ZWJW

Zeitschrift für Wortbildung
Journal of Word Formation

Sonderheft / Special Issue

Historical English Word-Formation

Kerstin Majewski (ed.)

ZW
JW

2/2024

ZWJW

Zeitschrift für Wortbildung
Journal of Word Formation

2024 • Jahrgang / Volume 8 • Heft / Issue 2

Sonderheft / Special Issue

Historical English Word-Formation

Kerstin Majewski (ed.)

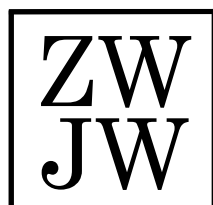**HRSGG. / EDS.**

Petra M. Vogel
Ludwig M. Eichinger
Mechthild Habermann
Jörg Meibauer
Barbara Schlücker
Hans-Joachim Solms
Pavol Štekauer
Salvador Valera Hernández

ZW
JW

Table of Contents

Hans Sauer, *in memoriam**

Kerstin Majewski

Introduction to the Proceedings of the 2023 Symposium 'Historical English Word-Formation'

It has not yet been ten years since Klaus Dietz (2015: 1915) prophesised that

> [f]uture research work [on historical word-formation in English] will profit by two kinds of new instruments: firstly, by the *Dictionary of Old English* (DOE) and its *Web Corpus*, by the *Middle English Dictionary* (MED) and by the nascent third edition of the *Oxford English Dictionary* (OED), and secondly, by new corpora of historical English.

The proceedings of the 2023 symposium respond to those predictions in manifold ways. Under the heading 'Historical English Word-Formation', the organisers of the symposium intended to "bring together researchers studying diachronic English word-formation and to showcase current research in this area" (Majewski 2023: 287). Although no particular temporal, thematic, or methodological focus was asked for, the five essays provide answers to some of the general questions that the symposium had initially raised, namely: How have large-scale corpus analyses and respective computational tools helped us study diachronic changes in the formation of new words?[1] Which recent insights are there into the frequency and productivity as well as the rules and restrictions of word-formation units and patterns in the history of English? Further, which roles do regional, social, medial, and

---

[1] An early study is Dalton-Puffer (1996), one of the more recent ones is Säily (2018).

other factors as well as text-types and (non-)literary genres play for the creation of new words?[2] The five contributions to this special issue of *ZWJW* illustrate that, as Dietz had anticipated, the study of word-formations in past stages of English has profited extremely from the advances made in computational research and Artificial Intelligence, yet they also delineate both their advantages and limitations.

Katrin Menzel's "systematic, corpus-based analysis" of data in the *Royal Society Corpus* shows "the evolving role of scientific initialisms in English academic writing in the 19th and early 20th centuries", using token frequency counts, topic modelling, and "information-theoretic surprisal values of initialisms" (8). These methods allow her to conclude that between 1830 and 1919, there was "a significant increase in both the frequency and variety of initialisms for scientific concepts" with initialisms becoming "common shortcuts for multi-word units with wordhood and term status across various natural science disciplines" (8).

Hagen Peukert's article begins with a discussion of some difficulties that computational analysis can entail:[3] A little less than 20 years ago, Dieter Kastovsky (2007) had addressed several lacunae in the research of Middle English word-formation. Scholars have been working towards closing some of those gaps,[4] yet "extensive dialectal differences" (Kastovsky 2007: 43) continue to be a major challenge when dealing with data in large-scale electronic corpora. There are more and more AI-tools available, but they have not been able to satisfactorily deal with Middle English orthographic variety. As Peukert explains (see his Section 2), many tools are unable to segment and analyse derivational morphemes correctly because at times they do not recognise whether a certain affix is part of a sequence or whether and when it attaches to certain word-classes only. The extraction of "reliable data on affixes over the last 700 years from text corpora" was eventually possible

---

[2] For instance, Gardner's (2014) and Säily's (2014) monographs look into regional, sociolinguistic, and genre-related factors. Semantic studies are those by Lloyd (2011) for Middle English, and Fisiak & Bator (2013) for historical English more generally. See further Trips (2009).

[3] Another example for the at times limited scope and accessibility of the "new instruments" Dietz had commented on is the Dictionary of Old English Project at the University of Toronto which had until very recently only published the dictionary entries from *A* to the letter *I*. As I was writing this introduction, a brand new version of the *DOE*, covering letters *A–Le*, was launched on 22 July. The editors also announced a new version of their *Web Corpus* to be coming soon.

[4] Dalton-Puffer (1996) is one of the first large-scale corpus-based studies, followed by Ciszek (2008) and Gardner (2014).

when "access to the OED RESTful API [was granted. This] made the crucial difference for automating the entire extraction process and hence produce the data that would allow for answering more detailed questions in the future on how the mechanisms of derivation in English work" (49).

Several of the here gathered essays furthermore illustrate that in-depth contextualisation, i.e. the analysis of word-formations in the source text and within the immediate and larger literary and/or socio-cultural context(s), are also essential for gaining the required results. For instance, **Daniela Fruscione** & **Letizia Vezzosi** offer the first systematic overview of compounds contained in the Old English Laws from King Æthelberht of Kent (7th cent.) up to those made under King Cnut the Great (10th/11th cent.). This specialised lexical material revealed several peculiarities,

> on the one hand because of opaque, unclear, and unpredictable semantic relationships between their constituents, and on the other hand because of the high incidence of words occurring once and *hapax legomena*. All these peculiarities appear to be less peculiar if one thinks that compounding in the early laws was a means for the development of a legal terminology (63).

The authors' 'deep-dive' into (largely nominal) compounding in early English laws enabled them to sketch developments and changes in Anglo-Saxon society between the 7th and 11th centuries reflected in the Old English legal vocabulary. Fruscione & Vezzosi's study also reminds us that, although a vast amount of texts in Old, Middle, and (Early) Modern English verse and prose is now available in electronic form, several literary and non-literary texts do not yet form part of established electronic corpora such as the *Parsed Corpus of Middle English Poetry*[5] or the *Penn Parsed Corpora of Historical English*[6]. Moreover, certain genre-specific or author-specific studies require manual compilation and analysis because a broader understanding of certain phenomena can sometimes only be achieved by focussing on one specific text (or text-type) and/or author.

Ursula Lenker's contribution is concerned with the origin of the suffix *-ly*, the Present-Day English "adverbial signature". She remarks that "corpora do not allow for a comparison of manuscript variants to the Latin exemplar, such as manuscripts H and C of the Old

---

[5] The PCMEP currently comprises 53 Middle English poems.
[6] Containing the second edition of the *Penn-Helsinki Parsed Corpus of Middle English* (PPCME2) and the *Penn-Helsinki Parsed Corpus of Early Modern English* (PPCEME). For other parsed corpora of historical English, see https://www.ling.upenn.edu/histcorpora/other-corpora.html.

English translations of the *Theodulfi Capitula*" (77, fn. 5). By means of a comprehensive textual analysis of two late Old English translations of the *Theodulfi Capitula* and of the early Middle English poem *The Owl and the Nightingale*, she is able to "test the more general findings […] regarding the diversification of adverbs in the history of English, in particular the more recent uses of subjective sentential adverbs such as stance and linking adverbs" (78).

Last but not least, it should be highlighted that engaging with and employing innovative interdisciplinary approaches can be fruitful for the study of historical English word-formation as well, complementing traditional concepts and methodologies, as **Mihaela Buzec** demonstrates in her proposal of a cognitive linguistic framework for the study of Old English kennings. She suggests that when poets compose or recite Old English poetry, they employ kennings (circumlocutions of a certain semantic concept, usually in the form of complex nouns) according to semantic associations in ways similar to the word-retrieval of patients suffering from anomia (the inability to name a certain referent). Buzec explains that by applying the framework of Semantic Feature Analysis, "kennings would be interpreted as a result of semantic feature association, and they would function as a basis for building semantic networks and offering clues for the specific contexts in which they appear" (112).

All in all, the proceedings of the 2023 symposium 'Historical English Word-Formation' gathered in this special issue of *ZWJW* hope to contribute to the broadly diversified and thriving field of diachronic word-formation in English.

References

Bauer, Renate & Ulrike Krischke (eds.). 2011. *More than Words: English Lexicography and Lexicology, Past and Present. Essays Presented to Hans Sauer on the Occasion of his 65th Birthday – Part I*. Frankfurt a. M.: Lang. [Hans Sauer's publications up to the year 2010 are found on pp. 17–22].

Bauer, Renate, Christine Elsweiler, Ulrike Krischke & Kerstin Majewski (eds). 2023. *Travelling Texts – Texts Travelling: A Gedenkschrift in Memory of Hans Sauer*. Munich: Utz. [Hans Sauer's publications from 2011 to 2022 are found on pp. 20–24].

Ciszek, Ewa. 2008. *Word Derivation in Early Middle English*. Frankfurt a. M.: Lang.

Dalton-Puffer, Christiane. 1996. *The French Influence on Middle English Morphology: A Corpus-Based Study of Derivation*. Berlin & New York: Mouton de Gruyter.

Dietz, Klaus. 2015. Historical Word-Formation in English. In Peter O. Müller, Ingeborg Ohnheiser, Susan Olsen & Franz Rainer (eds.), *Word-Formation: An International Handbook of the Languages of Europe*, *Volume 3*, 1914–1930. Berlin, Munich & Boston: De Gruyter Mouton. DOI: 10.1515/9783110375732-021.

DOE = Dictionary of Old English: *A to Le online*, eds. Angus Cameron, Ashley Crandell Amos, Antonette diPaolo Healey. University of Toronto: Dictionary of Old English Project, 2024. https://dictionary.doe.utoronto.ca/ (accessed 28 July 2024).

Fisiak, Jacek & Magdalena Bator (eds.). 2013. *Historical English Word-Formation and Semantics*. Berlin: Lang.

Gardner, Anne-Christine. 2014. *Derivation in Middle English: Regional and Text Type Variation*. Helsinki: Société Néophilologique.

Kastovsky, Dieter. 2007. Middle English Word-Formation: A List of Desiderata. In Gabriella Mazzon (ed.), *Studies in Middle English Forms and Meanings*, 41–56. Frankfurt a. M.: Lang.

Lloyd, Cynthia. 2011. *Semantics and Word Formation: The Semantic Development of Five French Suffixes in Middle English*. Oxford: Lang.

Majewski, Kerstin. 2023. Conference Report: Symposium "Historical English Word-Formation" (17–18 February, 2023; Munich, Germany). *Zeitschrift Für Wortbildung/Journal of Word Formation* 7(1). 287–295. DOI: 10.21248/zwjw.2023.1.96.

PCMEP = Richard Zimmermann (ed.). 2015. *The Parsed Corpus of Middle English Poetry.* University of Manchester, Department of Linguistics and English Language. https://pcmep.net/ (accessed 28 July 2024).

PPCEME = Anthony Kroch, Beatrice Santorini & Lauren Delfs (eds.). 2004. *The Penn-Helsinki Parsed Corpus of Early Modern English.* Department of Linguistics, University of Pennsylvania. https://www.ling.upenn.edu/ppche/ppche-release-2016/PPCEME-RELEASE-3 (accessed 28 July 2024).

PPCME2 = Anthony Kroch & Ann Taylor (eds.). 2000–. *The Penn-Helsinki Parsed Corpus of Middle English*. Department of Linguistics, University of Pennsylvania. https://www.ling.upenn.edu/ppche/ppche-release-2016/PPCME2-RELEASE-4 (accessed 28 July 2024).

Säily, Tanja. 2014. *Sociolinguistic Variation in English Derivational Productivity: Studies and Methods in Diachronic Corpus Linguistics*. Helsinki: Société Néophilologique.

Säily, Tanja. 2018. Change or Variation? Productivity of the Suffixes *-ness* and *-ity*. In Terttu Nevalainen, Minna Palander-Collin & Tanja Säily (eds.), *Patterns of Change in 18th-Century English: A Sociolinguistic Approach*, 197–218. Amsterdam: Benjamins.

Sauer, Hans. 2024, in print. Sun and Moon, Good and Evil, Come and Go: *Studies in English Binomials from ca. 850 to 2008.* Edited by Monika Kirner-Ludwig, Kerstin Majewski & Gaby Waxenberger. Trier: Wissenschaftlicher Verlag Trier.

Trips, Carola. 2009. *Lexical Semantics and Diachronic Morphology: The Development of* -hood, -dom *and* -ship *in the History of English*. Tübingen: Niemeyer.

Kerstin Majewski
Juniorprofessorin für Anglistik, insbesondere Mediävistik
Englisches Seminar, Ruhr-Universität Bochum
Universitätsstraße 150
D–44801 Bochum
kerstin.majewski@rub.de

Katrin Menzel

Initialisms in Scientific Writing in the 19th and Early 20th Centuries

Abstract: This paper focusses on the role of initialisms in scientific English articles in the *Royal Society Corpus* (*RSC*) from the 19th and early 20th centuries. The evolving role of scientific initialisms in English academic writing is shown here for the first time in a systematic, corpus-based analysis. The paper combines frequency data of initialisms with results from topic modelling to analyse the evolution of the topics of the texts in which initialisms are found. Additionally, it presents an analysis of information-theoretic surprisal values of initialisms in three time spans between 1830 and 1919 to measure the (un)predictability of the initialisms in their textual contexts. The results of the analysis show that the overall frequency and diversity of initialisms for scientific concepts has risen considerably between 1830 and 1919 in the context of the ongoing specialisation of the sciences. Particularly from the 1860s onwards, scientific initialisms increasingly became common shortcuts for multi-word units with wordhood and term status in a variety of disciplines of the natural sciences. The surprisal values of scientific initialisms have decreased over time as such forms more regularly occurred in conventionalised textual contexts and fixed expressions in scientific articles published by the Royal Society. Overall, the analysis confirms that key developments towards the conventionalisation of scientific initialisms as term formation patterns took place especially in the transitional period from Late Modern to Present-Day English, i.e. in the last decades of the 19th and the first decades of the 20th century.

Keywords: multi-word units, specialised languages, initialisms, diachronic word-formation, Late Modern English

1. Introduction

This paper focusses on the role of initialisms (e.g., *DRG* for 'dorsal root ganglion', cf. definition of initialisms below) in scientific English articles in the *Royal Society Corpus* (*RSC*, Fischer et al. 2020; Kermes et al. 2016).[1] The research questions addressed in this paper are: in which particular time span of the Late Modern English (LModE) period does the use of initialisms for scientific terms become a common strategy to shorten the growing number of multi-word terms in the natural sciences?; which scientific topics and

---

disciplines covered in the *RSC* were the most productive ones with regard to the use of initialisms in the analysed time period?; and have initialisms become highly predictable and conventionalised lexical items in fixed textual contexts over time? The paper aims to show that routines of shortenings for multi-word scientific term patterns have increasingly developed from the mid-19th century onwards. The evolving role of scientific initialisms in English academic writing in the 19th and early 20th centuries will be shown in a systematic, corpus-based analysis. Frequency data of initialisms and results from topic modelling will be used to analyse the evolution of the topics of the texts in which initialisms are found. Furthermore, an analysis of information-theoretic surprisal values of initialisms will be presented for three time spans between 1830 and 1919 to measure the (un)predictability of the initialisms in their textual contexts. The findings indicate a significant increase in both the frequency and variety of initialisms for scientific concepts between 1830 and 1919. Especially from the 1860s onwards, scientific initialisms increasingly became common shortcuts for multi-word units with wordhood and term status across various natural science disciplines. The surprisal values of scientific initialisms have decreased over time. This can be explained by the fact that such forms started to occur more regularly in conventionalised textual contexts and fixed expressions in scientific articles published by the Royal Society. Overall, the analysis of the *RSC* texts confirms the expectation that key developments towards the conventionalisation of scientific initialisms as term formation patterns occurred in the transitional period from Late Modern to Present-Day English (PDE). These key changes took place particularly in the last decades of the 19th century and the first decades of the 20th century.

Initialisms can be defined as combinations of initial letters of multi-word units (MWU) in condensed word-like units.[2] An example of an initialism for a scientific term is the

---

[2] Existing theoretical descriptions and typologies of shortening devices apply labels such as initialisms, alphabetisms, letter-words, abbreviations, alphabetic shortenings, acronyms etc. partly in slightly different ways (cf., for instance, Baum 1955; Heller & Macris 1968; Marchand 1969; Algeo 1975; Kreidler 1979; Bauer 1983; González & Cannon 1994; Fandrych 2008; Mattiello 2013). At first glance, initialisms appear to be a closed and easily identifiable category, but the real picture is much more complex and not necessarily homogeneous. Some forms depend less on the existence of a written tradition and more on the initial sounds as components. Initialisms are often grouped together with other types of shortening processes such as abbreviations, blends or multiple clippings. *Radar* ('radio detection and ranging'), for instance, takes one syllable and three initials. So-called opening letter initialisms and syllabic initialisms, e.g., *HeLa* for a cell line named after Henrietta Lacks, or *modem* ('modulator-demodulator') (cf. Bloom 2000; Hock 2021: 457), are out of the scope of this paper. The great variety of irregularly formed or hybrid forms of letter sequences that has

above-mentioned *DRG*, in which each letter corresponds to the first letter of a part from the full form 'dorsal root ganglion'. Another example is *GUT* for 'grand unified theory'. Letter-by-letter initialisms are pronounced as series of individual letter names, and acronymic initialisms as words.[3] In a broader sense, initialisms may also consist of initial letters of several lexical morphemes from multimorphematic individual words in MWU that contain more than one meaningful part. If we use such a broader definition, we may include shortenings of scientific terms that contain closed compounds (e.g., *HRP* for 'horse-radish peroxidase') or neoclassical combining forms (e.g., *EMF* for 'electromotive force' or *PTFE* for 'polytetrafluoroethylene').[4]

English word-formation patterns that are productive in scientific or technical fields as well as their historical background have often been excluded from English morphological studies. The theoretical morphological literature has often treated initialisms as peripheral, marginal, or extra-grammatical word-formation patterns (Mattiello 2013). Moreover, initialisms have rarely been examined on the basis of specialised and diachronic corpus data. This paper addresses this research gap and investigates abbreviated forms in scientific writing as an increasingly regular process stipulated by changes in needs for communication due to language-internal and language-external developments. It will be shown how and when initialisms for scientific multi-word terms have become a productive word-formation pattern in specialised texts from the 19th and 20th century and spread to new contexts and usages.

Reductions of multi-word units to their initial letters as submorphemic elements (Fandrych 2004: 18) are common shortening strategies in communities that use alphabetical writing systems. Letter-by-letter initialisms often consist of three letters which makes them rather minimalistic signs. Initialisms are typically composed of capital letters (with optional periods). Initialisms are productive in specialised registers such as political, administrative, military, and business languages, and function as insiders' code words

---

developed in PDE makes a clear-cut definition of initialisms as the basis of an empirical approach challenging.

[3] Some initialisms have several possible pronunciations. Others neither have a pure letter-by-letter pronunciation nor a pronunciation that accurately reflects their spelling, e.g., *JPEG* pronounced as /ˈdʒeɪ ˌpeg/, *CABG* ('coronary artery bypass graft') pronounced as 'cabbage', or *CESR* ('Cornell Electron Storage Ring'), pronounced 'Caesar'.

[4] Cf. also Cannon (1989:108), who permits combining forms as constituents for forming initialisms.

giving shorter labels and an intended flavour of familiarity to concepts that already have multi-word designations (Mattiello 2013: 66). Initialisms also play an important and apparently still increasing role in scientific writing as shortening devices for MWU (Mattiello 2012; Barnett & Doubleday 2020). However, they may be perceived as in-group jargon as they are semantically less explicit than their full forms.[5]

English initialisms, especially acronymic ones, are often associated with the second half of the 20th century onwards (Fandrych 2008) and with specific communication tools and means with length constraints. Dietz (2015: 1915) describes the use of initialisms ("letter acronyms" and "word acronyms" in his terminology) as one of the few word-formation pattern "innovations" during LModE and PDE. In this article, it will be shown that the use of letter-by-letter initialisms itself was not entirely new from LModE onwards, but that their systematic use in scientific English was indeed innovative in the transitional period from LModE to PDE. Before the second half of the 19th century, scientific multi-word terms and, thus, initialisms for them were rare. Some early initialisms in English were used for non-technical terms, most importantly for multi-word proper nouns for institutions and professional and honorary designations. If we look at the first academic articles published in English at the end of the Early Modern English (EModE) period, i.e. in the second half of the 17th century, we already find some examples of initialisms. For instance, in the *Philosophical Transactions of the Royal Society of London* from 1676, the president of the Royal Society was referred to with *P.R.S.*[6] Such early initialisms from the transitional period from EModE to LModE function less word-like than later ones, as these abbreviated forms were typically not yet integrated into sentence structures and running texts.[7] They can be found in text elements such as headlines or by-lines of the articles together with other abbreviations providing information on the identity of authors. Abbreviations in

---

[5] Recent publications have criticised the consequences of an "exploding" (mis)use of initialisms in PDE scientific texts. Initialisms – even those that are used in highly specialised scientific fields – can be ambiguous, as the letter combinations can be used with a great variety of meanings (e.g., 16 English multi-word names of clinical trials were identified, whose short form is spelt *HEART*, cf. Fred & Cheng 2003). Moreover, some recent acronymic initialisms in scientific texts have been described as having been coined like word-formation products in marketing language (Berkwits 2000). This has also led to more mixtures of initial and non-initial letters (Tay 2020).

