grammar was developed in the 1950s by Noam Chomsky, and seminal publications in 1957 (*Syntactic Structures*) and 1965 (*Aspects of the Theory of Syntax*) cemented its position as the most popular linguistic framework of its time. Generative grammar, as envisioned by Chomsky, was a syntax-centred theory from its inception. In generative grammar, word classes like Noun or Verb are fundamental units in the grammatical description of language, and their status as universal linguistic primitives is taken for granted: each word must be associated with a category label in order to be used felicitously in (a presumably infinite number of) phrases and clauses. The grammaticality of a phrase like *the boy* therefore crucially depends on a connection between the lexical formatives *the* and *boy*, the category labels that are attached to them (Det(erminer) and N(oun), respectively), and a phrase structure rule of the form NP → Det N (see e.g. Chomsky 1965: 64–68). In other words, all lexical items belong to a certain category, and the rules of grammar, both “base rules” and “transformations”, dictate what is grammatical and what is not (see e.g. Chomsky 1965: 68).

The adoption of distinctive features in phonology also led to the analysis of word classes in terms of features in generative syntax. In Chomsky (1965) nouns are already classified into subcategories according to features like [concrete] or [animacy], each choice resulting in an independent node in the taxonomy (1965: 81–82).<sup>11</sup> In later work (Chomsky 1974; Stowell 1981), an attempt was made to describe all lexical categories in terms of just two syntactic features [ $\pm$ N] and [ $\pm$ V] with the following result (see Stowell 1981: 21).<sup>12</sup>

i) Nouns = [+N, -V]

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<sup>11</sup> Binary features (although not the  $\pm$  notation) were also used in semantic analysis in generative grammar in the 1960s. The earliest example is Katz and Fodor (1963), where the different senses of *bachelor* were distinguished in terms of binary features (which Katz and Fodor call “semantic markers” and “distinguishers”), such as “human”, “male” and “unmarried” (1963: 185–186). See also Fillmore (1975) for a critical discussion. In Chapter 5, the feature notation is used as a shorthand for the semantic features [atelic] and [stage].

<sup>12</sup> As there are only two features with two values, the system allows for a maximum of four lexical categories. In later work (e.g. Emonds 1985; Chomsky 1993), only nouns, verbs and adjectives were considered to be lexical categories.

- ii) Verbs = [-N, +V]
- iii) Adjectives = [+N, +V]
- iv) Prepositions = [-N, -V]

Similarly to the natural classes in phonology, the two syntactic features can be used to divide lexical categories into four natural classes: i) nouns and adjectives are [+N], ii) verbs and prepositions are [-N], iii) verbs and adjectives are [+V], and iv) prepositions and nouns are [-V] (see e.g. Chomsky 1993 [1981]: 48). The binary features were also supposed to be able to account for the way in which lexical categories may be organised in different languages. For example, as argued in Stowell (1981: 26), there are languages in which adjectives behave morphosyntactically much like nouns do, while in others adjectives and verbs are hard to set apart on structural grounds (see also Dixon 1982). Furthermore, Stowell proposes that there is no language that conflates the four lexical categories in a way that would violate the natural classes presented above (e.g. prepositions are not grouped together with adjectives, nor are nouns with verbs). While the feature system has in this form been largely abandoned in more recent generative research, the underlying assumption about the discrete nature of categories has generally been maintained. For example, while rejecting the theory of syntactic features, Baker (2003) fully embraces the principles of the classical theory of categorization in his analysis of word classes. Indeed, as discussed in Rauh (2010: 141–149), in more recent generative frameworks, such as “Principles and Parameters” and the “Minimalist Program”, word classes are regarded as feature complexes, which makes the traditional categorial features [N] and [V] somewhat redundant.<sup>13</sup>

Interestingly, although generative theory fundamentally rests on the premises of the classical theory of categorization, gradient phenomena in language were already recognised in Chomsky (1955), one of the earliest works in generative grammar. Chomsky (1955: 110–111) points out that although sentences like *Golf admires Bill* are nonsensical and in some sense ill-formed,

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<sup>13</sup> For example, nominal features like [+count], [+animate] and [+abstract] already imply that a word is [+N] (see also Roberts 2010). Not surprisingly, perhaps, this principle was already introduced by Aristotle in *On the Parts of Animals*: “Sometimes the final differentia of the subdivision is sufficient by itself, and the antecedent differentiae are mere surplusage. Thus, in the series Footed, Two-footed, Cleft-footed, the last term is all-expressive by itself, and to append the higher terms is only an idle iteration.” (quoted in Wilkins 2009: 15).

they are nevertheless more grammatical than patterns like *the admires Bill* or *sincerity the of*. Importantly, however, this observation was not interpreted in terms of gradient categories. Indeed, Chomsky's solution to the problem allows him to explain gradience in language through the principles of the classical theory of categorization. The degrees of grammaticality, or "belongingness" in language (Chomsky 1955: 115), can be accounted for by assuming a taxonomy of categories and grammatical operations, where violations on one level may lead to "partially grammatical" sentences (e.g. *Golf admires Bill*), whereas violations on another may result in "completely ungrammatical" structures (e.g. *sincerity the of*). *Golf admires Bill* is partially grammatical because only animate nouns are acceptable as subjects of verbs like *admire*: the strangeness therefore arises from a violation at the level of subcategorization, but the more general phrase structure rules of English are not violated. In *sincerity the of*, on the other hand, the ungrammaticality is a result of a violation at the phrase structure (or word class) level. In short, what seems like a genuine instance of gradience in language is explained away in terms of a binary structure that fully conforms to the classical theory: a word either is an animate noun or it is not – there is no middle ground.<sup>14</sup> Similarly, although Chomsky does not discuss this matter explicitly, both animate and inanimate nouns are supposedly equally representative of the larger category of nouns.<sup>15</sup>

However, as was already observed in Katz (1964), the "hierarchy of grammars" suggested by Chomsky cannot explain why a sentence like *Man bit dog* seems to be much better formed than *the admires Bill* even though the ill-formedness arises from violations at the same level of grammatical organisation in both cases. Indeed, as Wasow (2009) has recently argued, generative linguistics has always struggled with combining a fully categorical theory of grammar with gradient data. In fact, just like all other theories that rely on the

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<sup>14</sup> This approach was more recently echoed by Ian Roberts in a thematic volume on gradience in language (edited by Elizabeth Traugott and Graeme Trousdale). Roberts (2010: 47) argues that "just as a seemingly continuous curve can be treated as a series of discrete infinitesimal steps, so a seemingly gradient category [...] can be seen as a change in membership between two very similar, but nonetheless discretely distinct, syntactic categories." It seems to me that Wittgenstein's lesson about the category of *games* is worth repeating here: we can certainly *draw a line* between games and non-games, but this does not mean that the division tells us anything about the category in question.

<sup>15</sup> Chomsky made a distinction between "grammatical" and "meaningful" or "acceptable" sentences explicit in later work (1957: 15–16; 1965: 10–11), but was pessimistic about the operationalisation of these notions (1965: 19).



classical theory of categorization, generative grammar of the 1960s and the 1970s could not accommodate gradient phenomena in its description of language: all gradience had to be explained in terms of strict binary divisions.

Nevertheless, gradience continued to be acknowledged even in the Chomskyan paradigm, although gradient data were still analysed in terms of classical categories and non-gradient grammar. For instance, in Chomsky (1970) the difference between gerunds (e.g. *John's refusing the offer*) and derived nominals (e.g. *John's refusal of the offer*) was discussed. Although Chomsky's analysis of these forms follows the tenets of the classical theory in that the two structures are assumed to be formed in distinct parts of grammar (in accordance with the "lexicalist hypothesis", which states that transformations cannot take part in derivational morphology; contra Lees 1968 [1960]), it is nevertheless noteworthy that Chomsky himself admits that there are mixed forms (e.g. *John's refusing the offer*) that pose problems for the analysis: "These forms are curious in a number of respects, and it is not at all clear whether the lexicalist hypothesis can be extended to cover them. [...] In fact, there is an artificiality to the whole construction that makes it quite resistant to systematic investigation." (Chomsky 1970: 214).<sup>16</sup> Interestingly, Chomsky even considers the possibility of separating the lexicon from the categorial component of grammar in order to be able to account for such structures: "We can enter *refuse* in the lexicon as an item with certain fixed selectional and strict subcategorization features, which is free with respect to the categorial features [noun] and [verb]." (1970: 190). In other words, lexical items could be underspecified with regard to word class, and the larger syntactic frame would associate them with a category label.<sup>17</sup>

Chomsky's pessimism regarding the analysis of mixed categories did not deter others from attempting to describe such structures in generative terms. For example, Aoun (1981) analyses participles in Standard and Lebanese Arabic with binary features, while van Riemsdijk (1983) is a feature-based analysis of German participles. Maling (1983), on the other hand, studied the similarities and differences between adjectives and prepositions by using distinctive features. One

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<sup>16</sup> In Lexical-Functional Grammar, an offshoot of generative grammar, these kinds of "mixed categories" are analysed as "head-sharing constructions", where a structure like *John's refusing the offer* may instantiate two different types of phrasal projection (NP and VP; see e.g. Bresnan 1997).

<sup>17</sup> The idea of underspecification is also pursued in the analysis of *-ing* participles in Chapter 5 of this thesis, where premodifying *-ing* participles are argued to be semantically underspecified with a strong preference to be interpreted as aspectually atelic. It should be pointed out, however, that my analysis does not follow the principles of generative grammar.

of the rare examples of early generative analyses that does not seem to be tied to the classical theory (at least in the strictest possible sense) is Fraser (1970), who studied the relative frozenness of idioms. Fraser suggested that idioms form a continuum according to the number of transformations in which they can take part. Although Fraser's "frozenness hierarchy" still follows the classical theory of categorization in the sense that the levels in his implicational hierarchy are all sharply delineated from each other, the high number of levels he posits (seven in all) does blur the line between the adjacent categories in the hierarchy.<sup>18</sup>

Although generative grammar struggled to accommodate gradient phenomena into its theory, gradience started to gain increasing attention among linguists working in other frameworks. Floyd Lounsbury, a linguist and an anthropologist, already suggested in his 1956 article on Pawnee kinship terms that "[i]n some areas of lexicon, semantic structure may be so complex that it is impossible or unprofitable to approach it [...] with Aristotelian class logic and the 'same or different' pragmatic test as the principal tools. It may become necessary to abandon the Aristotelian dichotomy of *A* vs. *not-A* [...] Continuous scales may be introduced in place of these sharp dichotomies..." (Lounsbury 1956: 193–194).<sup>19</sup> Bolinger (1961), on the other hand, challenged the classical theory of categorization not only by pointing out that many phonetic phenomena, such as vowel length and pitch, are in fact gradient, but also by suggesting that categories may be indeterminate in discourse. For instance, Bolinger argued that while it is reasonable to assume that *put* in the sentence *they put their glasses on their noses* receives either a present or a past interpretation (just like the classical theory would have it), there are contexts of use where the verb form may allow for two readings. For example, in the question *put them away yet?* it is impossible (and unnecessary) to decide on the exact category of *put*: the verb is arguably either in the present or the past tense (a binary choice), but the structure allows for both simple past and present perfect readings (*did you put them away yet?* vs. *have you put them away yet?*) (Bolinger 1961: 17).

Bolinger's ideas preceded Chomsky's suggestion of categorial indeterminacy by almost a decade, and, not surprisingly, they were not well

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<sup>18</sup> Aarts, discussing Bertrand Russell's position on gradience, makes the point that vagueness can be interpreted as a proximity problem: "the closer you get, the more it disappears" (Aarts 2007a: 14). Bolinger (1961: 13), on the other hand, distinguishes between "differentiated" continua (which can be divided into stages) and "undifferentiated" continua (which cannot).

<sup>19</sup> Lounsbury thanks Roger Brown, whose work has already been discussed, for pointing out this possibility.

received by the generativist community of the time. Most of Bolinger's observations were panned by Stockwell (1963) in a review published in *Language*. Although Stockwell concedes that Bolinger's book "is a useful corrective to the dogmatism that some of us too easily fall into", he does not find much merit in Bolinger's analyses regarding indeterminacy and gradience in general: "Bolinger is not convincing in the cases where he is saying something that really contradicts the assertions of Joos and others about linguistics as a discrete mathematics." (Stockwell 1963: 90).

Another early paper that raised gradience from periphery to an integral role in linguistic organisation is Halliday (1961). Halliday argued that grammar includes "processes of abstraction, varying in kind and variable in degree". According to Halliday, as linguistic analysis increases in delicacy (i.e. depth of detail), the relationship between linguistic categories becomes "increasingly one of 'more/less' rather than 'either/or'" (1961: 249).<sup>20</sup> Indeed, Halliday argued that probabilistic phenomena should not be regarded as peripheral to grammatical organisation; instead, probabilities and gradience play a fundamental role in language: "But the very fact that we can recognize primary and secondary structures – that there is a scale of delicacy at all – shows that the nature of language is *not* to operate with relations of 'always this and never that'" (Halliday 1961: 259; emphasis original). This view, just like Bolinger's, was in sharp contrast to the mainstream generative grammar of the time. Chomsky, for instance, argued on many occasions that probabilities play absolutely no role in language whatsoever (e.g. 1957: 17; 1965), and he remains sceptical of statistical approaches to language even today.<sup>21</sup>

When it comes to word classes, two early analyses are particularly worthy of mention. First, Crystal (1967) discusses the internal structure of word classes in gradient terms. He takes nouns as an example and suggests that the class can be divided into central and peripheral members according to morphological and

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<sup>20</sup> Halliday's theory was influenced by J.R. Firth, who had argued that indeterminacy should be acknowledged as part of language and therefore incorporated into grammatical description: "There is need to recognize indeterminacy, not only in the restricted technical language of description, but also in the language under description." (Firth 1955: 98).

<sup>21</sup> In a relatively recent panel discussion (May 2011), Chomsky admitted that statistical models in linguistic research have had "some successes", but he continued by adding that there have been "a lot of failures" and that some statistical approaches to language have only gained success in a "very odd sense of success".

(<http://languagelog.ldc.upenn.edu/myl/PinkerChomskyMIT.html>: accessed March 21, 2016).

distributional criteria. He then lists four factors that contribute to the degree of membership in the noun category (he points out that the list is not intended to be exhaustive): i) the word's ability to be used as subject, ii) number inflection, iii) co-occurrence with articles, and iv) morphological indication (e.g. *hardship*, *peroration*) (Crystal 1967: 46). Crystal admits that it is difficult to decide just what the relevant criteria for word class inclusion actually are (a point that was also discussed forty years later in the debate between Aarts (2007b) and Croft (2007)), but he concludes that ultimately "continuity of some kind seems to be essential" (Crystal 1967: 47).

In America, the gradient nature of word classes was taken up in a series of articles by John Robert (Haj) Ross. Ross (1972) introduced the (relatively short-lived) notion of "category squish" to stand for the idea that category space forms a "quasi-continuum". Ross argued that lexical categories like Noun or Adjective should not be regarded as discrete classes; instead, membership in a category is a matter of degree (see e.g. Ross 1972: 316–317). Similarly to Fraser (1970), who had ranked idioms on a scale according to the number of transformations in which they could take part, Ross argued that nouns can be ranked according to their syntactic potential. In short, while a central noun like *Harpo* (Ross's example) can take part in three transformations ("left dislocation", "tough movement" and "tag formation"), *tabs* (in *keep tabs on something*) can be marginally used in only one of them (tag formation, according to Ross) (see Ross 1973: 96–98). In Ross's theory, then, it makes perfect sense to talk about the "nouniness" of a word instead of making a strict division between "nouns" and "non-nouns".

Other relatively early analyses embracing gradience are Lakoff (1973) and Hopper and Thompson (1980). Lakoff extended categorial gradience to truth-conditional semantics and hedges. He starts his paper with a version of the "sorites paradox",<sup>22</sup> asking what it actually means to say that someone *is tall*, for surely there cannot be a clear cut-off point for "being tall" and "not being tall". He suggests that "fuzzy concepts", such as gradable predicates, degree modifiers and hedges, cannot be analysed in terms of classical logic. Making use of Zadeh's (1965) fuzzy logic, Lakoff (1973: 471) argues that a clause like *a bat is sort of a bird* has intermediate truth value, while it is impossible to assign a truth value to

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<sup>22</sup> The "sorites paradox" gets its name from the Greek word σωρίτης, 'heap'. The paradox, which is attributed to the fourth-century BC Greek philosopher Eubulites of Miletus, presents the following scenario: one grain of sand is not enough to make a heap. Yet, if we have a heap of sand, it will not cease to be a heap at any specific point if we start removing sand from it one grain at a time.

the proposition in *technically speaking, this TV set is a piece of furniture*; whether or not a television set is considered to be a piece of furniture varies from person to person and culture to culture (Lakoff 1973: 484).

Hopper and Thompson (1980), on the other hand, interpreted transitivity as a continuum, arguing that, for example, a clause where an agentive and volitional subject affects a change of state in a clearly delineated object is high in transitivity when compared to a clause where (some of) these conditions are not met. For instance, *John (intentionally) scared Sally* would be more transitive than *the picture scared Sally*. This view of transitivity is based on typological evidence. For instance, although Present-day English typically encodes clauses that are high in transitivity (e.g. *John broke the window*) similarly to those that are low in transitivity (e.g. *John likes beer*), in many other languages the clause lower in transitivity is expressed in a syntactically intransitive structure (e.g. in Spanish *me gusta la cerveza*; ‘me-DAT like beer’; ‘I like beer’; Hopper and Thompson 1980: 254). It is interesting to note that earlier stages of English had a similar impersonal construction where verbs like *think* and *like* were used with a dative subject (see e.g. Denison 1990; Möhlig-Falke 2012). This construction still survives in the fossilised expression *methinks* (e.g. Palander-Collin 1999).

