

## **The Lemmatisation of Old English Comparative Adverbs**

### **Lematización de adverbios comparativos en inglés antiguo**

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This paper presents a pilot study in the lemmatisation of Old English comparative adverbs. This research is a further contribution to the lemmatisation methodology implemented in the OE verbal classes. The adverbs graded for the comparative have been chosen for this study. The data have been retrieved from *The York-Toronto-Helsinki Parsed Corpus of Old English Prose* and *The York-Toronto-Helsinki Parsed Corpus of Old English Poetry*. The starting point of this study is the automatic extraction of the forms morphologically tagged with the ADVR label (comparative adverbs). Secondly, the resulting forms are manually assigned the lemma provided by the lexical database of Old English *Nerthus*. Thirdly, the results are compared with Seelig (1930) and with the *Dictionary of Old English* in order to verify the lemma assignment and disambiguate doubtful cases. The conclusions insist on the applicability of the lemmatisation method to all non-verbal categories of Old English.

**Keywords:** *Old English; corpus linguistics; lexicography; lemmatisation; comparative adverbs*

Este artículo presenta un estudio piloto sobre la lematización de los adverbios comparativos del inglés antiguo. Esta investigación contribuye a la metodología previamente implementada en la lematización de las clases verbales. Los corpus *The York-Toronto-Helsinki Parsed Corpus of Old English Prose* y *The York-Toronto-Helsinki Parsed Corpus of Old English Poetry* han proveído las formas flexivas a lematizar. El punto de partida de este estudio es la extracción automática de las formas morfológicamente etiquetadas con la etiqueta ADVR (adverbios comparativos). En segundo lugar, se ha asignado un lema de la base léxica *Nerthus* a cada forma flexiva. En tercer lugar, los resultados han sido contrastados con Seelig (1930) y el *Dictionary of Old English* para verificar la asignación de lemas y desambiguar casos dudosos. Las conclusiones insisten en la aplicabilidad de este método de lematización al resto de categorías no verbales de inglés antiguo.

**Palabras clave:** *ingles antiguo, adverbios comparativos, lingüística de corpus, lematización*

#### **1. AIMS AND RELEVANCE**

This paper describes and discusses the lemmatisation process of Old English adverbs in the comparative. Lemmatisation is still a pending task of Old English lexicographical studies as there is no fully lemmatised corpus of this language. The singularities of Old English, a language that presents considerable spelling inconsistency, partly due to the existence of several dialects and the absence of a written standard, make this task even more necessary. The

principal Old English dictionaries of reference, namely Bosworth and Toller's (1973) *An Anglo-Saxon Dictionary*, Clark Hall's (1996) *A Concise Anglo-Saxon Dictionary* and Sweet's (1976) *The Students Dictionary of Anglo-Saxon*, although valuable lexicographical sources, fail to compile a full inventory of lemmatised inflectional forms in a systematic way. Unlike the earlier sources, *The Dictionary of Old English* (Healey, 2008) is, to date, the most complete lexicographical work, although only letters A to I have been published so far.

This study is framed within the context of the *Nerthus* project, which is currently concerned with the lemmatisation of the non-verbal lexicon of Old English. Previous works on the lemmatisation of verbal forms deal with strong verbs (Metola Rodríguez, 2015, 2017), preterite-present, anomalous and contracted verbs (García Fernández, 2018) as well as weak verbs (Tío Sáenz, 2019). With differences in lemmatisation techniques due to the various morphological characteristics of the verbal classes, these authors use a semi-automatic method that comprises an initial automatic search followed by manual revision of the results obtained and an assessment that is based on the comparison with the available sources and provides feedback on the accuracy of the searches, which are gradually improved.

The present study is the first to undertake the task of lemmatising a non-verbal category, thus serving as a pilot study in the implementation of a new methodology. Unlike the verbal category, which presents great morphological and inflectional complexity, adverbs are only inflected for the comparative and the superlative, the scope of this analysis being restricted to the comparative degree.

This work contributes, on the one hand, to identifying the lemma for all Old English adverbial forms inflected for the comparative that have been retrieved from the *York-Corpus of Old English* (henceforth YCOE) (Taylor, Warner, Pintzuk & Beths, 2003) and, on the other, to conducting a comparative study of the obtained forms with a lexicographical and a secondary source in order to complete and refine the results. The lexicographical source is *The Dictionary of Old English*, a prestigious work that is based on a corpus of texts that comprises an example, at least, of every surviving text in Old English. As for the secondary source, Seelig (1930) has been consulted. This work is a compilation of Old English adjectives and adverbs inflected for the comparative and the superlative which are also grouped by lemma.

All things considered, this paper begins with an overview of the Old English adverbial system and the formation of adverbs (Section 2). Section 3 presents an outline of the relationship between corpus linguistics and electronic lexicography within the framework of a historical language. Section 4 lays the foundations of the lemmatising methodology applied to comparative adverbs. Section 5 offers the main results of the analysis and discusses some doubtful cases. The main conclusions are presented in Section 6.

## **2. AN OVERVIEW OF THE OLD ENGLISH ADVERBIAL SYSTEM**

Old English is characterised, from a grammatical point of view, by its rich use of inflections, which can be translated into a closer relationship between form and function in words (Smith, 2009: 22). As a synthetic language, Old English relies on inflectional endings to mark the function of a word rather than using word order or function words typically associated with analytic languages. Notwithstanding its rich inflectional system, Old English is described as a "half-inflected language" (Mitchell & Robinson, 1985: 62) given that this language preserves only four cases of the eight that existed in Indo-European. In addition to this, the nominative and the accusative coincide and prepositions are often used to introduce phrases even in those cases in which they could express the same function without any.

If compared with the other categories, adverbs represent roughly a five per cent of the whole Old English lexicon, nouns encompassing half of the total and adjectives and verbs a 20% each. Adverbs in Old English serve the same functions as in Present-Day English, namely they are used as verbal modifiers and as headwords of adverbial phrases that modify adjectives and adverbs.

On the grounds of derivational morphology, adverbs are classified into four types, namely basic, zero derived, affixed and compounds. Maíz Villalta (2012) carried out a study in Old English adverbial formation whereby she concluded that affixation, more specifically suffixation, is by far the most productive process of derivation, with 666 suffixed and 199 prefixed adverbs. Examples of adverbs that undergo affixation are *andēages* ‘openly’, *onbæc* ‘back, backwards’, *eallunga* ‘altogether’, *earfoðlice* ‘with difficulty’, and *searwum* ‘skillfully’. Quantitatively speaking, basic adverbs occupy the second position. Examples of underived adverbs include *oft* ‘often’, *under* ‘under’ or *ymbe* ‘around’. A total of 122 adverbs undergo conversion, a process that involves category extension and semantic modification without a formal change. Converted adverbs are, for instance, *æfter* ‘after’, which originates from the formally alike adjective *æfter* ‘next, following’, or *hām* ‘homewards’, derived from the noun *hām* ‘dwelling, home’. Finally, adverbial compounds constitute the smallest group in terms of number; a total of 64 adverbs are formed through this process, among which we find *efennēah* ‘equally near’ or *geardæg* ‘formerly’.

Adverbs are mostly created through the addition of the suffix *-e*, representing the instrumental case, to an adjectival stem (Campbell, 1959: 275; Mitchell & Robinson, 1985: 53); for instance, *swōt* ‘sweet’ > *swōte* ‘sweetly’. Many adverbs were created from adjectives ending in *-lic* by adding *-e*; this is the case of *rēðlic* ‘fierce’ > *rēðlice* ‘fiercely’. As a consequence, *-lice* became a typical ending that was attached to adjectival stems to form adverbs: *sideful* ‘decorous’ > *sidefullice* ‘decorously’. Besides these productive endings, others have been identified for adverbs; these are *-unga* (*nēadunga* ‘not willingly’) and *-an* (*westan* ‘from the west’). Old English adverbs may also derive from the genitive singular neuter (*ealles* ‘entirely’ or *singales* ‘always’). In addition, the dative singular and the dative plural can also give rise to forms that are used adverbially, this is the case of *fāecne* ‘deceitfully’ or *hwilum* ‘at times’.

Turning to inflection, adverbs ending in *-e* normally form the comparative and the superlative by adding *-or* or *-ost* right after the consonant that precedes the final *-e*. Thus, the comparative and the superlative forms of the adverb *rihte* ‘right’ are *rihtor* and *rihtost*. Other possible endings are *-ur* and *-ar* for the comparative and *-ast*, *-est* and *-ust* for the superlative. Furthermore, Fulk (2018: 240) identifies double suffixation (*-m-ist*) in the formation of the superlative in some adverbs that can be used as adjectives like *innemest* ‘innermost’ and *yfemest* ‘uppermost’.