[6] https://royalsocietypublishing.org/doi/epdf/10.1098/rstl.1676.0043 (accessed 26 February 2024).

[7] Nevertheless, some early initialisms already underwent further word-formation processes such as conversion, derivation, or compounding so that they developed a lexeme-like behaviour and did not remain pure abbreviations (e.g., *K.C.B.-ship* and *K.C.B.'d* in 19th-century texts [*OED* s.vv. *K.C.B.-ship*, *K.C.B.*]).

compressed, heavily nominal structures can also be found in LModE 'headlinese' in other registers, for instance, in the *Old Bailey Proceedings* front matter (Hitchcock et al. 1674–1913). Initialisms that give information on professional titles of people play the most important role in the Old Bailey texts from the LModE period (e.g., *D.C.L.* for 'Doctor of Civil Law' in texts throughout the 19th century). Some initialisms for other types of multi-word proper nouns can also be found in the Old Bailey texts towards the end of the LModE period (e.g., *G.P.O.* for 'General Post Office' or *G.E.R.* for 'Great Eastern Railway').[8] At the beginning of the 20th century, there were already larger abbreviation dictionaries like Rogers's (1913) with initialisms and other shortenings from different fields.

It has been shown that the 20th century was characterised by an increasing use of multi-word terms and longer and more complex noun phrases in scientific writing (Mattiello 2012; Biber & Gray 2016). The foundations for this trend were probably laid in the 19th century when important changes in the scientific world took place that led to a rapid specialisation of scientific disciplines and journals. LModE scientific writing is already characterised by an ongoing densification of noun phrases and a growing use of multi-word terms containing proper and common nouns. The purpose of the growing number and variety of shortening devices in LModE scientific articles was to reduce the word count of texts, to save time for the authors, and to make the coding more efficient for a specialised community of readers, e.g., by reducing the wordiness of complex noun phrases and by avoiding the frequent repetition of full forms of multi-word terms with initialisms in a one-word format that achieve higher syntactic flexibility.

The analysis in this paper shows the development of scientific initialisms in the transitional period from LModE to PDE that have increasingly become shortcuts with wordhood status taking over the function of specialised vocabulary items consisting of multi-word units. Section 2 presents a diachronic case study on initialisms in the *RSC* data. The analysis focuses particularly on three 30-year periods between 1830 and 1919. In this time span, scientific initialisms were certainly not yet as frequent and diverse as in more contemporary texts. However, it is in this time period that we expect to observe crucial developments that have paved the way for the conventionalisation of initialisms for

---

[8] Most capital letter sequences in the Old Bailey Corpus refer to the initials of people marked on objects (e.g., "This shirt marked E.J. is my mate's, Edward Jackson's.")

scientific concepts in academic articles. After an overview on the data and methods, the development of scientific initialisms is illustrated with frequency data, an analysis of the evolution of the topics of the texts in which initialisms occur and the surprisal ranges of initialisms in the three analysed time spans. Section 3 summarises the conclusions drawn from these results.

2. Diachronic Analysis of Initialisms in Scientific Journal Articles

2.1 Data and Method

In order to gain insights into the usage of initialisms in scientific journal articles from the transitional period from LModE to PDE, the *RSC* V6.0.1 and V6.0.4 are used. The *RSC* is a large diachronic and specialised corpus of scientific English with digitised journal articles from 1665 to 1996. It contains, for instance, the *Philosophical Transactions* (*Phil. Trans.*) and the *Proceedings* (*Proc.*) of the Royal Society of London and their more specialised successor journals *Phil. Trans. A* and *B* (since 1887) and *Proc. A* and *B* (since 1905). While the early journals used to cover all major scientific disciplines of the time, the *Phil. Trans.* and *Proc. A* series published from the end of the LModE period onwards are dedicated to the mathematical and physical sciences; the *B* series cover the biological sciences. The *RSC* is a unique dataset due to its large time span and the high number of complete, professionally published and peer-reviewed science texts from many different authors. One of the advantages of the *RSC* is that it is much larger than other diachronic corpora with scientific texts, for instance, the science section in the *Representative Corpus of Historical English Registers* (ARCHER 3.2). It is also much larger than the *Coruña Corpus of English Scientific Writing* (Crespo & Moskowich 2015) that contains around 200,000 words per century and discipline from various scientific text types published during the LModE period. The *RSC* has been enriched with fine-grained annotations, e.g., for lemmas, parts of speech and metadata that provide users with contextual information.

The full corpus version V6.0.1 contains ca. 48,000 texts and ca. 296,000,000 tokens. V6.0.4 is a subcorpus from the *RSC* with all texts until 1920 (ca. 17,500 texts, 78,600,000

tokens). [9] The *RSC* V6.0.1 is annotated with surprisal values serving as an information-theoretic measure of the (un)predictability of each token in its textual context (Degaetano-Ortlieb & Teich 2022). Surprisal (S) has been calculated as the negative log (base 2) probability of each token (t) given its preceding context of three tokens measured in bits of information as in the following equation: $S(t_i) = -\log_2 p(t_i|(t_{i-1}\ t_{i-2}\ t_{i-3}))$. The texts in V6.0.4 are annotated with primary and secondary topics derived from probabilistic topic modelling that serve as indicators of the scientific topics and disciplines of the texts (Fankhauser, Knappen & Teich 2016; Menzel, Knappen & Teich 2021). The data used for the case study on initialisms in this paper are three 30-year time slices from 1830 to 1919 from *RSC* V6.0.1 and V6.0.4 (Tab. 1). They represent different fields of the natural sciences and increasing proportions of more specialised mathematical, physical, and biological science texts.

Tab. 1: Size of 30-year time slices in *RSC* V6.0.1 and V6.0.4 between 1830 and 1919

Time period	Texts	Tokens
1830–1859	2,294	9,251,482
1860–1889	4,117	22,160,285
1890–1919	4,696	29,496,383

Initialisms are identified via CQP queries (Corpus Query Processor, cf. Evert 2005) and extracted from *RSC* V6.0.1 in the three respective time slices between 1830 and 1919. Their frequencies are normalised. The full forms of the initialisms are determined manually. [10] In this paper, I am particularly interested in initialisms for scientific and technical concepts as an innovation for forming specialised vocabulary items. In research on specialised languages, there is no unanimous opinion on how to separate scientific concepts clearly

---

[9] All *RSC* texts from the EModE and LModE period until 1920 have been made available for free download and online query in a CQPweb (cf. Hardie 2012) interface from the CLARIN-D centre at Saarland University under a persistent identifier. The full version is available onsite to researchers and students at Saarland University.

[10] The full forms are identified manually via searches in the *RSC* on the basis of the textual contexts of the initialisms, in other dictionaries such as the *OED*, or in other relevant sources such as historical or modern abbreviations dictionaries. Searches in the texts often help to identify the full form of scientific initialisms, but in many articles, they are not written out in full if the author assumes that they are known by the readership. Especially initialisms that are shortened forms of honorific titles are almost never written out in full. Geographical initialisms and many institutional initialisms also seem to have fallen under the assumed common knowledge of the readership and are rarely defined in the documents.

from other types of professional communication and from the general lexicon. Moreover, from a diachronic perspective, there might be slightly different opinions on the classification of some forms, e.g., whether *N.N.E.* 'north-north-east' should be regarded as a specialised lexical item and whether its status has changed over time. Here, initialisms for such terms that might have undergone a certain degree of determinologisation over time, i.e. a movement from specialised to general language, are not excluded from the results. However, the following categories of initialisms are excluded as I want to keep them separate from those that designate scientific concepts: initialisms denoting professional titles, ranks, and memberships of people (e.g., *M.R.C.S.* for 'Member of the Royal College of Surgeons'), personal names (*H.D.D.* for 'Henry Drysdale Dakin'), geographical entities (*U.S.A.* for 'United States of America'), publications or collections (*R.F.F.* for 'Records of Family Faculties'), and names of projects, institutions, or societies (*R.A.S.* for 'Royal Astronomical Society') if they are not used as parts of terms (e.g., *B.T.U.* for 'Board of Trade unit' or *B.O.T.* ['Board of Trade'] *cells*).[11]

For practical reasons, the analysis focuses on initialisms as capital letter sequences with more than two and fewer than five letters (with or without periods) that have at least five occurrences in the respective time span.[12] Forms with non-capital letter characters are excluded apart from plural forms with a small *s*. The design of suitable CQP queries takes into account that there is a multitude of possible underlying full forms and a high number of different reduction types. In order to obtain high retrieval effectiveness, the query results also contain a high number of irrelevant cases that have to be sorted out, e.g., letters denoting geometric objects, chemical symbols, and abbreviations of individual words (e.g., a rectangle *ABCD*, the chemical structure *COOH*, or the abbreviation *MSS*[13]) and regular words spelt with capital letters. The development of the scientific initialisms from the three time slices will be discussed on the basis of a quantitative and qualitative analysis. For each occurrence of the initialisms, the primary and secondary topics of the respective texts are extracted from *RSC* V6.0.4, as both topic types give equally valuable information on the

---

[11] In order to find out whether initialisms are used as parts of longer scientific terms in the *RSC* texts, the preceding and following tokens of the initialisms are also checked.

[12] Items that occur less frequently represent primarily other types of capital letter sequences or OCR errors. It is also more difficult to identify potential full forms of low-frequency forms as they are not distinctively linked to one specific term yet or occur only in one individual text.

[13] I.e. manuscripts.

content and scientific domains of the respective texts. For instance, a text with a usage of an initialism may have meteorology and geography or electricity and chemistry annotated as topics. The list of all these extracted topics will be visualised for each 30-year time interval with the word cloud function from the MATLAB Text Analytics Toolbox[14] to illustrate the development of the topics of the texts in which scientific initialisms are found. Finally, surprisal values for each occurrence of the initialisms are extracted from *RSC* V6.0.1. Their ranges will be compared for the three time spans. Surprisal, i.e. (un)predictability in context, serves as an indicator for cognitive processing effort (cf. Section 2.1; Shannon 1948; Hale 2001; Teich, Martínez Martínez & Karakanta 2020). Surprisal has been claimed to be proportional to the cognitive effort required to process any linguistic unit in different contexts of interaction and has been used in previous corpus studies to model and explain linguistic behaviour and choices (cf. Degaetano-Ortlieb & Teich 2022 for examples and a wider overview). Highly predictable linguistic units with low surprisal will require lower cognitive processing effort than less predictable linguistic units with higher surprisal (affecting, for instance, reading times). I will therefore analyse the surprisal values of scientific initialisms in the context of their preceding tokens in the *RSC*.

2.2 Analysis and Results

2.2.1 Frequencies

Most forms found between 1830 and 1919 were excluded from the query results as they either turned out to be no initialisms or they fell under other types of initialisms as described above. Among the 30 most frequent initialisms between 1830 and 1919, for instance, 21 are irrelevant for our purposes. The majority of the excluded initialisms in the data until 1919 denote people, their memberships, titles and ranks, providing information on the authors and communicators of the articles. This shows that the status and identities of the discourse participants played an important role in academic publications in the analysed time span. This information was encoded in relatively long nominal expressions so that conventionally used shortened forms have developed early, and many of them were already in usage before 1830. In the analysed time span, the authors and communicators

---

of the articles had access to similar types of social capital resources, being, for instance, *F.R.S.* ('Fellow of the Royal Society') and / or *F.L.S.* ('Fellow of the Linnaean Society'), *F.R.A.S.* ('Fellow of the Royal Astronomical Society') etc. The form *F.R.S.* occurs almost in every text. A relatively strong link between nobility and science and a tradition of orders and decorations is reflected in the use of initialisms after various author names, e.g., *K.C.S.I.* ('Knight Commander of the Star of India') or *K.C.M.G.* ('Knight Commander of St Michael and St George'). As expected, such initialisms for honorifics are most often found in headlines or by-lines of the articles, e.g., "*An Account of Experiments made with an Invariable Pendulum at New South Wales*, *by Major-General Sir Thomas Brisbane, K.C.B. F.R.S. Communicated by Captain Henry Kater, F.R.S., in a Letter to Sir Humphry Davy, Bart. P.R.S.*"[15]. The majority of shortenings for multi-word terms in early scientific journal articles are thus mainly related to social culture and organisation. Some initialisms in the analysed time span refer to geographical multi-word expressions. Although such initialisms are also excluded from a more detailed analysis of *scientific* initialisms here, it is interesting to note that the *RSC* documents very early usages of geographical initialisms. For instance, *N.S.W.* ('New South Wales') is used in *RSC* texts from 1851 onwards, which antedates the *OED* quotations for this initialism starting in 1888 (*OED* s.v. *NSW*).

In the following, I will have a closer look at the initialisms for expressions related to scholarly topics discussed in the *RSC* journal articles. Only 10 types of initialisms for such expressions can be found between 1830 and 1859 (Tab. 2). The data from this time span yield some interesting insights into the early usages of scientific initialisms in LModE.

Tab. 2: Initialisms from specialised vocabulary in *RSC* texts from 1830–1859

	Initialism	**Freq. per 100,000 tokens**	**Full form**[16]
1	E.N.E.	0.56	east-north-east
2	W.N.W.	0.54	west-north-west
3	S.S.E.	0.45	south-south-east
4	N.N.W.	0.44	north-north-west
5	E.S.E.	0.43	east-south-east
6	N.N.E.	0.42	north-north-east

---

[15] *RSC* text ID: 107653, text year: 1833.

[16] In the *RSC* texts and in contemporary dictionary entries, e.g., in the *OED*, multi-word expressions that can be shortened by the use of initialisms are typically capitalised only for proper names (e.g., New South Wales). Otherwise, such full forms are mostly written in lowercase, although there are occasional variations. The short forms, however, almost always appear in uppercase letters.

	Initialism	Freq. per 100,000 tokens	Full form[16]
7	W.S.W.	0.24	west-south-west
8	S.S.W.	0.17	south-south-west
9	Q.E.D.	0.09	quod erat demonstrandum
10	N.P.D.	0.06	north polar distance
		Σ 3.04	

The 8 most frequent ones in this time span belong semantically together and refer to geographical information in nautical or meteorological terminology with a long tradition in specialised English. The underlying multi-word terms are attested already in English texts from the 14th century onwards (*OED* s.vv. *north-north-west*, *north-north-east*). Therefore it is not surprising that initialisms for them start to be used early in contexts where scholars would otherwise need to use the full terms repeatedly in their writing. These forms can also be found in LModE *RSC* texts before 1830.[17] *Q.E.D.* was also not newly coined in the time span we are looking at. It is the only initialism identified in the entire dataset that shortens a clausal structure. This short form has been used in English at least since the 15th century. The Latin full form 'quod erat demonstrandum' goes back to a Greek expression already used by mathematicians such as Euclid (c. 300 BC).

N.P.D. seems to be one of the first English initialisms shortening a nominal group compound (cf. Halliday & Martin 1993: 161). The full expression 'north polar distance' is attested in the *RSC* from the second half of the 18th century onwards. It reflects the new trend in LModE of forming scientific term patterns as nouns premodified by several lexical items such as other nouns or adjectives. The increasing usage of such clusters of lexical items in scientific lexemes in LModE generally led to more phrasal complexity and longer noun phrases in the *RSC* texts. On the one hand, this is counterbalanced by the introduction of initialisms for scientific multi-word terms that reduce the length of noun phrases (e.g., 'the degree in N.P.D.', 'changing the N.P.D. as required'). On the other hand, it leads to a compression of lexical information in noun phrases that makes it possible to pack even more information into such phrases by additional nominal pre- and postmodifiers. At the

---

[17] For example: "*The day was very fair and hot, with a little wind in the morning at W.S.W. which in the afternoon came round to N.N.W.*", *RSC* text ID: 105226, text year: 1757. Of course it is difficult to know whether such forms were pronounced as letter-by-letter initialisms. They may also have been used mainly as written abbreviations that would be read in their full forms as these were phonologically short with three syllables each.

end of the 19th century, long phrasal structures such as 'Greenwich N.P.D. observations of Polaris' or 'determination of the solar parallax from N.P.D. observations of Mars at Greenwich and Williamstown' have become commonly accepted in scientific articles. We can therefore observe from the 1860s onwards that scientific initialisms increasingly become shortcuts with wordhood status taking over the function of specialised vocabulary items consisting of multi-word units. These scientific multi-word units are typically premodified nominal groups with three lexical components. In the period from 1860–1889, the list of initialisms is semantically more diverse and longer than in 1830–1859, with 27 types and a higher proportion of nominal group compounds as full forms, e.g., *K.C.C.* 'kathodic closure contraction' (Tab. 3).

Tab. 3: Initialisms from specialised vocabulary in *RSC* texts from 1860–1889

	Initialism	Freq. per 100,000 tokens	Full form
1	E.M.F.(s)	1.69	electromotive force(s)
2	C.G.S.	0.68	centimetre-gramme-second
3	N.P.D.	0.31	north polar distance
4	W.S.W.	0.26	west-south-west
5	W.N.W.	0.23	west-north-west
6	E.N.E.	0.22	east-north-east
7	E.S.E.	0.20	east-south-east
8	N.N.W.	0.20	north-north-west
9	S.S.E.	0.19	south-south-east
10	N.N.E.	0.17	north-north-east
11	S.S.W.	0.16	south-south-west
12	G.M.T.	0.12	Greenwich mean time
13	A.C.C.	0.09	anodal[18] closure contraction
14	E.M.I.	0.09	electromotive intensity
15	K.C.C.	0.08	kathodic closure contraction
16	A.O.C.	0.07	anodal opening contraction
17	R.L.G.	0.06	rifle large grain
18	B.W.G.	0.05	Birmingham wire gauge
19	E.M.P.	0.05	electromagnetic pulse
20	K.O.C.	0.05	kathodic opening contraction
21	M.S.L.	0.05	mean sea level
22	N.G.F.	0.05	numerical generating function
23	C.E.M.F.	0.05	counter-electromotive force
24	E.M.E.	0.04	electromagnetic energy

[18] Or: anodic.

	Initialism	Freq. per 100,000 tokens	Full form
25	Q.E.D.	0.04	quod erat demonstrandum
26	L.M.T.	0.03	local mean time
27	R.G.F.	0.03	real generating function
		Σ 5.26	

The frequency of all scientific initialisms has risen from 3.04 to 5.26 per 100,000 tokens. Many are related to measurements and abstract terms. The frequency of the individual initialisms is not considerably higher than in the 30-year period before, apart from *E.M.F.*, the most frequent one with 1.69 occurrences per 100,000 tokens. Its structure and frequency have probably influenced the formation of similar shortenings in related domains in the same time span (*E.M.I.*, *E.M.P.*, *E.M.E.*, and the 4-letter form *C.E.M.F.*). *E.M.F.* behaves most lexeme-like among the observed forms and starts to take a plural suffix from the 1880s onwards. It is the only scientific initialism identified with an affix between 1830 and 1919 in the *RSC*. Generally, the one-token format gives initialisms a higher syntactic flexibility than their underlying MWU so that these short forms become regularly used as noun premodifiers from the 1870s onwards (e.g., *C.G.S. system*, *R.L.G. powder*, *B.W.G. diameter*).[19] Among those with lower frequencies, some were coined by the authors and introduced in the *RSC* texts as in the following example from an article by the mathematician Arthur Cayley from the 1870s:

> But the whole plan of the Memoir was changed by Sylvester's discovery of what I term the Numerical Generating Function (N.G.F.) of the covariants of the quintic, and my own subsequent establishment of the Real Generating Function (R.G.F.) of the same covariants. (*RSC* text ID: rspl_1878_0080)

For the majority of scientific initialisms in 1860–1889, the full expression is not used in the *RSC* in this time span. This indicates that the initialisms were already conventionally used in other forms and media of scientific discourse (e.g., spoken academic discourse or books), and they were in many cases not coined in the *RSC* journal texts. Sometimes, their underlying full expression is not used at all in the *RSC* between 1830 and 1919.