One of the widely-read reference grammars of English also incorporates gradience in its analysis of word classes and other grammatical phenomena. In *A Comprehensive Grammar of the English Language*, Quirk et al. argue that subordination and coordination should not be analysed as separate phenomena; instead, there is a gradient between the two types of clause linkage (Quirk et al. 1985: 927–928). Similarly, the authors argue that the distinction between main verbs and auxiliaries is a matter of degree: there are central modal auxiliaries like *must*, *may* and *shall* and central main verbs like *run*, *drop* and *sing*. However, in between these two sub-classes of verbs are “marginal modals” (e.g. *dare*, *need*), “modal idioms” (e.g. *had better*, *would rather*), “semi-auxiliaries” (e.g. BE *about to*, BE *going to*) and “catenatives” (e.g. SEEM *to*, KEEP + *-ing*) (Quirk et al. 1985: 136–137). The verbs at different points in the verb-auxiliary cline are differentiated, for example, by their ability to be used with the negative clitic *n’t* (e.g. *mustn’t* vs. \**seemn’t*), their potential to co-occur with a *to*-infinitive (e.g. *be going to do* vs. \**must to do*), and their ability to undergo concord in the present tense (e.g. *he is going to do* vs. \**he musts do*).<sup>23</sup>

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<sup>23</sup> Main verbs and auxiliaries were already suggested to constitute a *squish* by Radford (1976). Radford’s paper, which was called “On the non-discrete nature of the verb-auxiliary distinction in English” was published in *The Nottingham Linguistics Circular*, where it was immediately followed by Geoffrey Pullum’s paper “On the *nonexistence* of

Gradient categories have recently been adopted as part of several influential linguistic frameworks, among them Cognitive Grammar (e.g. Langacker 1986, 1987; Taylor 2003), Word Grammar (e.g. Hudson 2006; Gisborne 2008) and Construction Grammar (e.g. Goldberg 1995, 2003; Croft and Cruse 2004). In Cognitive Grammar, the objectivist foundation of the classical theory of categorization is altogether abandoned: linguistic categories are understood in terms of cognitive construal. The benefit of this approach to categorization is that it takes into account the dynamic nature of language: the way in which individual speakers construe categories may change over time, and variation within a linguistic community is expected. In Word Grammar and many strands of Construction Grammar, on the other hand, constructions and dependencies are modelled in terms of networks. The network connects constructions (systematic form/meaning pairings) at different levels of abstraction, and the more specific constructions may inherit properties from the more abstract, or schematic, constructions. Importantly, gradience can be incorporated into this kind of model through *dual* or *multiple inheritance* (see e.g. Trousdale 2013). In inheritance models, the construction inherits information from its parent constructions, and dual and multiple inheritance means that the construction may inherit from more than one parent. For instance, in Hudson's analysis of the Gerund construction in English (2003) the Gerund is analysed in terms of dual inheritance: the construction inherits properties from both nouns and verbs, and can therefore be regarded as both a noun and a verb – there is no need to make a binary choice between the two categories. The network model will be discussed in more detail in Chapter 9 below.

## 2.5. Issues in word class categorization

So far the discussion has focused on the ontology of categories in different linguistic frameworks, and some individual studies have been cited to illustrate how linguistic analyses crucially depend on the way in which categories are understood and formulated in the underlying theory. Any framework endorsing the classical theory of categorization will only be able to accommodate analyses where the role of gradience in the data is downplayed or explained away through technical innovations, such as subcategorization in early generative grammar. On the other hand, if a theory follows prototype or exemplar-based theories of

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the verb-auxiliary distinction in English” (emphasis mine). Needless to say, Radford and Pullum did not agree on the relevance of gradience in grammatical theory at the time.

categorization, gradience poses relatively few analytical problems – at least in terms of category-internal gradience. In this section, I will discuss some issues in categorization that have been taken up in recent research. The focus will be on gradience within and across word classes and how words belonging to one class (e.g. nouns) may come to be used similarly to words of another class (e.g. adjectives). After a survey of the relevant literature and a discussion of some challenges in word class analysis, I will conclude this section by discussing how gradience features in the empirical part of the thesis, which focuses on the similarities and differences between participles and adjectives both in terms of their word class and in terms of their relative subjectivity.

Gradience has recently attracted a lot of attention in linguistics. The discussion has been spurred, for example, by a thematic volume on gradience in language that included reprints of many of the key articles on gradience and categorization (Aarts et al. 2004), the theoretical suggestions made by Bas Aarts (2004, 2007a), and reactions to these suggestions (e.g. Croft 2007; Aarts 2007b; the articles in Traugott and Trousdale 2010). In his monograph, Aarts (2007a) takes issue with both formal syntacticians, who insist that all categories are discrete, and with “eclectic linguists”, who see gradience everywhere. Aarts (2007a: 5) makes a distinction between *subsective* (intra-categorical) and *intersective* (inter-categorical) gradience. He argues that while subsective gradience is common, intersective gradience is, on the whole, quite rare. Interestingly, one of the few cases of intersective gradience discussed by Aarts is pronominal participles, a category which he admits to exhibit gradience between verbs and adjectives (see also Huddleston 1984). Aarts points out that *working* in *a hard working mother* is verb-like both in its form (the *-ing* ending) and in terms of modification (*hard-working* ~ *work hard*), but it is adjective-like because of its attributive function.

However, Aarts’s claim about the rarity of intersective gradience has been called into question by recent empirical research. For instance, David Denison has argued in several papers (e.g. Denison 2010, 2013a) that words exhibiting intersective gradience may in fact be rather common – at least more common than has been claimed by Aarts and others (e.g. Huddleston and Pullum 2002: 1643). Denison points out that many words that were only used as nouns in the earlier stages of English have recently acquired adjective-like uses. For example, in addition to the concrete sense of ‘waste material’ or ‘litter’, *rubbish* has been used in a metaphorical sense of ‘worthless or absurd ideas’ and ‘nonsense’ since the late 16th century (*OED*, s.v. *rubbish* 3a) (see Denison 2010: 106–110 for a detailed discussion). Denison points out that in addition to this metaphorical meaning, which is similar to meanings that are typically expressed by adjectives

in English, there are also two contexts of use where the difference between mass nouns (the original category of *rubbish*) and adjectives is in fact neutralised: prenominal modifier, as in (2.1), and predicative complement, as in (2.2) (the examples are taken from Denison 2010: 107).

- (2.1) A self-confessed “**rubbish**” golfer won a £15,000 car after fluking a hole-in-one.
- (2.2) And today was **rubbish**.

In other words, *rubbish* could in both of the above examples be replaced either by a noun (e.g. *a tour golfer*; *today was Monday*) or an adjective (*a professional golfer*; *today was sunny*). Denison argues that these constitute *equivocal* contexts of use, where the word class of *rubbish* remains underspecified both for the speaker and the hearer. This idea is similar to Bolinger’s (1961) point about the underspecification of *put* in *put them away yet* that was discussed above.<sup>24</sup>

However, there are also cases where it is not possible to analyse *rubbish* as a noun. Examples (2.3)–(2.5) provide both morphological and syntactic evidence for adjectival categorization (examples are again from Denison 2010: 107).

- (2.3) And the prize for **rubbishest** blogger in the world goes to... Me!
- (2.4) Because i like to take a lot of photos when i go out but the light on my V975 seems **very rubbish**.
- (2.5) and I can’t imagine Harry Hall’s selling **anything rubbish**.

Interestingly, when Denison conducted a survey of the acceptability of different uses of *rubbish* among 21-year-old students, the most clearly “adjectival contexts”, such as (2.3) and (2.4), scored quite poorly in comparison to examples like (2.1) and (2.2) where the distinction between nouns and adjectives was neutralised. However, and importantly, the post-pronominal use in (2.5), *anything*

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<sup>24</sup> Denison makes a distinction between *ambiguous* and *equivocal* structures. According to Denison (2010: 109), an equivocal sentence is “underdetermined for both producer and recipient”, while “the producer of an ambiguous sentence must have intended one or the other of the possible readings.” In a later paper, he consistently uses the term *vague* instead of *equivocal* to refer to underspecified constructions (Denison 2013: 171–172). I will return to this point in Chapter 10.



*rubbish*, scored almost as high as the two neutralised contexts. Denison argues that this is evidence of true gradience: speakers may consider some adjectival uses to be well-formed while assessing others less acceptable.<sup>25</sup>

It is, of course, possible to argue that the adjectival uses of *rubbish* in (2.3) and (2.4) are “informal” or “innovative” – instances of *coercion* rather than evidence of categorial gradience.<sup>26</sup> Indeed, there is evidence that speakers may be self-aware of their own usage, indicating in some way that their utterance is not fully acceptable even to them. We already saw an example of this in (2.1), where the writer enclosed *rubbish* in quotation marks (*a self-confessed, “rubbish” golfer*). Another example is (2.6), where the speaker makes an interesting meta-textual comment about the word class of *dynamite*.

(2.6) “This was some **very dynamite**, for lack of a better adjective, information, if it were true,” Sanders said. (COCA,<sup>27</sup> 2003)

However, there is one serious objection to dismissing such uses as mere innovations or coercions. In fact, there is a large number of nouns in addition to *rubbish* and *dynamite* which are commonly used in constructions where adjectives are typically found. Denison (2013a) provides a long list of nouns with attested adjectival uses, including words like *core*, *dinosaur*, *draft*, *freak*, *genius*, *killer* and *powerhouse*. It is true, of course, that the token frequency of the adjectival uses of these nouns is often very low in corpus data when studied individually, but the productivity of the phenomenon does validate Denison’s point that intersective gradience is not as rare as has been claimed (even if full overlap in terms of frequency of use is of course not expected). Moreover, although the discussion has thus far only focused on nouns that are used like adjectives, there are many other examples of gradience between word classes. Gradience between adjectives and determiners has been explored, for example, in Denison (2006, 2010), Davidse et al. (2008) and Breban (2010b), and the participles studied in the empirical part of this thesis represent something of a

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<sup>25</sup> *Anything rubbish* could also be analysed as a pronoun followed by a reduced relative clause. I thank Matti Kilpiö for this observation.

<sup>26</sup> “Coercion” is a term used in Construction Grammar to describe a situation where a word is forced or “coerced” into a construction in which it is not typically used, and it consequently inherits part of its meaning from that construction. For instance, in *give me some pillow*, the count noun *pillow* is coerced into a mass noun construction (cf. *give me some money*). (See Michaelis 2002; see also Lauwers and Willems 2011 for a recent discussion on coercion).

<sup>27</sup> COCA = *The Corpus of Contemporary American English* (see Davies 2009).

classic example of categorial gradience. One example of how the participle and the adjective categories intersect is given in (2.7) and (2.8), where *amazed* is first graded with *much* (an adverb that typically modifies verbs) and then with *very* (a degree modifier that modifies adjectives and adverbs). This change will be discussed in more detail in Chapter 9.

(2.7) I think more than anything they're pretty **much amazed**. (COCA, 2004)

(2.8) "Ninety-nine percent of the people in my classes walk out in two hours, **very amazed** that they've been able to make something this good," she said. (COCA, 1997)

For some words, the overlap between categories may extend even further than what has been discussed thus far. For example, in (2.9) and (2.10), *killer*, which is originally a noun, is first used as an adjective and then a degree modifier. Similarly, in (2.11) *hands-down* (originally an adverbial)<sup>28</sup> is used as an adjective, while in (2.12) it is a degree modifier. In (2.13) and (2.14), on the other hand, *drop-dead* (originally an imperative clause; *Drop dead!*) is first used as an adjective and then as a degree modifier. Finally, in (2.15), *stone-cold* is used as an adjective, and in (2.16) as a degree modifier.<sup>29</sup>

(2.9) The fish and chips **are killer**, and the salmon soup is truly memorable. (COCA, 1998)

(2.10) He wasn't just **killer good-looking**. He was to die for. (COCA, 2008)

(2.11) On that evening, as the guests talked, relaxed, admired, and truly enjoyed the food, we knew we had succeeded in making the event a **hands-down success**. (COCA, 2004)

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<sup>28</sup> The etymology of *hands down* is somewhat obscure, but there is some evidence to suggest that it originated in horse-racing in the 1800s to indicate that the winning jockey won the race with remarkable ease (without having to hold the reins, i.e., he won the race *hands down*).

<sup>29</sup> It would also be possible to analyse *stone* in (2.15) as a sub-modifier to *cold*, although I would argue that *stone-cold* is a compound expression in both (2.15) and (2.16). Examples (2.9)–(2.16) are part of ongoing research, and they are only discussed here in order to illustrate some problems that may arise in traditional word class analysis.

- (2.12) The Marble Slab Creamery, with sites all over the Houston area, offers the **hands-down best** ice-cream cone in town. (COCA, 1992)
- (2.13) The pennycolored structure's ninth-floor observatory offers **drop-dead views** of the Inner Richmond, and the Marin Headlands across the Golden Gate. (COCA, 2006)
- (2.14) Morey calls the hike over two 12,000-foot passes "extremely strenuous, but **drop-dead beautiful**," making your ultimate basecamp that much more of a reward. (COCA, 1999)
- (2.15) Over the course of a couple of weeks, Simmons said, he had seen two huge, raucous crowds reduced to **stone-cold silence**. (COCA, 2007)
- (2.16) If not, let me describe the scene: Mixed in with families, sober students and alumni who are law-abiding are a large number of people who are **stone-cold drunk**. (COCA, 2003)

Although multi-word expressions like *hands-down*, *drop-dead* and *stone-cold* are perhaps not typical adjectives (or degree modifiers) due to their structural complexity, I would argue that assigning examples (2.9)–(2.16) into word classes is a relatively straightforward task. However, there are cases where word class assignment is much more difficult. Consider examples (2.17) and (2.18), where *under-the-counter* and *off-the-rack* are used as classifying adjectives. Both examples look very much like phrasal projections, even though prepositional phrases cannot normally be used grammatically in attribution in English. Furthermore, even if (2.17) and (2.18) are analysed as adjectives, what about *Sunday-go-to-meeting* in (2.19), which does not appear in any other context of use in corpus data? Again, an analysis based on coercion or innovative language use is not very satisfying, as *Sunday-go-to-meeting* is reasonably well attested in both synchronic and diachronic corpora, which suggests at least some degree of conventionalisation.<sup>30</sup>

- (2.17) Now, as Lynn Sherr reports, parents and kids have been warned about alcohol and cocaine, but do they know about the danger of **under-the-counter** drugs? (COCA, 1993)

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<sup>30</sup> COCA includes seven tokens of *Sunday-go-to-meeting*, while COHA has fifteen (the earliest example is from 1866).

- (2.18) Two hundred thirty-five pounds of ex-linebacker crammed into an **off-the-rack**, wrinkled brown suit. (COCA, 2011)
- (2.19) Charlie was one year older and seven inches taller than Graham, although Graham swore he was six feet tall when he had his **Sunday-go-to-meeting** shoes on. (COCA, 2007)

So, is it possible to analyse examples (2.17)–(2.19) as adjectives? According to Huddleston and Pullum (2002: 528), central adjectives have the following three properties:

- i) They can appear in the attributive (*happy people*), predicative (*they are happy*), and postpositive functions (*someone happy*).
- ii) They are semantically gradable and hence can be used with degree modifiers (*very happy*) and have inflectional or analytical comparatives (*happier, more useful*).
- iii) They characteristically take adverbs as modifiers (*remarkably happy, surprisingly good*).

It is obvious that *under-the-counter*, *off-the-rack* and *Sunday-go-to-meeting* do not meet these criteria very well. First, although I have no doubt that some speakers may find predicative uses acceptable, at least to a degree, corpus data suggest that all three structures are largely restricted to attribution. Second, the structures are semantically non-gradable, and hence they are not readily used in grading constructions (e.g. *more under-the-counter; very off-the-rack*). Finally, they do not occur with adverb modifiers, at least in the senses in which they are used above (e.g. *remarkably off-the-rack, surprisingly under-the-counter*).<sup>31</sup> In short, these structures are adjectives only according to one of the criteria suggested in the *Cambridge Grammar*: attributive use.<sup>32</sup> For those who accept gradient analyses of word classes, this is perhaps not very problematic: one could simply analyse (2.17)–(2.19) as marginal or non-prototypical adjectives. However, there is another alternative, which requires us to take a step back from

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<sup>31</sup> I found one instance of *too off-the-rack* in COCA, but in that case the structure was used metaphorically in the sense of ‘convenient’ or ‘obvious’ (*But that was far too neat an explanation for Alexandra, too off-the-rack*).

<sup>32</sup> As has already been discussed, this criterion does not separate adjectives from nouns, nor does it distinguish adjectives from (verbal) participles (see Chapters 5 and 6).

the data and return to the philosophical foundations of categorization and grammar.

*Word classes as emergent categories*

The alternative is to conceive word classes as *emergent*. In the linguistic literature, *emergence* is typically discussed in reference to Paul Hopper's influential paper published in 1987. Hopper argued that language should be studied as a "real-time, social phenomenon" where grammatical structure (or regularity) is "at least as much an effect as a cause" (Hopper 1987: 142).<sup>33</sup> According to this view, linguistic structure, both grammar and word classes, should not be understood as parts of a static mental entity – an *a priori* grammar – which then finds its application in discourse; instead, language use enjoys a privileged status, and grammatical constraints and linguistic categories are dynamically negotiated in speaker-hearer interaction as a function of the language users' prior experience with language. Regarding linguistic structure as emergent is, of course, incompatible with the idea that word classes like Noun, Adjective and Verb are fundamental concepts of linguistic organisation insofar as each word in the lexicon should be associated with a particular category label in order to be used grammatically. Instead, the emergent approach to word classes asserts that word classes are *epiphenomenal*.

The term *epiphenomenal* may be used with reference to word classes in two different senses. First, word classes can be regarded as emergent *schemas*, that is, as abstractions that arise from repeated usage experiences (cf. Hilpert 2013). According to this view, it is not the case that a word like *happy* is an adjective because it has the *potential* to be used in attribution and predication or to be graded; instead, the adjectiveness of *happy* emerges from the language user's experiences not only with the usages of *happy* but also with many other words, such as *nice*, *sad*, *beautiful*, and so on. In other words, the language user

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<sup>33</sup> In his article, Hopper makes reference to the work of the social scientist James Clifford, who argued that culture is "contested, temporal, and emergent" (Clifford 1986: 19). However, Hopper does not acknowledge his rather obvious intellectual debt to Plato, who on many occasions discussed the difference between the ever-changing, unstable world of sensory experience and the immutable world of forms. In *Timaeus* (27d–28a), Plato described the world of the senses as something that is "always in a process of becoming and perishing and never really is". Hopper, on the other hand, describes grammatical structure as "always in a process but never arriving" (Hopper 1987: 141). The twist is, of course, that Plato, like so many after him, only considered the world of forms to be worthy of study, while Hopper argues that it is precisely the dynamic, ever-changing world that should be the focus of scientific inquiry.

perceives similarities in the meanings of these words (e.g. gradability, descriptive meaning) as well as their usage patterns, and forms an abstract representation – a word class – based on this information. In this sense, *epiphenomenal* means that patterns of use (or more specific constructions) are primary, while abstractions (or more schematic constructions) are secondary. This approach represents a bottom-up model of language as opposed to a top-down one (Hilpert 2013).

The second way in which *epiphenomenal* can be understood is through online production of text, which is probably closer to what Hopper originally meant (it should be noted that Hopper did not specifically discuss emergence in terms of word classes). In this second sense, we could argue that there are contexts of use where the word class does not emerge at all or where it emerges only partially in discourse. We have already seen examples where such analysis of word classes might be appealing. For instance, in *a rubbish golfer* it could be argued that the word class of *rubbish* does not emerge properly because of the vagueness between nouns and adjectives in attribution. Similarly, it could be argued that the word class of *Sunday-go-to-meeting* in (2.19) does not emerge very well – not because of vagueness but because of the peculiarity of the structure, its classifying function and its non-use in other constructions from which the adjective class emerges (e.g. *these shoes are Sunday-go-to-meeting; very Sunday-go-to-meeting shoes*).<sup>34</sup> In other words, according to this view word classes are constantly negotiated in speaker-hearer interaction, and there may be occasions where the word class simply does not emerge properly (see Hopper 2011: 28).<sup>35</sup>

Focusing on language use and lower-level constructions also explains why some words are often regarded as marginal category members. Let us take the class of *a*-adjectives in English as an example (e.g. *ablaze, afloat*, and many others). These adjectives are mainly restricted to predication in English (Huddleston and Pullum 2002: 559), but there is no obvious way to account for this fact from a top-down perspective: exactly *why* are these adjectives so rarely

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<sup>34</sup> Some isolated instances of *very Sunday-go-to-meeting* can be found on the Internet (David Denison, p.c., August 25, 2016), but the extremely low frequency of such forms suggests that the item in question is typically construed as non-gradable.