A group of adverbs undergo mutation in the root vowel (Campbell, 1959: 278) when forming the comparative and the superlative; this is the case of the forms *fierr* and *firrest*, the comparative and the superlative forms of the adverb *feorr* ‘far’. Additionally, suppletive comparison is present in some adverbs that form the comparative and the superlative from a stem different from the positive adverb (Fulk, 2018, 240). Suppletive comparison is observed, for instance, in *wiers* and *wierst*, the comparative and superlative forms of the positive adverb *yfel* ‘evil’.

### 3. CORPUS LINGUISTICS AND ELECTRONIC LEXICOGRAPHY IN A HISTORICAL LANGUAGE

Lexicography and corpus linguistics hold an intimate relationship given that the lexicon of any lexicographical work must be based on a solid corpus. Faaß (2017) underscores the importance of computerized corpora in order to maximize the accuracy in the description of the data. Furthermore, this author acknowledges that linguistic annotation, i.e. part-of-speech category and lemma assignment to each of the words in a corpus, is even more crucial in the case of a historical language such as Old English due to its morphologically rich nature. After an initial lemma assignment process, by which the search of inflectional forms is optimised, the subsequent tagging contributes to disambiguating forms that are formally alike but belong to different lemmas.

There is no doubt that the emergence of electronic corpora and dictionaries in the last few years has contributed to facilitating data retrieval and research in the field of historical linguistics. In particular, the introduction of corpora has been especially valuable as they offer a faster and more accessible path to the collection of written evidence, also in a more systematic way, allowing for a more accurate analysis of the material available. Most of the lexicographical work is based on a semi-automatic process in which data extraction can be performed automatically but data interpretation requires manual revision.

Notwithstanding the plethora of applications corpora have in the area of historical linguistics, there are still several issues that need to be tackled. Firstly, for obvious reasons, the only evidence we have of this language is to be found in written texts, which mostly reflect the language of the elite, therefore it is not possible to know much about the language spoken by the majority of the population at that time, who were illiterate. Secondly, Old English is a language with a considerable degree of spelling variation due to a number of reasons that include the existence of different dialects, the absence of a standard written language or the lack of systematicity on the part of editors and transcribers when reproducing the texts.

If compared with modern corpora, historical ones need to increase the amount of grammatically annotated material, which is yet scarce. However, this does not come without complications. Among the difficulties encountered, Claridge (2008: 254) underscores the fact that software should conform to the requirements of historical linguistics, including the differences in form and usage and the higher internal variability.

Of particular interest in the area of English historical linguistics, and also for this research, are the *Dictionary of Old English Corpus* (DOEC) (Healey, Price-Wilkin & Xiang, 2004) and *The York-Toronto-Helsinki Parsed Corpus* (YCOE), the latter comprising both *The York-Toronto-Helsinki Parsed Corpus of Old English Prose* (Taylor et al.) and *The York-Toronto-Helsinki Parsed Corpus of Old English Poetry* (Pintzuk & Plug, 2001). The DOEC represents one of the first electronic resources that could be applied to the study of a historical language and is, to date, the largest corpus of this language, compiling around 3,000,000 words. The YCOE, another authoritative corpus in this area, files roughly 1.5 million words distributed in a wide variety of texts genres, dates and authors. The fact that it is both syntactically and morphologically annotated makes it a precious source of data for historical linguistic studies. These sources will be further reviewed in section 4.1.

### 4. THE LEMMATISATION PROCESS

Burkhanov (1998: 122) defines lemmatisation as “the reduction of inflectional word forms to their lemmata, i.e. basic forms, and the elimination of homography”. This author adds that this process “involves the assignment of a uniform heading under which elements of the corpora

containing the word forms of same lexeme are represented” (1998: 122). This work thus aims at gathering all the adverbial forms attested by a corpus (the YCOE, in this case) under one lexicographical entry.

A major concern in this regard is to define the concept of lemma so that words can be grouped together meaningfully. Fitschen and Glupta (2008: 553) allege that the definition of what a lemma is largely depends on the approach that is adopted. In a paradigmatic-based approach, which is the one adopted in this research, words that share any type of paradigmatic relation share the same lemma. In this sense, lemmatisation entails the assignation of a lemma to a group of morphologically related words, including both predictable and unpredictable forms.

In the remainder of this section, a detailed summary of the different steps that have been followed is provided as well as of the tools used and the sources consulted.

#### 4.1 *The lemmatisation sources*

To fulfil the lemmatising task, this research has required lexicographical and textual sources. As for the former sources, *The Dictionary of Old English* (henceforth DOE) (Healey, 2008) is the main lexicographical source this work has used. At its current state, the DOE has published entries starting with letters A-I. These entries have been created on the basis of a corpus of texts and contain grammatical information of the headword (part of speech category, gender, verb class, etc.), the attested spellings in the corpus, the inflectional forms, dialectal variations, number of occurrences, meaning and some textual citations.

The *Dictionary of Old English Corpus* (DOEC) is the textual source that has been utilised. The DOEC registers over three million words in Old English and compiles at least one copy of every surviving text in this language. A simple search in the corpus gives all the hits that correspond to the searched word together with the short title of the text and the Cameron number.

The other corpus that has guided this research is the YCOE. Lemmatisation calls for the selection of a target category –the comparative form of Old English adverbs in this case– and, to that aim, the attested forms of the comparative have been retrieved from this corpus, which constitutes the primary source for the lemmatisation of the adverbial forms. The two corpora that conform the YCOE, namely *The York-Toronto-Helsinki Parsed Corpus of Old English Prose* and *The York-Toronto-Helsinki Corpus of Old English Poetry*, are both syntactically and morphologically annotated through syntactic trees and labelled bracketing.

Finally, Seelig’s (1930) work on Old English adjectives and adverbs has contributed to completing and refining the analysis by providing its comparative. In his chapter devoted to the comparison of adverbs, Seelig (1930: 57-75) establishes a classification of adverbs on a morphological basis: the first group is comprised of adverbs that undergo regular comparison (*smale*, *smæle* ‘small’: *smælor*, *smalost*), the second group consists of adverbs whose comparative forms entail any type of vowel change (*softe* ‘soft’: *seft*, *softor*, *softost*), while the third group includes irregular adverbs, that is, those in which the comparative is created from a different stem in the positive (*sēl* ‘best’: *sāel*, *sēlast*, *sēlest*, *sēlost*).

#### 4.2 *The extraction processes*

Prior to lemmatising, it is necessary to have a list of lemmas that will be later assigned to the adverbial forms under analysis. This list has been obtained from the *Nerthus V3* database (Martín Arista, García Fernández, Lacalle Palacios, Ojanguren López & Ruiz Narbona, 2016) and consists of 1,755 adverbs. With the purpose of facilitating the lemmatising task, two other

fields of the database have been exported, these are spelling variants, which are neither independent predicates nor morphologically contrastive forms but variants of the predicate they appear with (Martín Arista, 2010: 10), and translation, which provides an equivalent of the Present Day English source term.

Once the adverbial list of lemmas is available, the adverbial inflectional forms attested by the YCOE (1, 425 tokens) have been assembled. The YCOE, which compiles one hundred prose texts and twenty poetry ones, has served this purpose. Texts are annotated with part-of-speech labels (POS) and syntactic information labels (PAS). An example of each type of annotation is included in Figures 1 and 2 below.

```
<T06950000200,3>_CODE He_PRO^N s+ade_VBD +teh_ADV ,_, +t+at_C +t+are_ADV^L
w+aren_BEDS swy+de_ADV feawe_Q^N o+d+de_CONJ nan_NEG+Q^N ,_, +te_C swa_ADV
frig_ADJ^N w+are_BEDS __. Coaugust,Aug:3.3_ID
```

Figure 1: *Part-of-speech (POS) annotation in the YCOE*

```
((CODE <T06950000200,3>)
(IP-MAT (NP-NOM (PRO^N He))
(VBD s+ade)
(ADVP (ADV +teh))
(, .)
(CP-THT (C +t+at)
(IP-SUB (ADVP-LOC (ADV^L +t+are))
(BEDS w+aren)
(NP-NOM (QP-NOM (ADV swy+de) (Q^N feawe))
(CONJP (CONJ o+d+de)
(QP-NOM (NEG+Q^N nan))))
(, .)
(CP-REL (WNP-NOM-1 0)
(C +te)
(IP-SUB (NP-NOM *T*-1)
(ADJP-NOM-PRD (ADV swa) (ADJ^Nfrig) (BEDS w+are))))))
(. .) (ID Coaugust,Aug:3.3))
```