From 1890 to 1919, the number of scientific initialisms with at least five occurrences, in absolute numbers, has risen to 38 types (Tab. 4).

---

[19] Usages in other word-formation processes, e.g., as parts of adjective compounds such as *PVC-lined* or in derivations with prefixes such as *anti-BSA response*, can be found only much later in the *RSC*: from the 1950s onwards.

Tab. 4: Initialisms from specialised vocabulary in *RSC* texts from 1890–1919

	Initialism	Freq. per 100,000 tokens	Full form
1	E.M.F.	7.28	electromotive force
2	G.M.T.	5.81	Greenwich mean time
3	C.G.S.	2.85	centimetre-gramme-second
4	S.S.N./SSN	0.83	standard scale number
5	P.W.B.C.	0.43	polynuclear white blood corpuscles
6	M.L.D.	0.22	minimum lethal dose
7	S.B.P.	0.19	sulphur boiling point
8	R.B.C.	0.17	red blood corpuscles
9	N.T.P.	0.16	normal temperature and pressure
10	M.H.D.	0.15	minimum haemolytic dose
11	W.F.P.	0.12	water freezing point
12	A.C.E.	0.11	alcohol, chloroform, ether
13	S.W.G.	0.11	standard wire gauge
14	R.M.S.	0.11	root-mean-square
15	E.S.E.	0.11	east-south-east
16	S.S.E.	0.11	south-south-east
17	N.N.E.	0.10	north-north-east
18	W.B.P.	0.10	water boiling-point
19	E.N.E.	0.09	east-north-east
20	B.W.G.	0.09	Birmingham wire gauge
21	S.S.W.	0.08	south-south-west
22	L.C.M.	0.08	least common multiple
23	E.S.U.	0.07	electrostatic unit(s)
24	W.S.W.	0.07	west-southwest
25	E.M.E.	0.07	electromagnetic energy
26	N.N.W.	0.07	north-north-west
27	W.N.W.	0.06	west-north-west
28	B.O.T.[20]	0.05	Board of Trade
29	E.M.P.	0.04	electromagnetic pulse
30	M.S.L.	0.04	mean sea level
31	B.T.U.	0.03	Board of Trade unit
32	A.V.B.	0.03	atrio-ventricular bundle
33	M.D.W.	0.03	Mather-Duddell wattmeter
34	N.P.D.	0.03	north polar distance
35	Q.E.D.	0.02	quod erat demonstrandum
36	L.M.T.	0.02	local mean time
37	A.C.C.	0.02	anodal closure contraction
38	R.L.G.	0.02	rifle large grain
		Σ 19.97	

---

[20] As indicated above, this initialism for a government body was not excluded when it was used in the term 'B.O.T. cell(s)'.

The overall frequency of these forms has risen considerably to 19.97 per 100,000 tokens. New forms have been coined from a greater variety of topics. The proportion of texts with at least one scientific initialism increases considerable over time. Generally the article content has also become much longer over time with more opportunities and requirements for reductions. Almost all identified initialisms still contain periods. The first variant without periods is used from 1900 onwards (*SSN* for 'standard scale number'). Short forms for lists of nouns as premodifiers also become common (e.g., *A.C.E. mixture*). Among the top five forms, we have a 4-letter initialism, *P.W.B.C.*

Acronymic initialisms, particularly those that resemble existing words, seem to be of marginal importance in the analysed time span. They do not seem to be an innovation of scientific language as the few that can potentially be pronounced like words typically come from other semantic categories. *B.O.T. cells*, for instance, contains an initialism that stands for a government body. Among the ones that were excluded from the results for semantic reasons, we also find examples such as *M.I.C.E.* ('Member of the Institution of Civil Engineers') and *M.A.P.S.* ('Member of the American Philosophical Society') in texts from the second half of the 19th century.

2.2.2 Topics

The word clouds in Fig. 1–3 show an overview of the development of the topics of the texts in which the scientific initialisms were used. The topics were extracted from *RSC* V6.0.4 for each usage of the scientific initialisms listed in Tab. 2–4 and visualised with the MATLAB Text Analytics Toolbox.
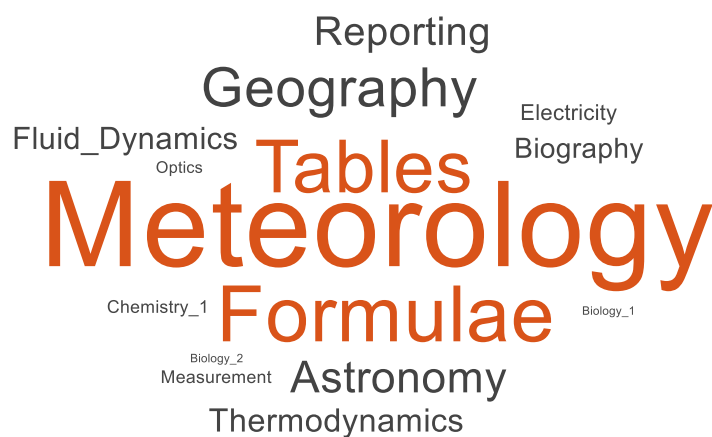
Fig. 1: Topics of texts in which initialisms were used (1830–1859)
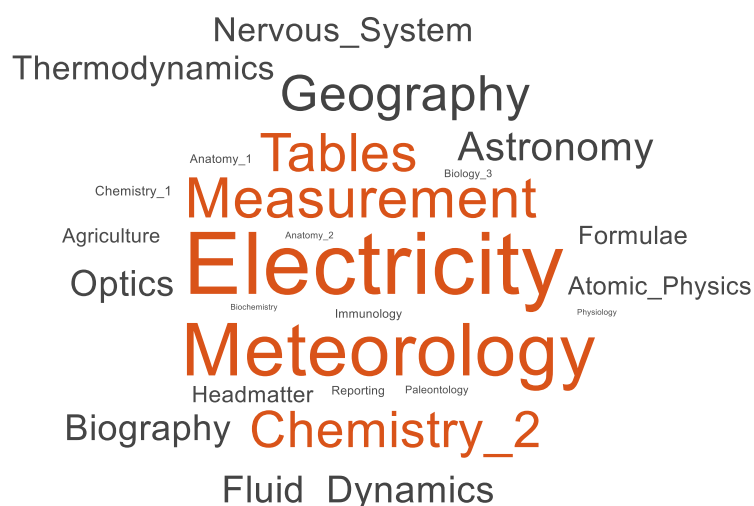
Fig. 2: Topics of texts in which initialisms were used (1860–1889)
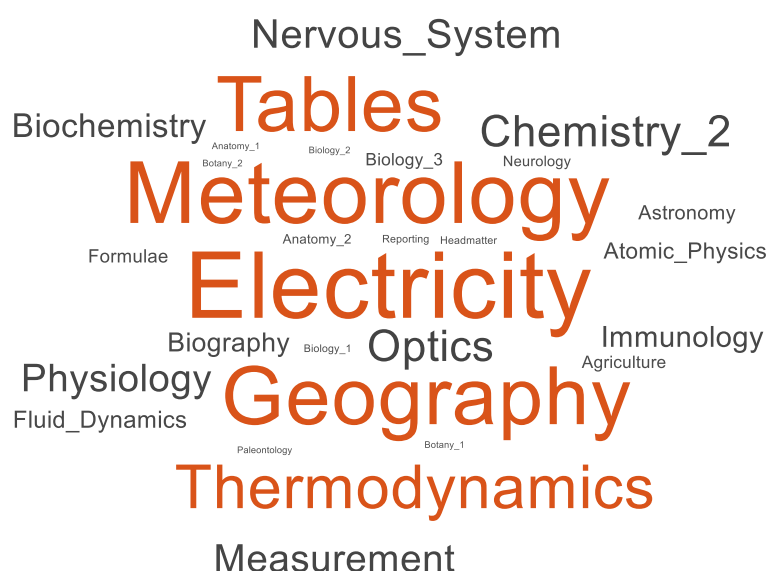
Fig. 3: Topics of texts in which initialisms were used (1890–1919)

The dominant topics from the first time span were meteorology, geography, astronomy, and mathematical contexts (formulae, tables). Similar topics remain among the most important ones in the following times spans, but initialism start to represent a greater variety of the topics that are covered in an increasingly specialised way in the scientific journal texts in the *RSC*, e.g., the sciences of electricity or biochemistry. Texts from all topics covered in the *RSC* contain initialisms in the third time span. However, the language used with regard to some topics that are represented by a non-negligible number of texts in the *RSC* is not characterised by a high number of initialisms, particularly in the biological sciences (e.g., anatomy, botany, and physiology).

2.2.3 Surprisal

Fig. 4 presents an overview of the surprisal ranges of the individual usages of the scientific initialisms in the three analysed time spans to measure the (un)predictability of the initialisms given their preceding textual contexts.
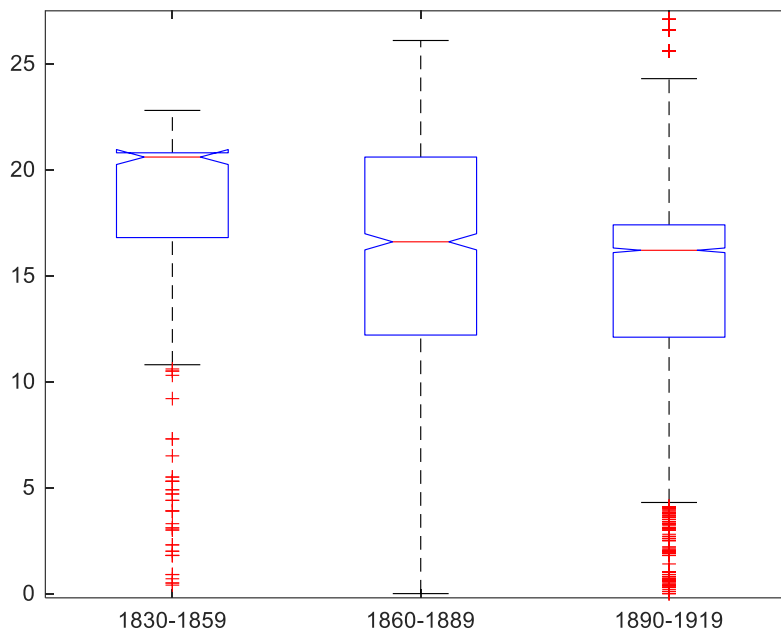
Fig. 4: Surprisal values of initialisms in the *RSC* from 1830–1919

The observed surprisal values of scientific initialisms in their textual contexts decrease over time. The median in the first time span (20.6) is significantly higher than in in the second and third time span (16.6 and 16.2), which we can conclude from the plotted notches that represent the confidence interval around the medians. The 1830–1859 period has generally high surprisal values in a relatively small interquartile range IQR. The third period from 1890–1919 has generally lower surprisal values in a similarly small IQR. The 75th percentile values in the first two time spans are very similar to each other (20.8 and 20.6), while the 25th percentile values from the second and third time span are also very similar to each other (12.2 and 12.1). The second time span therefore has a higher IQR and seems to represent a transitional period between the first and the third one with regard to the surprisal development.

The decreasing surprisal of scientific initialisms can be explained by their increasing occurrence in fixed contexts. In the second and third time span, initialisms are more regularly preceded and followed by certain words, e.g., when they are used as nominal

premodifiers as in the examples discussed above or when they are preceded by certain modifiers or sequences of words, e.g., *Atlantic M.S.L.*, *temporary E.M.I.*, *the rise of E.M.F.*, *magnetic field in C.G.S.*

3. Summary and Outlook

The results of the analysis of the *RSC* texts show that initialisms for scientific concepts from the mathematical, physical, and life sciences became common shortening devices in scientific articles during the analysed time span. The overall frequency of these forms has risen considerably between 1830 and 1919, particularly in the context of the ongoing specialisation of the sciences during the final period of LModE and at the beginning of PDE. The scientific initialisms that were identified shorten and replace multi-word nominal expressions that had become conventionalised scientific terms. Initialisms are visually distinct indicators of terminology that are used across texts from the same specialised domains and in individual texts in repetition-based lexical chains. This has further consequences for the word-formation system of English with implications for other linguistic levels. Initialisms have established themselves as an innovative strategy in specialised contexts and as one of the linguistic means of the English language that lead to maximally compact and informationally dense units and efficient expert-to-expert communication. The regular usage of initialisms for scientific multi-word terms systematically reduces the length of noun phrases. It also leads to a compression of lexical information in noun phrases that makes it possible to pack even more information into phrasal structures with scientific content. We observe particularly from the 1860s onwards that scientific initialisms have increasingly become shortcuts for multi-word units with wordhood and term status.

From the analysis of the full forms of the initialisms and the text topics extracted from the textual metadata, I conclude that early scientific initialisms in the *RSC* are mainly related to mathematical contexts and measurements and to nautical, meteorological, and astronomical terminology. In various cases, these short forms are still used in PDE. During the analysed period, initialisms represent an increasing diversity of specialised fields, e.g., the sciences of electricity or biochemistry. Some fields within the biological sciences were

still characterised by a rather low frequency of initialisms. The surprisal values of scientific initialisms decreased over time as these initialisms increasingly occurred in more conventionalised textual contexts and fixed phrasal expressions. Overall, the corpus analysis of the scientific periodicals of the Royal Society of London shows that key developments towards the conventionalisation of scientific initialisms as term formation patterns took place between 1830 and 1919. Comparisons with other data from the same time span will probably confirm that the results reflect a general development in scientific English, but due to the inherent limitations of diachronic specialised resources, it could be argued that there are certain characteristics that may bias the results.

One important finding of the analysis of the *RSC* is that the one-token format has given initialisms a higher syntactic flexibility than their underlying MWU. They have become regularly used as noun premodifiers, they started to take inflectional suffixes and increasingly occurred in variants without periods in the analysed time span. An analysis of the *RSC* texts after 1920 will reveal an even greater diversity of initialisms as shortening strategies, an even more lexeme-like behaviour of these forms and an increasing number of initialisms undergoing further word-formation processes. From the 19th century onwards, initialisms have acquired more functions and features than mere abbreviations, and they therefore deserve a much more prominent role in contemporary morphological theory.

References

Algeo, John. 1975. The Acronym and its Congeners. In Adam & Valerie Makkai (eds.), *Proceedings of the 1st LACUS Forum 1974*, 217–234. Columbia, SC: Hornbeam Press.

ARCHER-3.2 = Representative Corpus of Historical English Registers version 3.2. 2013. Originally compiled under the supervision of Douglas Biber & Edward Finegan at Northern Arizona University and University of Southern California; modified and expanded by subsequent members of a consortium of universities. https://www.projects.alc.manchester.ac.uk/archer/ (accessed 26 February 2024).

Barnett, Adrian & Zoe Doubleday. 2020. Meta-Research: The Growth of Acronyms in the Scientific Literature. *eLife 9*: e60080. DOI: 10.7554/eLife.60080.

Bauer, Laurie. 1983. *English Word-Formation*. Cambridge: Cambridge University Press.

Baum, S. V. 1962. The Acronym, Pure and Impure. *American Speech* 37(1). 48–50.

Berkwits, Michael. 2003. Capture! Shock! Excite! Clinical Trial Acronyms and the 'Branding' of Clinical Research. *Annals of Internal Medicine* 133(9). 755–762.

Biber, Douglas & Bethany Gray. 2016. *Grammatical Complexity in Academic English*: *Linguistic Change in Writing.* Cambridge: Cambridge University Press.

Grange, Bob & D. A. Bloom. 2000. Acronyms, Abbreviations and Initialisms. *BJU International* 86(1). 1–6. DOI: 10.1046/j.1464-410x.2000.00717.x.

Cannon, Garland. 1989. Abbreviations and Acronyms in English Word-Formation. *American Speech* 64(2). 99–127.

Crespo, Begoña & Isabel Moskowich. 2015. A Corpus of History Texts (CHET) as Part of the Coruña Corpus Project. *Proceedings of the International Scientific Conference "Corpus linguistics – 2015"*. 14–23.

Degaetano-Ortlieb, Stefania & Elke Teich. 2022. Toward an Optimal Code for Communication: The Case of Scientific English. *Corpus Linguistics and Linguistic Theory* 18(1). 175–207.

Dietz, Klaus. 2015. Historical Word-Formation in English. In Peter O. Müller, Ingeborg Ohnheiser, Susan Olsen & Franz Rainer (eds.), *Volume 3*: *Word-Formation*: *An International Handbook of the Languages of Europe*, 1914–1930. Berlin & New York: De Gruyter Mouton.

Evert, Stefan. 2005. *The CQP Query Language Tutorial.* IMS: Stuttgart University.

Fandrych, Ingrid. 2004. Non-Morphematic Word-Formation Processes: A Multi-Level Approach to Acronyms, Blends, Clippings and Onomatopoeia. PhD dissertation. Bloemfontein: University of the Free State.

Fandrych, Ingrid. 2008. Submorphemic Elements in the Formation of Acronyms, Blends and Clippings. *Lexis* (2). 105–123.

Fankhauser, Peter, Jörg Knappen & Elke Teich. 2016. Topical Diversification over Time in the Royal Society Corpus. In Maciej Eder & Jan Rybick (eds.), *Digital Humanities 2016 Conference Abstracts*, 496–500. Kraków: Jagiellonian University & Pedagogical University.

Fischer, Stefan, Jörg Knappen, Katrin Menzel & Elke Teich. 2020. The Royal Society Corpus 6.0: Providing 300+ Years of Scientific Writing for Humanistic Study. In *Proceedings of the 12th Language Resources and Evaluation Conference* (*LREC*), 794–802. Marseille: European Language Resources Association.

Fred, Herbert L. & Tsung O. Cheng. 2003. Acronymesis: The Exploding Misuse of Acronyms. *Texas Heart Institute Journal* 30(4). 255–257.

González, Félix Rodríguez & Garland Cannon. 1994. Remarks on the Origin and Evolution of Abbreviations and Acronyms. In Francisco Fernández, Miguel Fuster Márquez & Juan Jose Calvo (eds.), *English Historical Linguistics 1992*: *Papers from the 7th International Conference on English Historical Linguistics*, *Valencia*, *22–26 September 1992*, 261–272. Amsterdam: Benjamins.

Hale, John. 2001. A Probabilistic Earley Parser as a Psycholinguistic Model. In *Proceedings of the 2nd Meeting of the North American Chapter of the Association for Computational Linguistics on Language Technologies* (*NAACL'01*). 1–8. Pittsburgh, PA: Association for Computational Linguistics.

Halliday, Michael A. K. & James R. Martin. 1993. *Writing Science Literacy and Discursive Power*. 2nd edition. London: Falmer Press.

Hardie, Andrew. 2012. CQPweb – Combining Power, Flexibility and Usability in a Corpus Analysis Tool. *International Journal of Corpus Linguistics* 17(3). 380–409. DOI: 10.1075/ijcl.17.3.04har.

Heller, Louis G. & James Macris. 1968. A Typology of Shortening Devices. *American Speech* 43(3). 201–208.

Hitchcock, Tim, Robert Shoemaker, Clive Emsley, Sharon Howard & Jamie McLaughlin et al. (eds.), *The Old Bailey Proceedings Online*, 1674–1913. https://www.oldbaileyonline.org, version 7.0 (accessed 26 February 2024).

Hock, Hans Henrich. 2021. *Principles of Historical Linguistics*. 3rd revised and updated edition. Berlin & Boston: De Gruyter Mouton.

Kermes, Hannah, Stefania Degaetano-Ortlieb, Ashraf Khamis, Jörg Knappen & Elke Teich. 2016. The Royal Society Corpus: From Uncharted Data to Corpus. In *Proceedings of the 10th International Conference on Language Resources and Evaluation* (*LREC*). 1928–1931. Portorož: European Language Resources Association (ELRA).

Kreidler, Charles W. 1979. Creating New Words by Shortening. *English Linguistics* 13(1). 24–36.

Marchand, Hans. [1960] 1969. *The Categories and Types of Present-day English Word-Formation.* 2nd edition. Munich: C.H. Beck.

Mattiello Elisa. 2012. Abbreviations in English and Italian Scientific Discourse. *ESP Across Cultures* 9. 149–168.

Mattiello, Elisa. 2013. *Extra-Grammatical Morphology in English*: *Abbreviations*, *Blends*, *Reduplicatives and Related Phenomena*. Berlin & Boston: De Gruyter Mouton.