<sup>35</sup> The term *epiphenomenal* has also been understood to be roughly synonymous with *inconsequential, unimportant* or *derived* in the literature. For instance, while discussing (and rejecting) the Distributed Morphology view of word classes, Hollmann (2012) equates the view of word classes as “mere epiphenomena” with “linguists’ generalisations over patterns observed in language”. This is not how *epiphenomenal* is understood in this thesis.

used in attribution? Of course, it is possible to use terminology from Cognitive Grammar and say that the *a*-adjectives are only *partially sanctioned* by their parent schema, i.e. the abstract word class (see Langacker 1987: 68–69). While the abstract adjective schema sanctions (allows for the use of) the *a*-adjectives in predication, it does not sanction attributive uses. In Word Grammar and many strands of Construction Grammar, the same idea can be expressed in terms of inheritance relations: the lower-level constructions, the *a*-adjectives, only inherit some of the properties of the more abstract construction (the word class).

However, although these notions are able to describe the synchronic fact that the *a*-adjectives are somehow marginal adjectives in PDE, they offer very little by way of explanation. Indeed, I would argue that a bottom-up, usage-based approach to word classes is much better able to account for marginal category membership as exhibited by the *a*-adjectives. In a quantitative corpus-based study, Schlüter (2008) shows that there are many factors that discourage the use of *a*-adjectives from being used in attribution, including their origin (many *a*-adjectives have developed out of prepositional phrases), a stress clash (the avoidance of successive stressed syllables in phrases like *an aghást mán*), and a preference for permanent or characteristic features to be expressed in attribution as opposed to temporary ones (which are typically encoded by the *a*-adjectives).<sup>36</sup> Interestingly, Schlüter also notes that some *a*-adjectives have become more frequent in attribution in recent times. She suggests that this is a consequence of a systemic change in English whereby attributive constructions have generally become more complex (Schlüter 2008: 172; see also Biber and Clark 2002; Biber and Gray 2011: 230–231). Importantly, all these observations are based on language use, and they help explain why the *a*-adjectives have remained marginal members of the adjective category for so long: general patterns of English usage have disfavoured their spread to attribution. I would suggest that the word class of words like *asleep* and *aghast* does not consequently emerge as clearly in the minds of the speakers as the word class of central adjectives like *happy*: while speakers of English have plenty of experience of *happy* being used in both

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<sup>36</sup> Although I find Schlüter's analysis otherwise convincing, I do not agree with her about the applicability of this last criterion. The idea that premodifiers express permanent features while postmodifiers express temporary ones was first discussed by Bolinger (1967), who pointed out the difference between phrases like *the visible stars* ('permanently visible') vs. *the stars visible* ('visible at the time of speaking'), and *the (only) navigable rivers* ('permanently navigable') vs. *the rivers navigable* ('navigable at a particular time'). Bolinger's analysis was also adopted in Quirk et al.'s (1985) discussion of premodifying participles – an analysis which I will contest in Chapter 5 below.

attribution and predication and graded in degree (e.g. *happier*, *very happy*), they are more likely to have used the *a*-adjectives in a much more restricted way – primarily in predication and without gradation.

The usage-based approach to word classes is also congruent with the results of recent diachronic studies on category change. The textbook example is the development of *key* from a noun to an adjective (see e.g. Denison 2001, 2013a; De Smet 2012; also Chapter 7 of this thesis). According to Denison, *key* started to be used in attribution in the sense of ‘decisive’ or ‘crucial’ in the early 1900s. Importantly, both these senses are descriptive and subjective, that is, they are meanings which are typically expressed by words with adjectival syntax. As has already been discussed, the difference between nouns and adjectives is neutralised in attribution, and this has probably been an important factor in *key*’s adjectivization as well. According to Denison (2013a: 164), *key*’s usage gradually expanded to predication in the 1960s, and there is evidence of other adjectival uses some decades later (e.g. *more key*; *keyer*, *very key*). This kind of development fits well with the emergent idea of word classes as epiphenomenal. At first, there is a period where *key*, which so far had been a well-established noun, is used in an equivocal context where its word class does not emerge very clearly. This vagueness can be taken as the prerequisite for change. Next, we see *key*’s use extended to predication, where adjectives are commonly found, but where count nouns cannot occur without a determiner (e.g. *this is key to our survival*). Finally, language users start to grade *key* similarly to central adjectives (e.g. *very key*; *more key*).

From a usage-based emergent perspective, it could be argued that the category change of *key* reflects the speakers’ experience of particular usage situations. Instead of a sudden reanalysis, we see a series of local analogies between lower-level constructions, which may ultimately lead to *key*’s all-out adjectivization. Importantly, the change is based on the perceived similarities between specific lower-level constructions, not on an analogy between the most abstract construction (the word class schema) and the construct in question (*key*).

## **2.6. Relevance of subjectivity/subjectification to categorization and category change**

The preceding discussion has emphasised the idea of word classes as gradient, dynamic and emergent categories that encompass the language user’s total knowledge of the meaning, function and use of a particular word or structure. Category change, on the other hand, has been described as a process where



language users gradually extend an existing word's (say, a noun's) usage patterns to contexts where words of another class (say, adjectives) are typically found. This account of category change is in line with recent theories of context types that have been discussed especially in relation to grammaticalisation (see e.g. Evans and Wilkins 2000; Heine 2002; Diewald 2002), constructionalization and constructional change (e.g. Bergs and Diewald 2008; Hilpert 2013; Traugott and Trousdale 2013), and semantic change (e.g. Traugott 1999; Traugott and Dasher 2002). All these theories are based on language use, and they share the following two premises: i) language change is triggered by semantic and/or structural ambiguities or vagueness, and ii) language change takes place in speaker/hearer interaction through pragmatic implicatures or inferencing (Traugott and Dasher 2002).

There is also ample evidence in the literature that the direction of semantic change tends to proceed from more objective to more subjective meanings; that is, speakers start to encode their attitudes and beliefs by words and constructions that were previously used in a more objective way (see e.g. Traugott and Dasher 2002; Traugott 2010). Traugott (1982) is probably the first systematic account of the subjectification of meaning in the literature. Building on Halliday's and Hasan's (1976) model of linguistic organisation, Traugott suggested that semantic change proceeds from propositional (objective) meanings to textual and expressive, that is, to increasingly subjective meanings. *Subjectification*, as defined by Traugott, has been observed in various linguistic domains. Examples of subjectification in English include the development of modal verbs like *shall*, *should* and *must* (Traugott 1989; Sweetser 1990; Hopper and Traugott 2003), discourse markers like *indeed* and *actually* (Traugott and Dasher 2002), connectives like *while* and *since* (Traugott 1989; Traugott and König 1991), and (secondary) determiners like *certain*, *same* and *different* (e.g. Breban 2006a, 2006b), and *old*, *complete* and *regular* (Davidse et al. 2008).

Subjectivity is a pervasive feature of language, and therefore subjectification provides a particularly appealing explanation of language change. Indeed, as argued by Benveniste (1958), subjectivity is such an integral part of language that it is difficult to imagine how language could ever work without it and still be called "language" (1971 [1958]: 225). Benveniste points out that the referents of personal pronouns like *I* and *you* are always interpreted in relation to an *ego* – a speaking subject. The same is true for adverbs like *here*, *there* or *yesterday*, determiners like *this*, *that* and *the*, and even tenses that situate the contents of an utterance into the speaker's present, past or future. Importantly, such meanings are always negotiated in speaker-hearer (or writer-reader) interaction. Indeed, it has become customary in recent literature to make a

difference between *subjectivity* and *intersubjectivity*; i.e., between meanings that speakers use to express their own attitudes and beliefs (e.g. Lyons 1982: 102; Traugott 2010: 33; 2012) and meanings which primarily encode addressee-oriented meanings (Cuyckens et al. 2010).<sup>37</sup>

### *Subjectivity and the adjective/participle dichotomy*

Subjective meanings can be expressed in many ways, both through words and larger patterns and constructions. It is also obvious that there is no one-to-one correspondence between subjective meanings and a specific word class: subjectivity can be expressed through nouns (*disaster, fool*), verbs (*detest, admire*), adverbs (*well, poorly*) and adjectives (*nice, interesting*), for example, and all these categories also include words that express objective meanings. Nevertheless, if we consider the criteria that are typically used to identify adjectives in the literature, it would seem that subjectivity is particularly important for the organisation of the adjective class. This is a consequence of the grading constructions that contribute to the emergence of the adjective category: grading a property in degree is a subjective act, and phrases like *very happy* or *happier* are therefore always subjective in meaning. Indeed, even when an adjective is normally used objectively, the grading construction imposes a subjective meaning on it. For instance, the word *military* is typically used objectively as a classifying adjective in phrases like *a military compound* or *military gear*, but in (2.20) the speaker uses it subjectively to assess the appearance of another person.

(2.20) He looks good, **very military**, he's hard to fluster. (COCA, 1995)

The fact that central adjectives are subjective in meaning has direct relevance to the main topic of this thesis, the categorization of adjectives and participles. Indeed, we can observe that semantically subjective participles like *charming, fascinating* and *interesting* are morphologically *-ing* participles (i.e. verb forms), but semantically and distributionally they are central adjectives. By contrast, semantically objective participles like *advancing* or *falling* have only few things in common with central adjectives: they can be used as modifiers, but they cannot

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<sup>37</sup> There are many different definitions of (inter-)subjectivity, and the reader should bear in mind that I will mainly discuss subjectivity as defined by Traugott (most recently in 2010). Useful overviews of different definitions of subjectivity can be found, for example, in De Smet and Verstraete (2006) and Cuyckens et al. (2010).

be used as adjective phrases in predication, nor can they readily be used in grading constructions. Indeed, in the case of *-ing* participles the overlap between semantics (subjectivity) and word class (adjectives) seems to be so significant that one could ask whether it makes any difference at all if these items are studied from the perspective of subjectivity or in terms of word classes.

I would argue that the main difference between the two perspectives lies in their scope. As was already pointed out, subjectivity is not tied to a single word class, and therefore analyses based on subjectivity can be extended to cover more than one word class. Analyses based on word classes, on the other hand, are more restricted in scope, but they can be useful in focusing attention on both the structure and the meaning of a class of words as well as changes that encompass both semantic and distributional aspects. In other words, by studying words from different perspectives we are able to ask different kinds of questions. For instance, studying the meaning of *-ing* participles from the perspective of lexical aspect necessitates the division of the participle category in two, as the analysis is not relevant to adjectival participles like *charming* (see Chapter 5).<sup>38</sup> By contrast, dividing the participles into verbs and adjectives is not relevant to the phenomenon studied in Chapters 7 and 8, that is, the tendency of subjective *-ing* participles, adjectives and nouns to be used in indefinite noun phrases.

### *Subjectivity and indefiniteness*

One of the main findings of this thesis (reported in Chapters 7 and 8) concerns the tendency of subjective adjectives, adjective phrases and nouns to be used with indefinite determination. When we look at corpus data, we see that NPs like *an interesting idea*, *a very nice man* and *an idiot* are much more frequent than the corresponding definite descriptions *the interesting idea*, *the nice man* and *the idiot*. An interesting consequence of this synchronic tendency is that we can observe semantic change in the data simply by studying changes in the proportions of indefinite and definite NPs over time. As discussed in Chapter 7, when speakers start to use an originally objective participle like *outstanding* ('to stand out in a neutral way') increasingly often in a more subjective sense ('excellent'), there is a gradual increase in the proportion of indefinite NPs where *outstanding* is used as a premodifier in the data. The results of these studies also suggest that increased subjectivity (e.g. *a very interesting idea*; *a much more interesting idea*) correlates with an increased likelihood of indefinite marking and

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<sup>38</sup> See De Smet and Heyvaert (2011) for a similar, independently developed analysis of the meaning of *-ing* participles.

also with a higher probability of the NP to be expressed as a predicative complement in discourse (see Chapters 7 and 8).

To see why this should be the case let us consider how information is typically structured in discourse (we are speaking in terms of probabilities instead of grammatical rules or constraints, after all). The literature on definiteness states that if the speaker marks a noun phrase as definite, they must assume that the addressee will be able to either i) uniquely identify the referent, ii) be familiar with it, or iii) be able to access the referent mentally (see e.g. Hawkins 1978; Heim 1982; Lyons 1999; Epstein 2002a; Abbott 2004). By contrast, by marking the noun phrase as indefinite, the speaker assumes that these conditions are not met: the indefinite determiner implies that the phrase includes new information that is inaccessible to the discourse participants. If we consider words like *interesting* or *idiot*, we can see that their main function is to express the speaker's subjective opinions and attitudes in discourse. Consider examples (2.21) and (2.22), which are taken from the *British National Corpus* (BNC; see Burnard 2007).

- (2.21) Full details of this interesting self-training method for developing rapid reading skill will be found in **an interesting new book** 'How To Read Faster – And Remember More', sent free on request. (BNC, CFV)
- (2.22) I said I said cos you don't know (-----) but she's a n—she's **a nice girl**, she looks alright in uniform... (BNC, JN7)

In (2.21), the writer introduces a new referent into discourse while evaluating it at the same time: *an interesting new book*. In (2.22), on the other hand, the speaker performs an evaluation of an old discourse referent (*she's a nice girl*). Regardless of the information status of the referent, then, the speaker's opinion, which has not been shared with the other discourse participants in that particular discourse context prior to the utterance, is enough to trigger indefinite marking. Indeed, the subjectivity/indefiniteness correlation could be regarded as an intersubjective discourse strategy, where the speaker takes into account the knowledge states of the other discourse participants and consequently expresses the utterance as new information (see Chapter 8; also Grice 1975: 47). This kind of awareness of the interlocutors' position in the immediate discourse context has in recent work been called "immediate intersubjectivity" as opposed to "extended intersubjectivity", where the speaker's expression shows their awareness of people who are not

present in the discourse context but who are nevertheless relevant to it (Tantucci, forthcoming).

The finding that subjective meanings are typically expressed in indefinite structures, and in a complement role, emphasises the role of context in linguistic description and language change. The fundamental role of context is also discussed in Chapter 9, where a study of three participle constructions reveals that the participles are much more often modified in degree in predication than in attribution. Indeed, this synchronic tendency may provide an explanation for the recent change in the degree modification patterns of a group of adjectival *-ed* participles, such as *amazed*, *scared* and *fascinated*. Until the late 19th century, the preferred degree modifier for all these participles was (*very*) *much*, that is, a degree adverb that also modifies finite verbs (cf. *it amazed me (very) much*). However, in the course of the 19th and 20th centuries, *much* started to give way to *very*, which typically modifies central adjectives in English (see examples (2.7) and (2.8) above). Interestingly, this is the only clear indication of category change from verbs to adjectives exhibited by the *-ed* participles. The change can be explained from a usage-based perspective by observing that the vast majority of the *-ed* participles studied in Chapter 9 are in fact used in predication in corpus data (or after BE, as the *-ed* participle in the “BE V-*ed*” pattern is ambiguous between passive verb and predicative adjective readings). Consequently, as adjectives/adjectival words are particularly often modified in degree in predication, it is plausible that the change in the modification patterns is due to the frequent use of degree modifiers in general, as language change typically affects items that occur frequently in speech (Hopper and Bybee 2001; Bybee 2007).

Tendencies like these can only be observed through the analysis of large amounts of data. Indeed, all the studies reported in Chapters 5 to 9 make use of large corpora of both Present-day English and earlier varieties of English. These corpora are introduced in section 3.2 below, but let us first turn to some methodological remarks related to the use of corpora in linguistics from the perspective of the research included in this thesis.

### 3. Methodology and data

#### 3.1. Corpus linguistics

The research reported in the empirical part of this thesis has been carried out according to the principles of empirical corpus linguistics. *Corpus linguistics* is here understood as a linguistic methodology that makes use of data from large electronic text banks that have been compiled according to specific principles. Two such principles are particularly important, as they have direct relevance to what kinds of claims can be made based on the data: i) representativeness, and ii) balance. *Representativeness* is a requirement that concerns general corpora in particular. It means that a corpus should represent the language used by a particular linguistic community as accurately as possible (see e.g. Biber 1993; McEnery and Wilson 1996). The requirement that a corpus should be representative is, of course, a very severe one, because corpora are always finite in size. Therefore, a representative corpus should be understood as a representative *sample* of language; a corpus can be used to increase our understanding of language, but the specific questions that can be explored through the study of corpus data always depend on the size of the corpus and the texts that are included in it (Leech 2007).

The *balance* of the corpus, on the other hand, refers to the composition of the corpus in terms of the proportions of genres or registers that are included in it.<sup>1</sup> In a general corpus, balance can be achieved by including texts from a wide range of genres and sub-genres. The written component of the *British National Corpus* (BNC), for instance, includes texts from fiction, academic texts and newspaper texts, and these genres are further divided into sub-genres (e.g. academic prose into social sciences, natural sciences, arts, and so on). Similarly, the 520-million-word *Corpus of Contemporary American English* (COCA) is balanced across five major genres (spoken, fiction, magazine, newspaper,

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<sup>1</sup> There is much variation in the way terms like “register” and “genre” are used in the literature (see Lee 2001), and leading scholars as well as corpus compilers have also used these terms interchangeably or sometimes inconsistently. In Biber (1988), for example, a *genre* is described in language-external terms (according to the intended audience and the purpose of the text, for instance), but in Biber and Conrad (2009: 2), *genre-analysis* includes both the study of common linguistic features of the text, its situation of use and the conventional structures that are used to construct a text of a particular variety. From the perspective of the research reported in this thesis (especially Chapter 6), either *genre* or *register* could have been used to refer to the different kinds of textual categories studied.

academic), which are all divided further into sub-genres. Quite typically, however, corpus compilers only pay attention to the balance of the corpus on a rather general level. Indeed, in addition to genre-related information, corpora are often annotated in terms of other relevant parameters, but the texts may not be balanced with respect to these features. For example, the *British National Corpus* includes information of the speaker's/author's sex, age and target audience, but the corpus is not balanced for these particular parameters (Burnard 2007).

Typically, the genre/register division in corpora is based on language-external features, such as the topic of the text and the publication medium, but genres can also be organised by linguistic criteria. For instance, Douglas Biber has proposed that genres (or registers) can be identified through factor analysis by studying the frequency of linguistic forms that typically co-occur in different textual dimensions, such as “involved vs. informational text production”, “narrative vs. non-narrative discourse” and “situation-dependent vs. elaborated reference” (see e.g. Biber 1988, 1995). One benefit of Biber's multi-dimensional approach is that it provides a well-defined methodology for examining how genres change in time (see e.g. Biber and Finegan 1989). Indeed, although the question does not really arise in the context of this thesis, one should always be mindful of the possibility that the changes observed in corpus data may in fact be a consequence of the composition of the corpus and the evolution of a genre instead of grammatical change (see e.g. Biber 2003; Hinrichs and Szmrecsanyi 2007; Biber and Gray 2011).