Figure 2: *Parsed (PAS) annotation in the YCOE*

The attested forms of adverbs in the comparative are extracted by importing all the POS files corresponding to the ADVR tag in the corpus to an Excel file. In this way, we obtain all the inflectional forms attested for adverbs graded in the comparative. Table 1 includes a sample of comparative adverbs extracted from the YCOE, along with the corresponding tag, the code of the text the form appears in and the text genre:

Table 1: *Sample of extracted comparative adverbial forms*

| Inflectional form  | Morphological tags | Text code    | Text genre |
|--------------------|--------------------|--------------|------------|
| <i>æror</i>        | ADVR^T             | Coorosiu.o2  | PROSE      |
| <i>bet</i>         | ADVR               | Cowulf.o34   | PROSE      |
| <i>eað</i>         | ADVR               | Coaelholm    | PROSE      |
| <i>firnor</i>      | ADVR^T             | Cowulf.o34   | PROSE      |
| <i>firr</i>        | ADVR^L             | Coorosiu.o2  | PROSE      |
| <i>orsorglicor</i> | ADVR               | Cocurac      | PROSE      |
| <i>uttor</i>       | ADVR^D             | Cogregdh.o23 | PROSE      |

As can be observed, the first column presents the inflectional form the corpus gives. The second column corresponds to the morphological tag in the YCOE. This tag may also indicate the type of adverb a form is; for example, the tag ADVR^D stands for directional comparative adverb, ADVR^L indicates that the adverb is locative and ADVR^T that is temporal. This further specification results especially helpful in those cases in which the same inflectional form denotes different meanings. Table 2 illustrates this:

Table 2: *Formally alike inflectional forms with different morphological tags*

| Inflectional form | Morphological tags | Text code    | Text genre |
|-------------------|--------------------|--------------|------------|
| <i>Fyrr</i>       | ADVR^D             | CogregdH.o23 | PROSE      |
| <i>Fyrr</i>       | ADVR^L             | Comart3.o23  | PROSE      |
| <i>Innor</i>      | ADVR^D             | CogregdH.o23 | PROSE      |
| <i>Innor</i>      | ADVR^L             | Colaece.o2   | PROSE      |

As indicated in the table above, the form *fyrr* may have a directional and a locative meaning. As a directional, this form is frequently accompanied by a prepositional phrase that conveys a sense of movement towards a point. For example, in the sentence *Ac þa þa hi þa gyt fyrr foron on heora weg* (GD 2 (C) B9.5.4 [0288 (13.128.35)]) ‘But then they even traveled from afar on their way’, *fyrr* has a directional meaning. As a locative, *fyrr* suggests distance towards a point with no movement. An example of locative *fyrr* is found in the sentence *þa was in þære seolfan nihte, þætte se ælmihtega Drihten hire forðfore in oðrum mynstre fyrr gesettum* (Bede 4 B9.6.6 [0533 (24.338.31)]) ‘That took place at the same night when the almighty Lord put her in another minster placed far away’. Something similar occurs to the form *innor*, which may be both directional and locative too.

At this point of the process, only the morphological tags corresponding to an adverbial graded form are selected. For instance, given the chunk in Figure 3, only the information corresponding the ADVR tag is extracted.

```
swa_ADV eac_ADV se_D^N +te_C nat_NEG+VBPI Godes_NR^G bebodan_N ofter_ADVR^T
he_PRO^N synega+d_VBPI ._, swa_ADV swa_P he_PRO^N nat_NEG+VBPI ._, +tone_P
do_VBPS se_D^N +te_C heo_PRO^A wat_VBPI ._. Coalcuin,Alc_[Warn_35]:100.74_ID
```

Figure 3: *POS file chunk with grammatical tags*

The POS file is opened with a text editor, Notepad++ in this case, which permits us to process simultaneously greater amounts of texts than other text editors. Once in the text editor, the text must undergo several adjustments. Firstly, preferences must be modified to guarantee that replacements do not distinguish between small and capital letters; afterwards, symbols +a, +d and +t are replaced with letters æ, ð and þ respectively, and single spaces with a paragraph mark. The whole content is then selected and sorted by paragraph. The result is a list of adverbs linked to their morphological tag through a low hyphen and arranged in a column. The last step of this process consists of selecting the resulting text and posting it in an Excel file. By alphabetically sorting the column containing the morphological tags, it is possible to get rid of the undesired results, that is, all the tags different from ADVR.

Storing the information in this way facilitates the creation of dynamic charts that permit us to search for inflectional forms, labels, text codes and genre, allowing for both qualitative

and quantitative-oriented research. Through this procedure it is, thus, possible to obtain a complete inventory of inflectional forms that will be the starting point of the lemmatisation process.

#### 4.3 The lemmatisation process

The process of lemmatisation requires, on the one hand, a list of inflectional forms and, on the other, a list of headwords. As it has been described in section 4.2., the list of inflectional forms, which make a total of 1,425 tokens, has been extracted from the YCOE, whereas the list of headwords draws on the lexical database of Old English *Nerthus V3* (Martín Arista et al., 2016). Lemmatisation is yet far from being a fully automatic procedure. Table 3 illustrates this manual step of the process. As observed below, this new table has attached an additional column to the left, which corresponds to the lemma that is assigned to the inflectional form. If a headword is available in the *Nerthus* list, then it is indicated in the left column; otherwise, the cell is left blank.

Table 3: A sample of lemmatised comparative adverbial form

| Lemma            | Inflectional form  | Morphological tags | Text code    | Text genre |
|------------------|--------------------|--------------------|--------------|------------|
| <i>ēaðe</i>      | <i>Eað</i>         | ADVR               | Coaelholm    | PROSE      |
| <i>fyrn</i>      | <i>Firnor</i>      | ADVR^T             | Cowulf.o34   | PROSE      |
| <i>feorr</i>     | <i>Firr</i>        | ADVR^L             | Coorosiu.o2  | PROSE      |
| <i>orsoglice</i> | <i>Orsorglicor</i> | ADVR               | Cocurac      | PROSE      |
| <i>ūt</i>        | <i>Uttor</i>       | ADVR^D             | Cogregdh.o23 | PROSE      |

Attention must now be paid to the nine forms that remain unlemmatised. At this point, it is necessary to rely on lexicographical sources. First, the DOE has helped with the forms beginning with letters A-I as, for the moment, this dictionary represents the most complete lexicographical work as far as the number of attested inflectional forms is concerned. The other reliable source is Seelig's (1930: 57-70) work, which has been of help to countercheck the results obtained and to assign a lemma to the remaining unlemmatised forms.

To illustrate this stage of the process, Table 4 presents all the inflectional forms retrieved from the YCOE that have been assigned the lemma *forð* 'forth, forwards, onwards, further' and those forms associated with the lemma *gehende* 'near, at home; closely, in detail'. In addition, the table also lists the forms that the DOE and Seelig have identified for this same lemma.

Table 4: Lemmas *forð* and *gehende* and their attested forms in different sources

| Lemma          | YCOE   | DOE   | Seelig                        |
|----------------|--|---|-------------------------------|
| <b>forð</b>    | <i>furðar, furðor, furður</i>                  | <i>furþor, furðor, furþar, furðar, furþur, furður, furþer, forþor, forðor, forður, fyrðor</i> | <i>forðor, furðor, furður</i> |
| <b>gehende</b> | <i>gehender, gehendor, gehendran, gehendre</i> | <i>gehendor, gehender, gehændor</i>   | <i>gehendor</i>               |

As shown in the table above, the inflectional forms corresponding to lemma *forð* identified by YCOE are fully attested by the DOE. In this particular case, the DOE contributes

with new forms, these are *furþor*, *furþar*, *furþur*, *furþer*, *forþor*, *forðor*, *forður* and *fyrðor*. The fact that the DOE distinguishes between spelling ð and þ makes this list considerably longer. Compared with YCOE's inventory, Seelig also attests *furðor* and *furður* and provides an additional form, *forðor*. YCOE, for its part, attests the form *furðar* that is not included in Seelig's inventory. Concerning the forms assigned to the lemma *gehende*, it can be observed that YCOE incorporates two forms that are unattested by both the DOE and Seelig, these forms are *gehendran* and *gehendre*, whilst the DOE contributes with a new form, *gehændor*.

By conducting such a comparative study, the forms provided by the YCOE can be checked in the other lexicographical sources either to test their validity, or to complete the list by suggesting new ones. In the next section the results of the lemmatisation process will be further described and compared with the aforementioned lexicographical sources.