Menzel, Katrin, Jörg Knappen & Elke Teich. 2021. Generating Linguistically Relevant Metadata for the Royal Society Corpus. *Research in Corpus Linguistics* 9(1). 1–18.

OED = The Oxford English Dictionary. 2000–. 3rd edition. http://www.oed.com (accessed 26 February 2024).

Rogers, Walter T. 1913. *Dictionary of Abbreviations.* London: George Allen & Company, LTD.

RSC = Royal Society Corpus. V6.0.1 and V6.0.4. https://fedora.clarin-d.uni-saarland.de/rsc_v6/; https://corpora.clarin-d.uni-saarland.de/cqpweb/ (accessed 26 February 2024).

Shannon, Claude E. 1948. A Mathematical Theory of Communication. *Bell System Technical Journal* 27(3). 379–423. DOI: 10.1002/j.1538-7305.1948.tb01338.x.

Tay, Andy. 2020. Snappy Acronyms Generate Excitement for Science (SAGES). *The Scientist*. https://www.the-scientist.com/news-opinion/snappy-acronyms-generate-excitement-for-science--sages--67057 (accessed 26 February 2024).

Teich, Elke, José Martínez Martínez & Alina Karakanta. 2020. Translation, Information Theory and Cognition. In Alves, Fabio & Arnt Lykke Jakobsen (eds.), *The Routledge Handbook of Translation and Cognition*, 360–375. London: Routledge.

Katrin Menzel
Universität Mannheim
Anglistik IV
D–68159 Mannheim
katrin.menzel@uni-mannheim.de

Hagen Peukert

Lexical Affix Productivity in the History of English: A Quantitative Approach[*]

Abstract: This paper addresses the development of lexical affixation throughout the last 700 years of the English language. More specifically, it pursues two objectives. First, a short outline of the methodological approaches will be devised reaching from stand-alone applications (Peukert 2014) and shared-work solutions (Peukert 2018) to requesting the OED RESTful API. Second, two sets of results will be presented. The first set includes overall aggregations of all productive affixes as well as their shares on the total number of each affix type. The second set of results elaborates on two interesting cases chosen from highly productive prefixes and suffixes. The contribution closes with a short discussion on alternative explanations and limitations of the chosen approach. Although the affix token frequencies by and large replicate the findings in Peukert (2016), which are based on type frequencies, the presented data substantiate the idea that, in terms of lexical morpheme usage, English reveals more and more characteristics of a prefixing language.

Keywords: affix productivity, diachronic analysis, derivational morphology

1. Introduction

Collecting representational quantitative data on the frequency of lexical affixes throughout 700 years of English language use has proven to be a challenging task (Dietz 2015: 1915–1917). While type frequencies of suffixes and prefixes can be determined with relative ease, the identification of token frequencies from larger text corpora employs profound computational knowledge and intensive, cumbersome methodological work. Extracting all representations of one affix type and its exact quantities requires considering all kinds of variability in form and usage. As opposed to mere type frequencies, the token frequencies are needed to make the more interesting statements on affix productivity and interrelations with other factors of influence in the system of language, i.e. a correlation to word order or predictions of likely future changes (Stein 1970; Kastovsky 2009).

The motivation for a systematic diachronic study of affixation in English is the present state of missing data in this field. A short, but by no means exhaustive, survey of the literature reveals diachronic studies on single (productive) morphemes such as *-hood*, *-dom*, *-ship*, *-ment*, or *-age* (Ciszek 2008; Trips 2009), *-nesse* and *-ity* (Riddle 1985), *-ity* and *-ness* for Modern English (Arndt-Lappe 2014) and aggregations up to seven prefixes (Hiltunen 1983), prefixed verbs (Lutz 1997) or several suffixes (Haselow 2011). Although a vast plethora of thorough studies have been carried out, reliable statements that hold the test of representativity are rare to non-existent. To be precise, investigating a specific set of suffixes or prefixes of the past is without question valuable scientific inputs in the direction of the development of the English derivational system; yet the significance is limited for the missing context of the quantities of all other affixes. Depending on the definition of bound morphemes and whether Greek and Latin items are included, there are about 300 known affix types documented in the *OED*. This number more than triples if variation in forms is considered. Estimations on polysemous items could not yet be made, but even without those, the case is clear that statements made from very few affixes to the general behavior to all English affixes must be relativized. In other words, it is crucial to have the productivity of one affix set in relation to all other productive and non-productive affixes to really understand the underlying mechanisms.

With the above argument in mind, it follows that the main subject of the paper at hand is methodological. Hence, at first, a short survey of the attempts made and the main learnings from their failures will be given. Second, the presentation of results that proposedly come a large step closer to the ideal of a representative and somewhat contextualized data collection of English affixation. Before going to these details, background and problem space are briefly delineated. The paper closes with an abbreviated discussion of the results.

2. Problem and Background

The challenges in morphological analysis presented here are generally agreed upon (Faiß 1992; Štekauer 2000; Schmid 2016). These phenomena are replicated in all standard textbooks of this matter or encyclopedias such as Crystal (2019), so that no further

reference is made unless other information is provided. This short reproduction is provided here to be better able to relate the analytical problems to the design of the applied methods described hereafter.

The first salient characteristic of English diachronic text analysis is the high degree of variability especially in the Middle English period up to the establishment of standards by recognized dictionaries such as Johnson's *Dictionary* of 1755 (Vera 2002; Crystal 2019: 78) in Early Modern English. From this time on English writing is more homogeneous, and hence morphological analysis becomes easier. Despite missing standards in the Old English period as well, the comparatively little amount of written text and the overall conforming effect of monasteries pushes the challenge of managing text variability to the background. It remains the foremost problem of Middle English texts. Written variability mainly arises from two sources: regional differences or dialect and individual inconsistencies among scribes or even of one and the same scribe. Some scribes are known to change writing rules and styles within short time intervals. Others happen to write as they speak, and this may had led to more fluctuations within much shorter time intervals and without any observable systematic patterns of change.

Indeed, language diversity underlies known processes of language change that must especially apply in an area of extreme immigration at that time. Well-studied linguistic assimilation processes from borrowings have certainly contributed to balancing the perceived variability by the speakers. Harmonizing foreign to familiar (morphological) forms is suggested to be a psychological conformity (Ellis 2022) whereas phonetic and then phonological assimilation is due to learned physiological restriction (Blevins 2004; Antoniou et al. 2015). However, both types of assimilation may interact with each other. To illustrate, the still very productive *-er* suffix and its variant *-or* could be detected in words like *editor*. Yet, careful diachronic investigation strongly suggests that *editor* entered the English lexicon at a time in which the verb *to edit* did not exist (*OED* s.v. *edit, v.*). Hence, *editor* is not created by affixation, that is, *-or* is added to *edit*, but it needs to be identified as a backformation – a process characterized by reversed analogy to the affixation process. The form of a suffix happens to coincide with the same phonetic sequence of the ending of a lexical item, which is thus recognized as such, and accepting the remaining root, *edit*, as a new lexical entry in the lexicon.

At the same time, assimilation processes make morphological analysis more challenging. There is nothing but the very manuscript study which reveals knowledge of past assimilation. It cannot be derived from one source alone. Simply by looking at the word *establish* and many other verbs ending in *-ish* (*OED* s.v. *-ish* suffix[2]), for example, the unknowing analyst may be inclined to identify the phonetic *-ish*-sequence as a suffix. Indeed, the word was borrowed from Old French *establiss* as the lengthened stem of *establir* and was incorporated into Middle English morphology as *establisse-n* as the *OED* suggests (*OED* s.v. *establish, v.*). To assume an affixation process for Modern English is still beside the point since *-ish,* derived from Latin *-isc-*, soon became unproductive. The meaning of the Old English homonymic form, however, which transfers a noun to a corresponding adjective, kept its productivity. Both forms could be confused if changes over time remained unconsidered. In other cases, affixes may fuse with roots, stems, or other affixes. The *be*-prefix in *behead* exemplifies such a case of amalgamation. Similar to Middle High German *behoubeten*, the Old English verb *behēafdian* was once formed by prefixing the noun *hēafod*, which meant 'head' (*OED* s.v. *behead, v.*). Today the *be*-prefix became unproductive, but we still find the remainder in words like *behave* and *behavior* (*OED* s.vv. *behave, v.*; *behaviour, behavior, n.*).

The examples above illustrate the major methodological challenge for morphological analysis in general and for computational approaches in particular. Exclusive manual examination will not reach representative data unless huge amounts of human resources and time is granted. As an alternative, semi-automatic and fully automated approaches exist. In addition and because of its immense popularity nowadays, methods of Machine Learning (ML) and Artificial Intelligence (AI) are proposed for all kinds of data analysis. It is still an open question if more recent AI-technologies can be applied to a reliable identification of derivational morphemes of Middle English. Having trained an experimental supervised model, accuracy measures turned out to be low, probably due to the verb morphology. Attempts towards creating a reasonable unsupervised learning model failed as well so that these approaches are postponed to future follow-up studies.

Besides the number of word tokens in the existing corpus material, a pressing problem of computational morphology is that existing word models that define the hierarchical relations between root, stem, base, and affixes (Selkirk 1982; Booij 2010) are not

implemented as text annotations in established corpora as it is the case for the annotations of sentences (Bauer 2019: 58). Based on a solid theory such as Head-Driven Phrase Structure Grammar (Pollard & Sag 1994) or Dependency Grammar (Hays 1964), text corpora are syntactically parsed and as such can be evaluated with ease. This is not the case on the word level with no exception for diachronic corpora. In fact, rule-based approaches opt out for this very reason. While simple search algorithms collapse in very few cases on the syntactic level where annotations exist, they completely fail on the word level for the limited power of linear expressiveness. Searches mostly expressed as regular expressions are likely either to overgeneralize or undergeneralize a given population, i.e. they happen to match more words or fewer words containing the letter sequence. Since the productivity measure depends on hapax legomena, even one mishit already may lead to seriously skewed results. The following word pair in examples (1) and (2) spells out the core problem.

(1) a. *distemperaunce*   [inclemency]

     b. dis   temp   er   aunce

     c. [dis]   [temp]   [er]   [ance]

     d. prefix   root   stem/suffix suffix

The French borrowing *distemperaunce*, which can be translated with 'inclemency' today, might be segmented as shown in (1). Seemingly, the same structure prevails in *disseveraunce* ('separation'). It turns out that any matching algorithm using simple analogies would fail as in (2e.) through (2g.) given the variability in writing of the *dis*-prefix and the *-ance* suffix. The correct segmentation is then a matter of equally distributed probabilities.

(2) a. *disseveraunce*   [separation]

     b. dis   sever   aunce

     c. [dis]   [sever]   [ance]

     d. prefix   root/stem   suffix

     e.* dis   sev   er   aunce

     f.* dis   sever   a   unce

     g.* diss   ev   er   a   unce

Hence, the direction of a possible solution points towards handling the diversity of affixes and the problem of embeddedness. The embeddedness problem describes the inability to recognize that a potential affix is embedded in another sequence, that is in examples (1) and (2), *-er* is used as a suffix in *temper*, but not in *sever*. Embeddedness typically occurs in replacement procedures based on regular expressions. An additional source of information could be the word class, which may change if an affix is stripped. Affixes typically are added to certain word classes but not to others. The consequences of incorporating word class information in a rule-based algorithm is twofold. First, it adds substantial complexity and, second, it reduces faultiness. There is certainly a tradeoff between these two. Complexity increases because for each word class the set of possible affixes and order information must be defined. For most prefixes and a few suffixes these sets are not disjunct.

3. Method

3.1. Methodological Assumptions and Morphological Productivity

The methodological assumptions of the study at hand hark back to determining type frequencies of affixes (Peukert 2016) but are extended with a measure of productivity. As a short wrap-up, the first assumption is that the prevalently used corpora of diachronic analysis of English (PPCME2, PPCEME, PPCMBE) are correctly parsed and are representative for the English language at that time. This assumption is strong and there are reported cases, though anecdotal, which argue against the representativeness of text corpora for diachronic analysis. This is reasonable if considering the distribution of text registers and genres in which medieval texts were written. Yet, text corpora as representatives of the language in use are the only existing source. There is little choice as to trust the engaged linguist when compiling the corpora to the rules of corpus design as best as possible (Biber 1993).

As a second assumption, the *Oxford English Dictionary* (*OED*) is acknowledged as a standard, i.e. ambiguities are resolved by consulting the lexical entry in question. However, this does not apply to word occurrences dated earlier in the corpus than claimed in the *OED*. The function of a text corpus is to balance the correct relation of actual language use as exact as possible. Technically derivational affixes are a substring of the word, so that the

frequency of the words, in which the affix occurs, is equal to the frequency of the occurring affixes. Hence, the function of the corpus (but not from the dictionary) is to provide the word frequencies, from which the affix frequencies can be calculated, by adding up all word frequencies the affix occurs in. Since this is done for all words, the quantitative relations for all affixes to each other can also be derived. Additionally, for diachronic derivational morphology, word frequencies from one period can be correlated to the frequencies of the next period. Although dictionaries also provide frequency data, the decisive difference is that the frequency data in dictionary collections is not balanced (Biber 1993).

The third assumption asserts that the assigned time slots in the corpus design do not significantly distort word frequency data. The decision of number and length of time slots, in which texts are categorized, is somewhat arbitrary a matter of agreement and plausibility. In fact, due to nonavailability of eligible texts, the amount of textual material measured in word tokens is not equally distributed among the agreed time slots. In other words, the probability of occurrence of a certain affix changes in due proportion to the size of the corpus in the respective time interval. A general and cross-linguistic property of text (Zipf 1935) is that type frequencies scale down significantly while token frequencies keep on rising relative to the text size. Since the productivity measure employed here, (3) depends on the number of tokens in the denominator; the resulting productivity values will be smaller for large texts assumed that the probability of occurrence of hapaxes – needed in the numerator – is equally likely on a normalized basis, e.g., per 10,000 words. When comparing productivity values from different text sizes, i.e. different time periods, large distances of productivity values could be treated as implied in (3), but small distances should be construed on a logarithmic scale as implied in Zipf's law relative to the text size.

(3) $$P = \frac{n_1^{aff}}{N^{aff}} \qquad 0 < P \leq 1$$

For reasons of comparability and simplicity, the productivity will be defined as in (3): the number of hapaxes containing a particular affix over all token occurrences with that affix in a given text (Bauer 2001; Plag 2006; Baayen 2009: 902) and at a defined time interval.

The values range between zero and one. The closer a productivity value approaches one, the higher the productivity of the affix. The closer the value comes to zero, the lower the productivity will be. A value of zero means there is no productivity at all, which may also happen if no hapaxes with the affix are available at that specific time interval although the affix occurs frequently.

3.2. Genesis of Computational Approaches

Roughly, the work on diachronic computational morphology approaches to be described here can be summarized in three stages evolving over the last decade and revealing a constant development towards more and more degrees of automation while adopting the important insights for further improvement to the next stage. In what follows, a brief description of these stages will be provided with some more emphasis on the first stage, which is the basis of all subsequent versions.

The first stage was inspired by an old classic: the division of labor between the machine and human mind to efficiently identifying and counting affixes of some millions of words. Word parsers that give a reliable hierarchical representation of historical lexical items are up to the present effectively not available so that the best way of receiving the desired data was to have the machine do all routine work. The scientist is then free to dedicate more time to the careful analysis of the structure of words. The result was a stand-alone application called the *Morphilo* Toolset (Peukert 2012; 2014; 2016). It consisted of three components that fulfilled the machine's task of extracting the relevant lexical items (*MorExtractor*), making reasonable suggestions on the structure of these items as well as counting all representatives in the corpus at a given time spot (*Morphilizer*) and, finally, querying the data (*MorQuery*). The *Morphilizer* component contained an overgeneralizing algorithm that is still part of the current 3rd version as a robust backup in case a word could not be retrieved via the *OED* interface. Since this algorithm works astonishingly well for rare and therefore regularly formed words (Haspelmath 2008; Haspelmath & Karjus 2017: 1218–1219), it will be presented here in more detail. It should be explicitly noted that the algorithm will fail if the root of the word also happens to be a suffix or prefix form (see example (4)).

The basic idea is to approach a given word from both ends, front and back, and cut short all matches of strings from lists of prefix and suffix allomorphs after one another. The segmentation is likely to be correct if the direction of matching, i.e. start with matching the prefixes or start with matching the suffixes, has no effect on the remaining root. The root's length must also be longer than one character.

The pseudo code of the algorithm is given in abbreviated form by means of the sample word *disenablement* in (4) and Fig. 1. It is one of the rare cases, in which the algorithm does not fully succeed. It is selected here as an accessible example to the workings of the algorithm.
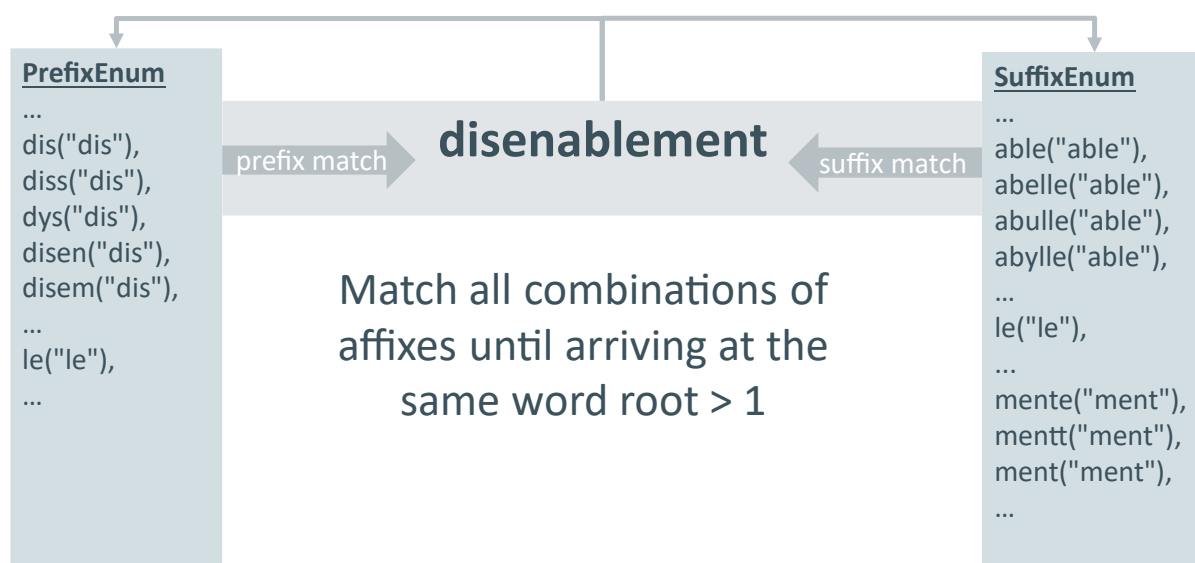
Fig. 1: Rule-based affix matching algorithm

The algorithm has access to enumerated lists of prefixes and suffixes extracted from the *OED*. These lists encode the variants of each morpheme in the program's specific syntax as *allomorph("morpheme")* pairs and can be quite long, e.g., 89 variants for the *over*-prefix. For each given morpheme, the allomorphemic variants are ordered by length. As illustrated in Fig. 1, the algorithm starts with the prefix match of the longest possible item from left to right and continues the matching process until no more matches can be made. The same will be done for the suffixes but the matching goes from right to left. Again, it is important to start with the longest match since the probability is higher for longer affixes as occurrence frequency decreases with length and so is a hit of a longer affix more likely to be correct as several shorter affixes. If the remainder of both matching processes is greater than one, the algorithm starts over in reversed order, i.e. the suffixes are firstly aligned. If the root of both

matching processes were equal, the tagged word would be kept as a likely candidate. Otherwise, the suggested segmentation will be deleted. Finally, the algorithm starts from the beginning until the enumerated lists are empty. In case of several remaining candidates at the end, the one with the longest root is presented or, as a second criterium, the number of identified affixes will be taken. The first generation of software displayed this candidate in the *Morphilizer* component for manual correction or confirmation.

(4a.) shows the correct segmentation for the word *disenablement*. In (b.) all prefixes are matched evoking the matching of suffixes in (c.). Technically the algorithm could stop here because it is already clear that there will be no roots left or they cannot be possibly equal as stated in (g.). It is revealed in (d.) through (f.), where the suffixes are matched first followed by the prefixes. The algorithm will delete the combination of affixes and repeats the above process with the next candidate from the prefix list (h.) – (j.).[1] This time, the loop ends with no roots because the form of the root happens to be a suffix as well. It also means that the algorithm in this simple form described here will never find the correct segmentation. It can only be fixed by implementing additional rules such as a preliminary checkup of monomorphemic words with the list candidates.

