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(Received 16 December 2016)

doi:[10.1017/S1360674317000041](https://doi.org/10.1017/S1360674317000041)

Douglas Biber and **Bethany Gray**, *Grammatical complexity in academic English* (Studies in English Language). Cambridge: Cambridge University Press, 2016. Pp. xiv + 277. ISBN 9781107009264.

Reviewed by Viviana Cortes, Georgia State University

In true tradition of the School of Flagstaff of corpus-based linguistic analysis, Biber & Gray bring us a very informative volume in which they analyze a variety of aspects of grammatical complexity in English academic writing. The book is arranged in seven chapters topically organized around different features of grammatical complexity that are strategically related to highlight the primary focus of the book: to discuss ‘phrasal complexity features and the associated phrasal discourse style that is typical of present day science research writing’ (p. 39).

Chapter 1 is much more than a simple introduction. In this chapter, the authors identify in previous language research studies major stereotypes about grammatical complexity, language change processes and academic writing. They set out to challenge these stereotypes in the rest of the book, showing empirically based descriptions of academic writing patterns of use studied over time and across different language registers and subregisters.

In chapter 2, Biber & Gray introduce the different corpora used to conduct the studies presented in this volume and they provide a clear and detailed description of the various procedures they implemented for the grammatical analyses conducted. A wide range of corpora were analyzed, including corpora specially collected for this book as well as more established corpora previously used in other research studies. The *20th Century Research Article Corpus* was specially compiled by the authors and contains published research articles from journals in science, social science and the humanities from three twenty-year intervals (1965, 1985 and 2005), comprising 570 texts and about 3.6 million words. Other corpora and subcorpora used for comparison were ARCHER (*A Representative Corpus of Historical English Registers*), CETA (*Corpus of English Texts in Astronomy*), samples from the *Philosophical Transactions of the Royal Society*, the LSWE (*The Longman Spoken and Written English*) Corpus, subcorpora from the T2KSWAL (*TOEFL 2000 Spoken and Written Academic Language*) Corpus and a group of texts from Project Gutenberg, among others. The corpora were grammatically annotated using the Biber tagger, which relies on

probabilistic algorithms to annotate each word in the corpus with part-of-speech and syntactic function information. The authors investigated a wide range of grammatical features and a set of phrasal and clausal complexity features which are listed in this chapter. On a later stage, more specific computer programs were developed to process the already tagged corpora. Some feature identification and some aspects of the analysis could be completed automatically while others required manual coding.

A synchronic comparison of academic writing with other registers is presented in chapter 3 by contrasting phrasal and clausal styles in discourse. The chapter starts with a detailed situational analysis of academic and non-academic registers, a fundamental but sometimes neglected stage in any comparative discourse analysis. The chapter also introduces an extensive list and some general discussion of linguistic research studies on academic writing from the past thirty years, including numerous lexical and phraseological studies. The authors explain that the analyses they present in this volume will complement studies in the related literature that analyze grammatical features, as in this book they focus on grammatical features of academic writing. A whole section of this chapter is devoted to reintroducing and discussing a set of grammatical features found to be especially common in academic writing, which were first presented in the *Longman Grammar of Spoken and Written English* (Biber, Johansson, Leech, Conrad & Finegan 1999). In this chapter there is also a discussion of the importance of register variation studies, particularly those that used multidimensional analysis (MD), a research approach developed to investigate linguistic patterns of register variation. The chapter finishes with a series of case studies that compare academic writing with other registers such as conversation, university classroom teaching, popular written registers, and across subregisters of different academic disciplines in terms of grammatical complexity, general academic style, grammatical features and grammatical variation. The major findings reported here reveal that academic research writing relies on a wide variety of phrasal features which show signs of compression, particularly in the use of phrasal structures that modify nouns, rather than elaboration ‘with the result that they are not explicit in expressing the meaning relations among grammatical elements’ (p. 123).

The focus of chapter 4 changes towards the analysis of the historical development of phrasal discourse style in academic writing. Biber & Gray try to find out what makes academic writing complex. They conduct a number of analyses on past academic texts, discovering that already in the eighteenth century in science writing, for example, clausal embedding was not frequently used and that, while other written registers like fiction shifted to a more oral style in the twentieth century, this change did not occur in academic registers. The authors, however, make clear that academic registers underwent alternative historical linguistic change. On the one hand, academic writing may be considered conservative because it has resisted the trend towards increased use of colloquial linguistic features but, on the other hand, the register has been