## 5. ANALYSIS AND DISCUSSION

On the basis of the methodology described in Section 4, the following pages will address the overall results obtained after lemmatising a total of 1,425 adverbial forms in the comparative by assigning an appropriate headword from the *Nerthus*' list. The procedure that has been adopted has allowed for the lemmatisation of the vast majority of the adverbial comparative forms, yet 130 forms could not be lemmatised at a first round and required further research. I will return to these doubtful cases at the end of this section.

Focusing on the distribution of lemmas and inflectional forms, roughly 40% of the lemmas, 59 out of 139 to be more precise, have been assigned only one inflectional form with one occurrence in the YCOE. This is the case, for example, of the lemma *ārweorðlice* 'honourably' and the inflectional form *arwurðlicor*, *bealdlice* 'confidently' and *bealdlicor*, *frēondlice* 'kindly' and *freondlicor*, *ōðerlice* 'otherwise' and *ōðerlicor*, *twifealdlice* 'doubly' and *twyfealdlicor* or *unnytlice* 'uselessly' and *unnytlicor*. On 25 occasions, an inflectional form has two occurrences in the corpus; this occurs, for instance, with the forms *cudlicor* (lemma *cūdlice* 'certainly'), *estelicor* (lemma *ēstelice* 'kindly'), *synderlicor* (*synderlice* 'separately'), *teartlicor* (*teartlice* 'severely') or the forms *ðristelicor* and *ðristlicor* (lemma *ðristlice* 'boldly'). As for the lemmas that have been assigned to forms with the highest number of occurrences, the lemma *swīðe* 'very, much, exceedingly' compiles 379 inflectional forms, 275 of which are occurrences of the form *swiðor*. In second position is the lemma *leng* 'longer', with 131 inflectional forms associated to it; most of these occurrences correspond to the homonymous form *leng*. The lemmas *bet* 'better' and *forð* 'forth, forwards' have been assigned to 77 inflectional forms each, of which *bet* and *furðor* contribute the greatest amount of occurrences, 74 and 58 respectively.

As mentioned in Section 4.2., the YCOE's morphological tags can further specify the type of adverb a form is, which proves particularly useful in meaning disambiguation in cases of polysemy. By way of illustration, the adverb *fyrr*, a comparative form of the lemma *feor* 'far, far away, distant, remote; far back (in time); further, besides, moreover', may perform both a directional and a locative function. In example (1), *fyrr* is directive: *þonne he fyrr in Breotone feran scolde* 'he should go further into Britain'; in example (2), *fyrr* is locative: *se ælmihtega Drihten hire forðfore in oðrum mynstre fyrr gesettum* 'The Almighty Lord put her in other monastery placed far away'. In examples (1) and (2) the syntactic annotation for these segments is presented as it appears in the YCOE:



As can be seen in Table 5, two columns have been added to the right, namely Seelig and DOE, which have been further subdivided into two. This distribution allows us to indicate whether a lemma and an inflectional form are attested by any of the sources. The symbol ✓ is used when the form appears in any of the sources and has the same status, either of lemma or of inflectional form. Symbol X is used if the lemma or the inflectional form are not attested by the sources or if they have assigned a different lemma to a form. For example, neither *ǣdre* nor *eðre* appear in Seelig’s work, whilst in the case of the DOE, the lemma exists but the inflectional form has been attested in a different entry, more specifically as an attested spelling of the noun *ǣder*, *ǣdre*. Regarding lemma *ǣr*, both sources include this form as a lemma; the DOE also attests the three inflectional forms, *ǣrre*, *ǣrror* and *ǣrur*, and Seelig only *ǣrror* and *ǣrur*. The last example of the table is the lemma *beorhte*, which appears in both sources; the inflectional form *beorhtor* has been also attested by the DOE and Seelig, while *beorhtre* is an inflectional form of the adjectival lemma *beorht* in both sources.

Starting with the adverbial forms beginning with letters A-I, it turns out that 495 tokens have been mapped on to seventy-one lemmas. The majority of these tokens, 451 to be precise, are also attested by the DOE, whilst only 198 are recorded by Seelig. This gives rise to forms that have been attested by neither source but that have been assigned a lemma (in brackets) from the *Nerthus*’ list of headwords. These forms are *beorhtre* (*beorhte* ‘brightly’), *eðost* (*ǣaðe* ‘easily’), *gearnlicor* (*geornlice* ‘earnestly, diligently’), *gehendran*, *gehendre* (*gehende* ‘near’), *geredellicor* (*gerǣdelīce* ‘wisely, prudently’), *ðristelicor* (*ðristlīce* ‘boldly’) and *ðristlicor* (*ðristlīce* ‘boldly, confidently’).

In this regard, it must be noted that the DOE, unlike Seelig, distinguishes the spellings *ð* and *þ*, therefore it may be the case that pairs of words with *ð* and *þ* share the same lemma. For example, the adverb *hraþe* contains the pairs *hraþe* and *hraðe*, *raþe* and *raðe*, *hraðe* and *hraþe* or *reþe* and *reðe*.

Special attention must be paid to a group of thirteen inflectional forms whose lemma does not coincide with that suggested by the DOE. This may be due to two reasons: DOE’s lemma does not exist in the *Nerthus*’ list or there is another lemma that has been deemed more appropriate. Take as an example the form *arwurðlicor* ‘reverentially’, which has been assigned the lemma *ārweorðlīce* from the *Nerthus*’ list; however, the DOE has opted for the form *ārwurðlīce*, which, according to *Nerthus*, is an alternative spelling of *ārweorðlīce*. Other cases in which the lemma assigned is different from the one proposed by the DOE are *emnar* (*efne* ‘even’; DOE *efne*, *emne*) and *deoror* (*dēore* ‘dearly’; DOE *dȳre*). It may be also the case that the lemma suggested by DOE is recorded by *Nerthus* not as a headword but as an alternative spelling, for example the form *estelicor* is assigned the *Nerthus* lemma *ēstelīce*, yet DOE assigns the lemma *estlice*, which is compiled as an alternative spelling by *Nerthus*. Only in a few cases is DOE’s lemma not present in *Nerthus* or it appears with a different category, as occurs with *dȳre*, which is an alternative spelling of the adjective *dēore* in this database.

In the comparison of sources, there may be mismatches that affect the category of the forms. For example, the DOE considers *gehendre* and *beorhtre* as exclusively comparative forms of the adjectives *gehende* ‘near’ and *beorht* ‘brightly’ respectively. However, the YCOE records four occurrences of the form *gehendre* and one occurrence of the form *beorht* as comparative adverbs. By way of illustration, if we examine the form *gehendre* in context, it can be observed that it displays an adverbial function: *þonne scineð seo sunne seofon siðum beorhtre ðonne heo nu do* (Mart 5 (Kotzor) B19.5 [0235 (Ma 21, A.9)]) ‘The sun shone seven times as brightly as it does now’.

After having verified the lemmatisation of the forms starting with letters A-I, a similar procedure has been followed for L-W forms, although this time only with Seelig’s work. Seelig’s contribution to this study is double. On the one hand, this author identifies inflectional

forms that are not attested by the YCOE, namely *gymeleaslicor*, assigned to lemma *gymeleaslice* ‘carelessly’, *lætlicor* (*lætlice*), *alenge* and *leong* (*lange*, *longe*), *leohtor* (*leohte*), *luflicor* (*luflice*), *mærlicor* (*mærlice*), *mehtelicor* (*mehtelice*, *mihtlice*), *mihtlicor* (*mildheortlice*), *næar* and *nyr* (*neah*, *neh*), *neoder* (*neodlice*), *neodlicor* (*neodlice*), *niodoror* (*nið und niðer*), *niwlicor* (*niwlice*), *ofostlicor* (*ofostice*), *orsorhlicur* (*orsorglice*), *ramlicor* (*ramlice*), *regollicor* (*regollice*), *scortlicor* (*scortlice*), *sæl* (*sel*), *seldnor* (*seld*), *seft* and *siðor* (*sið*), *slawlicor* (*slawlice*), *sniomor* (*sneome*, *sniome*), *snotorlicor* (*snotorlice*), *styðlicor* (*stidlice*), *strangor* (*strange*), *stuntlicor* (*stunlice*), *swetolor* (*sweotole*), *swætolocor* and *sweotolicor* (*sweotollice*), *tearlicer* and *teartlicur* (*teartlice*), *tidlicor* (*tidlice*), *todæedlicor* (*todæedlice*), *tolcendlicor* (*tolcendlice*), *trumlicor* (*trumlice*), *tylg* (*tulge*), *ofor* and *uferur* (*ufor*), *unswiðor* (*unswiðe*), *waccor* (*wace*), *weorðfulicor* (*weorðfullice*), *weorðelicor* and *wurðlicor* (*weorðlice*, *wurðlice*), *widor* and *widre* (*wide*), *wæse* (*wiers*), *wunderlicor* (*wundorlice*). On the other hand, Seelig suggests new lemmas that are not included in our reference lemma list and that have been used to lemmatise a few inflectional forms; this is the case of *wyrs* ‘worse’, assigned to the forms *wyrs*, *wyrse*, *wiers* and *wirs*, the lemma *rume* ‘widely’ (infl. form *rumor*), the lemma *rumlice* ‘largely, abundantly’ (infl. form *rumlicor*), the lemma *gelimplice* ‘properly, suitably’ (infl. form *gelimplicor*), the lemmas *gesceadwislice* and *gescadwislice* ‘rationally, reasonably’ (infl. form *gescadwislicor*) and the lemma *gymeleaslice* ‘carelessly’ (infl. form *gymeleaslicor*).