(4) a. *disenablement* $[dis]_{pref}[en]_{pref}[able]_{root}[ment]_{suf}$

b. $[disen]_{pref} [ab]_{pref}$ lement no more prefixes left that match

c. $[disen]_{pref} [ab]_{pref} [le]_{suf} [ment]_{suf}$ match all suffix strings

d. disenable$[ment]_{suf}$ reverse direction of matching

e. disen$[able]_{suf} [ment]_{suf}$ no more suffixes left that match

f. $[disen]_{pref}[able]_{suf} [ment]_{suf}$ match all prefixes

g. c. and f. are not equal; no roots greater one, delete this candidate

h. $[dis]_{pref}$ enablement take next allomorph

i. $[dis]_{pref} [en]_{pref}[able]_{suf} [ment]_{suf}$ no more matches possible

j. $[dis]_{pref} [en]_{pref}[able]_{suf} [ment]_{suf}$ reverse direction of matching

k. i. and j. are equal; but no roots greater one, delete this candidate

---

[1] The more practical implementation will start each repetition with the respective other affix, here the suffix, to encounter efficiency problems of different list sizes of prefixes and suffixes. For reasons of clarity and conciseness, it is neglected here.

Despite the semi-automated process, it became soon clear that the immense workload of analyzing word structures could still not be handled in due time by a single analyst. Consequently, the next generation of software (2nd version) needed further efficiency gains in the analysis of word structures at low costs. A promising solution at that time seemed to be a community-based approach, which would acknowledge the need of representative data in the field of historical word-formation and, at the same time, delegate some of the responsibility to each user benefiting from the data. Put briefly, other than a web-based wiki, in which each user profits from the collected knowledge without necessarily contributing to it, the new version was supposed to restrict access to active users, that is, a take-and-share approach. The result was a software called *Morphilog* (Peukert 2018)[2] that allowed all users to register via a web interface and upload part-of-speech tagged text corpora. All words in these collections would then be matched with the existing analyzed data and only those words that are missing in the master data base would be given for analysis to the user. Since Zipf's law (Zipf 1935) applies for all larger texts, the resulting set of words still to be analyzed happened to be considerably low. Once the user had completed the analysis of the missing types, the entire collection with all analyzed words including his or her own annotations would be returned. Thus, each user would only contribute a minimum of annotation work and benefit immensely from the return of the entire material. By and large a savings of 90 percent of the work could be noticed.

The architecture of *Morphilog* incorporated most of the algorithms of the first software generation but made them accessible via a web interface and an additional component that managed the quality control of newly made annotations. For the latter, a statistical solution was implemented that collected all annotations made by registered users, compared them, and wrote them to the master database if a definable limit of equal annotations was made. This limit turned out to be decisive. From an initial value of 20 equally annotated words by different users, the value was soon set to five. And even this number was rarely met. It depended crucially on the number of active users; otherwise, statistical quality control misses its point. At the end, the size of the community working in a fairly particular field and willing to trust an unknown software with questionable sustainability was the reason

---

[2] https://gitlab.rrz.uni-hamburg.de/mycore_projects/morphilo2019.git;
https://morphilo.readthedocs.io/en/latest/index.html.

to abandon the community-based approach and return to the very roots of the project, but not without substantially reconsidering the strategy.

The availability of a RESTful API by the Online *OED* as well as a successful application for its unrestricted access initiated the starting point for yet another software version. The new and most recent software is named *Morphóchron*.[3] The procedure here is as simple as requesting data from the *OED* for each word, parsing through the result set and returning the relevant information on time slots, affixes, and roots. The fallback of items that are not listed in the *OED* reverts to the above-described *Morphilo* algorithm.

Fig. 2 depicts the architecture of software that finally generated the results that are presented in Section 4. It also serves as a description of the general procedure. The central unit is as usual the *Init* class, which after start-up invokes a graphical user interface (*GUI*). Here, the user is asked to specify the *OED* credentials, corpus, word class, and affix type. For the study at hand the *Penn-Parsed Corpora of Middle English* (PPCME2), *Early Modern English* (PPCEME), and *Modern English* (PPCMBE) as well as prefixes and suffixes and all nouns, verbs, and adjectives were selected. The *AffixStripper* class is taken from the 1st software version. All preprocessing of word classes is done with the factory design pattern (*WordClassFactory*) with a respective interface. Text normalizations are carried out in the *Corpus* class.

---

[3] https://gitlab.rrz.uni-hamburg.de/softwaretools/morphochron.git. The software is for public use. However, credentials for using the OED API must be separately applied for. Without the access token, *Morphóchron* will not work.
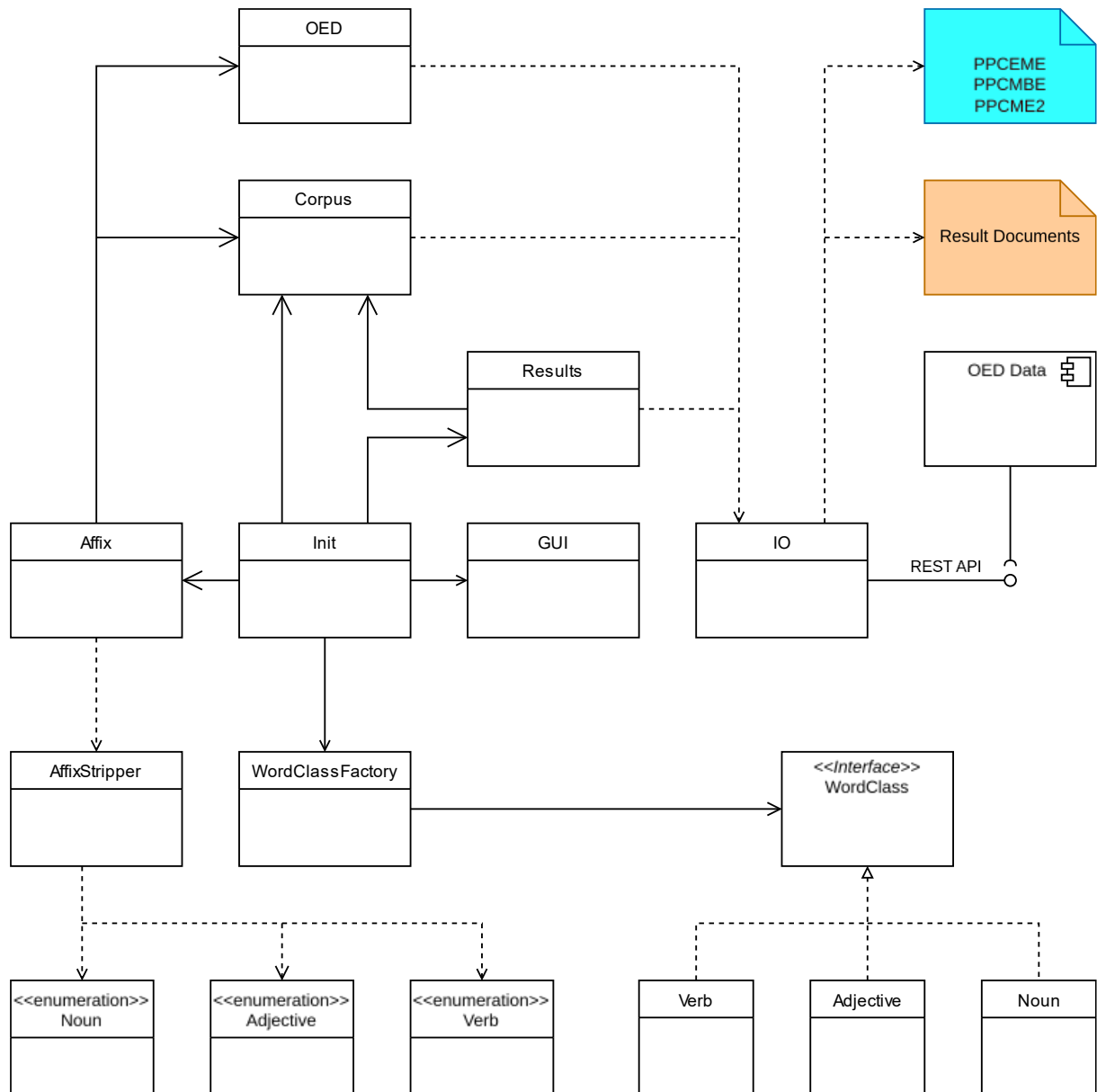
Fig. 2: Architecture of *Morphóchron*

4. Results

Morphóchron produces lists of hapaxes and words containing the respective affix.[4] For the overall analysis, the number of prefixes and suffixes of these vectors are aggregated. While affixes that only occurred once are included in the total number, they are not incorporated in the productive set although the above given definition of productivity does not prescribe that. Yet it would lead to the highest productivity value ($P = 1$) and it would distort the

---

[4] https://gitlab.rrz.uni-hamburg.de/softwaretools/morphochron//blob/master/Morphochron/results/resultsMorphochron.csv?ref_type=heads.

data massively. For example, the nominal suffix *-et* occurs only in the word *chapelet* once in the entire corpus (PPCME2/m3 1350–1420), which means that $n^{aff} = N^{aff} = P = 1$. In the same corpus, there are 463 nouns ending in *-ness* (159 types) from which 91 are hapax legomena. The productivity value is still below 0.2 and this would indicate a lower productivity than for *-et*. In the next period (PPCME2/m4 1420–1500), *taberette* entered the corpus as another hapax; *chapelet* accounts for two tokens, which results in a fairly high productivity measure of one third. This value comes close to the productivity of the *-ness* suffix, which occurs 122 times with 37 hapaxes. In this period *-et* is part of the productive set. While these distortions are not a problem in the present analysis, in which overall aggregations are presented and pairs of affixes are contrasted whose quantitative properties are similar, productivity classes and other measures would need to be introduced if all 379 cases were included.

Tab. 1: Absolute numbers of productive and total prefixes and suffixes

	1150–1250	1250–1350	1350–1420	1420–1500	1500–1569	1570–1639	1640–1710	1700–1769	1770–1839	1840–1914
prod. prefixes	22	15	18	10	5	10	15	22	31	37
prod. suffixes	30	27	42	38	25	37	40	54	77	78
total prefixes	37	37	41	35	31	42	47	62	85	106
total suffixes	43	46	64	56	52	70	87	102	124	156

If the data in Tab. 1 are sketched along the timeline (Fig. 3), one can make three important observations. First, prefixes and suffixes are on a steady rise from the 15th century on after they have gone through ups and downs in the Middle English period. As shown elsewhere (Peukert 2016) and with the possible exception of time span 1350–1420 (PPCME2/m3), the general increase cannot be explained with differing corpus sizes. Since the relation between suffixes and prefixes stemming from the same text does not dependent on the number of words, token normalization is excluded here. This leads to the second observation; the total numbers of prefixes and suffixes seem to grow by the same ratio. The development of productive suffixes and prefixes roughly follows this trend but reveals more deviation.
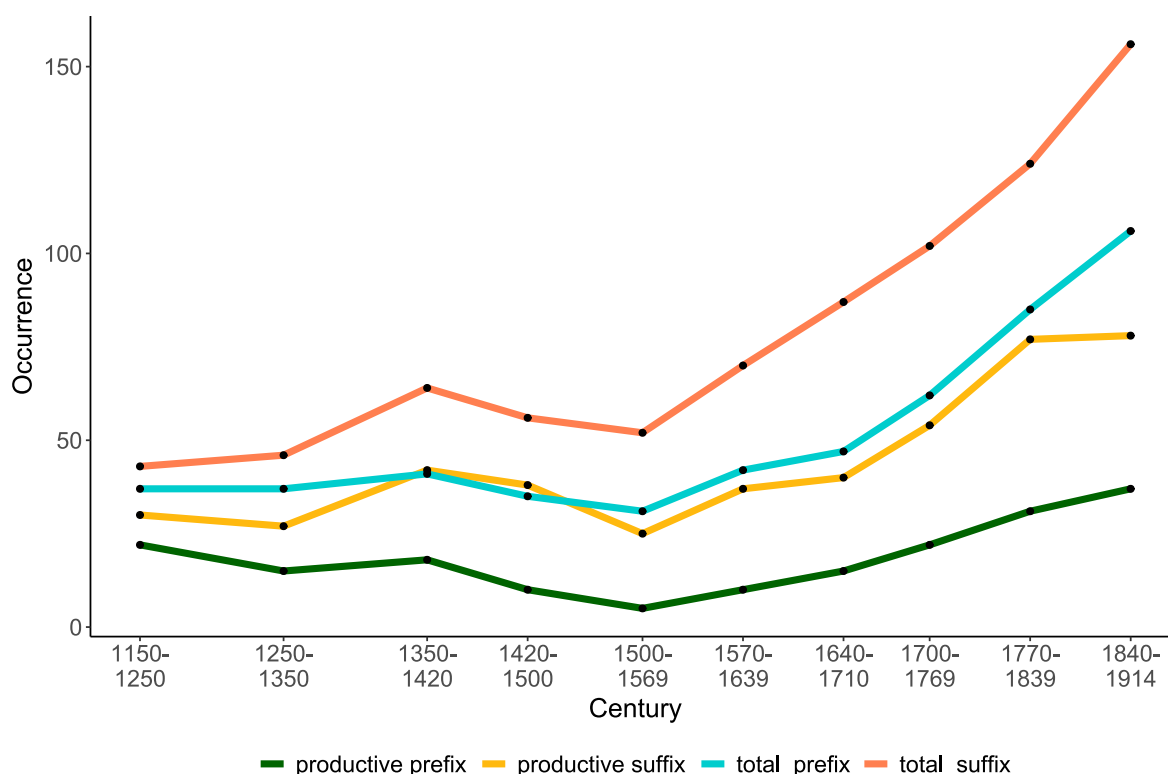
Fig. 3: Development of productive and total affixes

To understand more about the system of affixation, it is possible to relate these absolute numbers to each other. This makes the picture of what the increase means much clearer. In fact, the relation between productive suffixes and prefixes sheds light on the preferred affixation type and its gradients over time. The graphic visualization of calculating the relation between productive prefixes over productive suffixes (rel_prod), total prefixes over total suffixes (rel_tot), productive prefixes over total prefixes (rel_prod_pref), and productive suffixes over total suffixes (rel_prod_suff) is given in Fig 4.

The relation (rel_prod) shows a clear downward movement in the Middle English period. It entails that the actual use of suffixes relative to prefixes is substantially higher. After the 15th century, this tendency is reversed. There must be more productive prefixes used and created relative to the suffixes. This discovery is supported by the shares of productive affixes of all affixes (rel_prod_pref und rel_prod_suff). For prefixes, its productive share is decreasing first and then rising; the opposite is true for the productive suffix share. In this case, one could even draw a straight line at 0.5 and mirror its respective counterpart as a convex or concave function respectively. In addition, if productivity remains unconsidered and the relation of total prefixes and total suffixes (rel_tot) is

estimated, a much-flattened line with two slightly rising ends is depicted. It clearly suggests that hapax affixes did not skew the data to any larger extent. To sum up, in the last 500 years the number of (productive) suffixes grew slower than the number of (productive) prefixes.
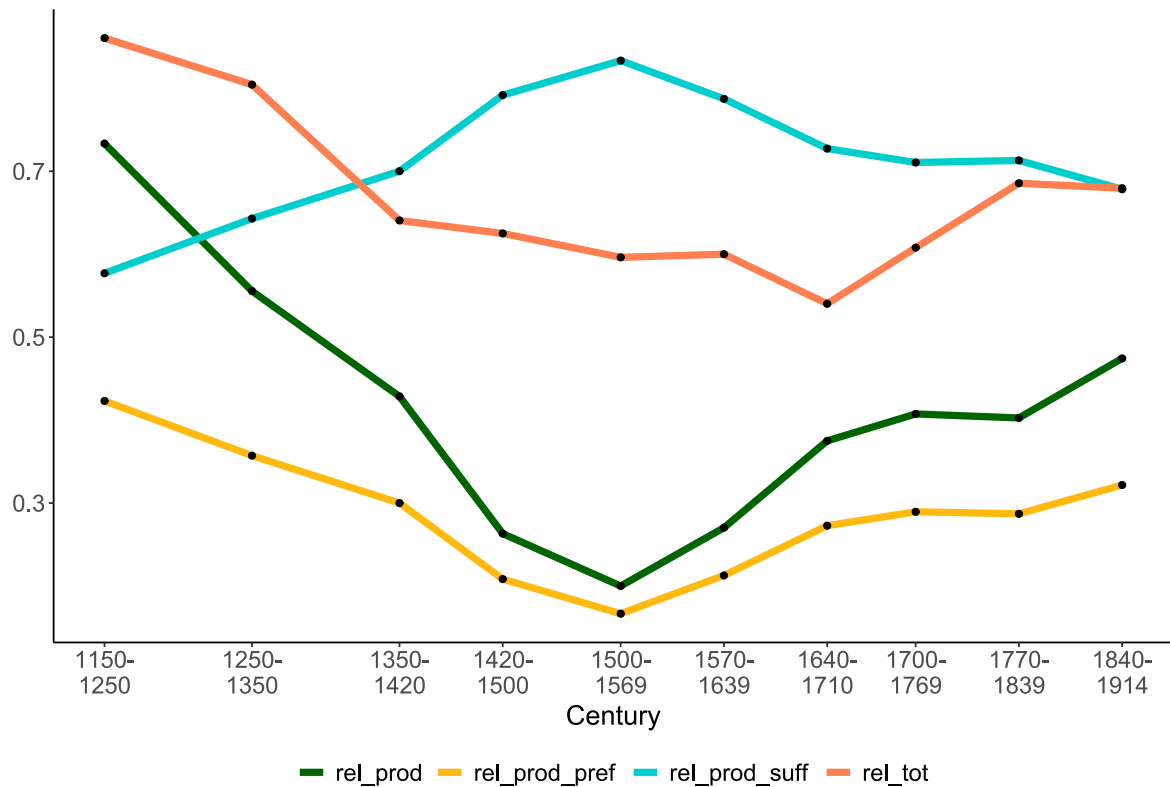
Fig. 4: Relation of productive and total affixes

The overall view generalizes from hundreds of single cases and aggregates these into a condensed picture. There is a lot of information lost on the way. Indeed, it is possible to look separately at smaller aggregates of word classes, that is, verbs, nouns, or adjectives. Moreover, it would as well be enlightening to see the effect on productivity of the affix position, syllabicity, or origin. Also, the strength of a comprehensive approach to affixation is that individual cases can be put into relation with each other.

As an illustration, the latter will be presented here. To do this, a plausible criterium should be provided. The most obvious is semantic similarity following the logic that semantically similar affixes fulfill the same function in word-formation. Substitution effects or other forms of usage behavior should then be observable. On the one hand, the prefixes *dis-* and *un-* are semantically close and at least in today's meaning distinguished

enough from other alternatives, such as *a-*, *de-*, *in-*, *non-* (Hammawand 2009: 64–72, 136). So are, on the other hand, the suffixes, *-ment* and *-ness* although to differing degrees (Schmid 2016: 169–172). It is important to note that the dependent variable is the productivity as introduced in Section 3.1. As equation (3a.) defines, the productivity score will be zero if the corpus exhibits no hapaxes, in which the affix occurs independently from the token frequency of all other words that contain the affix.

Fig. 5: Productivity scores of *dis-* and *un-* over time

The data depicted in Fig. 5 provides a first indication of a substitution effect of two negative prefixes. For about 300 years, a time of transition, in which major changes took place on various levels of Middle English on its way to Early Modern English, the usage of the Germanic prefix became unproductive. At the same time, the negative *dis-* prefix whose etymology points to Latin, gained ground on productivity by almost the same ratio. In fact, from the early 17th century on, i.e. in Modern English, the productivity of the Germanic prefix rose rather drastically to equal levels where it once started to decrease 500 years ago. At about the same time, the Latin prefix lost productivity, but was still used in new word creation processes at lower rates. It is apparent that the gradients of the two functions at the beginning (1350–1420) and the ending (1640–1770) are in inverse proportion.

Keeping the history of the British Isles and the Norman Conquest in the back of our minds (Dalton-Puffer 1996), the above data also reveals a temporally delayed shift of about 300 years until lexical affix usage is observable in text documents. According to the particular case of negative prefixes, the effect of French on the English language started suddenly but fades out long after the French influence stopped. This trend is also suggested by the suffixes although there are striking differences visible in the progression of the gradients.