‘dynamic and innovative’ in the use it makes of compressed structural devices for economy of expression (p. 129). These changes are more memorable because they represent new styles of discourse that are not found in any other registers. The authors highlight the importance of nominalizations in academic writing, which is a feature that was widely studied in the linguistic field in the past, but they also stress the importance of other linguistic features which are also extensively used in academic writing such as attributive adjectives, nouns as nominal pre-modifiers, prepositional phrases that are post-nominal modifiers, and appositive noun phrases. When analyzing diachronic changes in academic writing, Biber & Gray mention the many social changes present in the last two centuries that resulted in the ‘information explosion’ that called for ‘the need to present information in an efficient and concise way’ (p. 133). The chapter then proceeds to compare the use of science prose with other written registers like fiction and news reportage from a historical evolution perspective, showing how in science research writing there was a marked increase in the use of nouns, adjectives, nominalizations and word length, and a decrease in the use of lexical verbs and adverbs over time. It could be noted that colloquialization had little impact on academic writing when compared to other written registers. Academic writing also showed a decrease in the use of relative clauses and *-ing* clauses, while *-ed* clauses remained unchanged and there was a marked increase in the use of pre- and post- nominal modifiers. Chapter 4 ends with a description of historical change across subacademic registers, contrasting patterns in specialist sciences, social science, multi-disciplinary science and the humanities. The most important point in this chapter emphasizes the dynamic characteristics of academic writing, particularly of specialist science writing, which reflects an exceptional change in the twentieth century.

After the introduction of a brief situational analysis of academic writing and conversation, chapter 5 provides a more detailed analysis of grammatical features that were found to be characteristic in modern academic writing, presenting the grammatical discourse functions of different linguistic devices that showed an increase in use in this register. For this purpose, the authors conducted qualitative analyses that focused on expansion of meaning and function in science prose, medical prose and newspaper writing. The first section of this functional analysis centers on the study of nouns as nominal pre-modifiers with detailed analysis of each of the factors related to their functional extension, for example, nouns used instead of genitives, the semantic categories of pre-modifying nouns, and pre-modifying nominalizations. Each of these analyses is illustrated by numerous examples taken from the different corpora used in this book. Later in the chapter, the focus shifts towards phrasal post-modifiers of the noun, with a thorough discussion of prepositional phrases which are post-nominal modifiers. In the last section of chapter 5, Biber & Gray discuss a systemic change towards what they call ‘structural compression motivated by economy of expression’ (p. 207). Here, the authors present a ranking of structural features along a gradual line of compression.

As explained in chapter 5, compression is the defining characteristic of academic writing that makes this type of discourse highly inexplicit. Biber & Gray show that academic writing is not elaborated but compressed, which is reflected in a dense use of grammatical structures that are inexplicit. Chapter 6 then presents a review of literature related to cognitive complexity through the study of syntactic environments and discusses various linguistic features found in academic writing that have been associated with the loss of explicit meaning. The authors introduce numerous examples of inexplicit meaning related to phrasal pre-modification in the noun phrase and explain how academic writing makes extensive use of noun–noun structures that are ‘inexplicit regarding the intended meaning relation’ of these nouns (p. 225). This relation may result in incorrect interpretation for non-specialist readers of scientific research writing because it could lead to ambiguity of meaning and lack of comprehension. The chapter also includes discussions and examples of inexplicit meaning relations in the use of phrasal post-nominal modifiers such as appositive noun phrases and prepositional phrases as well as a section on the use of compressed clausal connectors like linking adverbials in academic writing.

The last chapter, chapter 7, revisits the academic writing stereotypes established in the field through previous research (see chapter 1) that Biber & Gray challenge throughout the volume. The authors explain that, traditionally, complexity was linked to elaboration expressed through the use of dependent clauses added to an independent clause. They then conclude that there are different types of grammatical complexity and that one of those types involves phrasal embedding. Phrasal complexity features have been shown to be characteristic of academic writing and have been the center of historical change in this register over the past three centuries. When discussing the stereotypical view that academic writing is resistant to change, Biber & Gray maintain that academic writing has been resistant to changes related to the incorporation of grammatical features that originate in conversation or other oral registers but that it has been a leader in the historical development of features that originated in writing, far from being the conservative and resistant-to-change register depicted in previous literature. The final section of chapter 7 introduces implications for language development, language teaching and assessment. The authors mention how features of compression frequently found in academic writing are often disregarded in the teaching of this register even when students will undoubtedly face professional written texts that present these features and they will need to master how to extract intended meaning from compressed expressions in order to succeed in academia.

I agree with the authors when, at the beginning of chapter 3, they explain that academic writing is important ‘because of its role in university education: it is the primary register that students must control for academic success’ (p. 67) and that academic reading and writing are major educational obstacles that students need to overcome. I regret, however, that the section on suggested applications of the valuable results of the studies presented in this volume to the teaching of academic writing was limited to only two pages at the end of the final chapter. All in all, the authors

perfectly accomplished the objective they established at the beginning of the book: to present a comprehensive description of English academic writing exploring features of grammatical complexity, using empirically based methodology and illustrating each claim with numerous examples extracted from their data. I strongly recommend this book to researchers and practitioners interested in any aspect of academic writing because the methods used and the findings reported in the book undoubtedly pave the way for further analysis of complexity features in academic writing and for the analysis of other registers.

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(Received 15 March 2017)