In addition to genre-related information, many corpora also include linguistic information in the form of part-of-speech (POS) annotation, and some corpora, such as the *Penn Parsed Corpora of Historical English* even include information about the phrasal and clausal structuring of the texts. Although some researchers have expressed strong reservations about linguistic annotation, primarily because all annotation adds an analytical (and to some extent subjective) layer to the raw data,<sup>2</sup> it is clear that there are many research questions that could not be studied if the data were not tagged for parts of speech. However, this is not to say that data annotation is without problems. Indeed, the topics discussed in Chapters 5 and 6 were in part motivated by the question of how premodifying *-ing* participles should be annotated in corpora: annotating a corpus for part-of-speech information always runs the risk of forcing gradient data into the Procrustean bed of classical categorization, and when the research reported in

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<sup>2</sup> See e.g. Tognini-Bonelli (2001) for a division between “corpus-driven” and “corpus-based” research. See also McEnery et al. (2006: 7–10) and Xiao (2009: 995) for critical, and persuasive, discussions of this dichotomy.

this thesis started, it was impossible to retrieve different kinds of premodifying *-ing* participles from corpus data by using POS annotation: both adjectival participles (e.g. *interesting*) and verbal participles (e.g. *advancing*) were uniformly tagged as adjectives in the widely used corpora of English.<sup>3</sup>

In principle, corpus annotation schemes do not necessarily need to follow the binary choices imposed by the classical theory of categorization. For example, automatic POS taggers may assign an ambiguity tag to a word which they cannot analyse (for instance, by indicating that the word is either an adjective or a noun). In my opinion, these ambiguity tags could also be used to indicate that the word class is truly vague between two alternatives. This possibility was already discussed by the compilers of the Penn Treebank, who explicitly argued that as it is not always possible to assign a POS tag to a word with confidence, ambiguity tags could be used to indicate categorial indeterminacy (Marcus et al. 1993: 316; see also Denison 2013b). In the manual to the BNC, on the other hand, Leech and Smith acknowledge the difficulties related to part-of-speech annotation, but conclude that “ideally, all tags should be correctly disambiguated”<sup>4</sup> (see also Denison 2007 for several case studies that are discussed specifically from the perspective of POS annotation). In my opinion, problems that arise in POS annotation are a direct consequence of the lack of fit between gradient and sometimes indeterminate data and the implicit assumption that each word must be associated with a category label, and this makes it both a theoretical and a practical problem. As McEnery and Hardie (2012: 14) put it: “To identify problems with accuracy and consistency in corpus annotation is, in principle at least, to identify flaws with analytical procedures in the whole of linguistics.”

Because of the requirement of representativeness that was discussed above, large corpora provide an excellent opportunity to study patterns of language use and linguistic change across time from the perspective of a community of speakers. However, it is much more difficult to study variation in the usage patterns of an individual speaker by using corpus data (insofar as large general corpora, such as the BNC or COCA are concerned). When it comes to categorization and gradient categories, we may observe from corpus data that a particular pattern becomes gradually more or less frequent within the linguistic community, but we can only rarely see signs of gradient categorization in the

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<sup>3</sup> To my knowledge, the situation remains the same at the time of the publication of this thesis.

<sup>4</sup> Geoffrey Leech and Nicholas Smith: “Manual to accompany the British National Corpus (Version 2) with improved word-class tagging”.  
[http://www.natcorp.ox.ac.uk/docs/bnc2postag\\_manual.htm](http://www.natcorp.ox.ac.uk/docs/bnc2postag_manual.htm) (accessed April 5, 2016).



language use of an individual speaker. In short, we typically see language change as a step-wise progression (a series of micro-changes) in corpus data, but it is much more difficult to find evidence of the kind of gradience that surfaces when speakers report on their reactions to certain forms, as discussed in Denison (2010) concerning the adjectival uses of *rubbish*, for example (see section 2.5 above). Indeed, examples like (2.1), where an adjectival use of *rubbish* is enclosed in quotation marks, or (2.6), where the speaker makes a comment about his own usage of *very dynamite*, are very rare in corpus data. Nevertheless, they do suggest that the gradualness of category change is indeed connected to gradient speaker judgments about the well-formedness of the emerging structures. Likewise, the change in the degree modification patterns of *-ed* participles that is discussed in Chapter 9 (and exemplified in (2.7) and (2.8) above) shows that speakers may construe some words in two different ways at roughly the same time in their lives. In case of the *-ed* participles, the *Corpus of Historical American English* (COHA) includes many cases where an author uses two different constructions to modify an *-ed* participle in the same book, either emphasising the participles' connection to verbs by using *much* or highlighting their connection to adjectives by using *very*. Examples (3.1) and (3.2) are from a book called *Martha's Little Shop* by Inez Haynes Gillmore, while (3.3) and (3.4) are taken from Amanda Douglas's book *A Little Girl in Old Salem*.

- (3.1) Maida was very polite but it was evident that she was not **much interested**. (COHA, 1909)
- (3.2) Billy was **very interested** in the secret language. (COHA, 1909)
- (3.3) He was asked to take luncheon with them and they proved quite agreeable and intelligent, and **much pleased** at the prospect of seeing Elizabeth and Eunice Leverett. (COHA, 1908)
- (3.4) She hunted him up and he was **very pleased** to meet Mr. Leverett. (COHA, 1908)

Indeed, general corpora like COHA are not very well-suited for studying this kind of variation due to the requirement of representativeness. However, if a corpus is large enough, evidence of gradience in the language of an individual speaker can sometimes be observed. One recently published corpus that may prove useful in future studies is the Hansard Corpus (<http://www.hansard-corpus.org/>), which includes almost all speeches delivered in the British Parliament from 1803 to

2005. As the Hansard Corpus is not restricted by such general principles as balance and representativeness, it offers better opportunities to study variation and change at the level of the individual (see also De Smet 2016).<sup>5</sup>

What large corpora lack in terms of observational detail in this respect, however, is well compensated by the fact that large data sets have allowed us to study phenomena that are infrequent in language or only observable as tendencies instead of categorical splits. Indeed, most of the research questions discussed in this thesis could not have been explored ten years ago due to lack of data. Large corpora also provide us with the possibility to revisit and rethink some earlier analyses that have been proposed on the basis of introspective evidence or few isolated examples. In Chapter 5, for example, the semantic analysis of *-ing* participles, which was not backed up by empirical data in Quirk et al. (1985), is challenged in light of corpus data.<sup>6</sup>

The size of some recently compiled corpora is truly massive, and they can include hundreds of millions and even billions of words.<sup>7</sup> While the large size of the corpus is in many cases a real advantage to the researcher, there are also some problems that need to be taken into account. For example, as opposed to smaller corpora, where POS tagging can be first performed automatically and then manually rechecked (see e.g. Marcus et al. 1993: 6–7), it is impossible to check the annotation of the modern mega-corpora: the amount of data is simply too overwhelming. As a consequence, there will always be some undesirable noise in the data, as POS taggers can never achieve perfect accuracy. This is especially problematic for research on gradient categories, since the taggers have been trained according to typical usage patterns, and emerging patterns – such as adjectival uses of *key* or *rubbish* – may therefore not be recognised by the annotation software (see also Denison 2007). Consequently, in this thesis I have supplemented all POS queries with lexical queries (when feasible) in order to ensure that the results will not be skewed due to low recall. An exception to this principle is the case study reported in Chapter 6, where data were extracted from a parsed version of the BNC by a script designed by Jeffrey Lijffijt.

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<sup>5</sup> Another corpus that has recently been used to study how individual speakers change their usage over time is the *Corpus of Early English Correspondence* (see Nevalainen and Raumolin-Brunberg, forthcoming).

<sup>6</sup> As has already been pointed out, the analysis of premodifying *-ing* participles in Quirk et al. (1985) is largely based on Bolinger (1967).

<sup>7</sup> For instance, the GloWbE corpus (*Corpus of Global Web-based English*) includes 1.9 billion words of text (Davies and Fuchs 2015).

Studies included in Chapters 8 and 9 also make use of statistical significance testing (Fisher's exact test). The purpose of these tests is to establish that the results obtained are not due to chance but represent genuine differences between the data sets studied (Coolidge 2013: 166). Statistical significance is typically expressed in terms of a significance level, which is in turn expressed as a  $p$ -value. Typically, a  $p$ -value lower than 0.05 is taken to indicate a statistically significant finding. In other words,  $p < 0.05$  means that there is a lower than five per cent probability that the result is due to chance. In addition to the Fisher's exact test, most corpus-based studies to date have used the chi-squared ( $\chi^2$ ) and log-likelihood tests to check for statistical significance. The benefit of these tests is that they can be used very quickly to see whether the data merit more detailed attention (Säily 2014: 45). On the other hand, they have been known to yield false positives, and therefore care must be exercised when using them to study word frequencies (Kilgarriff 2005). Ideally, statistical significance tests should also be able to control for the dispersion of the observed phenomenon in the data (Säily 2014: 46). In the case studies included in this thesis, however, it has not been feasible to calculate dispersion systematically: keeping count of the dispersion of tens of thousands of tokens would simply have been too labour-intensive.

A final methodological note concerns the operationalisation of a semantic notion that is the focus of Chapters 7 and 8 below: subjectivity. As was already pointed out, *subjectivity* is expressed through different kinds of words and constructions in language. Furthermore, it should be emphasised that subjectivity is a scalar notion: in reality, there is no sharp line between subjective and objective meanings – meanings can be considered to be subjective or objective to a degree (e.g. Traugott 2010: 34–35). Therefore, the division of adjectives, nouns and participles into subjective and objective items should be understood as a generalisation that roughly corresponds with the typical usage of the words studied. For example, as pointed out in Chapter 8, the noun *technician* is used 440 times in COCA, and only in 2 of the 440 cases is it used subjectively. The amount of noise in the data can therefore be regarded as inconsequential.

### 3.2. Corpora and databases

In this section I will briefly introduce the corpora and databases that are used in the empirical part of this thesis. The methods used in data retrieval are discussed separately in each article and will not be repeated here. However, it should be reiterated that all POS-based corpus queries in Chapters 5, 7, 8 and 9 have been supplemented with lexical queries, if possible, to ensure higher recall. Chapter 6

is an exception as the retrievability of the different kinds of participles was part of the research question.

The diachronic coverage of the studies is relatively long, with Early Modern English representing the earliest stage of English studied. Because of the historical range and the low frequency of some of the linguistic items studied, data have also been gathered from several corpora and databases. Table 3.1 shows some general information of the corpora and databases used in Chapters 5 to 9.

**Table 3.1.** Corpora and databases used in the empirical part of the thesis

Corpus/database	Description	Period	BrE/AmE	Words
Penn-Helsinki Parsed Corpus of Early Modern English (PPCEME)	General corpus	1500–1720	BrE	ca. 1.7 million
Eighteenth Century Collections Online, Text Creation Partnership (ECCO-TCP)	Database	1700–1800	BrE and AmE	ca. 59.1 million
Old Bailey Online (OB)	Database	1700–1800	BrE	n/a
Corpus of Late Modern English Texts (CLMET) <sup>8</sup>	General corpus	1710–1850	BrE	ca. 5.8 million
Corpus of Historical American English (COHA)	General corpus	1830–2009	AmE	ca. 406 million
British National Corpus (BNC)	General corpus	1960s–1990s	BrE	ca. 100 million
Corpus of Contemporary American English (COCA)	General corpus	1990–2012	AmE	ca. 432 million
Freiburg-LOB Corpus of British English (F-LOB)	General corpus	1991	BrE	ca. 1 million

<sup>8</sup> The version of the CLMET used in the case studies is described in De Smet (2005).

As can be seen from Table 3.1, the data used in the case studies are quite varied. First, data are drawn from general corpora, which have been compiled according to the principles of balance and representativeness that were discussed above, but some data are also taken from databases which are simply large text repositories that have been collected opportunistically. For instance, the *Eighteenth Century Collections Online* includes “every significant English-language and foreign-language title printed in the United Kingdom” in the eighteenth century,<sup>9</sup> and the TCP version of ECCO that is used in the case studies is just a small sample of the larger database (ECCO-TCP currently includes 2,231 texts, while the ECCO database consists of 205,000 individual volumes.<sup>10</sup> The *Old Bailey Online*, on the other hand, is a collection of trial reports published in the *Proceedings of the Old Bailey*. Like ECCO, the Old Bailey database was originally compiled with socio-historical questions in mind, and the texts included in the database consist of the published trial reports in their entirety.<sup>11</sup> It is obvious that great care should be exercised when using these databases as sources in linguistic research, especially when studying frequency changes over time.

The corpora in Table 3.1 are also heterogeneous in many respects, especially when it comes to balance across genres. For instance, the composition of *Freiburg-LOB Corpus of British English* (F-LOB) follows the detailed organisation of the Brown corpus (Francis and Kučera 1979), while the genre division in the *Corpus of Contemporary American English* (COCA) and the *Corpus of Historical American English* (COHA) is relatively coarse (see Davies 2008, 2009). This is in part a function of the size of these corpora. The F-LOB corpus, for example, only consists of ca. one million words of text, which means that all texts in the corpus can be checked and managed by individual researchers. COCA and COHA, by contrast, include hundreds of millions of words, and the large amount of work required in their compilation necessitates a simpler and more practical approach to genres. The *British National Corpus*, on the other hand, includes much detailed information not only about genres but also about authors, speakers and their audiences. Indeed, while there is ongoing debate about

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<sup>9</sup> ECCO also includes many texts produced in the United States, but the comprehensive coverage only concerns the United Kingdom.

See <http://gdc.gale.com/products/eighteenth-century-collections-online/>. Accessed April 22, 2016.

<sup>10</sup> See <http://www.textcreationpartnership.org/tcp-ecco/>.

<sup>11</sup> The *Old Bailey Corpus*, which comprises ca. 10 per cent of the texts in the Old Bailey Online, has recently been made available for the research community. (<http://www1.uni-giessen.de/oldbaileycorpus/>; accessed May 2, 2016).

the pros and cons of “small and tidy” and “big and messy” corpora, the BNC manages to tread a middle ground (see Mair 2007: 356). However, in my opinion even the corpora that are sometimes referred to as “big and messy”, such as COCA and COHA, are extremely valuable resources for linguistic research. Although the first two decades included in COHA (1810–1820) are clearly not well balanced, and have been excluded from the case studies reported in this thesis, the data from 1830 to 2009 are much more reliable in terms of genre balance: literature constitutes ca. 50 per cent of all data, and the proportion of the other three genres (newspapers, non-fiction books, popular magazines) also remains stable.<sup>12</sup>

Because different corpora have typically been compiled according to different principles, it is not always easy to compare two datasets synchronically or diachronically. However, I think that this is a problem that affects the field of linguistics more generally, especially when the research focuses on low-frequency items like the participles and adjectives studied in this thesis. Indeed, as pointed out above, many of the research questions discussed in this thesis would have been impossible to study if large corpora like COHA did not exist. Another problem that should be acknowledged concerns the variety studied. Although it is quite obvious that varieties like *British English* or *American English* are relatively crude abstractions that are mainly based on geography, there are, of course, real linguistic differences between these macro-varieties. Ideally, the studies introduced in this thesis would have focused on either British or American English, but for practical reasons it was necessary to discuss data from both varieties.

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<sup>12</sup> The question is not only about balance but also about the small amount of data in the 1810s and the 1820s in COHA.

## **4. Concluding remarks**

The purpose of the discussion in the preceding chapters has been to provide some background against which the studies presented in Chapters 5 to 9 should be read and understood. As the case studies discuss very specific research questions, it has not always been possible to connect them to a wider theoretical context, such as the nature and organisation of word classes, in their original publications. I hope that by introducing some of the relevant philosophical and linguistic literature I have been able to emphasise the importance of research on categorization, category change and marginal category members. I also hope that the studies will in their own small part contribute to the practical task of corpus annotation, so that the annotation schemes used in linguistic mark-up would be better able to reflect linguistic reality in the future.





## **PART III: CONCLUSION**



## 10. Summary of findings and concluding remarks

This thesis has focused on questions related to the categorization, meaning, use and category change of premodifying *-ing* participles and other kinds of adjectival constructions in English with special reference to subjectivity. The research reported in Chapters 5 to 9 is intended to introduce new aspects to the growing body of research on the nature of word classes on the one hand and expressions of subjectivity on the other. I will now review the main research questions that were introduced in section 1.2., after which I will conclude this thesis by proposing some questions for future research.

The first two research questions concerned the categorization and semantic analysis of *-ing* participles.

- (1) Should all premodifying *-ing* participles be categorized as members of a single word class? Are there grounds for analysing *-ing* participles as adjectives and verbs?
- (2) How should *-ing* participles be analysed semantically?

As was discussed in Chapters 5 and 6, many linguists consider all premodifying *-ing* participles to be adjectives because of their prenominal position and descriptive function (e.g. Borer 1990; Conrad et al. 2002: 14), while others have pointed out that some *-ing* participles exhibit verb-like behaviour in their meaning and complementation patterns (e.g. Huddleston 1984; Quirk et al. 1985). Personally, I think that arguments for lumping all *-ing* participles into the adjective class are spurious at best: regardless of whether one approaches categorization from the classical perspective or not, the differences between verbal and adjectival *-ing* participles are significant. First, as discussed in Chapter 5, adjectival *-ing* participles are distributionally very different from verbal participles. For example, while *a very interesting idea* and *a more interesting performance* are perfectly grammatical, *a very running man* and *a more writing man* are not. On the other hand, the analysis of premodifying *-ing* participles in terms of lexical aspect (atelicity) quite clearly only obtains for those participles that exhibit verb-like behaviour: conceptualising an eventuality in terms of (the lack of) an inherent end-point only makes sense when the event is construed as having some kind of internal organisation.

My analysis of the meaning of premodifying *-ing* participles is similar, but not quite the same, as the one developed independently by De Smet and Heyvaert

(2011). As was already pointed out, in my analysis the verb-like qualities of the *-ing* participles are naturally emphasised, simply because atelicity is an aspectual category that patterns structurally with verbs in English. De Smet and Heyvaert, on the other hand, focus on the mismatch between the verb-like meaning of participles and temporal stability that has been associated with adjectives in previous literature (e.g. Givón 2001; Croft 2001). Both analyses have their merits; on the one hand, De Smet and Heyvaert's analysis is appealing because the similarity between adjectives and (verbal) *-ing* participles receives a motivated explanation through mismatch. My analysis, on the other hand, is better able to account for the dynamic meaning of many verbal participles, as atelicity does not require that the eventuality denoted by the participle is perceived as temporally stable. In any case, I believe that the difference in the two analyses is minor, as does De Smet (p.c. April 25, 2012).

Chapter 6 discussed the distribution of adjectival and verbal participles in the different registers of the *British National Corpus*. The aim of the study was to establish whether the division of *-ing* participles into two classes has any real-life relevance or whether the question is simply about analytical preferences – a relatively trivial difference between a “lumping” and a “splitting” approach to word class categorization (see e.g. Croft 2000 for some discussion; also Beck 2002). The results of the study showed that there are indeed significant differences in the distribution of the two types of participle in corpus data. For instance, while over 80 per cent of all premodifying *-ing* participles were verbal participles in academic prose, ca. 65 per cent of the participles in spoken conversation were adjectival. These results provided some indirect support to the analysis of *-ing* participles in Chapter 5, and they also anticipated the analysis of *-ing* participles in terms of subjectivity, which was taken up in Chapter 7; after all, spoken conversation is an interactive register with high speaker involvement (Biber 1988: 107), and expressions of subjective opinion and stance are therefore particularly frequently expressed in conversation.