Parallel to the *dis-* prefix, the *-ment* suffix enters English written material not before the beginning of the 15th century (Fig. 6). The high number of hapaxes during the next 100 years suggests highly productive usage following by an abrupt downsizing in the 16th century already and followed by an equally fading-out at lower rates as its prefix counterpart. Contrary to the *un-* prefix, the Germanic suffix *-ness* also increases productive use up to the 14th century, but completely stops being used in the 15th century before it continues at high rates of productive use for one century. With an equally steep negative slope as *-ment* one century before, *-ness* decreases and stays at lower levels of productivity.
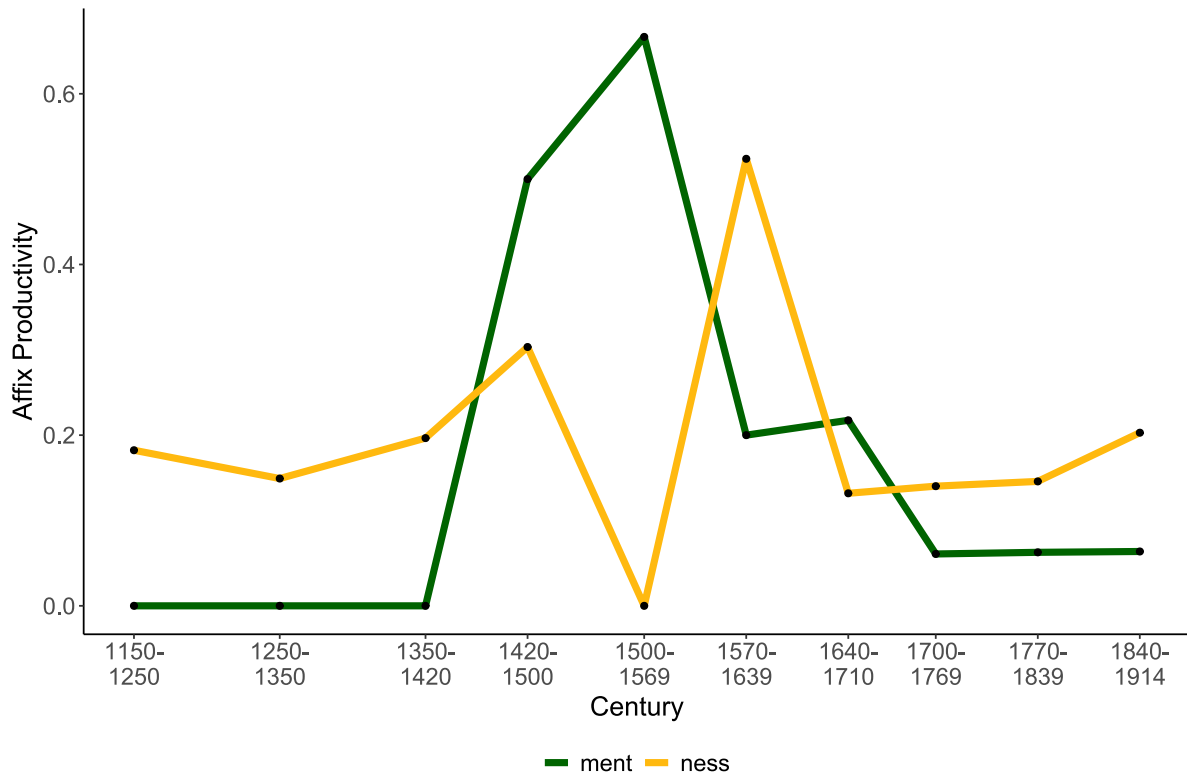
Fig. 6: Productivity scores of *-ment* and *-ness* over time

Except for the time span 1350–1420, the two suffixes show alternating productivity scores. When compared to the prefixes, it is also obvious that the declining trend of the Latin root suffix happens two centuries earlier.

5. Discussion

The above examples are a rather arbitrary selection inspired by discussions on most productive affixes encountered in the established literature. So, the purpose here was to extend this particular strain of research. Nevertheless, the *Morphóchron* data that is now available would also allow for a more systematic analysis. It would be feasible to show that no other affix is able to fulfill a likewise substitution by explicating their slopes. Further, there possibly are combined effects of several affixes substituting another affix. While these kinds of explication are left for future work, a short discussion on the presented results as well as the limitations of the approach at hand will be addressed here.

Morphóchron data does not include information on polysemy, which, arguably, could play a similar role as in lexemes (Lehrer 2003). Polysemy in derivational affixes suggests that the meaning of one affix depends on the root or base it is attached to. It also implies that this meaning can change over time for each case differently.

Considering the prefixed nouns of the last cohort 1840–1914 (PPCMBE) given as the type vectors of the algorithm for *dis-* (5a.) and for *un-* (5b.), the abstract meaning of negativity seems to hold for all items. Unfortunately, the corpora do not contain direct evidence for any cross-transfer effects of affixes with equal roots. In (6a.) *unobedience* and *unbelief* are attested. In today's dictionary *disobedience* and *disbelief* are listed (*OED* s.vv.). Hence, at some point in history a transfer occurred, which presumes semantic proximity over some constant period of time. The semantics of these cases may have been moderated by short time intervals (in the 16th and 17th centuries) of the *mis-* prefix whose semantics ('ill', 'wrong', 'improper') is often overlapping with a 'negative' prefix that switches meaning to its semantic counterpart and exists in parallel throughout the centuries with high to moderate productivity scores.

(5) a. disability, disfavour, disestablishment, dislike, distrust, discharge, disendowment, dissatisfaction, disadvantage, disorder, disappearance, discomfort, disintegration, discredit

    b. unrighteousness, uneasiness, unconsciousness, unconventionality, unworthiness, unmaidenliness, unpopularity, unknowableness, unfitness, unacquaintance, unfaith, uncleanness, uncleanliness

In the 14th and 15th centuries the respective type vectors read as follows (PPCME2/m3 for *un-* and m4 for *dis-*). While *un-* reverses the meaning to its semantic opposite in all documented cases (6b.) and thus complies with its definition, it is different for *dis-* in one attested case. For *disadventure* in the reading of *misfortune* (*OED* s.v. *adventure, n.*), the definition holds. Yet, there is no reading in which the meaning of *were*, i.e. 'danger', 'peril' (*OED* s.v. *were, n.*[3]) would be directly ascribed to 'doubt' or 'hesitation' (*OED* s.v. *diswere, n.*) and there are no indicators that the affix merged with its root. Hence, *dis-* could be considered polysemous, but the problem remains which meaning *dis-* in the given sense may have instead. Whatever the correct answer to this question is, it would not make a difference for the rising productivity of *dis-* as an overall effect and with the more abstract meaning of negativity, that is, even if removing the *dis-* prefix in *diswere* as an exception or attributing it to another not yet specified meaning category would not distort the data in Fig. 5.

(6) a. disadventure, diswer

    b. vnait, vnbyleue, unreste, vnknowing, vnobedience, vnreuerence

At first glance, the picture looks different for the selected suffixes *-ment* and *-ness*. It is worth mentioning that the definition of the former is narrower than the definition of the latter. Both suffixes, *-ment* and *-ness*, form abstract nouns from verbs and adjectives. However, *-ness* can also be added to participles, adjectival phrases, other nouns, pronouns, and adverbs with the consequence that in a quantitative analysis the role of robustness comes into play. The estimates for hapaxes and tokens are much higher for the established Germanic *-ness*. For example, in the 15th century (PPCME2/m4), *-ness* accounts for 37 hapaxes and 122 tokens, whereas *-ment* accounts for only four hapaxes and eight tokens. Whereas for *-ment* these numbers stay about the same in the next period, there is a

dramatic drop of *-ness* to zero hapaxes. In the 16th century then, *-ness* re-establishes to 11 hapaxes and only 21 tokens while the tokens of *-ment* rise to 30 occurrences and six hapaxes.

Left aside that the chosen productivity index does not capture robustness, the critical observations are twofold: the specific shape of the productivity's progression and the absence of usage. Suffice it here to describe these observations. The process of becoming productive is characterized by low absolute numbers of types, tokens, and hapaxes somewhere in the realm of single digits. This implies that the ratio between them and in particular hapaxes and word tokens is comparatively high. Then, after two or three centuries, the tokens rise partly exponentially, the types moderately, and the hapaxes little or not at all. Therefore, the productivity gradients increase in the initial time periods more and subsequentially flatten out. And this also applies to the investigated prefixes.

The non-usage of *-ness* in the 16th century and its revival right in the next period need more fine-grained analysis. In the case of the prefixes this period of lack of usage lasted for 400 years. Usage behavior of *-ness* seems to be more volatile than of *un-*. Apart from the 14th century, *-ment* and *-ness* exclude each other more abruptly, that is, each decrease of *-ment* is paralleled by an increase of *-ness* and vice versa. Although the observation can be explained with a substitution effect as well, it could also be a kind of phase shift in the usage of *-ness*, for which the usage of one suffix stimulates rather than substitutes the usage of the respective other. The plausibility of this argument depends critically on the explanation of the sudden lack of *-ness* usage in the 15th century. This, however, if at all, needs to be done in a follow-up study. The alternative proposals range from errors in corpus compilation over craze to historical events.

6. Summary

As laid down in Section 3, it needed several unsuccessful attempts to arrive at a method that would extract reliable data on affixes over the last 700 years from text corpora. While approaches of Artificial Intelligence and Machine Learning failed for missing sufficient training material, first semi-automated programs still needed too much manpower. Consequently, a community-based approach failed for high organizational costs and

limited ability to communicate to other researchers in the field willing to share their work and trust into an unknown resource. Finally, granted access to the OED RESTful API made the crucial difference for automating the entire extraction process and hence producing the data that would allow for answering more detailed questions in the future on how the mechanisms of derivation in English work.

Looking at productive affixes shows a general tendency. Up to the 15th century productive suffixes rose and productive prefixes declined. This process is reversed thereafter and between 1700–1914 prefixes increase faster than suffixes. Considering individual cases of frequently studied affixes, a clear substitution effect of *dis-* and *un-* is backed up with quantitative data. To some degree, the usage pattern of the prefixes is reflected in the suffixes *-ness* and *-ment*. Yet, the transition for the selected prefixes is smoother, for the suffixes more volatile.

References

Antoniou, Mark, Eric Liang, Marc Ettlinger & Patrick C. M. Wong. 2015. The Bilingual Advantage in Phonetic Learning. *Bilingualism: Language and Cognition* 18(4). 683–695. DOI: 10.1017/S1366728914000777.

Arndt-Lappe, Sabine. 2014. Analogy in Suffix Rivalry: The Case of English *-ity* and *-ness*. *English Language and Linguistics* 18(3). 497–548.

Baayen, Harald R. 2009. Corpus Linguistics in Morphology: Morphological Productivity. In Anke Lüdeling & Merja Kytö (eds.), *Corpus Linguistics: An International Handbook*, Volume 2, 899–919. Berlin: De Gruyter Mouton. DOI: 10.1515/9783110213881.2.

Bauer, Laurie. 2001. *Morphological Productivity*. Cambridge: Cambridge University Press.

Bauer, Laurie. 2019. *Rethinking Morphology*. Edinburgh: Edinburgh University Press.

Biber, Douglas. 1993. Representativeness in Corpus Design. *Literary and Linguistic Computing* 8(4). 243–257. DOI: 10.1093/llc/8.4.243.

Blevins, Juliette. 2004. *Evolutionary Phonology: The Emergence of Sound Patterns*. Cambridge: Cambridge University Press.

Booij, Gert. 2010. *Construction Morphology*. Oxford: Oxford University Press.

Ciszek, Ewa. 2008. *Word Derivation in Early Middle English*. Frankfurt: Lang.

Crystal, David. 2018. *The Cambridge Encyclopedia of the English Language*. Cambridge: Cambridge University Press.

Dalton-Puffer, Christiane. 1996. *The French Influence on Middle English Morphology: A Corpus-Based Study of Derivation*. New York: De Gruyter Mouton.

Dietz, Klaus. 2015. Historical Word-Formation in English. In Peter O. Müller, Ingeborg Ohnheiser, Susan Olsen & Franz Rainer (eds.), *Word-Formation: An International Handbook of the*

Languages of Europe, Volume 3, 1914–1930. Berlin, Munich & Boston: De Gruyter Mouton. DOI: 10.1515/9783110375732-021.

Ellis, Nick C. 2022. Second Language Learning of Morphology. *Journal of the European Second Language Association* 6(1). 34–59.

Faiß, Klaus. 1992. *English Historical Morphology and Word Formation: Loss versus Enrichment*. Trier: Wissenschaftlicher Verlag Trier.

Hamawand, Zeki. 2009. *The Semantics of English Negative Prefixes*. London: Equinox.

Haselow, Alexander. 2011. *Typological Changes in the Lexicon: Analytic Tendencies in English Noun Formation* (Topics in English Linguistics 72). Berlin & New York: De Gruyter Mouton.

Haspelmath, Martin. 2008. Frequency vs. Iconicity in Explaining Grammatical Asymmetries. *Cognitive Linguistics* 19(1). 1–33. DOI: 10.1515/COG.2008.001.

Haspelmath, Martin & Aandres Karjus. 2017. Explaining Asymmetries in Number Marking: Singulatives, Pluratives, and Usage Frequency. *Linguistics* 55(6). 1213–1235. DOI: 10.1515/ling-2017-0026.

Hays, David G. 1964. Dependency Theory: A Formalism and Some Observations. *Language* 40(4). 511–525. DOI: 10.2307/411934.

Hiltunen, Risto. 1983. *The Decline of the Prefixes and the Beginnings of the English Phrasal Verb: The Evidence from Some Old and Early Middle English Texts*. Turku: Turun Yliopisto.

Kastovsky, Dieter. 2006. Typological Changes in Derivational Morphology. In Ans van Kemenade & Bettelou Los (eds.), *The Handbook of the History of English*, 151–176. Newark: Wiley-Blackwell.

Lehrer, Adrienne. 2003. Polysemy in Derivational Affixes. In Brigitte I. Nerlich, Zazie Todd, Vimala Herman & David D. Clarke (eds.), *Polysemy: Flexible Patterns of Meaning in Mind and Language*, 217–232. Berlin & New York: De Gruyter Mouton. DOI: 10.1515/9783110895698.217.

Lutz, Angelika. 1997. Sound Change, Word Formation and the Lexicon: The History of the English Prefix Verbs. *English Studies* 78(3). 258–290.

OED = Oxford English Dictionary. https://www.oed.com (accessed December 2023).

Peukert, Hagen. 2014. The Morphilo Toolset: Handling the Diversity of English Historical Texts. In Anne Ammermann, Alexander Brock, Jana Pflaeging & Peter Schildhauer (eds.), *Facets of Linguistics* (*Language and Text Studies*), 161–172. Frankfurt: Lang.

Peukert, Hagen. 2016. Smoothing Derivational Asymmetries in English: In Support of Greenberg's Universal 27. *STUF – Language Typology and Universals* 69(4). 517–545.

Peukert, Hagen. 2018. Merging Community Knowledge and Self-Interest to Build Language Resources: Architecture and Quality Management of a Take-and-Share-Approach of Word Annotations. In Manuel Burghardt & Claudia Müller-Birn (eds.), *INF-DH-2018*. Bonn: Gesellschaft für Informatik. DOI: 10.18420/infdh2018-01.

Pollard, Carl & Ivan A. Sag. 1994. *Head-Driven Phrase Structure Grammar*. Chicago: University of Chicago Press.

Plag, Ingo. 2006. Productivity. In Bas Aarts & April McMahon (eds.), *Handbook of English Linguistics*, 537–556. Oxford: Blackwell.

Riddle, Elizabeth M. 1985. A Historical Perspective on the Productivity of the Suffixes *-ness* and *-ity*. In Jacek Fisiak (ed.), *Historical Semantics – Historical Word-Formation*, 435–462. New York: De Gruyter Mouton.

Schmid, Hans-Jörg. 2016. *English Morphology and Word-Formation: An Introduction*. Berlin: Schmidt.

Selkirk, Elizabeth O. 1982. *The Syntax of Words* (Linguistic Inquiry Monographs 7). Cambridge, MA: MIT Press.

Stein, Gabriele. 1970. Zur Typologie der Suffixentstehung (Französisch, Englisch, Deutsch). *Indogermanische Forschungen* 75. 131–165.

Štekauer, Pavol. *English Word Formation: A History of Research (1960–1995)*. Tübingen: Narr.

Trips, Carola. 2009. *Lexical Semantics and Diachronic Morphology: The Development of* -hood, -dom *and* -ship *in the History of English* (Linguistische Arbeiten 527). Berlin & New York: Niemeyer.

Vera, Javiar E. Díaz (ed.). 2002. *A Changing World of Words: Studies in English Lexicography, Lexicology and Semantics*. Amsterdam & New York: Rodopi.

Zipf, George K. 1935. *The Psycho-Biology of Language: An Introduction to Dynamic Philology*. Boston: Mifflin.

Hagen Peukert
Universität Hamburg
Zentrum für nachhaltiges Forschungsdatenmanagement
Monetastraße 4
20146 Hamburg, Deutschland
hagen.peukert@uni-hamburg.de

Daniela Fruscione & Letizia Vezzosi

Digging into Old English Legal Compounds[*]

Abstract: Word-formation in Old English has been extensively studied from both theoretical and textual perspectives, with special attention given to compounding as a way to convey in Old English new concepts and notions contained in Latin texts. Although often cited, compounds in the Anglo-Saxon laws have thus far been neglected. The present paper aims to partially fill this gap by focusing on the early legal codes, from Æthelberht to Ine, and offering a classification of legal compounds according to their formal features. Although they are formally consistent with Old English compounding, their meanings are not always equally clear. This difficulty arises partly because these words are often rare or even *hapax legomena*, and partly because their individual components reflect different stages of the language. Our analysis indicates that both their rarity and their semantic value are the result of a long process in the development of Old English legal terminology. Therefore, to understand them, one must delve into each individual law.

Keywords: compounding, laws, word-formation, Old English, semantics

1. Introduction

A catalogue of compounds in the Old English laws from the earliest codification of King Æthelberht of Kent at the very beginning of the 7th century to the decrees of Cnut in the first half of the 11th century offers a unique opportunity to observe the meaning and development of this feature of Old English legal prose. The surviving body of Old English laws shows six centuries of unbroken legislation and has no parallel in any other (legal) corpus written in a Germanic language in the Early Middle Ages.[1] Anglo-Saxon legislation allows a philological, semasiological, and onomasiological analysis of the vernacular vocabulary and knowledge gained, representing a counterpart to the continental legislation written in Latin. Indeed, vernacular compounds in the continental *Leges*

---

[*] We would like to thank the two anonymous referees for their careful review of our manuscript and for their insightful suggestions. All errors remain ours.

[1] Besides the standard edition of the whole Old English legal corpus by Liebermann (1903–1916), Oliver (2002) edited the Kentish Laws. A new edition of Alfred's and Ine's laws was made by Oliver & Jurasinski (2021). Here we follow the numbering of these more recent editions.

Barbarorum are inserted in the Latin text (Kremer & Stricker 2018). There are no specific investigations into compound words in Anglo-Saxon laws (but see, for instance, the several examples in Carr 1939: 117, and Munske 1973). Moreover, compounds are mentioned as an essential feature of early medieval (and Anglo-Saxon) laws in several works. Stefan Sonderegger writes in *Die Sprache des Rechts im Germanischen* (1962/1963) that in the legal language compounds have the function of explaining or delimiting a concept. We owe Klaus von See (*Altnordische Rechtswörter* 1964) a more structured explanation of the frequency and relevance of composition in the legal language of the ancient Germanic vernaculars. In these vernacular legal codes, a lack of abstraction constitutes a fundamental difference from the language of Roman law, which uses semantically unambiguous terms to describe specific legal concepts. Due to the scarcity of legal concepts the transition from generic terminology to technical terms of the law could be easily achieved through composition. Compound words do not simply clarify, delimit, or explain a concept or give compact information referring to legal facts, they create legal concepts.

This phenomenon is particularly evident in Old English. The vernacular legal corpus in Anglo-Saxon England is unparalleled among Germanic cultures. Therefore, any investigation of Old English legal language must extensively consider the analysis of the vast amount of compound words. Our paper will provide a first systematic overview of compounds in early Anglo-Saxon laws, demonstrating that generic terms such as *finger*, *gild*, *wer* become legal concepts by being determined by a determinant, and this pattern holds consistently with very few exceptions – such as *mund* 'protection', an old Germanic legal concept, common to several Germanic languages (Fruscione 2005: 18–20).

