

Laura García Fernández

**Lemmatising Old English  
on a relational database**

Preterite-present, contracted,  
anomalous and strong VII verbs



## English and Beyond

herausgegeben von Hans Sauer, Gaby Waxenberger  
und Monika Kirner-Ludwig

Band 10



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## Introduction

This work deals with the linguistics of Old English in the new paradigm defined by the incorporation of linguistic corpora and electronic resources. With exhaustive compilations of data that are organised systematically, much more powerful computing hardware, and software (including non-specific one) that offers a wide range of functionalities, it is possible to make significant advances in the linguistic analysis of Old English.

This work may take a further step in the research in the linguistic analysis of Old English with corpus-based lexical databases conducted, among others, by García Fernández (fc.), García García (2012, 2013), González Torres (2010a, 2010b, 2011), Martín Arista (2012a, 2012b, 2013a, 2013b, 2014, 2017a, fc.), Martín Arista and Cortés Rodríguez (2014), Martín Arista and Veá Escarza (2016), Mateo Mendaza (2013, 2014, 2015a, 2015b, 2016), Metola Rodríguez (2016, 2017, 2018), Novo Urraca (2015, 2016a, 2016b), Tío Sáenz (2015, 2018), Torre Alonso (2011a, 2011b) and Veá Escarza (2012, 2013, 2014, 2016, 2016b).

More specifically, this work is framed within the *Nerthus* Project, which works on the lexical database called *The Grid*, presented by Martín Arista (2013b) in a lecture delivered at the University of Sheffield, where the language itself the object of analysis. *The Grid* consists of five relational layouts, namely *Nerthus*, a concordance by fragment, a concordance by word, an index and a reverse index to the *Dictionary of Old English Corpus*. This lexical database is being built with the purpose that the language itself is the object of analysis. One of the main avenues of research that the database has started is the lemmatisation of the verbal lexicon of Old English as attested in the *Dictionary of Old English Corpus*. The present study contributes to this line of research.

With these bearings, this work combines aspects of Morphology, Lexicography and Corpus Analysis, and takes two main directions: exploring the relationship between Inflectional Morphology and Lexicography; and gaining insight into the connection between Inflectional Morphology and Corpus Linguistics.

As is explained in the synthetic part of this work, the relationship between Corpus Linguistics and Lexicography is well established: new dictionaries, as a general rule, are designed and compiled on the basis of a corpus of the target language; while lemmatisation is generally accepted as one of the necessary tasks of dictionary making: indeed, textual occurrences need to be related to a headword whose entry presents the information relevant to all the textual occurrences of each lemma.

On the other hand, the relationship between lemmatisation and Corpus Linguistics is less clear, at least in the field of Old English studies. As a matter of fact, no lemmatised corpus of Old English is available. Generally

speaking, a lemmatised corpus has clear advantages over an unlemmatised one. It facilitates studies in morphology, syntax and semantics (as well as in the relationships between them) and allows for textual analysis of frequency, productivity, collocations, etc. In the specific area of Old English, a lemmatised corpus is even more necessary. This is so because Old English presents numerous and various morphological variations and, above all, because it does not have a written standard. Instances of morphological variation are attributable to change over time; and as a result of spelling inconsistencies that may have to do with authorship or textual transmission. Thus, for example, the contracted negative forms *næfð*, *næfst*, *næbbe*, *næfdon*, *næfde*, *nabban* and *nabbað* should be attributed to the verbal lemma *habban* ‘to have’; whereas to the copulative verb lemma *bēon* ‘to be’ the following forms, at least, should be assigned: *be*, *beo*, *beon*, *beonne*, *beoð*, *beop*, *bið*, *bist*, *bip*, *byð*, *byst*, *byþ*, *eart*, *eom*, *heom*, *is*, *sindon*, *sint*, *sund*, *sy*, *synd*, *syndan*, *synden*, *syndon*, *synt*, *ys*, *wær*, *wære*, *wæran*, *wæron*, *wæs*, *was*, *were*, and *wes*. Notice that this list comprises rather unpredictable forms such as *heom*, *sund*, *syndan*, *wæran* and *wes*. When it comes to analysing Old English, it makes a great difference if the forms just cited are gathered under the corresponding lemma. Not only because all the information on the lemma is available for all its inflectional forms but, above all, because the researcher does not know where or how to look for morphologically or orthographically deviant or unpredictable forms. Put differently, the lemmatisation of the lexicon gathers morphological paradigms and applies a criterion of regularisation whereby deviant or unpredictable forms are found where they should be, thus becoming available for the researcher.