The inventory of inflectional forms compiled by Seelig evinces that the present study contributes with a substantial number of forms unattested by the author, 65 types to be exact. These forms and their lemma (in brackets) are *læng*, *længc*, *længe*, *lencg*, *leng*, *lengc* and *lenge* (*leng*), *leohtlicor* (*lēohtlice*), *liðelecor* (*līðellice*), *lomlucor* (*gelome*), *lusðlicor*, *lustlicor* (*lustlice*), *mærlycor* (*mærllice*), *medomlicor* (*medemlice*), *menigfealdlicor* (*manigfealdlice*), *mildelicor* (*mildellice*), *monigfealdlecor* (*manigfealdlice*), *nealicor* (*nēallice*), *near* (*nēah*), *niðor* (*niðer*), *nytweorðlicor* (*nytwierðlice*), *oðerlicor* (*ōðerlice*), *ofter* (*oft*), *ricenor*, *ricenur* (*recene*), *rihtlucor* (*rihtlice*), *rumedlicor* and *rumodlicor* (*rūmmōdlice*), *rumor* (*rume*), *ryhtlecor* (*rihtlice*), *ryhtor* (*rihte*), *sel*, *soel*, *selor* and *selre* (*sēl*), *siðlicor* (*sīðlice*), *slaulecor* (*slāwllice*), *soðlicor* and *soðlicur* (*sōðlice*), *staðolfæstlicor* (*staðolfæstlice*), *stiðlicor* (*stīðlice*), *strenglicor* (*stranglice*), *suiðor* and *suiður* (*sūð*), *swidlicor* (*swīðlice*), *swutellicor* and *swutellicor* (*sweotollice*), *swutolor* (*sweotole*), *swyðer*, *swyðere*, *swyður* and *swiðer* (*swīðe*), *synderlicor* (*synderlice*), *twyfealdlicor* (*twifealdlice*), *ufer* (*ufor*), *ungefredelicor* (*ungefrēdellice*), *ungemetlicor* (*ungemetlice*), *ungestæððelicor* (*ungestæððiglice*), *unied* (*uneade*), *unnytlicor* (*unnytlice*), *ymbhydiglicor*, and *ymbhygdelicor* (*ymbhydiglice*).

A set of forms that are worth commenting are *længc*, *læng*, *lencg*, *leng*, *lengc*. According to Seelig, these are adjectives in the comparative, however, the YCOE and the DOEC attest some adverbial occurrences of these forms. Notice the adverbial function of *lencg* in the following sentence: *þænne þu længc ne most lifes brucan* (Rewards A18 [0013 (60)]) ‘when you no longer must enjoy life’.

It goes without saying that the manual process of lemmatisation is not always as straightforward as would be desired. It may be the case that a form can be attributed to two or more different lemmas. For the forms beginning with letters A-I, the solution adopted is to consult the DOE, since it represents the most reliable and complete lexicographical source to date. As for the forms starting with letters L-W, Seelig’s work has been of great help. In those cases in which neither source has succeeded in resolving the ambiguity, it has been necessary to resort to Old English grammars such as Campbell (1959), Mitchell and Robinson (1964) or Fulk (2018).

To illustrate this point, let’s consider the form *æror*. After checking in the list of headwords, we find two potential lemmas for this form, namely *ær* and *æror*, sharing similar

meanings. Once the status of *æror* has been verified in the DOE, where it is considered and inflectional form of the adverb *ær*, it has also been assigned the lemma *ær*.

Another possible circumstance is the existence of a mismatch between a lemma available in the *Nerthus* list and the one suggested by the other sources. The decision made in these cases is to give *Nerthus* priority over the others. An example is the form *hefelicor*; which Seelig attributes to the lemma *hefelice* but that is not available in *Nerthus*; in this case, the lemma *hefiglice* ‘violently’ has been assigned instead.

Two more special cases deserve mentioning as they required deeper research in order to elucidate their actual status. To start with, the form *unieð* has been tagged as a comparative adverb (ADVR) by the YCOE, while it should be rather considered an alternative spelling of the adverb *unēaðe* ‘not easily, with difficulty’. The only occurrence of *unieð* in the YCOE is to be found in the sentence *swa he unieð wiðstod* (CP B9.1.3 [2066 (52.407.25)]) ‘just as he withstood with difficulty’, where it is a non-graded variant of the adverb *unēaðe*. Another doubtful form is *medmare*. Apparently, it does not represent a canonical comparative adverbial ending, although the YCOE has tagged it as a comparative adverb. In turn, Bosworth and Toller (1973) consider that *medmare* is a comparative form of the adjective *medmicel* ‘not great, moderate, small (of time, space, quantity)’. In order to clarify this, the two occurrences of *medmare* in the YCOE were examined: *buton tweon hit gehweorfeþ þy medmare to his sylfes þearfe* (GDPref 1 (C) B9.5.1 [0017 (5.1)]) ‘Without doubt it turns more moderately to his own needs’; *hit byð þy medmare to hwylcum synderlicum þingum* (GD 1 (C) B9.5.2 [0234 (4.41.7)]) ‘It was turned more moderately to some special things’. As observed, *medmare* performs an adverbial function in both cases.

This section has described the results of the lemmatisation of the adverbs inflected for the comparative. It has been possible to lemmatise the whole inventory of comparative adverbs as provided by the YCOE. In addition, a few new forms unattested by the YCOE have been identified. A comparative analysis with other sources has provided feedback, which has ultimately refined the design of the whole process.

## 6. CONCLUSIONS

This study has presented a lemmatisation method for the assignment of a lemma to all the adverbial comparative forms compiled by the YCOE. A total of 1,425 forms have been lemmatised through this method and 134 lemmas have been required to this aim. Seven inflectional forms deserve special attention as these have been lemmatised but were given by neither the DOE nor Seelig. These forms include *beorhtre* (*beorhte*), *ðristelicor* and *ðristlicor* (*ðristlice*), *gehendran* and *gehendre* (*gehende*), *gearnlicor* (*geornlice*), and *geredelicore* (*gerædelice*). Furthermore, the comparison with these sources has also allowed us to identify the inflectional forms that were not part of YCOE inventory; these make a total of 186 forms, such as *æðellicor* (*æðellice*), *ærrur* (*ær*), *egeleaslecor* (*egelēaslice*), *eðor* (*ēaðe*), *feor* (*fyrre*), *ferrer* (*feorr*), *hraður* (*hraðe*), *hiwcuplicor* (*hīwcūðlice*) *leong* (*lange, longe*), *luflicor* (*luflice*), *mærllicor* (*maerlice*), *swetolor* (*sweotole*).

The main difficulties encountered have to do with the availability of more than one lemma in the list of headwords that can be assigned to an inflectional form. In those cases, the DOE and Seelig have helped in the disambiguation. When these sources did not contain this information, the form had to be analysed in context, that is, in the citations where it appeared in order to verify its meaning and associate the appropriate lemma. The Old English reference

grammars have been especially useful in adverbs displaying suppletive comparison as the identification of the stems is often highly unpredictable.

This article has contributed to the design and implementation of a methodology for the lemmatisation of Old English adverbs. In comparison with verbs, already lemmatised by the *Nerthus* project, adverbs present a substantially lower degree of variation, which has motivated a different methodology that has turned out more appropriate for this class. The methodology here developed may be applicable to the lemmatisation of the non-verbal categories that are still unlemmatized, such as the adjective, the noun, and the pronoun.

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## APPENDIX 1: LIST OF LEMMAS AND THE CORRESPONDING ADVERBIAL FORMS INFLECTED FOR THE COMPARATIVE.