After a brief introduction (Sections 1.1–1.2), which specifies what we mean by compounds, which terminology we used, and what method we applied to build our corpus, we will present a typology of the main compounding patterns attested in Anglo-Saxon laws (Section 2), with a special focus on those laws that represent the "foundations of the Anglo-Saxon legal order" (Lambert 2017: 27–111): the Kentish laws (7th century) and the first two West-Saxon codes, i.e. Ine's (7th century) and Alfred's (9th century). These laws were developed during a period of political consolidation and before the foreign invasion by Scandinavians could have an impact on the language of Alfred's legislation. They deal for the first time with several aspects of Anglo-Saxon society; besides frequently used

compounds (*wergild* 'value of a person'), there is in them a large number of compound words occurring only occasionally (*witeđeow* 'slave as a consequence of crime') and several *hapax legomena* (*feaxfang* 'taking hold by the hair'). From this sub-corpus, a few examples are extracted and discussed both formally and thematically to show what role compounding played in the institution and development of a legal system. The compounds have been chosen according to the focus of the laws where they occur and of which they represent the thematic core (Sections 3–6).

1.1 Word-Formation Processes in Old English: Compounding

Before delving into the core issue of this paper, that is, the use of compounding in the early Anglo-Saxon laws, it is worth spending a few words on defining what we have considered as instances of compounding in our corpus of analysis in relation to Old English compounding in general, and to describe the terminology we have used. We leave aside the debate about the definition of compounding[2] or the criteria[3] utilised to identify compounds within the broader group defined as "complex words". On the semantic level, compounds are defined in terms of transparency, that is, the extent to which the lexical meaning of a complex word can be inferred from its structure and components, according to the features of relatedness and predictability.[4] This feature is particularly relevant in diachronic studies inasmuch as it can be influenced by various factors, including frequency and productivity (Bybee 1985; Hay 2001; Johnson, Elsner & Sims 2023), and lexicalisation and semantic change (Ronneberger-Sibold 2006). Operatively, we have considered a

---

[2] To give an example, Harbert (2007: 29) defines compounding as "the process of forming new words by conjoining two or more root morphemes", while Lass (1994: 194) vaguely claims that "[a] compound is a lexeme made (in general) of two or more independent lexemes". Despite the long debate about terminology referring to the single constituents of a compound (see Bauer 1983) – whether they are roots or stems or bases, whether they are lexemes or listemes etc. – it is still possible to come across definitions where the "slippery" status of the term "word" is ignored. For instance: "a compound word is a single noun or adjective consisting of two or more independently occurring words which combine to become the constituents of the compound" (Davis-Secord 2016: 33). Marchand (1967) even rejects the term "compound" and talks of expansion and derivation.

[3] Usually scholars highlight either phonological (Štekauer, Diaz-Negrillo &Valera 2011) or syntactic criteria (Bauer 1998: 77; Spencer 2003: 2011), much less frequently semantic features (Jones 1969: 258) are often object of debate.

[4] We follow the main literature according to which relatedness is the degree to which the compound's meaning retains the meaning of each constituent, and predictability the degree to which one can predict the meaning of a compound from its structure and from the meaning of its components (Gagné, Spalding & Nisbet 2016; Libben, Gagné & Dressler 2020).

compound as "the formation of a new lexeme by adjoining two or more lexemes" (Bauer 2003: 40), whose right-most element determines the category and the grammatical features of the whole in accordance with the Germanic pattern. The constituents are referred to as 'determinant' (the first one) and 'determinatum' (the second one) following the established terminology since Marchand (1967: 300).

When examining Old English compounding, the operational definition adopted needs adjusting. If distinguishing between compounds and affixations can be fairly straight-forward in most (but not all) cases in Present-Day English, it gets more complicated when one considers earlier phases of the language, as the delimitation is even less clear. According to the literature, those forms that only occur as determinants are interpreted as prefixes and accordingly their formations are usually not counted as compounds, unless they are in complementary distribution with their corresponding noun and can be modified by suffixes. To give some examples, *cyne-* 'royal' could be classified as a prefix, as it only occurs as a determinant. However, since it is also in complementary distribution with *cyning* 'king' and is the base of derivative formations such as *cynelic* 'royal', it is considered as an allomorph of *cyning* (see Kastovsky 1992: 363, but also Sauer 2019). As for those lexemes that occur only as determinata such as *-dom*, *-had*, *-lac*, *-ræden*, *-scipe* (nominal) and *-fæst*, *-ful*(*l*), *-leas* (adjectival), their combinations are analysed as compounds when, as determinata, they have the same meaning as they have when occurring as independent words (see Sauer 1985: 282–284). Thus, *bisceaphad* and *martyrhad* 'state, rank of a bishop, martyr' are compounds, while *arfæst* 'virtuous', *arleas* 'impious', *burgscipe* 'township' are not. It is, however, clear that this is not a discrete criterium, but it depends on the degree of grammaticalisation a lexical component has undergone. Therefore, in the case of Old English, the semantic component is a decisive factor in determining whether or not a word is a compound.

Another major problem, which concerns Modern English compounding and gets amplified in the historical phases of the language, is the delimitation between compounds and syntactic groups, since orthography, semantic isolation, or stress cannot obviously be fully relied on. Generally, the absence of a parallel syntactic group or its distinct formal composition advocates a compounding interpretation of the word – e.g., *cnihtcild* 'boy, lit. boy-child' – and so does the lack of internal inflectional agreement – e.g., *wilddeora* 'wild

beasts' vs. *wilde deor* 'wild beast' with an inflected weak adjective (Kastovsky 1992: 362). Although in historical linguistics and, more specifically, in Germanic historical linguistics, *echte Komposition* ('genuine compounding') is distinguished from *unechte Komposition*[5] ('non-genuine compounding'), depending on whether the first element is either a stem or an inflected form respectively, this distinction does not play a significant role as a classifying criterium, and yet it is often referred to (Carr 1939: 281–298; Kastovsky 1992: 363). Actually, independently of how "non-genuine compounds" emerged,[6] they became relatively frequent in Old English as well as in the other Germanic languages (Harbert 2007: 30–32). The first element could be either an inflected form (e.g., *sunn-an-dæg* 'Sunday') or uninflected without any class marker (e.g., Got. *gud-hus* 'temple') or with a "bridging element" (e.g., *stan-e-gella* 'pelican').[7] With ambiguous forms, the semantic specificity is once again pivotal in establishing their status, as "compounds refer to a unified semantic concept" (Plag 2003: 7). If semantic interpretation can be a reliable factor in diagnosing compound forms in Old English, it becomes more problematic in the case of legal texts, especially the earliest Anglo-Saxon laws. In these texts, the manuscript tradition is inconsistent in the graphical representation of words, and the number of words with a single occurrence, or *hapax legomena*, is exceedingly high (see below).

Not only was compounding one of the most important stylistic devices in Old English poetry, it was also its largest (or richest) source of new words in prose. Therefore, it played a pivotal role in lexical expansion. Depending on the relationships between the constituents of compounds, the traditional categorisation of compounds into five types[8] is only partially applicable to Old English compounds. They are firstly to be categorised into

---

[5] On these two types of compounding in Germanic, see Krahe & Meid (1967: 16–19).

[6] These compounds are supposed to be the outcome of a lexicalisation process involving previous syntactic phrases. According to Lass (1994), the lexicalisation process might have been triggered by the morphological changes taking place in Old English that underwent the development from a stem-based lexicon to a word-based lexicon as the result of the breakdown of the noun-class system. Although these phenomena are attributed to Late West Saxon, they are important to our analysis because even the Earlier Anglo-Saxon Laws came down to us through Late West Saxon copies.

[7] The examples are taken from Harbert (2007), who quotes Lass (1994) for Old English.

[8] The earliest classification scheme originated in Sanskrit philology when Pāṇini divided compounds into five groups: *Dvandva* (copulative compounds), *Tatpuruša* (determinative compounds, where the determinant modifies the determinatum through a case relation), *Karmadhâraya* (attributive compounds), *Dvigu* (compounds where the determinant determines the determinatum numerically), and *Bahuvrihi* (possessive compounds). It is still used in Indo-European and ancient languages studies. Whenever such compounds are added a derivational suffix, they are called *erweiterte Bahuvrīhi* (Krahe & Meid 1967: 33), a definition that highlights the fact that they are derivational forms based on *Bahuvrīhi*.

exocentric or *Bahuvrihi* and endocentric compounds, depending on whether or not the compound as a whole belongs to the same word-class and lexical class as the head – e.g., *bedstreaw* 'straw for bedding' is a subcategory of *streaw*, while *yfelwille* 'malevolent' is not a noun unlike its determinant *wille*, but an adjective; or *anhorn* 'unicorn' is not a type of *horn*, but an animal with one horn. The two groups were not equivalent, as exocentric compounds were already limited in productivity compared with endocentric ones and were often reformed by either changing the inflexional class or by adding a derivational suffix – e.g., *eaþmod* vs. *eaþmodig* 'humble'. Endocentric compounds can be further subdivided into *Dvandva* (with the subdivision into the extremely rare additive type, e.g., *aþumswerian* 'son-in-law and father-in-law', and the copulative type, e.g. *eoforswin* 'pig which is a boar') and determinatives, where the determinatum determines the core meaning, and the determinant specifies or qualifies that meaning – e.g., *modorþegn* 'mother's servant', *beorhus* 'beer house' (Carr 1939; Kastovsky 1992). The two constituents could belong to different word-classes: mainly nouns, adjectives, verbs, and particles. Accordingly, compounds can be described on the basis of the word-class affiliation of the determinatum and the determinant. The following labels are taken from Kastovsky (2006) and "are not intended to represent a particular theoretical framework, but are used in their traditional signification to provide a framework" (Kastovsky 1992: 365).

Among nominal compounds, the type N(stem) + Noun represents the most frequent and productive pattern and expresses three basic relationships between the two constituents: additive, copulative, and rectional (Marchand 1969: 40). Next to this, there is the type N + linking element + N, where a segment occurs between the two constituents which functions as a linking element and not as inflectional markers – e.g., *uhtantid* 'time of dawn, twilight', *dægeseage* 'daisy', *gebyretid* 'time of birth' –, although historically they might have had this function. Semantically, this second type is more restricted (see Kastovsky 2006: 232). Another fairly productive pattern is Adj + N, where the relationship between the two constituents is that of attribution (e.g., *cwicseolfor* 'living silver' = 'mercury'). This pattern includes a subtype (second participle + N), which is relatively weak and mainly represented by *Bahuvrihi* – e.g., *wundenfeax* 'with twisted mane' vs. the regular endocentric compound *nægled-cnearr* 'nailed-fastened vessel'. Relatively productive is also the type Adv + N (e.g., *midgesiþ* 'fellow traveller', *forebreost* 'chest') which also

includes ambiguous instances such as *oferleorness*, interpretable both as *ofer-leorness* and as a derivative from a verbal compound *oferleornan*. Adjectival compounds consist of the following types: N + Adj, where the noun can be regarded as a complement of the adjective (e.g., *ellenrof* 'famed for strength'), as well as an intensifier (e.g., *blodred* 'blood-red') or where the adjective is an attribute of the noun (e.g., *modseoc* 'sick with regard to the heart'); Adj + Adj, expressing additive (e.g., *nearufah* 'difficult and hostile'), subordinative (e.g., *branbasu* 'brownish-purple'), intensifying/downgrading relations (e.g., *felageomor* 'very sad') or indicating either the goal of the determinatum (e.g., *clængeorne* 'clean-prone') or the manner of deverbal adjectives (e.g., *felaspecol* 'much-speaking' = 'talkative")); and finally Adv + Participle (e.g., *forecweden* 'aforesaid'). Verbal compounds were restricted to combinations with adverbs or prepositions as determinants (see Kastovsky 1992 and 2006 for a detailed description).

Compounds in Old English exhibit varying degrees of semantic transparency. In addition to transparent compounds like *hand-boc* 'handbook', there are compounds like *gang-dagas* 'period of time', which require more interpretative effort in order to be deciphered. This spectrum of transparency options highlights the flexibility of compounding as a word-formation strategy in Old English, capable of both straightforward and nuanced expression. But it is also the outcome of its historical development, because, as Kastovsky (1992) emphasises, compounding is not merely a lexical phenomenon but also a cognitive and cultural one. The ability to combine familiar elements to create new meanings reflects the speakers' conceptual frameworks and their responses to socio-cultural and environmental *stimuli*. Consequently, the meaning of the compounds and the relationship between its constituents mirror the socio-cultural milieux in which they were created. This is particularly evident with the Old English compounds in Earlier Anglo-Saxon Laws, especially with *hapax legomena* or infrequent compounds.

1.2 The Criteria to Create Our Corpus

As the first step in our investigation, it was necessary to create a corpus of the compounds occurring in Anglo-Saxon laws. Given the massive size of the corpus of the Anglo-Saxon laws, we focussed on the Early legal codes, the three Kentish laws of Æthelberht (*c*. 602), Hlothhere and Eadric (*c*. 673–*c*. 685) and Wihtred (695), and the West-Saxon laws of Ine

(688–694) and Alfred (*c.* 890) (see the Introduction). We referred to Oliver (2002)'s and Oliver & Jurasinski (2021)'s editions, on the basis of which we selected all those forms used as compounds. We wanted to check the relevance of compounding within the word-formation strategies at play in the creation of new legal lexemes. Therefore, we classified all complex words (457 tokens) according to the legal codes where they occurred and to the nature of their constituents, whether they were affixes, affixoids, or free lexemes. It turned out that the main strategies of word-formation in the early Old English laws were (in this order) compounding (257 tokens) and affixation (200, of which only 26 were suffixes) in agreement with what can be observed in Old English word-formation strategies. More interestingly, affixation mostly concerned verbs (154 tokens, that is the total of complex verbal forms) and adjectives (24 tokens out of 35 complex adjectives, but 13 instances were adjectives derived from a compound, e.g., *ælþeodige* 'foreign'). However, it was very marginal with nouns, being represented by only 11 tokens. Among non-compounded complex words, we included the so-called *erweiterte Bahuvrīhi* (Krahe & Meid 1967: 33), that is, words derived from *Bahuvrīhi* through the addition of suffixes, as their function is expressed by the affix and, consequently, they behave like any other word belonging to the category expressed by the affix.

Hence, we can justifiably argue that in the early laws, compounding represented the most productive and frequent process of nominal expansion, whereas derivation was mainly used to create verbal and adjectival formations. Our analysis only focussed on the 267 forms that comply with our criteria for compounds.

2. Types of Compounds Found in the Corpus

Compounds in early laws are mostly nominal (246 tokens), as we have found no instances of verbal compounds and only 11 adjectives. Among the latter, only four are endocentric and belong to the subtype in which the determinant is a noun, in the form of a root (e.g., *ar-weorþ* 'honourable') or an inflected form (e.g., *æwum-boren* 'lawfully born'), functioning as a complement of the determinatum that is either an adjective or a past participle. The other compounds with an adjectival function are exocentric (e.g., *locbore* 'one wearing long hair, a free woman', *twifingre* 'two fingers thick' or *sixhynde* 'of a class whose wergild is six

hundred shillings'), that is, their morphological head is not an adjective, but a noun. Their left-hand constituent is often a numeral (e.g., *twi-fingre*, *twi-hynde*), but it can also be an adjective, as is the case of *unrihthæmde*, consisting of the adjective *unriht* 'illicit' and the noun *hæmde* 'intercourse'. However, the compound denotes the quality of those who have/had an illicit intercourse, that is 'adulterous'.

Nominal compounding is substantial in terms of number of tokens, but shows a low degree of recursivity (Sauer 2019) since the great majority of compounds indeed occur only once (111 types). The number of tokens which occur twice decreases substantially (19 compounds) while compounds occurring three times (5), four times (1), and five times (5) are quite rare. The only compounds with relatively high frequency are, as we would expect, *mundbyrd* 'protection' (7 times) and *wergild* 'the price set upon a man according to his degree' (11 times).

In our corpus, nominal compounding includes three subtypes (Adj + Noun, Num + Noun, and Noun + Noun), but, unlike Old English noun-formation strategies, the pattern Adj + Noun and its subtype Num + Noun are all marginal constructions from a quantitative point of view, whereas the pattern Noun + Noun is clearly the most frequent. As for the determinant in these types, it is an adjective in 10 compounds (e.g., *fæderen-mægþ* 'paternal kin', *fulwite* 'full fine'), and a numeral in 4 compounds (e.g., *angylde* 'a single payment compensation'), where all the others consist of a nominal determinant.

In terms of productivity, defined as the degree in which a lexeme can be used in various compounds (Sauer 2019), nominal compounds found in laws are quite interesting and show a behaviour that might be due to the function of nominal compounding in this text-type. In spite of their numerousness, both the determinant and the determinatum show a strong tendency for unicity: the majority of both members occurs once (30 lexemes as the left-hand element out of 114 types vs. 38 as the right-hand element out of 108 types). The second-biggest group consists of lexemes occurring twice (12 vs. 21), followed by those occurring three times (8 vs. 6) and so on, according to an inverse proportion between the frequency of occurrence of a lexeme and the number of compounds consisting of such lexeme. The most frequent lexemes are: *bryce* 'breach, violation' (*DOE* s.v. *bryce* noun1,

sense 3), *bot* 'penance, repair' (*DOE* s.v. *bōt*, sense B), *feng* 'taking' (*DOE* s.v.), *gild* 'payment' (*DOE* s.v. *gyld*, sense A), *mund* 'protection', *þeow* 'slave', and *wite* 'fine'.

When compounding in early laws could appear to show a low degree of productivity according to the criterium of word repetition, we have a slightly reverse picture if we take into account the occurrence of the same word in either constituent. According to this parameter, nominal compounding shows a higher productivity, as the same lexeme can occur as either constituent of the compound. Expectedly, this happens with the most frequent lexemes (e.g., *wite-ræden* 'punishment' vs. *ful-wite* 'full fine', *þeow-weorc* 'servile work' vs. *wite-þeow* 'one condemned to slavery for crime'), but it is not restricted to them, and it also involves less frequent ones (e.g., *gafol* 'tribute' in *gafolhwitel* 'blanketing, cloth paid as rent or tribute' and *beregafol* 'barley paid as rent'). However, the most attested pattern is a compound formed by one-occurrence lexemes, some of which have been indeed categorised as *hapax legomena*, such as *locbore* 'one wearing long hair, a free woman', *ladrincman* 'guide?', and *wlitewamm* 'disfigurement'.

This is probably the reason for the low degree of semantic transparency in legal compounds. Even if nominal compounds are endocentric and indicate a kind of hyponym of the head, the semantic relationships encoded in legal compounds are less straight-forward than in other text types. As copulative compounds are restricted to numerals and exocentric to adjectives, nominal compounds are determinative. However, their meaning is not always regular and compositional. The meanings of *gafolhwitel* and *beregafol*, which refer to the wheat given as a tax and a tax paid with barley respectively, are quite intuitive, that is, although the semantic relation implied between the two members is different, both indicate a type of taxation. *Feaxfang* 'seizing by the hair' (*DOE* s.v.) and *feohfang* 'taking money as a bribe' (*DOE* s.v. *feoh-fang*) denote a special type of 'taking, seizing' and morphologically depend on it, as they are both masculine like *feng*[9] and express a kind of 'taking, seizing'. They are easily classified as rectional synthetic compounds (Sauer 2019), having a deverbal noun as the determinatum (Kastovsky 1992), which in this case is an action noun. However, the very same *feohfang* has a secondary meaning and can indicate

---

[9] One has to point out that *fang* is the lexeme occurring mainly in compounds, while the *i*-stem form, *feng*, is the most frequent as an independent word. *Fang* in compound and *feng* express an action of 'taking, seizing'. According to dictionaries, they do not differ semantically. On the contrary, *fang* as a masculine noun indicates the result of 'taking, seizing', that is 'booty'.

the financial penalty due for having committed bribery (*DOE* s.v. *feoh-fang*, sense 2). In this case, it is not endocentric, does not refer to a type of *feng*, but specifies an external head, that is a fine. Based on the same determinatum, *healsfang* is another explanatory instance of such semantic opaqueness. Here *feng* cannot possibly be intended as a kind of taking. In no instance does it mean 'seizing by the neck or throat', as its components and structure would suggest. *Healsfang* always denotes 'a legal payment to be paid as a due or fine' (*DOE* s.v. *heals-fang*) according to the status of a person and accordingly could be analysed as a synecdoche-based compound (Bauer 2008). In other words, it developed a proper meaning that is far from those of its components, as one would expect with lexicalised compounds. A high degree of lexicalisation would explain its gender, which is not masculine, but neuter.[10] Finally, when attested in other text-types, compounds tend to be used with a very specific meaning in laws. A good example of this is the term *mund-byrd* that commonly means 'protection, patronage, aid', but in laws it denotes the fine paid for a violation of *mund*. Accordingly, it has to be interpreted figuratively.