The following research question was the focus of Chapters 7 and 8:

- (3) Are there preferred structures where subjective adjectives and participles are used? Can knowledge of these structures be used to study semantic change?

Initially, this question was framed only in terms of subjective and objective participles, but it soon became clear that a broader analysis of adjectival modifiers (and later nouns) was called for. In short, corpus data revealed a

convincing preference for subjective meanings to be expressed in indefinite NPs (and as predicative complements), while objective meanings were more evenly distributed across definite and indefinite NPs in the data. Although Chapter 7 studied this correlation only with reference to definite and indefinite articles, the data studied in Chapter 8 showed that the observed tendency also obtained when demonstrative and possessive determiners were included in the data. Although I believe that the correlation between subjectivity and indefiniteness is interesting in its own right, it also has a practical application that was discussed in Chapter 7: when a premodifying adjective/participle comes to be used more subjectively over time, this subjectification process can be studied in corpus data simply by observing changes in the proportion of indefinite NPs where the word is used as a premodifier. For example, the increased proportion of indefinite uses of *key* (depicted in Figure 7.2 above) fits very well with observations of *key*'s adjectivization in previous literature (e.g. Denison 2001, 2007; De Smet 2012). Furthermore, as was discussed in section 2.6., subjectification is a well-established mechanism of language change (see e.g. Traugott 2010: 35), and the observed correlation may therefore prove a particularly useful tool in future studies of semantic change.

Semantic change is often connected to structural changes and category change. However, category change may also take place with no observable change in the meaning of the word/construction. This kind of change was studied in detail in Chapter 9, which addressed the following question:

- (4) How should category change of complex *-ing* participles (e.g. *awe-inspiring*, *modest-looking*) be described and analysed? How can a constructionist network model contribute to research on category change?

Chapter 9 discussed the gradual adjectivization of the ADJ-*looking*, N-*Ving*, and adjectival *-ed* constructions. The adjectivization of the two *-ing* constructions was measured by examining their increased independence from the (complex) attributive construction, while the adjectivization of the *-ed* participles was mainly discussed in terms of changes in the participles' degree modification patterns. While it is plausible that the developments discussed in Chapter 9 may have been accompanied by subtle changes in meaning or construal, in many cases the data suggested that there had been a change in usage patterns with no discernible semantic change. For example, it would seem unlikely that the meaning of *nerve-wracking* was markedly different from its present-day meaning

in the late 19th century, even though in those days it was distributionally restricted to being used in attribution.

The changes in the participle constructions in Chapter 9 were discussed from a constructionist perspective, where word classes are understood as usage-based, emergent, language-specific categories (see section 2.5. above). In this chapter, the strict division between verbal and adjectival participles was backgrounded and the gradient nature of word classes emphasised: word classes were seen as abstract schemas that arise from patterns of use, and the distance of a micro-construction from the central members of the word class was regarded as a function of both its meaning and its use in the constructions from which the word class emerges. For instance, I argued that the prototypical adjectives in English are semantically subjective and gradable, and they are used in attribution and in predication as well as in several grading constructions. Consequently, the adjectivization of the complex *-ing* participles could be examined through their increased use in predication, while the adjectivization of a set of *-ed* participles could be investigated by studying some significant changes in their degree modification patterns: the more recent pattern with *very* corresponds to constructions associated with central adjectives, while the older pattern with *much* emphasised the similarity between the *-ed* participles and verbs.

I would suggest that adopting this perspective may help resolve some fundamental problems related to word class analysis. First, if word classes are regarded as usage-based, emergent categories that reveal prototype organisation, the problem of having to choose between splitting and lumping approaches loses its significance: we may observe that a word or a micro-construction is, for example, adjective-like in some respects and verb-like in others. This usage-based approach to word classes also turns the traditional structuralist view of word classes on its head: instead of grouping words into word classes in terms of their distributional *potential*, the emergent approach is based on attested usage. Another benefit of the emergent view is that constructions at all levels of schematicity are regarded as dynamic and subject to change: the abstractions that we call “word classes” change as language users change their linguistic behaviour over their lifetime and as new generations of speakers introduce innovative forms to the language. Indeed, in this approach terms like “adjectival” and “verbal” participles should in fact be understood in terms of prototypes, not as sharply distinct classes.

The final research question introduced in section 1.2. was also one of the main topics discussed in Chapter 9.

- (5) How well-suited are the current theories of context types to the study of the category change of participles? What is the role of ambiguous contexts in category change?

The facilitative effect of ambiguous contexts of use on semantic and structural change is typically taken for granted in the recent usage-based literature on language change (Evans and Wilkins 2000; Diewald 2002; Heine 2002; Traugott and Dasher 2002). However, I argued in Chapter 9 that ambiguity may not always promote change; it can also serve as a conservative force by continuing to provide access to the original source construction. In other words, although a participle construction may come to be used in different adjectival contexts over time, the earlier verbal schema remains available to speakers, at least to a degree. Such a situation may result in the relative stability of a “mixed” or “hybrid” construction like the participle. If this analysis is accepted, it provides further evidence against the view that every single word should be assigned a unique category label, a position that is widespread in generative linguistics, for example (see section 2.4. above).

In section 2.5, I discussed word classes as potentially *vague* or *underspecified* entities (following Denison 2010, 2013a). Although I have not made the distinction between ambiguous and vague constructions in the case studies included in this thesis, I do think that the distinction is potentially an important one. As Denison points out, even when speakers use an ambiguous structure, they typically have one specific interpretation in mind. An example of ambiguity would be a sign in a pub saying *Duck or grouse*, which is a play on two vastly different readings, one involving two species of birds and the other one two imperative verbs that warn the customers of a low-hanging beam in the pub (Denison 2013a: 171–172). Vagueness, on the other hand, refers to underdetermined meanings, as in *Jan killed her husband*, where the verb *killed* gives no indication of intentionality: Jan may have killed her husband on purpose or by accident. According to this definition, the questions explored in Chapter 9 could be reframed in terms of vagueness, as it does not seem likely that language users would make a conscious effort to communicate the word class of a word or a micro-construction in discourse (or that they should normally pay special attention to word class analysis upon hearing a construct uttered). Therefore, it is possible that the information about the abstract schema, the word class, could be discussed in terms of vagueness instead of ambiguity.

However, it could also be argued that the difference between vagueness and ambiguity may actually become neutralised in some contexts of use.<sup>1</sup> For instance, as discussed in section 2.5 above, *rubbish* in *a rubbish golfer* can be understood to be *vague* between noun and adjective readings. However, it seems to me that *rubbish* could also be regarded as ambiguous, although evidence for this would be hard to find: if the speaker entertains only one categorization of *rubbish* (say, *rubbish* as a noun), then he would find adjectival uses like *very rubbish* and *more rubbish* unacceptable, and probably also insist that there is nothing vague about his use of *rubbish* in *a rubbish golfer*. Corpus data cannot shed much light on this particular question, and it would therefore be important to complement corpus-based analyses of categorization and category change with psycholinguistic studies.

One of the main results of the research reported in this thesis concerned the correlation between subjective meaning and new information in discourse, and some final remarks about the topic are in order. From a methodological perspective, it should once again be pointed out that many semantic notions – and especially scalar notions like *subjectivity* – are difficult to operationalise, and the subjective and objective items studied in Chapters 7 and 8 should certainly be supplemented with larger data sets in future research. Furthermore, it should be borne in mind that subjectivity is only one factor affecting how information is structured in discourse: it is obvious that if an adjective or a noun occurs particularly often with indefinite marking in corpus data, this does not automatically mean that the item in question is subjective. Nevertheless, to my knowledge subjectivity has not featured as a topic of inquiry in previous work on information structure (e.g. Ariel 1990, Chafe 1994, Lambrecht 1994, Epstein 2002a), and the correlation between subjectivity and indefiniteness as presented in Chapters 7 and 8 should certainly be acknowledged in future work on information structure.

Another result that would merit further attention was discussed in Chapter 9, where the data on the changing degree modification patterns of adjectival *-ed* participles revealed a tendency for degree modifiers to be used more often in predication than in attribution. Here, only few items were studied, and although the results seemed very robust, much larger data sets need to be investigated in the future in order to establish the true extent of the phenomenon. If more evidence for this tendency can be found, it would bring further support to the idea that word classes are abstractions based on actual patterns of use. Similarly to the

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<sup>1</sup> See Denison (in press) for similar, independently developed ideas.



correlation between subjectivity and indefiniteness, the tendency of degree modifier constructions to be used particularly often in predication emphasises the importance of lower-level constructions on the emergence of a word class: the predicative construction should be assigned greater importance than the attributive construction as far as the role of degree modification in the emergence of the adjective category is concerned. As I see it, a usage-based constructionist approach to word classes should be able to accommodate such observations with ease, but I suspect that other frameworks, such as generative grammar, may have more trouble with data like these.

One thing that was mentioned, but not discussed in detail in Chapter 9, was the possibility that constructions may contribute to the emergence of the abstract word class schema in varying degrees. For example, attributive use is often considered to be an especially important criterion for a word's inclusion in the adjective class. Indeed, the adjectivization of participles in Chapter 9 was mainly discussed in terms of their distribution in attribution and predication, which of course means that I myself consider these two constructions to be particularly relevant to a word's or micro-construction's membership in the adjective category. At this point, it is not at all clear how different constructions should be weighted in an emergent constructionist model of word classes, but this is clearly a very important question that should be studied in greater detail in the future. One possible way to start would be to study the frequencies of the constructions and to place particular emphasis on the most frequently occurring constructions. However, it should be borne in mind that high frequency does not automatically entail psychological salience or prototypicality (see e.g. Gilquin 2006 for a discussion). As noted by Aitchison (1998: 229), the informants in one of Rosch's classic studies rated some rare items like *love seat* and *davenport* higher on the scale of prototypicality in the category *furniture* than an everyday item like *refrigerator*, which incidentally has a much higher textual frequency in general corpora. Indeed, in addition to a corpus linguistic perspective, the question of the relative importance of different constructions to word class emergence should be studied by using other methodologies that can complement the frequency-based information that is readily available through corpus studies.

Linguistic categorization can be studied from various perspectives, but I personally think that a constructionist approach to word classes provides particularly exciting avenues for future research. In this respect, it is rather unfortunate that in one of the most influential, and insightful, constructional accounts of language, Croft's *Radical Construction Grammar* (2002), the status of word classes is overtly questioned. However, it seems to me that Croft's criticism of the concept of *word class* is mainly aimed at the idea that word

classes are fundamental and universal entities that should be taken as the basis of typological and cross-linguistic analysis. Furthermore, Croft (2007) points out methodological problems related to the identification of word classes, arguing that there is no objective way to decide on the correct criteria for category membership. These methodological problems are indeed real, and I agree that more work needs to be done in order to arrive at a methodologically sound way of defining word classes in different languages. At present, a certain amount of “methodological opportunism” (see Croft 2007) seems unavoidable. However, I would argue that considering the fundamental importance of categorization in our everyday lives and development – a topic that was only briefly touched upon in Chapter 2 – it would be quite extraordinary if we did not form any kind of abstract linguistic categories that are based on both the meaning/function of words and language-specific structures. In this respect, I believe that it would be particularly interesting to continue to analyse words and constructions that are in some way at the margins of a category: understanding the periphery may lead to a better understanding of the core. It is precisely because of this that participles and other hybrid categories are so important – and interesting – to study.

**Bibliography**

- Aarts, Bas. 2004. Modelling linguistic gradience. *Studies in Language* 28(1): 1–49.
- Aarts, Bas. 2007a. *Syntactic gradience: The nature of grammatical indeterminacy*. New York: Oxford University Press.
- Aarts, Bas. 2007b. In defence of distributional analysis, *pace* Croft. *Studies in Language* 31(2): 431–443.
- Aarts, Bas. 2008. Approaches to the English gerund. In Graeme Trousdale and Nikolas Gisborne (eds.), *Constructional approaches to English grammar*, 11–32. Berlin: Mouton de Gruyter.
- Aarts, Bas, David Denison, Evelien Keizer and Gergana Popova. 2004. *Fuzzy grammar: A reader*. Oxford: Oxford University Press.
- Abbott, Barbara. 2004. Definiteness and indefiniteness. In Laurence A. Horn and Gregory Ward (eds.), *The handbook of pragmatics*, 122–149. Oxford: Blackwell.
- Acton, Eric K. and Christopher Potts. 2014. That straight talk: Sarah Palin and the sociolinguistics of demonstratives. *Journal of Sociolinguistics* 18(1): 3–31.
- Adamson, Sylvia. 2000. A lovely little example: Word order options and category shift in the premodifying string. In Olga Fischer, Anette Rosenbach and Dieter Stein (eds.), *Pathways of change. Grammaticalization in English*, 39–66. Amsterdam: John Benjamins.
- Aitchison, Jean. 1998. Bad birds and better birds: Prototype theories. In Virginia P. Clark, Paul A. Eschholz and Alfred F. Rosa (eds.), *Language. Readings in language and culture*, 6<sup>th</sup> edition, 225–239. Boston: Bedford/St. Martin's.
- Algeo, John. 1962. 'A fun thing'. *American Speech*, 37(2): 158–159.
- Amiot, Dany and Kristel Van Goethem. 2012. A constructional account of French *-clé* 'key' and Dutch *sleutel-* 'key' as in *mot-clé* / *sleutelwoord* 'keyword'. *Morphology* 22(3): 347–364.
- Andersen, Øistein E., Julien Nioche, Edward J. Briscoe and John Carroll. 2008. The BNC parsed with RASP4UIMA. In Nicoletta Calzolari, Khalid Choukri, Bente Maegaard, Joseph Mariani, Jan Odijk, Stelios Piperidis and Daniel Tapias (eds.), *Proceedings of the Sixth International Language Resources and Evaluation Conference (LREC08), Marrakesh, Morocco*, 865–869.
- Aoun, Youssef. 1981. Parts of speech: A case of redistribution. In Adriana Belletti, Luciana Brandi and Luigi Rizzi (eds.), *Theory of markedness in generative grammar. Proceedings of the 1979 GLOW Conference*, 3–24. Italy: Scuola Normale Superiore Pisa.
- Ariel, Mira. 1990. *Accessing noun phrase antecedents*. London and New York: Routledge.
- Ariel, Mira. 2001. Accessibility theory: An overview. In Ted Sanders, Joost Schilperoord and Wilbert Spooren (eds.), *Text representation: Linguistic and psycholinguistic aspects*, 29–87. Amsterdam: John Benjamins.
- Ariel, Mira. 2007. A grammar in every register? The case of definite descriptions. In Nancy Hedberg and Ron Zacharsky (eds.), *The grammar-pragmatics interface: Essays in honour of Jeanette K. Gundel*, 265–292. Amsterdam/Philadelphia: John Benjamins.
- Armstrong, Sharon Lee, Lila R. Gleitman and Henry Gleitman. 1983. What some concepts might not be. *Cognition* 13: 263–308.

- Athanasiadou, Angeliki, Costas Canakis and Bert Cornillie (eds.). 2006. *Subjectification. Various paths to subjectivity*. Berlin/New York: Mouton de Gruyter.
- Bach, Emmon. 1986. The algebra of events. *Linguistics and Philosophy* 9(1): 5–16.
- Bache Carl. 1978. *The order of premodifying adjectives in Present-day English*. Odense: Odense University Press.
- Baker, Mark C. 2003. *Lexical categories: Verbs, nouns, and adjectives*. Cambridge Studies in Linguistics 102. Cambridge: Cambridge University Press.
- Bauer, Laurie and Rodney Huddleston. 2002. Lexical word-formation. In Rodney Huddleston and Geoffrey K. Pullum (eds.), *The Cambridge grammar of the English language, 1621–1721*. Cambridge: Cambridge University Press.
- Beck, David. 2002. *The typology of parts of speech systems: The markedness of adjectives*. New York: Routledge.
- Bednarek, Monika. 2008. *Emotion talk across corpora*. Basingstoke/New York: Palgrave Macmillan.
- Bennis, Hans and Pim Wehrmann. 1990. On the categorial status of present participles. In Reineke Bok-Bennema and Peter Coopmans (eds.), *Linguistics in the Netherlands 1990*, 1–11. Dordrecht: Foris.
- Benveniste, Emile. 1971 [1958]. Subjectivity in language. In *Problems in general linguistics*, 223–30. Translated by Mary Elizabeth Meek. Coral Gables, Florida: University of Miami Press.
- Bergs, Alexander and Gabriele Diewald (eds.). 2008. *Constructions and language change*. Berlin: Mouton de Gruyter.
- Berlin, Brent and Paul Kay. 1969. *Basic color terms: Their universality and evolution*. Berkeley: University of California Press.
- Biber, Douglas. 1988. *Variation across speech and writing*. Cambridge: Cambridge University Press.
- Biber, Douglas. 1993. Representativeness in corpus design. *Literary and Linguistic Computing* 8(4): 243–257.
- Biber, Douglas. 1995. *Dimensions of register variation: A cross-linguistic comparison*. Cambridge: Cambridge University Press.
- Biber, Douglas. 2003. Compressed noun-phrase structure in newspaper discourse: The competing demands of popularization vs. economy. In Jean Aitchison and Diane M. Lewis (eds.), *New media language*, 169–181. London and New York: Longman.
- Biber, Douglas. 2006. Stance in spoken and written university registers. *Journal of English for Academic Purposes* 5(2): 97–116.
- Biber, Douglas. 2007. Compressed noun-phrase structures in newspaper discourse. In Wolfgang Teubert and Ramesh Krishnamurthy (eds.), *Corpus linguistics: Critical concepts in linguistics* Vol. 5, 130–141. London: Routledge.
- Biber, Douglas and Victoria Clark. 2002. Historical shifts in modification patterns with complex noun phrase structures: How long can you go without a verb? In Teresa Fanego, María José López-Couso and Javier Pérez-Guerra (eds.), *English historical syntax and morphology*, 43–66. Amsterdam: John Benjamins.
- Biber, Douglas and Susan Conrad. 2009. *Register, genre, and style*. Cambridge: Cambridge University Press.
- Biber, Douglas and Edward Finegan. 1989. Drift and the evolution of English style: A history of three genres. *Language* 65(3): 487–517.