**Ædre** ‘quickly; promptly’: *eðre* [Coalex.o23].

**Ær** ‘previously, before’: *ær* [CogregdC.o24], *æror* [Coadrian.o34, Coaelhom.o3, Coaelive.o3, Coboeth.o.02, Cocathom1.o3, CochroC, CochroD, CoexodusP, CoinspolD.o34, CoinspolX, ColsigewZ.o34, ConicodA, Coorosiu.o2, Covinsal, Cowulf.o34], *ærre* [ConicodC], *ærror* [CogregdC.o24], *ærur* [ConicodA].

**Æðellice** ‘nobly, gloriously, elegantly’: *æðellicor* [Comart3.o23].

**Ānmōdlice** ‘unanimously, with one accord’: *anmodlicor* [CocuraC].

**Arodlice** ‘quickly; vigorously’: *aredlicor* [CogregdC.o24].

**Ārweorðlice** ‘reverentially, solemnly, and kindly’: *arwurðlicor* [Coaelhom.o3].

**Bealdlice** ‘boldly’: *bealdlicor* [CogregdC.o24].

**Behogodlice** ‘carefully, diligently’: *behogodlicor* [CogregdC.o24].

**Beorhte** ‘brightly, brilliantly, splendidly; clearly, lucidly, distinctly’: *beorhtor* [Coboeth.o.02, Coherbar, Coverhom], *beorhtre* [Comart3.o23].

**Bet** ‘better, of manner: better’: *bet* [Coaelholm.o3, Coaelive.o3, Coapollo.o3, Cobenrul.o3, Coboeth.o.02, Cobyrtf.o3, Cocanedgd, Cocanedgx, Cocathom1.o3, Cocathom2.o3, Cochdrul, Cocurac, Cogregdc.o24, Cogregdh.o23, Coherbar, Colaece.o2, Colaw2cn.o3, Colaw5atr.o3, Colaw6atr.o3, Colawger.o34, Conicoda, Coorosiu.o2, Coverhom, Cowsgosp.o3, Cowulf.o34], *bett* [Cochdrul, Cocurac, Coverhom].

**Betera** ‘better’: *betere* [Coaelholm.o3, Colaece.o2, Cosevensl].

**Borlice** ‘sickly, grievously’: *borlicor* [Cobyrtf.o3].

**Cūðlice** ‘clearly, evidently, certainly, openly; familiarly, kindly, affably; therefore, to be sure, hence’: *cudlicor* [Cocathom1, Cowulf.o34].

**Ðancweorðlice** ‘gladly, willingly’: *ðancweorðlicor* [Cocura.o2].

**Dearle** ‘severely, sorely, strictly, hard (BT)’: *dearlur* [Cocura.o2].

**Dearlwisllice** ‘severely, strictly (BT)’: *dearlwislecor* [Cocura.o2], *dearlwislicor* [CogregdC.o24].

**Dēope** ‘deeply, thoroughly, entirely, earnestly, solemnly’: *deoppar* [Colaw2cn.o3], *deoppor* [Codocu3.o3, CogregdC.o24, CogregdH.o23, CoinspolX, Colaw2cn.o3, Colaw6atr.o3, Colawnorthu.o3, Cowulf.o34], *diopor* [CocuraC].

**Dēoplice** ‘deeply; ingeniously’: *deoplicor* [Cocathom2.o3, Colaw1cn.o3, Cosolsat2], *dioplicor* [Coboeth.o.02].

**Dōmllice** ‘judicially, powerfully, gloriously (BT)’: *domlicor* [Cosolsat2].

**Ðristlice** ‘boldly, confidently (BT)’: *ðristelicor* [CogenesiC], *ðristlicor* [Cootest].

**Ēaðe** ‘easily, lightly, soon; willingly, readily’: *eað* [Coaelhom.o3, Coapollo.o3, Cobenrul.o3, Cobyrtf.o3, Cochdrul, CogregdC.o24, CogregdH.o23 Coverhom], *eð* [Coalquin, Coboeth.o.02, Codicts.o34, Coverhom], *ið* [Coorosiu.o2], *ieð* [CocuraC, Coorosiu.o2], *yð* [Coboeth.o.02, Colaece.o2, Cowulf.o34].

**Ēaðelīce** ‘easily (BT)’: *eaðelicor* [Cocathom.o3, Cocathom2.o3, Colaece.o2, Coprefcath1.o3, Cowsgosp.o3], *eðelicor* [Cocathom2.o3], *ieðelicor* [CocuraC].

**Ēaðmōdlice** ‘humbly, meekly; kindly’: *eaðmodlicor* [Cowulf.o34].

**Earfoðlice** ‘with difficulty, painfully, reluctantly, hardly, scarcely’: *earfoðlicor* [CocuraC, CogregdC.o24].

**Earmlice** ‘miserably, wretchedly (BT)’: *earmllicor* [Coboeth.o.02].

**Efne** ‘still, nevertheless, even’: *emnar* [Coorosiu.o2].

**Egelēaslice** ‘fearlessly (DOE)’: *egeleaslicor* [CocuraC].

**Elcor** ‘else, elsewhere, otherwise, except, besides’: *ellicor* [Cochdrul].

**Ēstelīce** ‘cortuously; luxuriously’: *estelicor* [CocuraC].

**Færlice** ‘suddenly, immediately, by chance; of a sudden, all at once, unexpectedly (BT)’: *færlicor* [CocuraC].

**Fæste** ‘fast, firmly, securely; straitly, strictly; heavily (sleep); speedily’: *fæstor* [Coalex.o23, Coboeth.o.02, CocuraC].

**Fæstlice** ‘firmly; strictly, resolutely’: *fæsðlicor* [CocuraC], *fæstlicor* [Coboeth.o.02, CogregdC.o24].

**Feorr** ‘far, far away, distant, remote; far back (in time); further, besides, moreover’: *fyr* [Coverhom], *fyr* [Coaelive.o3, Cocathom2.o3, CogregdC.o24, CogregdH.o23, Comart3.o23, Contempo.o3], *fier* [CocuraC], *firr* [Coorosiu.o2].

**Forð** ‘forth, forwards, onwards, further; hence, thence; away; continually, still, continuously, henceforth, thenceforward, simultaneously’: *furðar* [Cobenrul.o3], *furðor* [Coaelive.o3, Coalex.o23, Cobenrul.o3, Coboeth.o.02, Cobyrtf.o3, Cocathom2.o3, CochronC, CocuraC, Codocu3.o3, Coelofri.04, Coeust, CogregdC.o24, Colaece.o2, Colaw2cn.o3, Comart3.o23, Contempo.o3, Coprefcura.o2, Coquadru.o23, Cosevensl, Cowulf.o34], *furður* [Cobenrul.o3, Coboeth.o.02, CocuraC, CogregdC.o24, Coherbar, Colaw2cn.o3, Comart2, ConicodD, Coprefcura.o2].

**Forsewenlice** ‘contemptibly, ignominiously (BT)’: *forsewenlicor* [Cocathom1].

**Frēondlice** ‘like a friend, kindly (BT)’: *freondlicor* [CogregdC.o24].

**Fullfremedlice** ‘fully, perfectly, completely’: *fulfremedlicor* [Cobyrtf.o3, Cocathom1].

**Fulllice** ‘entirely, fully, perfectly, completely’: *fullecor* [CocuraC], *fullicor* [Coboeth.o.02, CogregdC.o24, CogregdH.o23].

**Fyrn** ‘formerly’: *firnor* [Cowulf.o34].

**Gearwe** ‘well, effectually, sufficiently, thoroughly, entirely; quickly; near’: *gearor* [CocuraC, Coorosiu.o2], *gearwor* [Coalex.o23, CogregdC.o24], *gearwur* [Colaw2cn.o3].

**Gehende** ‘near, at home; closely, in detail’: *gehender* [Cocathom1], *gehendor* [Coaelholm.o3, Cocathom1, Cocathom2], *gehendran* [Cocathom1].

**Gelimplice** ‘conveniently’: *gelimplicor* [Cocathom1].

**Gelōme** ‘constantly, diligently’: *gelomor* [Cowulf.o34].

**Gelōmlīce** ‘often, repeatedly (Sweet)’: *gelomlicor* [Cocathom1, ColsigewZ.o34], *gelomlicost* [Coorosiu.o2].

**Georne** ‘eagerly, zealously, earnestly, gladly; well, carefully, completely, exactly; quickly’: *geornor* [Coleofri.o4, CogregdC.o24, CogregdH.o23, Colaw2cn.o3, Coorosiu.o2, Coverhom, Cowulf.o34].