With these preliminaries, the aim of this work is to contribute to the lemmatisation of the Old English verbal lexicon. Of all the classes, the scope of this research is restricted to the most morphologically complex verbal classes of Old English: irregular verbs and reduplicative verbs. This is to say, the scope includes the preterite-present, anomalous, contracted and strong VII verbs of Old English. Therefore, the main task is to relate the attestations of the above mentioned classes to a lemma inflected for the infinitive. This aim is twofold. Firstly, it is necessary to select and manage the sources of data and verification of results. Secondly, the steps of the lemmatisation tasks need defining and sequencing. Whereas strong verbs may have relatively predictable *ablaut* patterns that allow for a degree of automatised, and weak verbs may have relatively predictable inflectional paradigms, the four verbal classes in the scope of this research call for a specific lemmatisation procedure.

As remarked above, lemmatisation is still a pending task in Old English since there is not a complete list with all the attested forms by dictionary word. *The Dictionary of Old English* (henceforth DOE), which provides

all the attestations by headword entry, has only published the letters A-I, so that similar information is not available for the rest of the alphabet (L-Y). Similarly, the standard dictionaries of Old English, including Bosworth and Toller's *An Anglo-Saxon Dictionary*, Hall-Meritt's *A Concise Anglo-Saxon Dictionary*, and Sweet's *The Student's Dictionary of Anglo-Saxon*, do not give all the attested inflectional forms of verbs, neither do they offer the citations on a systematic basis. This leaves us with the task of not only relating attested forms to the verbal infinitive but also finding textual evidence for the infinitives or inflectional forms turned out by this analysis. This research also raises the issue of the automatised process of lemmatisation of Old English verbs, on which no previous literature has been found, except Metola Rodríguez (2015, 2017, 2018) and Tío Sáenz (2015, 2018).

This research contributes to the field with the inventory of lemmas and inflectional forms for the L-Y letters of the verbal classes mentioned above as attested in *The Dictionary of Old English Corpus*, which was not available until now from the lexicographical sources. This kind of analysis requires two types of resources, textual and lexicographical. The corpus used is the 2004 version of *The Dictionary of Old English Corpus*, which is the base of the lexical database. The *Dictionary of Old English Corpus* contains approximately three thousand texts and three million words, which represents in practice all the surviving written records of the Anglo-Saxon language. The lexicographical sources checked are, in the first place, the database *The Grid*, and secondly, the Old English dictionaries, including the DOE, Bosworth and Toller's *An Anglo-Saxon Dictionary*, Hall-Meritt's *A Concise Anglo-Saxon Dictionary*, and Sweet's *The Student's Dictionary of Anglo-Saxon*.

Two different approaches to lemmatisation have been taken in this research. Firstly, the class VII strong verbs are lemmatised by means of a search algorithm that is based on the main forms of the verbs (Metola Rodríguez 2015, 2017, 2018). The search algorithm is created on the basis of the roots, the set of inflections and the preverbal items of the strong verbs. Four different query strings combine aiming at the attested basic and complex strong verbs, while four filters are designed in order to discard undesired results. Therefore, this methodology targets both the derived lemmas and the basic verbs, unlike the other three verbal classes, which concentrate exclusively on the derived verbs. Secondly, the derived preterite-present, anomalous and contracted verbs are searched by means of their simplexes. By *derived* this research understands the Old English verbal forms and lemmas that are created on the basis of the attachment of a verb-forming prefix to a simplex form. Take as an example *tōsāwan*, which constitutes a derived strong VII verb by the addition of the prefix *tō-* to the simplex verb *sāwan*.

The method is based on one of the defining characteristics of the lexicon of Old English noted by Kastovsky (1992), which is the remarkable degree of morphological relatedness found in large word families of derivatives that share a base of derivation. Given that derived verbs display the same stem and inflectional endings as their simplex counterparts, it is possible to search for derivatives on the grounds of simplex verbs. For example, *onādōn* is a derivative of *ādōn*, which, in turn, results from the prefixation of *ā-* to *dōn* ‘to do’. Consequently, the morphological relationship holding between *dyde* and *dōn* is the same as the one that links *onadyde* to *onādōn*. The lemma *onādōn* is assigned to the inflectional form *onadyde*.

With the two approaches just described, the methodology comprises automatic searches and the manual revision of the hits. The automatic searches are launched on the lemmatiser *Norna* and the hits are compared with the available lexicographical sources. For example, given a basic verb like *gān*, the forms in theory attributable to the infinitive *gebegān* include *gebigeð*, *gebegeð*, *gebegeð*, *gebege*, *gebiggan*, *gebegað*, *gebega* and *gebegane*, although the only attestation in the texts that corresponds to the infinitive *gebegān* is *gebegane*. The first half of the alphabet, that is, letters A-I, are compared with the DOE, whereas, letters L-Y are checked with the standard dictionaries of Old English. After that, this research turns to secondary sources, as presented by the database *Freya*, and the York corpora of Old English (prose and poetry). Finally, ambiguous cases are examined in their context, for which this research provides their citation and translation.