- Biber, Douglas and Bethany Gray. 2010. Challenging stereotypes about academic writing: Complexity, elaboration, explicitness. *Journal of English for Academic Purposes* 9(1): 2–20.
- Biber, Douglas and Bethany Gray. 2011. Grammatical change in the noun phrase: The influence of written language use. *English Language and Linguistics* 15(2): 223–250.
- Biber, Douglas, Stig Johansson, Geoffrey Leech, Susan Conrad and Edward Finegan. 1999. *The Longman grammar of spoken and written English*. London: Longman.
- Billig, Michael and Henri Tajfel. 1973. Social categorization and similarity in intergroup behavior. *European Journal of Social Psychology* 3(1): 7–52.
- Blevins, James. P. 2005. Remarks on gerunds. In C. Orhan Orgun, and Peter Sells (eds.), *Morphology and the web of grammar: Essays in memory of Steven G. Lapointe*, 25–47. Stanford: CSLI Publications.
- BNC = *The British National Corpus*, version 3 (BNC XML Edition). 2007. Distributed by Oxford University Computing Services on behalf of the BNC Consortium. URL: <http://www.natcorp.ox.ac.uk/> The British National Corpus (BNC).
- Boas, Hans C. 2008. Determining the structure of lexical entries and grammatical constructions in Construction Grammar. *Annual Review of Cognitive Linguistics* 6: 113–144.
- Bod, Rens, Jennifer Hay and Stefanie Jannedy (eds.). 2004. *Probabilistic linguistics*. Cambridge (Mass.): MIT Press.
- Bolinger, Dwight L. 1961. *Generality, gradience, and the all-or-none*. The Hague: Mouton.
- Bolinger, Dwight 1967. Adjectives in English: Attribution and predication. *Lingua* 18(1): 1–34.
- Borer, Hagit. 1990. V + ing: It walks like an adjective, it talks like an adjective. *Linguistic Inquiry* 21(1): 95–103.
- Breban, Tine. 2006a. The grammaticalization of the English adjectives of comparison: A diachronic case study. In Roberta Facchinetti and Matti Rissanen (eds.), *Corpus-based studies of diachronic English*, 253–288. Bern: Peter Lang.
- Breban, Tine. 2006b. Grammaticalization and subjectification of the English adjectives of general comparison. In Angeliki Athanasiadou, Costas Canakis and Bernt Cornillie (eds.), *Subjectification: Various paths to subjectivity*, 241–278. Bern: Peter Lang.
- Breban, Tine. 2009. Structural persistence: A case based on the grammaticalization of English adjectives of difference. *English Language and Linguistics* 13(1): 77–96.
- Breban, Tine. 2010a. Is there a postdeterminer in the English noun phrase? *Transactions of the Philological Society* 108(3), 248–264.
- Breban, Tine. 2010b. *English adjectives of comparison: Lexical and grammatical uses*. Berlin/New York: Walter de Gruyter.
- Breban, Tine, Kristin Davidse and Lobke Ghèsquiere. 2011. Types of phoric relations expressed by complex determiners in English. *Journal of Pragmatics* 43(11): 2689–2703.
- Brekke, Magnar. 1988. The experiencer constraint. *Linguistic Inquiry* 19(2): 169–180.
- Brems, Lieselotte. 2011. *Layering of size and type noun constructions in English*. Berlin: Mouton de Gruyter.

- Bresnan, Joan. 1996. *Lexicality and argument structure*. Invited paper given at the Paris Syntax and Semantics Conference. Available online at: <http://www.stanford.edu/~bresnan/paris.pdf>. Accessed November 30, 2009.
- Bresnan, Joan. 1997. Mixed categories as head-sharing constructions. In Miriam Butt and Tracy Holloway King (eds.), *Proceedings of the LFG97 conference, University of California, San Diego*, 1–17. Stanford: CSLI Publications.
- Briscoe, Ted, John Carroll and Rebecca Watson. 2006. The second release of the RASP system. In *Proceedings of the COLING/ACL on interactive presentation sessions*, 77–80. Sydney, Australia: The Association for Computational Linguistics.
- Brown, Roger. 1958. How shall a thing be called? *Psychological Review* 65(1): 14–21.
- Burnard, Lou (ed.). 2007. Reference guide for the British National Corpus (XML Edition). URL: <http://www.natcorp.ox.ac.uk/XMLedition/URG/>
- Bushnell, Ian W. R., Fatma Sai and Jim T. Mullin. 1989. Neonatal recognition of the mother's face. *British Journal of Developmental Psychology* 7(1): 3–15.
- Bybee, Joan L. 2007. *Frequency of use and the organization of language*. Oxford: Oxford University Press.
- Bybee, Joan L. and Paul J. Hopper (eds.). 2001. *Frequency and the emergence linguistic structure*. Typological Studies in Language 45. Amsterdam: John Benjamins.
- Bybee, Joan L., Revere Perkins and William Pagliuca. 1994. *The evolution of grammar: Tense, aspect and modality in the languages of the world*. Chicago: University of Chicago Press.
- Chafe, Wallace. 1994. *Discourse, consciousness and time. The flow and displacement of conscious experience in speaking and writing*. Chicago/London: The University of Chicago Press.
- Charles, Maggie. 2003. 'This mystery...': A corpus-based study of the use of nouns to construct stance in theses from two contrasting disciplines. *Journal of English for Academic Purposes* 2(4): 313–326.
- Charles, Maggie. 2007. Argument or evidence? Disciplinary variation in the use of the Noun *that* pattern in stance construction. *English for Specific Purposes* 26(2): 203–218.
- Cheshire, Jenny. 1996. That jacksprat: An interactional perspective on English *that*. *Journal of Pragmatics* 25(3): 369–393.
- Chomsky, Noam. 1955. *The logical structure of linguistic theory*. Massachusetts Institute of Technology.
- Chomsky, Noam. 1957. *Syntactic structures*. The Hague: Mouton.
- Chomsky, Noam. 1965. *Aspects of the theory of syntax*. Cambridge (MA): The MIT Press.
- Chomsky, Noam. 1970. *Remarks on nominalization*. In Roderick A. Jacobs and Peter S. Rosenbaum (eds.), *Readings in English transformational grammar*, 184–221. Waltham (MA): Ginn and Company. [Reprinted in *Studies on Semantics in Generative Grammar*, The Hague, Mouton, 1–61.]
- Chomsky, Noam. 1974. Topics in the theory of generative grammar. In John R. Searle (ed.), *The philosophy of language*. Oxford Readings in Philosophy. Oxford: Oxford University Press.
- Chomsky, Noam. 1986. *Knowledge of language: Its nature, origin and use*. New York: Praeger.

- Chomsky, Noam. 1993 [1981]. *Lectures on government and binding: The Pisa lectures*. Berlin and New York: Mouton de Gruyter.
- Chomsky, Noam. 1993. *A minimalist program for linguistic theory*. In Kenneth Hale and Samuel Jay Keyser (eds.), *The view from building 20: Essays in linguistics in honor of Sylvain Bromberger*, 1–52. Current Studies in Linguistics Series 24. Cambridge (MA): The MIT Press.
- Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge (MA): The MIT Press.
- Chomsky, Noam and Morris Halle. 1968. *The sound pattern of English*. Cambridge (MA): The MIT Press.
- Christophersen, Paul. 1939. *The articles: A study of their theory and use in English*. Copenhagen: Munksgaard.
- Clark, Herbert H. and Catherine R. Marshall. 1981. Definite reference and mutual knowledge. In Aravind K. Joshi, Bonnie L. Webber and Ivan A. Sag (eds.), *Elements of discourse understanding*, 10–63. Cambridge: Cambridge University Press.
- Clifford, James. 1986. Introduction: Partial truths. In James Clifford and George Marcus (eds.), *Writing culture. The poetics and politics of ethnography*, 1–26. Berkeley: University of California Press.
- CLMET = *The Corpus of Late Modern English Texts*.  
<https://perswww.kuleuven.be/~u0044428/clmet.htm/>.
- COCA = Davies, Mark. (2008–). *The Corpus of Contemporary American English: 450 million words, 1990-present*. Available online at <http://corpus.byu.edu/coca/>.
- COHA = Davies, Mark. (2010–). *The Corpus of Historical American English: 400 million words, 1810-2009*. Available online at <http://corpus.byu.edu/coha/>.
- Cohen, Henri and Claire Lefebvre. 2005. *Handbook of categorization in cognitive science*. Amsterdam: Elsevier.
- Comrie, Bernard. 1976. *Aspect*. Cambridge: Cambridge University Press.
- Conrad, Susan and Douglas Biber. 2000. Adverbial marking of stance in speech and writing?. In Susan Hunston and Geoff Thompson (eds.), *Evaluation in text: Authorial stance and the construction of discourse*, 56–73. Oxford: Oxford University Press.
- Conrad, Susan, Douglas Biber and Geoffrey Leech. 2002. *The Longman student grammar of spoken and written English: Workbook*. London: Longman.
- Coolidge, Frederick L. 2013. *Statistics: A gentle introduction*. 3<sup>rd</sup> edition. Thousand Oaks, California: Sage.
- Corning, Peter A. 2002. The re-emergence of “emergence”: A venerable concept in search of a theory. *Complexity* 7(6): 18–30.
- Cornish, Francis. 2001. ‘Modal’ *that* as a determiner and pronoun: The primacy of the cognitive-interactional dimension. *English Language and Linguistics* 5(2): 297–315.
- Coulthard, Malcolm (ed.). 1994. *Advances in written text analysis*. London: Routledge.
- Croft, William. 2000. Parts of speech as typological universals and as language particular categories. In Petra M. Vogel and Bernard Comrie (eds.), *Approaches to the typology of word classes*, 65–102. Berlin: Gruyter.
- Croft, William. 2001. *Radical construction grammar: Syntactic theory in typological perspective*. Oxford: Oxford University Press.
- Croft, William. 2007. Beyond Aristotle and gradience: A reply to Aarts. *Studies in Language* 31(2): 409–430.

- Croft, William. 2013. Radical construction grammar. In Thomas Hoffmann and Graeme Trousdale (eds.), *The Oxford handbook of Construction Grammar*, 211–232. Oxford: Oxford University Press.
- Croft, William and D. Alan Cruse. 2004. *Cognitive Linguistics*. New York: Cambridge University Press.
- Crystal, David. 1967. English. *Lingua* 17(1): 24–56.
- Cuyckens, Hubert, Kristin Davidsen and Lieven Vandelandotte. Introduction. In Kristin Davidsen, Lieven Vandelandotte and Hubert Cuyckens (eds.), *Subjectification intersubjectification and grammaticalization*, 1–26. Berlin and New York: De Gruyter Mouton.
- Dąbrowska, Ewa. 2015. What exactly is Universal Grammar, and has anyone seen it? *Frontiers in Psychology* 6. doi: 10.3389/fpsyg.2015.00852
- Dahl, Östen. 1981. On the definition of the telic-atelic (bounded-nonbounded) distinction in tense and aspect. In Philip Tedeschi and Annie Zaenen (eds.), *Syntax and semantics 14: Tense and aspect*, 79–90. New York/London: Academic Press.
- Darwin, Charles. 1859. *On the origin of species by means of natural selection, or the preservation of favoured races in the struggle for life*. London: John Murray.
- Davidsen, Kristin, Tine Breban and An Van linden. 2008. Deictification: The development of secondary deictic meanings by adjectives in the English NP. *English Language and Linguistics* 12(3): 475–503.
- Davidsen, Kristin, Lieven Vandelandotte and Hubert Cuyckens (eds.). 2010. *Subjectification, intersubjectification and grammaticalization*. Berlin/New York: Walter de Gruyter.
- Davies, Mark. (2008–): online. *The Corpus of Contemporary American English: 450 million words, 1990–present*. Available at <http://corpus.byu.edu/coca/>.
- Davies, Mark. 2009. The 385+ million word Corpus of Contemporary American English (1990–2008+): Design, architecture, and linguistic insights. *International Journal of Corpus Linguistics* 14(2): 159–180.
- Davies, Mark and Robert Fuchs. 2015. Expanding horizons in the study of World Englishes with the 1.9 billion word Global Web-based English Corpus (GloWbE). *English World-Wide* 36(1): 1–28.
- DeCasper, Anthony J. and William P. Fifer. 1982. Of human bonding: Newborns prefer their mothers' voices. *Science* 208(4448): 1174–1176.
- Denison, David. 1990. The Old English impersonals revived. In Sylvia Adamson, Vivien A. Law, Nigel Vincent and Susan Wright (eds.), *Papers from the 5th International Conference on English Historical Linguistics*, 111–140. Amsterdam and Philadelphia: John Benjamins.
- Denison, David. 2001. Gradience and linguistic change. In Laurel Brinton (ed.), *Historical linguistics 1999: Selected papers from the 14th International Conference on Historical Linguistics, Vancouver, August 1999*, 119–144. Current Issues in Linguistic Theory 215. Amsterdam: John Benjamins.
- Denison, David. 2006. Category change and gradience in the determiner system. In Ans van Kemenade and Bettelou Los (eds.), *The handbook of the history of English*, 279–304. Oxford: Blackwell.
- Denison, David. 2007. Playing tag with category boundaries. In Anneli Meurman-Solin and Arja Nurmi (eds.), *Annotating variation and change*, Studies in Variation Contacts and Change 1. Helsinki: VARIENG.



- URL: <http://www.helsinki.fi/varieng/journal/volumes/01/denison/>
- Denison, David. 2010. Category change in English with and without structural change. In Elizabeth Closs Traugott and Graeme Trousdale (eds.), *Gradience, gradualness and grammaticalization*, 105–128. Amsterdam and Philadelphia: John Benjamins.
- Denison, David. 2013a. Parts of speech: Solid citizens or slippery customers? *Journal of the British Academy* 1: 151–185.
- Denison, David. 2013b. Grammatical mark-up: Some more demarcation disputes. In Paul Bennett, Martin Durrell, Silke Scheible and Richard J. Whitt (eds.), *New methods in historical corpora*. Corpus Linguistics and Interdisciplinary Perspectives on Language (CLIP), 17–35. Tübingen: Narr.
- Denison, David. In press. Ambiguity and vagueness in historical change. In Marianne Hundt, Sandra Mollin and Simone Pfenninger (eds.), *The changing English language: Psycholinguistic perspectives*. Studies in English Language. Cambridge: Cambridge University Press.
- Denison, David. In preparation. *English word classes: Categories and their limits*. Cambridge Studies in Linguistics. Cambridge: Cambridge University Press.
- De Smet, Henrik. 2005. A corpus of Late Modern English texts. *ICAME Journal* 29: 69–82.
- De Smet, Hendrik. 2012. The course of actualization. *Language* 88(3): 601–633.
- De Smet, Hendrik. 2016. How gradual change progresses: The interaction between convention and innovation. *Language Variation and Change* 28(1): 83–102.
- De Smet, Hendrik and Liesbet Heyvaert. 2011. The meaning of the present participle in English. *English Language and Linguistics* 15(3): 473–498.
- De Smet, Hendrik and Jean-Christophe Verstraete. 2006. Coming to terms with subjectivity. *Cognitive Linguistics* 17(3): 365–92.
- Diewald, Gabriele. 2002. A model for relevant types of contexts in grammaticalization. In Ilse Wischer and Gabriele Diewald (eds.), *New reflections on grammaticalization*, 103–120. Amsterdam: John Benjamins.
- Dixon, R.M.W. 1982. *Where have all the adjectives gone? And other essays in semantics and syntax*. Janua Linguarum. Series Maior 107. Berlin: Mouton.
- Dixon, R.M.W. 2005. *A semantic approach to English grammar*. 2nd edition. Oxford: Oxford University Press.
- Dowty, David. 1979. *Word meaning and Montague Grammar. The semantics of verbs and times in generative semantics and in Montague's PTQ*. Dordrecht: Reidel.
- ECCO-TCP = *The Eighteenth Century Collections Online. Text Creation Partnership*. <http://quod.lib.umich.edu/e/ecco/>.
- Emonds, Joseph E. 1985. *A unified theory of syntactic categories*. Studies in Generative Grammar 19. Dordrecht: Foris Publications.
- Englebretson, Robert. 1997. Genre and grammar: Predicative and attributive adjectives in spoken English. In Ashlee C. Bailey, Kevin E. Moore and Jeri L. Moxley (eds.), *Proceedings of the Twenty-third Annual Meeting of the Berkeley Linguistics Society*, 411–421. Berkeley, California: Berkeley Linguistics Society.
- Englebretson, Robert. 2007. Stancetaking in discourse. An introduction. In Robert Englebretson (ed.), *Stancetaking in discourse*, 1–26. Amsterdam/Philadelphia: John Benjamins.
- Epstein, Richard. 2002a. The definite article, accessibility, and the construction of discourse referents. *Cognitive Linguistics* 12(4): 333–378.

- Epstein, Richard. 2002b. Grounding, subjectivity and definite descriptions. In Frank Brisard (ed.), *Grounding: The epistemic footing of deixis and reference*, 41–82. Cognitive Linguistics Research 21. Berlin and New York: Mouton de Gruyter.
- Evans, Nicholas and David Wilkins. 2000. In the mind's ear: The semantic extensions of perception verbs in Australian languages. *Language* 76(3): 546–592.
- Fehr, Beverley and James A. Russell. 1984. Concept of emotion viewed from a prototype perspective. *Journal of Experimental Psychology: General* 113(3): 464–486.
- Ferry, Alissa L., Susan J. Hespos and Sandra R. Waxman. 2010. Categorization in 3- and 4-month-old infants: An advantage of words over tones. *Child Development* 81(2): 472–479.
- Fillmore, Charles J. 1975. An alternative to checklist theories of meaning. In Cathy Cogen, Henry Thompson, Graham Thurgood, Kenneth Whistler and James Wright (eds.), *Proceedings of the first annual meeting of the Berkeley Linguistics Society*, 123–131. Berkeley, California: Berkeley Linguistics Society.
- Fillmore, Charles J. 1982. Frame semantics. In Linguistic Society of Korea (ed.), *Linguistics in the morning calm*, 111–138. Seoul: Hanshin Publishing Company.
- Fillmore, Charles J. 1985. Frames and the semantics of understanding. *Quaderni di Semantica* 6: 222–254.
- Firth, J.R. 1955. Structural linguistics. *Transactions of the Philological Society* 54(1): 83–103.
- Fisher, Douglas H., Michael J. Pazzani and Pat Langley (eds.). 1991. *Concept formation: Knowledge and experience in unsupervised learning*. San Mateo (CA): Morgan Kaufmann.
- F-LOB = The Freiburg-LOB Corpus (original version) compiled by Christian Mair, Albert-Ludwigs-Universität Freiburg.
- Ford, Cecilia E., Barbara A. Fox and Sandra A. Thompson. 2003. Social interaction and grammar. In Michael Tomasello (ed.), *The new psychology of language: Cognitive and functional approaches to language structure*, Vol. 2, 119–144. London: Erlbaum.
- Francis, Elaine J. and Laura A. Michaelis. 2003. Mismatch: A crucible for linguistic theory. In Elaine J. Francis and Laura A. Michaelis (eds.), *Mismatch: Form-function incongruity and the architecture of grammar*, 1–27. Stanford, CA: CSLI Publications.
- Francis, Gill. 1994. Labelling discourse: An aspect of nominal-group lexical cohesion. In Malcolm Coulthard (ed.), *Advances in written text analysis*, 83–101. London: Routledge.
- Francis, W. Nelson and Henry Kučera. 1979. *Manual to accompany a standard sample of Present-day edited American English, for use with digital computers*. Original ed. 1964, revised 1971, revised and augmented 1979. Providence, Rhode Island: Department of Linguistics, Brown University.
- Fraser, Bruce. 1970. Idioms within a transformational grammar. *Foundations of Language* 6(1): 22–42.
- French, Robert M., Denis Mareschal, Martial Mermillod and Paul C. Quinn. 2004. The role of bottom-up processing in perceptual categorization by 3- to 4-month-old infants: Simulations and data. *Journal of Experimental Psychology: General* 133(3): 382–397.