**Geornfullīce** ‘anxiously, diligently, earnestly (BT)’: *geornfullicor* [Cocathom1, Cocathom2]

**Geornlice** ‘zealously, earnestly, diligently, carefully’: *gearnlicor* [coelive.o3], *giornlicor* [Coverhom], *geornlicor* [Coelive, Coalex.o23, Cobenrul.o3, Cocathom1, Cocathom2, Cochad.o24, CochdruL, CogregdC.o24, CogregdH.o23, Coverhom], *geornlicost* [Colaw2cn.o3, Coverhom].

**Gerædelīce** ‘wisely, prudently, skilfully, cunningly; deliberately, on purpose; fully, explicitly’: *geredellicor* [CogregdC.o24].

**Gescēadlice** ‘reasonably, rationally (BT)’: *gesceadlicor* [Coboeth.o.02]

**Gesceadwislice** ‘rationally, reasonably’: *gescadwislicor* [Coorosiu.o2].

**Gewisslice** ‘clearly’: *gewislicor* [Coelive.o3, Coapollo.o3, Cocathom2.o3, CogregdC.o24, Contempo.o3], *gewisslicor* [Cocathom2.o3, Coleofri.o4, CogregdH.o23].

**Gewunelīce** ‘according to custom, ordinarily, commonly (BT)’: *gewunelicost* [Coelive].

**Glædlice** ‘gladly, joyfully, kindly, and willingly’: *glædlicor* [Cobenrul.o3].

**Gīemelēaslice** ‘carelessly, without taking pains, negligently (BT)’: *gymeleaslicor* [CogregdC.o24].

**Hēalīce** ‘hēalīce’: *heallicor* [Coboeth.o.02, CogregdC.o24], *heallicost* [Coapollo.o3, Coherbar].

**Heardlice** ‘harshly, resolutely, severely, sternly; stoutly, bravely; excessively; hardly’: *heardlicor* [Cootest.o3].

**Hefiglice** ‘violently, intensely; sorrowfully; sluggishly’: *hefellicor* [CocuraC], *hefiglicor* [CocuraC].

**Hetelice** ‘fiercely, violently, vehemently’: *hetellicor* [Coelive.o3, Cocathom1].

**Hīwcuðlice** ‘in a domestic, familiar manner’: *hiewcuðlicor* [CocuraC], *hiwcuðlicor* [CogregdC.o24].

**Hlūde** ‘loudly, aloud’: *hluddor* [Coelive.o3], *hludor* [CocuraC].

**Hraðe** ‘hastily, quickly, promptly, readily, immediately, soon; too soon’: *hraðor* [Coaelholm.o3, Coelive.o3, Cobenrul.o3, Coboeth.o.02, Cocathom1, Cocathom2, CochronC, CocuraC, Codocu3.o3, CogregdC.o24, CogregdH.o23, Cotempo.o3, Cootest.o3], *hræðor* [Coboeth.o.02, CocuraC], *raðor* [Cobenrul.o3, Coboeth.o.02, Cocathom1, Cocathom2, CochronD, CogenesiC, CogregdH.o23, Colacnu.o23, Colaece.o2, Comart1, Coorosiu.o2, Cowsgosp.o3, Cowulf.o34]

**Hrædlice** ‘hastily, soon, forthwith’: *hrædlicor* [Cocathom2, CocuraC, Codocu3.o3], *hrædlicost* [Coboeth.o.02].

**Hwōnlīce** ‘moderately, slightly, little; cursorily’: *hwonlicor* [Coaelholm.o3, Cocathom1].

**Inn** ‘in, into, inwards, within, inside of; inwardly’: *innor* [Cobenrul.o3, CocuraC, Coeust, CogregdH.o23, Colaece.o2, ConicodA, Cowsgosp.o3], *innor* [Cobenrul, Cocurac, Coeust, Cogregdh.o23, Colaece.o2, Conicoda, Cowsgosp.o3].

**Lange** ‘long, a long time, far’: *læncg* [Coelive.o3], *læng* [Codocu3.o3, CogregdC.o24, ComargaC.o34, Comart3.o23], *læncg* [Colaw2cn.o3], *længe* [ConicodE].

**Late** ‘late; slowly; at last; lately’: *lator* [Cobenrul.o3, Coboeth.o.02, Cocathom1, CocuraC, CogregdC.o24, CogregdH.o23, Colaece.o2, Contempo.o3, Coorosiu.o2].

**Leng** ‘longer’: *lencg* [Coelive.o3, Cochdrul, Coorosiu.o2, Cosevensl, Cowsgosp.o3, Cowulf.o34], *leng* [Coaelholm, Coelive, Coalex.o23, Coapollo.o3, Coboeth.o.02, Cocathom1, Cocathom2, Cochdrul, CochronC, CocuraC, Codocu1.o3, Codocu3.o3, Coelofri.o4, Coeuphr, Coeust, Cogregdc.o24, Cogregdh.o23, Colaece.o2, Colawaf.o2, Colawafint.o2, Colwgeat, Comart3.o23, ConicodD, Contempo.o3, Coorosiu.o2, Cootest.o3, Coprefgen, Corood, Coverhom, Covinsal, Cowsgosp.o3, Cowulf.o34], *lengc* [Coapollo.o3, Codocu3.o3, Coelofri.o4, CogenesiC, Coherbar, Cootest, Cosevensl, Cowulf.o34], *lenge* [Colaece.o2].

**Lēohtlice** ‘lightly, slightly; inconsiderately; easily, quickly; gently, softly, slowly’: *leohtlecor* [CocuraC], *leohtlicor* [Cochdrul, Coverhom].

**Līðelice** ‘kindly; not severely, gently; slightly (Sweet)’: *liðelecor* [CocuraC], *liðelicor* [CogregdC.o24, Colaw2cn.o3].

**Lustlice** ‘willingly, gladly’: *lusðlicor* [CocuraC], *lustlicor* [Cocathom1, CogregdC.o24].

**Mærllice** ‘gloriously, splendidly; excellently’: *mærlycor* [Coverhom].

**Manigfealdlice** ‘in many ways, abundantly (BT)’: *menigfealdlicor* [Cocathom1, Cocathom2], *monigfealdlecor* [Coorosiu.o2].

**Medemlice** ‘slightly, moderately, incompletely; suitably, worthily, kindly’: *medomlicor* [Coverhom].

**Mildelice** ‘graciously, kindly, mercifully’: *mildelicor* [Cochdrul].

**Mildheortlice** ‘kindly, compassionately, mercifully (BT)’: *mildheortlicor* [CocuraC].

**Myriglice** ‘pleasantly, melodiously’: *myriglicor* [CogregdC.o24].

**Nēah** ‘near, nigh; about, almost, nearly, lately’: *near* [Coalex.o23, Coboeth.o.02, Cobyrtf.o3, Cocathom1, Cocathom2, CocuraC, Coeust, Comart3.o23, Contempo.o3, Coorosiu.o2, Cootest.o3, Cosevensl, Coverhom, CogenesiC].

**Nēallice** ‘nearly, about’: *nealicor* [CogregdC.o24].

**Niðer** ‘below, beneath, down, downwards’: *nyðor* [Cochdrul, Contempo.o3, Coverhom].

**Niðere** ‘below, down, low down’: *neoðor* [Contempo.o3], *niðor* [Cochdrul, CocuraC], *nioðor* [Coverhom].

**Norð** ‘in the north, north’: *norðor* [Contempo.o3, Coorosiu.o2].

**Ōðerlice** ‘otherwise, differently’: *oðerlicor* [Conbenrul.o3].

**Oft** ‘above, on high; to or on the other side; from side to side, across; beyond, above (quantity)’: *ofter* [Coalquin, Cochdrul, CochronD, Codicts.o34], *oftor* [Coaelholm.o3, Coboeth.o.02, Cobyrtf.o3, CocanedgD, CocanedgX, Cocathom1, Cocathom2, CochronC,

CochronD, CocuraC, Codicts.o34, CogregdH.o23, CoinspolX, Colaece.o2, Colaw2cn.o3, Colawine.ox2, Colawnorthu.o3, Colwstan1.o3, Comart3.o23, Cowulf.o34].

**Openlice** ‘openly, manifestly, plainly, clearly, unreservedly’: *openlicor* [Coboeth.o.02, Cobyrtf, Cocathom1, CocuraC, CogregdC.o24, CogregdH.o23].

**Orsoglice** ‘carelessly, rashly; without anxiety or hindrance; securely, safely’: *orsorglicor* [Coboeth.o.02, Cocathom1, CocuraC].

**Rædlice** ‘wisely, prudently, skilfully, cunningly; deliberately, on purpose; fully, explicitly’: *rædlicor* [CocuraC].