With respect to the organisation, the present work is divided into six chapters. Chapter 1 is devoted to the identification of Old English as an Indo-European language and to contextualise it within the family of the Germanic languages. Section 1.2 remarks the similarities and differences among Old English and the other Germanic languages. This chapter also includes a section (1.3) that gives an account on the main dialects that coexisted in the Anglo-Saxon times and comments on their common features as well as their main differences. After the general introduction to the Old English language, chapter 1 focuses on the morphology, which at the core of this work, gives special emphasis to the verbal system and the main procedures of word formation. Section 1.4 offers an overview of the verbal system in the Anglo-Saxon language, the formation of the inflectional paradigms, and the classification into the different verbal classes, which include strong verbs, weak verbs, preterite-present verbs and anomalous verbs. On the other hand, section 1.5 discusses the most relevant mechanisms that were used in Old English for the creation of new words. The final sections in chapter 1 (1.6, 1.7, 1.8 and 1.9) thoroughly describe the four classes of Old English verbs selected for this research, the strong VII, contracted, preterite-present and anomalous verbs,

respectively. Apart from their specific features, the focus is on the several theories that attempt to explain the origin and development of the mentioned verbal classes from the Indo-European and the Germanic languages.

Turning to chapter 2, it is devoted to the research methodology. Since this research is directly related to the disciplines of Lexicography and Corpus Linguistics, this chapter provides an overview on these linguistic areas, addresses their main goals and remarks the importance of Corpus Linguistics for the task of lemmatisation. In this respect, section 2.2 analyses Corpus Linguistics along the history of Lexicography and comments on the future perspectives concerning how these two linguistic areas will correlate. Section 2.2 also includes a description of the steps and methods of dictionary making, where lemmatisation plays a decisive role. This chapter devotes a whole section (2.3) to the problem of headword spelling, which is one of the main problems that lexicographers of Old English encounter when building a dictionary. After having offered an overview on lexicographical work, chapter 2 concentrates on the lemmatisation task. In section 2.4, the lemmatisation methods that are being currently developed by the *Nerthus* Project are presented, pointing at their main steps and differences among them. Section 2.5 gives an account of the sources required by this study, and finally, the methodological process that has been followed to get an exhaustive list of lemmas and inflectional forms is thoroughly described in section 2.6.

The remaining chapters of this work (3, 4, 5 and 6) share the same structure. Each of them deals with one of the verbal classes in this research, the preterite-present, contracted, anomalous and class VII strong verbs, respectively. These chapters apply the lemmatisation methodology to the four verbal classes following the procedure explained in chapter 2. These chapters are divided into several sections that deal with the lemmatisation tasks individually. First of all, sections 3.2, 4.2, 5.2 and 6.2 provide the context of what is available from the secondary sources by listing the lemmas and inflectional forms as indexed in the database *Freya*. The first task of the lemmatisation procedure has to do with the automatic searches, which is presented in sections 3.3, 4.3, 5.3 and 6.3. The subsequent sections concentrate on the next task and illustrate the steps by which the hits from the automatic searches are manually revised with the available lexicographical sources. The first half of the alphabet is compared with the DOE, as presented in 3.4, 4.4, 5.4 and 6.4. Then, the hits from the automatic searches corresponding to the L-Y letters are compared with the standard dictionaries of Old English. This step is illustrated in sections 3.5, 4.5, 5.5 and 6.5. Secondary sources, such as Old English glossaries (*Freya*) and annotated corpora (*York Corpus of Old English*), are checked for the verification of forms that are not given by

the dictionaries. After applying those filters, a few doubtful cases appear, which are discussed in 3.6, 4.6, 5.6. and 6.6. After all, this research provides the list of lemmas and inflectional forms for the L-Y letters that correspond to the preterite-present, anomalous, contracted and strong VII verbs in section 3.7, 4.7, 5.7 and 6.7, respectively. In the appendix, a list of lemmas and inflectional forms for the letters A-I is included that is based on the reference list from *Nerthus*. This list matches the inventory of L-Y lemmas and inflectional forms given in this work and, more importantly, reflects a consistent headword spelling.

The conclusions of this work constitute a contribution in two areas. On the descriptive side, an inventory of inflectional forms and lemmas of the verbs under analysis is offered. On the applied side, this work presents different procedures of automatic and manual lemmatisation that can be applied to the fields of Lexicography and Corpus Linguistics.

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