- Gardner, Howard. 1985. *The mind's new science. A history of the cognitive revolution*.
- Geeraerts, Dirk. 1997. *Diachronic prototype semantics: A contribution to historical lexicology*. Oxford: Clarendon Press.
- Gentner, Dedre. 1981. Some interesting differences between verbs and nouns. *Cognition and Brain Theory* 4(2): 161–178.
- Gentner, Dedre and Lera Boroditsky. 2001. Individuation, relativity, and early word learning. In Melissa Bowerman and Stephen C. Levinson (eds.), *Language acquisition and conceptual development*, 215–256. Cambridge: Cambridge University Press.
- Gilquin, Gaëtanelle. 2006. The place of prototypicality in corpus linguistics. Causation in the hot seat. In Stefan Th. Gries and Anatol Stefanowitsch (eds.), *Corpora in cognitive linguistics: Corpus-based approaches to syntax and lexis*, 159–191. Trends in Linguistics 172.
- Gisborne, Nikolas. 2008. Dependencies are constructions: A case study in predicative complementation. In Graeme Trousdale and Nikolas Gisborne (eds.), *Constructional approaches to English Grammar*, 219–255. Topics in English Linguistics 55. Berlin/New York: Mouton de Gruyter.
- Givón, Talmy. 1983. Topic continuity in discourse: An introduction. In Talmy Givón (ed.), *Topic continuity in discourse*, 1–41. Typological Studies in Language 3. Amsterdam/Philadelphia: John Benjamins.
- Givón, Talmy. 2001. *Syntax: An introduction*. Vol. 1. Amsterdam and Philadelphia: John Benjamins.
- Goldberg, Adele. 1995. *Constructions: A Construction Grammar approach to argument structure*. Chicago: University of Chicago Press.
- Goldberg, Adele. 2003. Constructions: A new theoretical approach to language. *Trends in Cognitive Sciences* 7(5): 219–224.
- Golinkoff, Roberta Michnick and Kathy Hirsh-Pasek. 2008. How toddlers begin to learn verbs. *Trends in Cognitive Science* 12(10): 397–403.
- Goren, Carolyn C., Merrill Sarty and Paul Y. K. Wu. 1975. Visual following and pattern discrimination of face-like stimuli by newborn infants. *Pediatrics* 56(4): 544–549.
- Gray, Bethany and Douglas Biber. 2012. Current conceptions of stance. In Ken Hyland and Carmen Sancho Guinda (eds.), *Stance and voice in written academic genres*, 15–33. Basingstoke/New York: Palgrave Macmillan.
- Grice, H. P. 1975. Logic and conversation. In Peter Cole and Jerry L. Morgan (eds.), *Syntax and Semantics 3: Speech acts*, 41–58. New York: Academic Press.
- Gundel, Jeanette K., Nancy Hedberg and Ron Zacharski. 1993. Cognitive status and the form of referring expressions in discourse. *Language* 69(2): 274–307.
- Gundel, Jeanette K., Nancy Hedberg and Ron Zacharski. 2001. Definite descriptions and cognitive status in English: Why accommodation is unnecessary. *English Language and Linguistics* 5(2): 273–295.
- Halle, Morris. 1962. Phonology in a generative grammar. *Word* 18(1–3): 54–72.
- Halliday, M.A.K. 1961. Categories of the theory of grammar. *Word* 17(2): 241–292.
- Halliday, M.A.K. 1994. *An introduction to functional grammar*. 2nd edition. London: Arnold.
- Halliday M. A. K. 2004. *An introduction to functional grammar*. Third edition. Revised by Christian M. I. M. Matthiesen. London: Arnold.

- Halliday, M.A.K. and Ruqaiya Hasan. 1976. *Cohesion in English*. London and New York: Longman.
- Harnad, Stevan. 2005. To cognize is to categorize: Cognition is categorization. In Henri Cohen and Claire Lefebvre (eds.), 20–43. Amsterdam: Elsevier.
- Haspelmath, Martin. 1994. Passive participles across languages. In Barbara A. Fox and Paul J. Hopper (eds.), *Voice: Form and function*, 151–177. Typological Studies in Language 27. Amsterdam: Benjamins.
- Hawkins, John A. 1978. *Definiteness and indefiniteness: A study in reference and grammaticality prediction*. London: Croom Helm.
- Heider, Eleanor Rosch. 1972. Universals in color naming and memory. *Journal of Experimental Psychology* 93(1): 10–20.
- Heim, Irene R. 1982. *The semantics of definite and indefinite noun phrases*. Amherst, MA: University of Massachusetts PhD dissertation.
- Heine, Bernd. 2002. On the role of context in grammaticalization. In Ilse Wischer and Gabriele Diewald (eds.), *New reflections on grammaticalization*, 83–101. Amsterdam: John Benjamins.
- Hengeveld, Kees. 1992. Parts of speech. In Michael Fortescue, Peter Harder and Lars Kristoffersen (eds.), *Layered structure and reference in a functional perspective*, 29–55. Pragmatics and Beyond New Series 23. Amsterdam: Benjamins.
- Hengeveld, Kees, Jan Rijkhoff and Anna Siewierska. 2004. Parts-of-speech systems and word order. *Journal of Linguistics* 40(3): 527–570.
- Hilpert, Martin. 2013. *Constructional change in English. Developments in allomorphy, word formation and syntax*. Cambridge: Cambridge University Press.
- Hilpert, Martin. 2014. *Construction Grammar and its application to English*. Edinburgh: Edinburgh University Press.
- Hinrichs, Lars and Benedikt Szmrecsanyi. 2007. Recent changes in the function and frequency of Standard English genitive constructions: A multivariate analysis of tagged corpora. *English Language and Linguistics* 11(3): 437–474.
- Hockett, Charles F. 1955. *A manual of phonology*. Indiana University publications in anthropology and linguistics Vol. 21(4). Baltimore (Ind.): Waverly Press.
- Hoey, Michael. 2000. Persuasive rhetoric in linguistics: A stylistic study of some features of the language of Noam Chomsky. In Susan Hunston and Geoff Thompson (eds.), *Evaluation in text: Authorial stance and the construction of discourse*, 28–37. Oxford: Oxford University Press.
- Hollmann, Willem B. 2012. Word classes: Towards a more comprehensive usage-based account. *Studies in Language* 36(3): 671–698.
- Hopper, Paul. J. 1987. Emergent grammar. In Jon Aske, Natasha Beery, Laura Michaelis and Hana Filip (eds.), *Berkeley Linguistics Society. Proceedings of the thirteenth annual meeting, February 14–16, 1987. General session and parasession on grammar and cognition*, 139–157. Berkeley (CA): Berkeley Linguistics Society.
- Hopper, Paul. J. 1991. On some principles of grammaticalization. In Elizabeth Closs Traugott and Bernd Heine (eds.), *Approaches to grammaticalization*, Vol. 1, 17–36. Amsterdam: John Benjamins.
- Hopper, Paul J. 2011. Emergent Grammar and temporality in interactional linguistics. In Peter Auer and Stefan Pfänder (eds.), *Constructions: Emerging and emergent*, 22–44. Göttingen: De Gruyter.

- Hopper, Paul J. and Sandra A. Thompson. 1980. Transitivity in grammar and discourse. *Language* 56(2): 251–299.
- Hopper, Paul and Elizabeth Closs Traugott 1993. *Grammaticalization*. Cambridge: Cambridge University Press.
- Hornsey, Matthew J. 2008. Social Identity Theory and Self-categorization Theory: A historical review. *Social and Personality Psychology Compass* 2(1): 204–222.
- Householder, Fred W. 1994. Dionysius Thrax, the Technai, and Sextus Empiricus. In R. E. Asher and J. M. Y. Simpson (eds.), *The encyclopedia of language and linguistics* Vol. 2, 931–935. Oxford: Pergamon Press.
- Huddleston, Rodney. 1984. *Introduction to the grammar of English*. Cambridge Textbooks in Linguistics. Cambridge: Cambridge University Press.
- Huddleston, Rodney and Geoffrey K. Pullum (eds.). 2002. *The Cambridge grammar of the English Language*. Cambridge: Cambridge University Press.
- Hudson, Richard. 2003. Gerunds without phrase structure. *Natural Language and Linguistic Theory* 21(3): 579–615.
- Hudson, Richard. 2006. Word Grammar. In Keith Brown (ed.), *The encyclopedia of language and linguistics*, 2nd ed, 633–642. Oxford: Elsevier.
- Hunston, Susan and Gill Francis. 2000. *Pattern grammar: A corpus-driven approach to the lexical grammar of English*. Amsterdam: John Benjamins.
- Hunston, Susan and Geoff Thompson (eds.). 2000. *Evaluation in text: Authorial stance and the construction of discourse*. Oxford: Oxford University Press.
- Hundt, Marianne. 2004. Animacy, agentivity, and the spread of the progressive in Modern English. *English Language and Linguistics* 8(1): 47–69.
- Jakobson, Roman. 1959. Boas' view of grammatical meaning. In Walter Goldschmidt (ed.), *The anthropology of Franz Boas*. Memoirs of the American Anthropologist Association Vol. 61(5), 139–145. The American Anthropologist Association.
- Jakobson, Roman, Gunnar M. Fant and Morris Halle. 1952. *Preliminaries to speech analysis: The distinctive features and their correlates*. Cambridge (MA): The MIT Press.
- Jespersen, Otto. 2004 [1924]. *The philosophy of grammar*. London: Routledge. Reprinted in Bas Aarts, David Denison, Evelien Keizer and Gergana Popova (eds.), *Fuzzy grammar: A reader*, 181–190. Oxford: Oxford University Press.
- Joos, Martin. 1950. Description of language design. *Journal of the Acoustical Society of America* 22(6): 701–708.
- Katamba, Francis. 1994. *English words. Structure, history, usage*. 2nd edn. New York: Routledge.
- Katz, Jerrold J. 1964. Semi-sentences. In Jerry Fodor and Jerrold J. Katz (eds.), *The structure of language: readings in the philosophy of language*, 400–416. Englewood Cliffs (NJ): Prentice-Hall.
- Katz, Jerrold J. and Jerry Fodor. 1963. The structure of a semantic theory. *Language* 39(2): 170–210.
- Keil, Frank C. 1989. *Concepts, kinds and cognitive development*. Cambridge, MA: The MIT Press.
- Kemp, Alan. 1987. The *Tekhnē Grammatikē* of Dionysius Thrax: English translation with introduction and notes. In Daniel J. Taylor (ed.), *The history of linguistics in the classical period*, 169–190. Studies in the history of the language sciences 46. Amsterdam: John Benjamins.

- Kenny, Anthony. 1963. *Actions, emotions and will*. Humanities Press.
- Kilgarriff, Adam. 2005. Language is never, ever, ever, random. *Corpus Linguistics and Linguistic Theory* 1(2): 263–275.
- Krifka, Manfred. 1989. Nominal reference, temporal constitution and quantification in event semantics. In Renate Barsch, Johan van Bentham and Peter van Emde Boas (eds.), *Semantics and contextual expressions*, 75–115. Dordrecht: Foris.
- Labov, William. 1973. The boundaries of words and their meanings. In Charles-James N. Bailey and Robert W. Shuy (eds.), *New ways of analyzing variation in English*, 340–373. Washington: Georgetown University Press.
- Laczko, Tibor. 2001. Another look at participles and adjectives in the English DP. In Miriam Butt and Tracy Holloway King (eds.), *Proceedings of the LFG01 conference*, 201–220. CSLI Publications.
- Lakoff, George. 1987. *Women, fire, and dangerous things: What categories reveal about the mind*. Chicago (IL): University of Chicago Press.
- Lakoff, Robin. 1974. Remarks on ‘this’ and ‘that’. In Michael W. LeGaly, Robert A. Fox and Anthony Bruck (eds.), *Papers from the tenth regional meeting of the Chicago Linguistics Society: April 9–21*, 345–356. Chicago: Chicago Linguistics Society.
- Lambrecht, Knud. 1994. *Information structure and sentence form: Topic, focus, and the mental representations of discourse referents*. Cambridge Studies in Linguistics 71. Cambridge: Cambridge University Press.
- Langacker, Ronald W. 1986. An introduction to Cognitive Grammar. *Cognitive Science* 10(1): 1–40.
- Langacker, Ronald W. 1987. *Foundations of Cognitive Grammar Vol. 1: Theoretical prerequisites*. Stanford (CA): Stanford University Press.
- Langacker, Ronald W. 1990. Subjectification. *Cognitive Linguistics* 1(1): 5–38.
- Langacker, Ronald W. 1995. Possession and possessive constructions. In John R. Taylor and Robert E. MacLaury (eds.), *Language and the cognitive construal of the world*, 51–80. Berlin: Walter de Gruyter.
- Langacker, Ronald W. 2008. *Cognitive grammar. A basic introduction*. Oxford: Oxford University Press.
- Lauwers, Peter and Dominique Willems. 2011. Coercion: Definition and challenges, current approaches, and new trends. *Linguistics* 49(6): 1219–1235.
- Lee, David YW. 2001. Genres, text types, domain, and styles: Clarifying the concepts and navigating a path through the BNC jungle. *Language, Learning and Technology* 5(3): 37–72.
- Lee, Seung-Ah. 2007. *Ing* Forms and the progressive puzzle: A construction-based approach to English progressives. *Journal of Linguistics* 43(1): 153–195.
- Leech, Geoffrey. 2007. New resources, or just better old ones? The holy grail of representativeness. In Marianne Hundt, Nadja Nesselhauf and Carolin Biewer (eds.), *Corpus linguistics and the web*, 133–150. Amsterdam and New York: Rodopi.
- Leech, Geoffrey, Paul Rayson and Andrew Wilson. 2001. *Word frequencies in written and spoken English: Based on the British National Corpus*. Harlow: Longman.
- Leech, Geoffrey and Nicholas Smith. Manual to accompany the British National Corpus (Version 2) with improved word-class tagging.  
URL: [http://www.natcorp.ox.ac.uk/docs/bnc2postag\\_manual.htm](http://www.natcorp.ox.ac.uk/docs/bnc2postag_manual.htm)

- Lees, Robert B. 1968 [1960]. *The grammar of English nominalizations*. The Hague: Mouton.
- Levin, Beth. 1993. *English verb classes and alternations: A preliminary investigation*. Chicago: University of Chicago Press.
- Lounsbury, Floyd. 1956. A semantic analysis of the Pawnee kinship usage. *Language* 32(1): 158–194.
- Lyons, Christopher. 1999. *Definiteness*. Cambridge: Cambridge University Press.
- Lyons, John. 1982. Deixis and subjectivity: Loquor, ergo sum? In Robert J. Jarvella and Wolfgang Klein (eds.), *Speech, place, and action: Studies in deixis and related topics*, 101–124. New York: Wiley.
- Maass, Anne, Daniela Salvi, Luciano Arcuri and Gün Semin. 1989. Language use in intergroup contexts: The linguistic intergroup bias. *Journal of Personality and Social Psychology* 57(6): 981–993.
- Maes, Alfons A. and Leo G. M. Noordman. 1995. Demonstrative nominal anaphors: A case of nonidentificational markedness. *Linguistics* 33(2): 255–282.
- Mair, Christian. 2007. Tracking ongoing grammatical change and recent diversification in present-day standard English: The complementary role of small and large corpora. In Antoinette Renouf and Andrew Kehoe (eds.), *The changing face of corpus linguistics*, 355–376. Amsterdam and New York: Rodopi.
- Maling, Joan. 1983. Transitive adjectives: A case of categorial reanalysis. In Frank Henry and Barry Richards (eds.), *Linguistic categories: Auxiliaries and related puzzles* Vol. 1, 253–289. Dordrecht: Reidel.
- Marcus, Mitchell, Beatrice Santorini and Mary Ann Marcinkiewicz. 1993. Building a large annotated corpus of English: The Penn treebank. *Computational Linguistics* 19(2): 313–330.
- Mareschal, Denis and Paul C. Quinn. 2001. Categorization in infancy. *TRENDS in Cognitive Sciences* 5(10): 443–450.
- McDonough, Colleen, Lulu Song, Kathy Hirsh-Pasek, Roberta Michnick Golinkoff and Robert Lannon. 2011. An image is worth a thousand words: why nouns tend to dominate verbs in early word learning. *Developmental Science* 14(2): 181–189.
- McEnery, Tony and Andrew Hardie. 2012. *Corpus linguistics: Method, theory and practice*. Cambridge Textbooks in Linguistics. Cambridge: Cambridge University Press.
- McEnery, Tony and Andrew Wilson. 1996. *Corpus linguistics*. Edinburgh: Edinburgh University Press.
- McEnery, Tony, Richard Xiao and Yukio Tono. 2006. *Corpus-based language studies: An advanced resource book*. London and New York: Routledge.
- MED ONLINE = *Middle English Dictionary Online*. <http://quod.lib.umich.edu/m/med/>.
- Medin, Douglas L. and Marguerite M. Schaffer. 1978. Context theory of classification learning. *Psychological Review* 85(3): 207–238.
- Meltzer, Aya. 2007. The experiencer constraint revisited. In Naomi Hilton, Rachel Arscott, Katherine Barden, Arti Krishna, Sheena Shah and Meg Zellers (eds.), *CamLing 2007. Proceedings from the Fifth University of Cambridge Postgraduate Conference in Language Research*, 177–184. Cambridge: Cambridge Institute of Language Research.
- Meltzer-Asscher, Aya. 2010. Present participles: Categorical classification and derivation. *Lingua* 120(9): 2211–2239.