**Recene** ‘instantly, quickly’: *ricenor* [Coverhom], *ricenur* [Coverhom].

**Rihte** ‘right, due, straight (of direction, as in right on, due east), outright; precisely, exactly, just; rightly, duly, well, correctly, truly, properly, fairly, justly; directly, immediately’: *rihtor* [Colaw2cn.o3, Cowulf.o34], *ryhtor* [Coorosiu.o2],

**Rihtlice** ‘justly, uprightly, virtuously; properly, rightly, regularly; correctly, precisely’: *rihtlicor* [Coboeth.o.02, Cocathom2, Cochrocn, Cochrocn, Cowulf.o34], *rihtlicost* [Cocathom1, Codocu3.o3, CoinspolD.o34, CoinspolX, Contempo.o3], *rihtlucor* [Coalquin], *ryhtlecor* [CocuraC], *ryhtlicor* [CocuraC].

**Rume** ‘widely, clearly’ *rumor* [cogregdC.o24].

**Rumlice** ‘largely, abundantly’: *rumlicor* [Cobyrtf.o3, CogregdC.o24, Cosevensl].

**Rūmmōdlice** ‘liberally; graciously, favourably (BT)’: *rumedlicor* [CocuraC], *rumodlicor* [Coverhom].

**Scamlēaslice** ‘shamelessly’: *scamleaslicor* [CocuraC].

**Scearplīce** ‘sharply, acutely, keenly; painfully, severely; effectually; attentively; quickly’: *scearplīcor* [Cocathom1].

**Sēl** ‘better, more effectually, rather, sooner, in preference’: *sel* [Cobenrul.o3, CocuraC, CogregdC.o24, Coherbar, Colacnu.o23, Colaece.o2, Comart3.o23, Coquadru.o23, Cosevensl, Coverhom], *selor* [Comart3.o23], *selre* [Coherbar], *soel* [Codocu1.02].

**Seldor** ‘more seldom, less frequently’: *seldor* [Cobenrul.o3, Coverhom].

**Sīðlice** ‘lately, after a time’: *sīðlicor* [Colwstan1.o3].

**Slāwlice** ‘slowly, sluggishly’: *slaulecor* [CocuraC].

**Smale** ‘finely, into small pieces; softly (not loudly)’: *smælor* [CocuraC].

**Smēalīce** ‘closely, thoroughly, accurately; subtly’: *smealīcor* [Coboeth.o.02, CocuraC].

**Smicere** ‘finely, fairly, elegantly (BT)’: *smicror* [CocuraC].

**Sōðlice** ‘truly, indeed, really, certainly’: *sōðlicor* [Comart3.o23], *sōðlicur* [CogregdC.o24].

**Sōfte** ‘softly, gently (BT)’: *softor* [Coboeth.o.02, Coprefsolilo].

**Spærlice** ‘frugally; (speak) briefly (Sweet)’: *sperlicor* [Coalex.o23].

**Staðolfæstlice** ‘in a physical sense, firmly; steadfastly, constantly, firmly (BT)’: *staðolfæstlicor* [CogregdC.o24].

**Stiðlice** ‘forcibly’: *stiðlecor* [CocuraC], *stiðlicor* [Cocathom1, Cocathom2, Cosevensl].

**Strange** ‘strongly, violently, furiously, severely’: *strengost* [Coherbar].

**Stranglice** ‘strongly, firmly, stoutly, boldly, bravely; fiercely, violently’: *stranglicor* [CocuraC], *strenglicor* [CogregdC.o24].

**Sūð** ‘southwards, south’: *suðor* [Contempo.o3], *suiðor* [CocuraC], *suiður* [CocuraC].

**Sweetole** ‘clearly, precisely, plainly, openly, visibly’: *sweetolor* [Coboeth.o.02, CocuraC], *swutolor* [CocuraC].

**Sweetollice** ‘clearly, precisely, plainly, visibly, openly’: *swutellicor* [Coaelholm, Cocathom1, Cowulf.o34], *swutellicor* [Coaelholm, Coaelive].

**Swiðe** ‘very much, exceedingly, severely, violently, fiercely’: *swiðer* [ColsigewB, ConicodE], *swiðor* [Coaelholm, Coaelive.o3, Coalex.o23, Coapollo.o3, Cobenrul.o3, Coboeth.o.02, Cocathom1, Cocathom2, Cochdrul, CochronC, CochronD, CocuraC, Codicts.o34, Codocu3.o3, Coelofri.04, Coepigen.o3, Coeuphr, CogenesiC, Cogregdc.o24, Cogregdh.o23, Coinspold.o34, Colaeece.o2, Colsigef.03, Colsigewz.o34, Comargac.o34 ConicodD, Contempo.o3, Coorosiu.o2, Cootest, Corood, Cosevensl, Coverhom, CovinceB, Cowsgosp.o3, Cowulf.o34], *swiður* [Coboeth.o.02, CocuraC, CogregdC.o24], *swyðer* [Coalcuin], *swyðere* [Coalcuin, Cojames], *swyðor* [Coaelholm, Coaelive.o3, Coalex.o23, Cobenrul.o3, Cobyrtf.o3, Cocathom1, CogregdC.o24, CogregdH.o23, CoinspolX, Cootest, Cowsgosp.o3, Cowulf.o34, Comargat], *swyður* [Cogregdc.o24, Cowsgosp.o3].

**Swiðlice** ‘strenuously (Sweet)’: *swidlicor* [Coverhom].

**Synderlice** ‘separately, specially’: *synderlicor* [Cochad .024].

**Teartlice** ‘sharply, severely (BT)’: *teartlicor* [Cocathom1, Cochdrul].

**Twifealdlice** ‘doubly, to twice the amount (BT)’: *twyfealdlicor* [Cowsgosp.o3].

**Dancweorðlice** ‘gladly, willingly’: *ðancweorðlicor* [Cocura.o2].

**Dearle** ‘severely, sorely, strictly, hard (BT)’: *ðearlur* [Cocura.o2]

**Dearlwislice** ‘severely, strictly (BT)’: *ðearlwislecor* [Cocura.o2], *ðearlwislicor* [CogregdC.o24].

**ðristlice** ‘boldly, confidently (BT)’: *ðristelicor* [CogenesiC], *ðristlicor* [Cootest].

**Ufor** ‘higher, further away, further up; later, posterior, subsequent: *ufer* [Coalcuin], *ufor* [Coaelive.o3, Coboeth.o.02, Cochdrul, CochronD, CocuraC, Codicts, CogregdC.o24, Colawaf.o2, Contempo.o3, Coverhom], *ufur* [CochronC, CogregdC.o24, Cowsgosp.o3].

**Unbeorhte** ‘not brightly: *unbeorhtor* [Coboeth.o.02], *unbyrhtor* [Coboeth.o.02].

**Undeore** ‘cheap: *undeoror* [Cobenrul].

**Unforhtlice** ‘fearlessly, without fear (BT):’ *unforhtlicor* [Comart3.o23].

**Ungefrēdelice** ‘callously’: *ungefredelicor* [CocuraC]

**Ungemetlice** ‘immoderately, beyond measure, excessively, too (much):’ *ungemetlicor* [CogregdC.o24].

**Ungestæððiglice** ‘unsteadily, without stability (BT)’: *ungestæððelicor* [CocuraC].

**Unnytlice** ‘uselessly, vainly, to no purpose (BT)’: *unnytlicor* [CocuraC].

**Untwēogendlice** ‘indubitably, unhesitatingly, undoubtingly’: *untweogendlicor* [CocuraC].

**Ūt** ‘out; without, outside’: *utor* [Cobenrul, Coboeth.o.02], *uttor* [Coaelholm, CogregdH.o23, Cowsgosp.o3].

**Wāclīce** ‘weakly; meanly (Sweet)’: *waclicor* [Coaelholm], *wærlicor* [Cocathom1, Cocathom2, CocuraC].

**Wide** ‘widely, afar, far and wide, side and w. far and wide)’: *widdor* [Cochdrul, CogregdC.o24, CogregdH.o23, Coverhom].

**Wise** ‘wisely’: *gewissost* [Coelive].

**Wuldorlice** ‘gloriously (BT)’: *wundorlicor* [CogregdC.o24].

**Wyr̥s** ‘worse’: *wiers* [CocuraC], *wirs* [CocuraC], *wyr̥s* [Cobenrul, Coboeth.o.02, Cocathom2, Cochronc, Cocurac, Coinspolx, Colaece.o2, Coorosiu.o2, Cowsgosp.o3], *wyr̥se* [Coaelholm].

**Ymbh̥ydglice** ‘carefully, sedulously (BT)’: *ymbh̥ydglicor* [CogregdC.o24], *ymbh̥ygdlicor* [Cochad .024].

**Unēaðe** ‘not easily, with difficulty’: *unieð* [CocuraC].