- Mervis, Carolyn B., Jack Catlin and Eleanor Rosch. 1975. Development of the structure of color categories. *Developmental Psychology* 11(1): 54–60.
- Mervis, Carolyn B. and Eleanor Rosch. 1981. Categorization of natural objects. *Annual Review of Psychology* 32: 89–115.
- Michaelis, Laura A. 2002. Headless constructions and coercion by construction. In Elaine J. Francis and Laura A. Michaelis (eds.), *Mismatch: Form-function incongruity and the architecture of grammar*, 259–312. Stanford (CA): CSLI Publications.
- Michaelis, Laura A. 2004. Type shifting in construction grammar: An integrated approach to aspectual coercion. *Cognitive Linguistics* 15(1): 1–67.
- Mill, John Stuart. 1843. *A system of logic, ratiocinative and inductive, being a connected view of the principles of evidence, and the methods of scientific investigation* Vol. 2. London: John W. Parker.
- Milsark, Gary. 1988. "Singl-ing". *Linguistic Inquiry* 19(4): 611–634.
- Modjeska, Natalia. 2003. *Resolving other-anaphora*. PhD Thesis. University of Edinburgh.
- Möhlig-Falke, Ruth. 2012. *The early English impersonal construction: An analysis of verbal and constructional meaning*. Oxford Studies in the History of English. Oxford: Oxford University Press.
- Mondloch, Catherine J., Terri L. Lewis, D. Robert Budreau, Daphne Maurer, James L. Dannemiller, Benjamin R. Stephens and Kathleen A. Kleiner-Gathercoal. 1999. Face perception during early infancy. *Psychological Science* 10(5): 419–422.
- Narrog, Heiko. 2012. *Modality, subjectivity and semantic change: A cross-linguistic perspective*. Oxford: Oxford University Press.
- Nevalainen, Terttu and Helena Raumolin-Brunberg. Forthcoming. *Historical sociolinguistics. Language change in Tudor and Stuart England*. 2nd edition. Routledge.
- Newmeyer, Frederick J. 1986. *Linguistic theory in America*. Orlando: Academic Press.
- Newmeyer, Frederick J. 1998. *Language form and language function*. Cambridge (MA): The MIT Press.
- Norde, Muriel. 2009. *Degrammaticalization*. Oxford: Oxford University Press.
- Nosofsky, Robert M. 1992. Exemplars, prototypes, and similarity rules. In Alice F. Healy, Stephen M. Kosslyn and Richard M. Shiffrin (eds.), *From learning theory to connectionist theory: Essays in honor of William K. Estes*, 149–167. Hillsdale, New Jersey: Lawrence Erlbaum Associates.
- Nuyts, Jan. 2015. Subjectivity: Between discourse and conceptualization. *Journal of Pragmatics* 86: 106–110.
- Oakes, Lisa M. and David H. Rakison. 2003. Issues in the early development of concepts and categories: An introduction. In David H. Rakison and Lisa M. Oakes (eds.), *Early category and concept development. Making sense of the blooming, buzzing confusion*, 3–23. New York: Oxford University Press.
- Ochs, Elinor. 1996. Linguistic resources for socializing humanity. In John J. Gumperz and Stephen C. Levinson (eds.), *Rethinking linguistic relativity*, 407–437. New York: Cambridge University Press.
- OB = *The Proceedings of the Old Bailey, 1674–1913*. <http://www.oldbaileyonline.org/>. Accessed: June 16, 2013.
- OED = *The Oxford English Dictionary*, Vol. 1–20, ed. by J.A. Simpson and E.S.C. Weiner (1989). (2nd ed.). Oxford: Clarendon Press.



- Palander-Collin, Minna. 1999. *Grammaticalization and social embedding: I THINK and METHINKS in Middle and Early Modern English*. Mémoires de la Société Néophilologique de Helsinki. Tome 55. Helsinki: Société Néophilologique.
- Paradis, Carita. 2000. Reinforcing adjectives. A cognitive semantic perspective on grammaticalization. In Ricardo Bermúdez-Otero, David Denison, Richard M. Hogg and C. B. McCully (eds.), *Generative theory and corpus studies*, 233–258. Topics in English Linguistics 31. New York: Mouton de Gruyter.
- Paradis, Carita. 2001. Adjectives and boundedness. *Cognitive Linguistics* 12(1): 47–64.
- Paradis, Carita. 2008. Configurations, construals and change: Expressions of DEGREE. *English Language and Linguistics* 12(2): 317–343.
- Pascalis, Olivier and David J. Kelly. 2009. The origins of face processing in humans: Phylogeny and ontogeny. *Perspectives on Psychological Science* 4(2): 200–209.
- Pascalis, Olivier, Scania de Schonen, John Morton, Christine Deruelle and Marie Fabre-Grenet. 1995. Mother's face recognition by neonates: A replication and an extension. *Infant Behavior and Development* 18(1): 79–85.
- Pinker, Steven. 1994. *The language instinct: the new science of language and mind*. London: Allen Lane.
- Plunkett, Kim, Jon-Fan Hu and Leslie B. Cohen. 2008. Labels can override perceptual categories in early infancy. *Cognition* 106(2): 665–681.
- PPCEME = Kroch, Anthony, Beatrice Santorini and Ariel Diertani. 2004. *The Penn-Helsinki Parsed Corpus of Early Modern English*. <http://www.ling.upenn.edu/hist-corpora/PPCEME-RELEASE-2/index.html>. Accessed: February 5, 2013.
- Pullum, Geoffrey K. 1976. On the nonexistence of the verb-auxiliary distinction in English. In Walter Nash and Christopher Butler (eds.), *The Nottingham Linguistic Circular* Vol. V, No. 2, 20–23. University of Nottingham.
- Pullum, Geoffrey K. 1991. English nominal gerund phrases as noun phrases with verb-phrase heads. *Linguistics* 29.5. 763–799.
- Pullum, Geoffrey K. 2009. Lexical categorization in English dictionaries and traditional grammars. *Zeitschrift für Anglistik und Amerikanistik* 57(3): 255–273.
- Pullum, Geoffrey K. and Rodney Huddleston. 2002. Adjectives and adverbs. In Rodney Huddleston and Geoffrey K. Pullum (eds.), *The Cambridge grammar of the English language*, 525–595. Cambridge: Cambridge University Press.
- Pullum, Geoffrey K. and Arnold Zwicky. 1999. Gerund participles and head-complement inflection conditions. In Peter Collins and David Lee (eds.), *The clause in English. In honour of Rodney Huddleston*, 251–271. Amsterdam/Philadelphia: John Benjamins Publishing Company.
- Quirk, Randolph, Sidney Greenbaum, Geoffrey Leech and Jan Svartvik. 1972. *A grammar of contemporary English*. Harlow: Longman.
- Quirk, Randolph, Sidney Greenbaum, Geoffrey Leech and Jan Svartvik. 1985. *A comprehensive grammar of the English Language*. London: Longman.
- Radford, Andrew. 1976. On the non-discrete nature of the verb-auxiliary distinction in English. In Walter Nash and Christopher Butler (eds.), *The Nottingham Linguistic Circular* Vol. V, No. 2, 8–19. University of Nottingham.
- Rauh, Gisa. 2010. *Syntactic categories: Their identification and description in linguistic theories*. Oxford Surveys in Syntax and Morphology 7. Oxford: Oxford University Press.

- Rijkhoff, Jan. 2002. *The noun phrase*. Oxford studies in typology and linguistic theory. Oxford: Oxford University Press.
- Roberts, Ian. 2010. Grammaticalization, the clausal hierarchy and semantic bleaching. In Elizabeth Closs Traugott and Graeme Trousdale (eds.), *Gradience, gradualness and grammaticalization*, 45–73. Amsterdam and Philadelphia: John Benjamins.
- Rosch, Eleanor. 1973. On the internal structure of perceptual and semantic categories. In Timothy E. Moore (ed.), *Cognitive development and the acquisition of language*, 111–144. New York: Academic Press.
- Rosch, Eleanor. 1974. Linguistic relativity in human communication: Theoretical explorations. In Albert Silverstein (ed.), *Human communication: Theoretical explorations*, 95–122. Hillsdale (NJ): Lawrence Erlbaum Associates.
- Rosch, Eleanor. 1975a. Cognitive representations of semantic categories. *Journal of Experimental Psychology: General* 104(3): 192–233.
- Rosch, Eleanor. 1975b. The nature of mental codes and color categories. *Journal of Experimental Psychology: Human Perception and Performance* 1(4): 303–322.
- Rosch, Eleanor and Carolyn B. Mervis. 1975. Family resemblances: Studies in the internal structure of categories. *Cognitive Psychology* 7(4): 573–605.
- Rosch, Eleanor, Carolyn B. Mervis, Wayne D. Gray, David M. Johnson and Penny Boyes-Braem. 1976. Basic objects in natural categories. *Cognitive Psychology* 8(3): 382–439.
- Rosch, Eleanor. 1978. Principles of categorization. In Eleanor Rosch and Barbara B. Lloyd (eds.), *Cognition and categorization*, 189–206. Hillsdale, NJ: Erlbaum.
- Rosenbach, Anette. 2002. *Genitive variation in English. Conceptual factors in synchronic and diachronic studies*. Topics in English linguistics 42. Berlin/New York: Mouton de Gruyter.
- Ross, John Robert. 1972. The category squish: Endstation Hauptwort. In Paul M. Peranteau, Judith N. Levi and Gloria C. Phares (eds.), *Papers from the 8th Regional Meeting of the Chicago Linguistic Society, April 14–16, 1972*, 316–328. Chicago: The Chicago Linguistic Society.
- Ross, John Robert. 1973. A fake NP squish. In Charles-James N. Bailey and Roger W. Shuy (eds.), *New ways of analyzing variation in English*, 96–140. Washington: Georgetown University Press.
- Rothstein, Susan. 2004. *Structuring events: A study in the semantics of lexical aspect*. Oxford: Blackwell.
- Ryle, Gilbert. 1949. *The concept of mind*. London: Hutchinson.
- Säily, Tanja. 2014. *Sociolinguistic variation in English derivational productivity: Studies and methods in diachronic corpus linguistics*. Mémoires de la Société Néophilologique de Helsinki XCIV. Helsinki: Société Néophilologique.
- Salmon-Alt, Susanne. 2001. *Référence et dialogue finalisé: De la linguistique à un modèle opérationnel*. PhD thesis. Université Henri Poincaré, Nancy, France.
- Schlüter, Julia. 2008. Constraints on the attributive use of ‘predicative-only’ adjectives: A reassessment. In Graeme Trousdale and Nikolas Gisborne (eds.), *Constructional approaches to English grammar*, 145–179. Topics in English Linguistics 57. Berlin/New York: Mouton de Gruyter.
- Seuren, Pieter A.M. 1998. *Western linguistics: An historical introduction*. Oxford: Blackwell.

- Sinclair, John. 2004. *Trust the text: Language, corpus and discourse*. London: Routledge.
- Sowa, John F. 2013. What is the source of fuzziness? In Rudolf Seising, Enric Trillas, Claudio Moraga and Settimo Termini (eds.), *On fuzziness: A homage to Lotfi A. Zadeh*, Vol. 2, 645–652. Berlin: Springer.
- Stein, Dieter and Susan Wright (eds.). 1995. *Subjectivity and subjectification. Linguistic perspectives*. Cambridge: Cambridge University Press.
- Stockwell, Robert P. 1963. Review of Dwight L. Bolinger: Generality, gradience, and the all-or-none. *Language* 39(1): 87–91.
- Stolt, Suvi, Leena Haataja, Helena Lapinleimu and Liisa Lehtonen. 2008. Early lexical development of Finnish children: A longitudinal study. *First Language* 28(3): 259–279.
- Stowell, Timothy. 1981. *Origins of phrase structure*. Doctoral dissertation. Massachusetts Institute of Technology.  
Available online at <http://www.ai.mit.edu/projects/dm/theses/stowell81.pdf>.
- Suits, Bernard. 1967. What is a game? *Philosophy of Science* 34(2): 148–156.
- Sweetser, Eve E. 1990. *From etymology to pragmatics: Metaphorical and cultural aspects of semantic structure*. Cambridge: Cambridge University Press.
- Tajfel, Henri. 1974. Social identity and intergroup behaviour. *Social Science Information* 13: 65–93.
- Tajfel, Henri and John C. Turner. 1986. The Social Identity Theory of intergroup behavior. In William G. Austin and Stephen Worchel (eds.), *Psychology of intergroup relations*, 7–24. Chicago: Nelson-Hall.
- Tantucci, Vittorio. Forthcoming. From immediate to extended intersubjectification: a gradient approach to intersubjective awareness and semasiological change. *Language and Cognition*.
- Taylor, John R. 1998. Syntactic constructions as prototype categories. In Michael Tomasello (ed.), *The new psychology of language. Cognitive and functional approaches to language structure* Vol. 1, 168–186. Mahwah (NJ): Lawrence Erlbaum Associates.
- Taylor, John R. 2003. *Linguistic categorization*. Oxford: Oxford University Press.
- Taylor, John R. 2004. Why Construction Grammar is radical. *Annual Review of Cognitive Linguistics* 2: 321–348.
- ter Meulen, Alice. 1995. *Representing time in natural language: The dynamic interpretation of tense and aspect*. Cambridge, MA: MIT Press.
- Thompson, Sandra A. 1988. A discourse approach to the cross-linguistic category “adjective”. In John A. Hawkins (ed.), *Explaining language universals*, 167–185. Oxford: Basil Blackwell.
- Thompson, Geoff and Susan Hunston. 2000. Evaluation: An introduction. In Susan Hunston and Geoff Thompson (eds.), *Evaluation in text: Authorial stance and the construction of discourse*, 1–27. Oxford: Oxford University Press.
- Tognini-Bonelli, Elena. 2001. *Corpus linguistics at work*. Amsterdam: John Benjamins.
- Tomasello, Michael. 1999. *The cultural origins of human cognition*. Cambridge (MA): Harvard University Press.
- Traugott, Elizabeth Closs. 1982. From propositional to textual and expressive meanings: some semantic-pragmatic aspects of grammaticalization. In Winfred P. Lehmann and Yakov Malkiel (eds.), *Perspectives on historical linguistics*, 245–71. Amsterdam: Benjamins.

- Traugott, Elizabeth Closs. 1989. On the rise of epistemic meaning in English: An example of subjectification in semantic change. *Language* 65(1): 31–55.
- Traugott, Elizabeth Closs. 1999. The role of pragmatics in a theory of semantic change. In Jef Verschueren (ed.), *Pragmatics in 1998: Selected papers from the 6<sup>th</sup> International Pragmatics Conference, II*, 93–102. Antwerp: International Pragmatics Association.
- Traugott, Elizabeth Closs. 2008. The grammaticalization of *NP of NP* patterns. In Alexander Bergs and Gabriele Diewald (eds.), *Constructions and language change*, 21–43. Berlin: Mouton de Gruyter.
- Traugott, Elizabeth Closs. 2010. (Inter)subjectivity and (inter)subjectification: A reassessment. In Kristin Davidse, Lieven Vandelanotte and Hubert Cuyckens (eds.), *Subjectification, intersubjectification and grammaticalization*, 29–71. Berlin and New York: De Gruyter Mouton.
- Traugott, Elizabeth Closs and Richard Dasher. 2002. *Regularity in semantic change*. Cambridge: Cambridge University Press.
- Traugott, Elizabeth Closs and Ekkehard König. 1991. The semantics-pragmatics of grammaticalization revisited. In Elizabeth Closs Traugott and Bernd Heine (eds.), *Approaches to grammaticalization*, Vol. 1, 189–218. Amsterdam: Benjamins.
- Traugott, Elizabeth Closs and Graeme Trousdale (eds.). 2010. *Gradience, gradualness and grammaticalization*. Amsterdam and Philadelphia: John Benjamins.
- Traugott, Elizabeth Closs and Graeme Trousdale. 2013. *Constructionalization and constructional changes*. Oxford: Oxford University Press.
- Trousdale, Graeme. 2013. Multiple inheritance and constructional change. *Studies in Language* 37(3): 491–514.
- Trubetskoy, Nikolai. 1939. *Grundzüge der phonologie*. Travaux du Cercle Linguistique de Prague 7. Göttingen: Vandenhoeck and Ruprecht.
- Van Riemsdijk, Henk. 1983. The case of German adjectives. In Frank Heny and Barry Richards (eds.), *Grammatical categories: Auxiliaries and related puzzles* Vol. 1, 223–252. Dordrecht: Reidel.
- Van Voorst, Jan. 1992. The aspectual semantics of psychological verbs. *Linguistics and Philosophy* 15(1): 65–92.
- Vartiainen, Turo. 2012a. Telicity and the Premodifying ing-participle in English. In Sebastian Hoffmann, Paul Rayson and Geoffrey Leech (eds.), *English corpus linguistics: looking back, moving forward*, 217–233. Amsterdam: Rodopi.
- Vartiainen, Turo. 2012b. The proximal and distal perspectives in relation to the position of directional modifiers in the English noun phrase. In María José López-Couso, Bettelou Los and Anneli Meurman-Solin (eds.), *Information structure and syntactic change*, 301–329. Oxford: Oxford University Press.
- Vartiainen, Turo. 2013. Subjectivity, indefiniteness and semantic change. *English Language and Linguistics* 17(1): 157–179.
- Vartiainen, Turo. 2016a. Evaluative nominals in Present-day English: A corpus-based study of the definiteness and syntactic distribution of subjective and objective NPs. *Folia Linguistica* 50(1): 243–268.
- Vartiainen, Turo. 2016b. A constructionist approach to category change: Constraining factors in the adjectivization of participles. *Journal of English Linguistics* 44(1): 34–60.

- Vartiainen, Turo and Jefrey Lijffijt. 2012. Premodifying *-ing* participles in the parsed BNC. In Joybrato Mukherjee and Magnus Huber (eds.), *Corpus linguistics and variation in English: Theory and description*, 247–258. Amsterdam: Rodopi.
- Vendler, Zeno 1957. Verbs and times. *The Philosophical Review* 66(2): 143–160.
- Verkuyl, Henk J. 1972. *On the compositional nature of the aspects*. Dordrecht: D. Reidel.
- Vidic, Janice M. and Robert A. Haaf. 2004. Four-month-old infants' categorization of animals: Does any body part hold privileged status? *The Psychological Record* 54(2), 187–197.
- Vogel, Petra M. 2000. Grammaticalisation and parts-of-speech systems. In Petra M. Vogel and Bernard Comrie (eds.), *Approaches to the typology of word classes*, 259–284. Berlin: Mouton de Gruyter.
- Wagner, Laura 2009. I'll never grow up: Continuity in aspect representations. *Linguistics* 47(5): 1051–74.
- Wasow, Thomas. 2009. Gradient data and gradient grammars. In Malcolm Elliott, James Kirby, Osamu Sawada, Eleni Staraki, and Suwon Yoon (eds.), *Proceedings of the 43rd Annual Meeting of the Chicago Linguistics Society*, 255–271. Chicago: The Chicago Linguistics Society.
- Waxman, Sandra R. 1999. Specifying the scope of 13-month-olds' expectations for novel words. *Cognition* 70: B35–B50.
- Westermann, Gert and Denis Mareschal. 2014. From perceptual to language-mediated categorization. *Philosophical Transactions of the Royal Society B* 369(1634): 20120391.
- Whewell, William. 1858. *History of scientific ideas*. London: J.W. Parker and Son.
- Whitehead, Alfred North and Bertrand Russell 1963 [1925]. *Principia Mathematica* Vol. 1. Cambridge: Cambridge University Press.
- Whorf, Benjamin Lee. 1945. Grammatical categories. *Language* 21(1): 1–11.
- Wierzbicka, Anna. 1996. *Semantics: Primes and universals*. Oxford: Oxford University Press.
- Wilkins, John S. 2009. *Defining species: A sourcebook from antiquity to today*. American University Studies V. Philosophy, Vol. 23. New York: Peter Lang.
- Wittgenstein, Ludwig. 1953. *Philosophical investigations*. Oxford: Blackwell.
- Wright, Sue Ellen and Talmy Givón. 1987. The pragmatics of indefinite reference: Quantified text-based studies. *Studies in Language* 11(1): 1–33.
- Xiao, Richard. 2009. Theory-driven corpus research: Using corpora to inform aspect theory. In Anke Lüdeling and Merja Kytö (eds.), *Corpus linguistics: An international handbook*, Vol. 2, 987–1007. Berlin: Mouton de Gruyter.
- Zadeh, Lotfi A. 1965. Fuzzy sets. *Information and Control* 8(3): 338–353.