Quite often in the literature, compounding in Old English is linked with the necessity of creating new words to translate concepts and notions from other languages, *in primis* Latin. According to Davis-Secord (2016: 30), translating Latin words is "one of the most fundamental applications of compound words in Old English". Legal compounds seem to prove the opposite in that they never translate a Latin word and are often likely to remain untranslated in the *Quadripartitus* as if they expressed concepts unknown to the Latin culture: for instance, LawIne 15.1: *se að sceal bion healf be huslgengum* (Quadr.: et debet esse medietas [iurantium] per hulsgengas [id est duodecimhyndos]); LawIICn 45.1: *gyf freoman freolsdæge wyrce, þonne gebete þæt mid his halsfange* (Quadr.: emendet hoc secundum suum halsfang); LawAf 1 30: *gif hit sie syxhynde mon, ælc mon to hloðbote LX scillinga & se slaga wer & fulwite* (Quadr.: unusquisque reddat pro hloþbota LX sol.).

Moreover, several compounds exclusively belong to the code of laws associated with one king – *leod-geld* 'fine for slaying a man', *weg-reaf* 'robbery done on a road', and *edorbrecþ* 'fence-breaking' to Æthelberht; *æwda-mann* 'witness', *bysmor-word* 'insult', and *mann-weorþ* 'price of a man' to Hlothere; or *hloþ-bot* 'fine to be paid by the member of a gang', *medren-mæg* 'maternal kinsman', *folc-leasung* 'slander' to Alfred. Moreover, it is not

---

[10] The gender could also be a result of the influence of the Old Norse *fang* that is actually neuter.

rare to have words with the same referent, one of which is characteristic of legal expressions: for instance, *huselgang* and *huselgenga* refer both to the communicant, but only the latter occurs in laws, while the former is common in many other textual genres, such as homilies (*DOE* s.v. *hūsel-gang*; *hūsel-genga*).

In other words, while compounds in laws show low variation and high regularity structurally, in terms of transparency, predictability, or simply frequency they turn out to be very peculiar, on the one hand because of opaque, unclear, and unpredictable semantic relationships between their constituents, and on the other hand because of the high incidence of words occurring once and *hapax legomena*. All these peculiarities appear to be less peculiar if one thinks that compounding in the early laws was a means for the development of a legal terminology. Therefore, to understand what a compound means, one has to delve into each single law.

3. Composition in Æthelberht's Injuries Catalogue as a Means of Clarity

Within the legislation of Æthelberht, chapters 32/33 to 71 build a catalogue of fines for personal injuries (Oliver 2002: 70–77), arranged according to the type of injury inflicted and, anatomically, from head to feet, corresponding to the idea of the "architectural mnemonic" (Carruthers 1990) in which memory can tie in with a familiar physical structure (Ong 1982: 31–57). Composition is substantial here in order to create semantically unambiguous terms concerning body parts and injuries. The generic determinatum *ban* 'bone', for instance, is delimited both by *cin* 'jaw' and *wido* 'collar'. Some of the compounds have merely anatomical scope (e.g., *cinban* 'jaw-bone') and others acquire a proper legal meaning such as *goldfinger* 'the finger wearing the ring' (lit. 'goldfinger'), indicating the social status – although this differentiation is based on an outsider (etic) point of view and does not necessarily reflect the insider (emic) account since, as the title of Lisi Oliver's book (2011) reads, in the Early Middle Ages "the body (is) legal".

3.1 The *-finger* Compounds

The *-finger* compounds reflect the concern for the lawgiver to value fingers individually in the personal injury laws (Oliver 2011: 143–158). Fingers are not barely compensated

according to their physiological value. The three compounds that contain the determinatum masculine -*finger* (*middelfinger*, *scytefinger*, and *goldfinger*) express different kinds of relations between the two stems. Indeed, the determinant represents very different aspects of the finger. *Middel-* indicates its physiological position in the hand. *Scyte-* represents an important physiology-related activity of the forefinger: it allows a man to shoot an arrow. The compound *scytefinger*, thus, refers to a male ability that had a decisive importance for the preservation of the ethnic community. Indeed, the original core of the earliest laws concerns the weapon-bearing freemen. Finally, the determinant *gold-* represents a cultural-related aspect of the fourth finger, on which a ring is traditionally worn. The ring finger is called here *goldfinger*. As a consequence of a metonymic process the material of which the ring is made can be used to indicate the ring itself. The fourth finger does not have a very different physiological value from the middle finger. And yet, its value is higher because there is a sort of additional punitive charge (added to the purely anatomic loss) for the loss of the finger that shows economic and marital status by the presence of the ring (Oliver 2011: 153). The relative value of the *goldfinger* becomes higher in the laws of Alfred (Oliver & Jurasinski 2021: 356–357) which reflects the concerns of a differentiated society, where the social and economic status are more important than in the kin-based society described by Æthelberht.

3.2 *Wlitewamm*

Two compounds, both *hapax legomena*, contained in Æthelberht's injury catalogue – *feaxfang* (33) and *wlitewamm* (60) – are typical offences to one's honour, humiliations that violated the physical integrity but did not affect any physiological function. Old English *wlitewamm* is a terminus technicus that designates the "facial disfigurement" or "visible facial wound" (Oliver 2002: 70; Jurasinski 2007: 59–63). The meaning of the compound cannot be immediately understood from the context of the decrees. *Wlite* is a noun that means 'countenance, aspect, look' and *wamm* is the word for 'shame'. The most likely meaning of *wlite* in this compound is that of 'an injury which is always visible' and, as a consequence, it is a cause of embarrassment. The notion of a visible damage is a pattern which is current in Æthelberht's law and, in general, is a feature of early laws (Skinner

2017: 42). The visibility of the injury was indeed what we would now call an "aggravating factor", because social disgrace was associated with this kind of injury.

3.3 *Feaxfang*

The Kentish personal injuries-tariff begins with fines for *feaxfang* (Oliver 2002: 72, 105). The masculine determinatum *-fang* recurs in several compounds but it occurs only once as a simplex outside the legal sources with the meaning 'plunder, spoil'. In *feaxfang* it has the meaning of 'seizing, taking, (maybe pulling)'. The determinant neutral *feax-* indicates here hair (on the head) as a whole. *Feaxfang* is a technical word which refers to the insult to one's honour, which comes from seizing hair. More than other elements that characterise the individual, hair and beards in their various natural and artificial forms, are signs of age and have legal and social relevance within the old cultures (Rolle & Seemann 1999: 232–240; Oliver 2011: 108–111). The idea behind Æthelberht's decree about *feaxfang* could also be that a fight often begins by one contestant pulling the other close to him in order to be able to beat him. Even if no actual injury occurs, the regulation punishes this sort of intention. *Wlitewamm* and *feaxfang* represent an older layer of legal words, which is not used in the younger Anglo-Saxon legislation. These compounds shed light on the social conventions by which wounds (*wlitewamm*) and gestures (*feaxfang*) were interpreted and valued in early Kentish society, confirming Mary Richards' point (2003) that the injury catalogues hint at processes of reading the material body that are distinct to the eras and regions within which these words were created.

4. *Drihtinbeag*: The Extinction of a Compound Word

The fine due to the king for killing a free man was called *drihtinbeag* in Æthelberht 12 (*DOE* s.v. *dryhten-bēag*). In *drihtinbeag* the determinative *drihtin* (WS *dryhten*) 'lord' is a derivation from Old English *dryht* 'multitude', 'arm'. *Dryhten* (*DOE* s.v.) is the 'lord', both as 'war lord/lord of a retinue' and as a 'lord of the household' (Green 1998: 106–112, 127–130). The second element of the compound, *beag* 'ring, crown' (*DOE* s.v.) describes the use of gold rings as money and originated in a time when money existed not only as coin, but also in the form of rings (Beck & Steuer 2003: 16–19). The killing of a free man

represented a loss for the king which had to be recompensed with a fine. *Drihtinbeag*, originally a payment to a lord for the death of one of his men, was superseded by the word *manbot* in the following Anglo-Saxon laws (Fruscione 2015). It was inevitable that *drihtinbeag* would disappear from the law books and be replaced by another word. The first element *drihtin* with the secular meaning of 'lord' was used for the last time in the laws of the last Kentish king, Wihtred, where *drihtin* appears three times with the meaning of 'lord of a household' in his relationship with the servants. In the West-Saxon coeval law of Ine, *drihtin* does not appear at all and in later legislation only with the religious meaning of 'God' (*DOE* s.v. *dryhten*, sense 2). *Drihtin* lost its original meaning as a relic of a warrior society (Green 1998: 119), and, in the passage from paganism to Christianity (Chaney 1960: 197–217), it underwent a typical process of assimilation, acquiring a new, religious sense (Gantert 1998: 19–20, 31, 139–140; Steuer 2006: 227–230).

5. *Healsfang*: Metonymy and Composition

Another nominal compound with *-fang* as determinatum is *healsfang*. The noun is one of several terms indicating a fine, a penalty (Oliver 2002: 156, 171–172). Although the meaning of either lexeme is clear and so is the meaning of the compound, the history of the word is not (*DOE* s.v. *healsfang*). *Healsfang* means literally 'the seizing by the neck or throat'. *Healsfang* appears often in the laws of the kings: first, in the early Kentish law of Wihtred (8.2, 9, 11) at the end of the 7th century in decrees regulating behaviour within the Christian household. Failing to observe a cessation of labour on the Sabbath is finable: a free man must pay his *healsfang*. If a person provides his dependants with meat in times of fast, both slaves and freemen are to be redeemed with *healsfang*. Finally, *healsfang* must be paid in case of Christians indulging in pagan practices (Oliver 2009: 108–111). Moreover, in II Eadmund 7,3 (920–946), *healsfang* (lat. *halsfang* in *Quadripartitus*) is the first instalment of the penance to be paid 21 days after a homicide. And finally, in the last Anglo-Saxon law of Cnut in the 11th century, *healsfang* is both a fine that applies in the case of a false oath (II 37), and a payment to be paid as a due (II 71,2); in both occurrences *healsfang* is rendered with L *halsfang* in *Quadripartitus* and L *collicipium* in the *Consiliatio Cnuti*. The formation of *healsfang* may be compared with that of *feaxfang* as an

action to which the law attached a penalty. The term may originally have denoted the crime of 'seizing by the neck' and has come to indicate a fine as a result of a metonymic process (Haubrichs 2021: 108–109). In Old English the word that denotes an offence often denotes also the fine for that offence. A further step in the development of the meaning was to become a standard word for a fine. Finally, it came to indicate a due, a tax. Indeed, both a fine and a due are financial resources for the king. Resorting frequently to the metonymic figure in the field of offence/fine is due to the fact that offence and the adequate compensation were two sides of the same coin. If an offence could be compensated by restitution, the archaic principle of reciprocity between the offender and the offended party was respected (Luhmann 1987: 154–157).

Similarly, in subsequent legal texts, compound words are also observed that simultaneously denoted a crime and the corresponding fine imposed for committing that crime. Examples include *mundbryce*, which signifies 'a breach of mund (protection)' as well as the fine paid to the authority whose *mund* was violated; *hamsocn*, referring to 'an attack on a man's house' (*DOE* s.v. *hām-sōcn*, sense 1) and the associated fine for such a breach of peace (*DOE* s.v. *hām-sōcn*, sense 2); and *griþbryce*, indicating 'a breach of the peace' and the corresponding fine for such an offense.

6. Expanding the Lexicon of Taxations and Gabelles

The first clause of the law of the Kentish king Wihtred states the freedom of the church from taxation (*cirice an freolsdome gafola*) expressed by the simplex *gafol* (*DOE* s.v. 1, sense 1b). Conversely, the contemporary legislation of the West Saxon Ine shows the occurrence of several compounds corresponding to various gabelles (Crabtree 2021: 171–172) that combine the determinatum *gafol* with various determinants. *Beregafol* (Ine 63) is a 'tribute of barley' (*DOE* s.v. *bere-gafol* 1), and the same meaning applies to *gafolbere* (*DOE* s.v. *gafol-bere*); *rædegafol* (Ine 68) is a 'tribute that must be paid all at once'. *Gafol* occurs as a determinant in *gafolhwitel*, 'blanketing, cloth paid as rent or tribute' (*DOE* s.v. *gafol-hwītel*). This group of compound words in expansion corresponds to the development of kingship and of the royal fisc. The ability to exploit the financial resources of their subjects, among others, was central to the establishment of Anglo-Saxon kingship (but also to the power of

the church). The stability of the *-gafol* compounds is confirmed by the later, private work *Rectitudines* (early 11th century: Liebermann 1903: 444–453): *ealugafol* 'tribute paid in ale' (*DOE* s.v. *ealu-gafol*); *feohgafol* 'usury' (*DOE* s.v. *feoh-gafol*); *huniggafol* 'tribute paid in honey' (*DOE* s.v. *hunig-gafol*); *landgafol* 'rent for land'; *metegafol* 'tribute paid in food'.

7. Conclusions

Compounding is one of the major word-formation strategies in Old English, together with derivation. It is not surprising that also in legal codes compounding plays a significant role in the creation of new words. From our analysis based on a corpus of complex words taken for the early Kentish Laws and the first two West-Saxon legal codes, it turns out that, unlike other text-types, compounding and derivation have an almost complementary field of domain, in that noun-formation consists almost exclusively of compounds, while affixation is mainly proper to verbal and, at a much lower degree, adjectival formations. In the corpus nominal compounds are mainly determinative – apart from a few exocentric ones used as adjectives –, with a noun as the determinant, while the pattern Adj + N, quite productive in Old English poetry and prose, is hardly attested. What makes legal compounds special is their semantic interpretation and their low frequency of occurrence. In spite of their formal regularities, the semantic relationship between their constituents can be quite opaque and inconstant. In other words, nominal compounds are often polysemous. Moreover, the majority of the compounds in laws only occurs once and so do even their determinant and determinatum. In addition to the lack of productivity, many compounds are peculiar to one single code and have a very short life as they do not survive their legislators. Unlike poetry, legal language should be clear and direct and not evocative. Moreover, it does not have to obey to metrical and rhythmical constraints and rules. Therefore, in the case of laws, these characteristics of compounds compose a quite puzzling picture, lest one supposes that compounding in early laws was the principal instrument used to develop a legal terminology. In other words, through composition generic concepts are delimited and qualified in order to create a legal concept. Another piece of evidence to confirm this hypothesis comes from the striking number of *hapax legomena* (Lendinara 1997; Oliver 2002). Most *hapaxes* are compounds, too. They are not necessarily the final

trace of an archaic, pre-literate past. In early legal sources where the principle of one topic/one word rarely applies (von See 1964: 4), a *hapax* is quite likely to be a *Gelegenheitsbildung* ('occasional formation') typical of the beginnings of a technical language in the making.

In this perspective, the extinction of a compound word from the legal sources may be accounted for according to different circumstances: either it designated an institution which, in the course of time, for socio-political factors (the emergence of a royal power in a family centred society) or for cultural reasons (the interaction of Germanic law with a converted Christian order) became irrelevant – or it was replaced by other compounds for reasons to be determined (Fruscione 2015). Therefore, the analysis of compounds from a formal point of view does not reveal the entire picture if not traced back to the context where they were created. In our paper, we concentrated on compounds that are used both to label various kinds of payments – both compensation/fines (*drihtinbeag* 'fine payable to a lord for killing a free man', *fulwite* 'full fine'), and taxations (*beregafol* 'tribute of barley') and on some criminal offences – against persons (*feaxfang* 'seizing by the air'), property (*reaflac* 'robbery'), a lord or the king (*hlafordsearu* 'plot against the lord/king') – as well as offenders (*manswara* 'perjurer').

Between the text of each law and the compounds occurring in it there is a profound consistency. Compounded words witness the change of legal focus in time and space and the aims of the lawgiver. In the early laws of Æthelberht, for instance, there is consistency between the detailed description of (injured) body parts and a set of laws basically designed by the lawgiver to guarantee the physical integrity of the community members in a precarious position. Similarly, in later times of West-Saxon royal activism as laws mirror the development of Anglo-Saxon kingship, we observe the birth of innumerable compounds necessary for the denomination of more and more forms of taxation, that were part of the financial resources of later Anglo-Saxon kings.

Up to Alfred, there was a period of legislative activism focused on the production of substantive law, driven by the need to create the legal terminology that Old English lacked. In contrast, in the later laws, compounds were created and used not only to convey compact information pertaining to significant legal facts but also to serve rhetorical purposes. Wulfstan's laws – homilist, ecclesiastical writer, and legislator whose legislative

work extended to the reign of Cnut – exhibited rhetorical features with a strong oratory and condemnatory bias. These compounds contribute to the formation of phrasal pairs, offering additional possibilities for creating echoes in ways that simplex forms cannot achieve. Wulfstan's homiletic style profoundly influenced the creation of legal formulas, intertwining with his propensity for creating nominal compounds that intensified the language rhetorically rather than merely conveying semantic content. Examples include: *hadbrecan 7 æwbrecan* 'injurer and adulterer' (V Atr 25); *scipfyrd 7 landfyrd* 'naval force and land force/expedition' (II Cn 77); *fihtewita 7 fyrdwita* 'fine paid for fighting and fine paid for neglecting the army' (II Cn 15).

In conclusion, studying compounding mechanisms in legal texts is a source of information not only about word-formation mechanism itself, but also a means of delving into Anglo-Saxon society and its changes.

References

Bauer, Laurie. 1983. *English Word-Formation*. Cambridge: Cambridge University Press.

Bauer, Laurie. 1998. When is a Sequence of Two Nouns a Compound in English? *English Language and Linguistics* 2(1). 65–86.

Bauer, Laurie. [1988] 2003. *Introducing Linguistic Morphology*. 2nd edition. Washington, DC: Georgetown University Press.

Bauer, Laurie. 2008. Exocentric Compounds. *Morphology* 18. 51–74.

Beck, Heinrich & Heiko Steuer. 2003. Ringgeld. In Heinrich Beck, Dieter Geuenich & Heiko Steuer (eds.). *Reallexikon der Germanischen Altertumskunde*, Volume 25, 2nd edition, 16–19. Berlin: De Gruyter.

Bybee, Joan L. 1985. *Morphology: A Study of the Relation Between Meaning and Form.* Amsterdam: Benjamins.

Carr, Charles T. 1939. *Nominal Compounds in Germanic*. London: Milford.

Carruthers, Mary. 1990. *The Book of Memory: A Study of Memory in Medieval Culture*. Cambridge: Cambridge University Press.

Chaney, William A. 1960. Paganism to Christianity in Anglo-Saxon England. *The Harvard Theological Review* 53(3). 197–217.

Chapman, Don W. 2002. Germanic Tradition and Latin Learning in Wulfstan's Echoic Compounds. *The Journal of English and Germanic Philology* 101(1). 1–18.

Chapman, Don W. 2017. Fixity and Flexibility in Wulfstan's Binomials. In Joanna Kopaczyk & Hans Sauer (eds.), *Binomials in the History of English*, 41–62. Cambridge: Cambridge University Press.

Crabtree, Pam J. 2021. Taxation in Anglo-Saxon England, Fifth-Ninth Centuries CE. In Jonathan Valk & Irene Soto Marín (eds.), *Ancient Taxation: The Mechanics of Extraction in Comparative Perspective*, 160–177. New York: New York University Press.

Davis-Secord, Jonathan. 2016. *Joinings: Compound Words in Old English Literature*. Toronto: University of Toronto Press.

DOE = Angus Cameron, Ashley Amos, Antonette diPaolo Healey & Haruko Momma (eds.). 1986. *Dictionary of Old English*, *A–I*. Toronto: University of Toronto Press. https://doe.artsci.utoronto.ca/ (accessed 18 July 2024).

Fruscione, Daniela. 2005. Zur Frage eines Germanischen Rechtswortschatzes. *Zeitschrift der Savigny-Stiftung für Rechtsgeschichte: Germanistische Abteilung* 122(1). 1–41.

Fruscione, Daniela. 2015. *Dryhtinbeag* and the Question of the Beginnings of Punishment. In Bruce O'Brien & Barbara Bombi (eds.), *Textus Roffensis*: *Law*, *Language*, *and Libraries in Early Medieval England*, 157–174. Turnhout: Brepols .

Harbert, Wayne. 2007. *The Germanic Languages*. Cambridge: Cambridge University Press.

Haubrichs, Wolfgang. 2021. Wergeld: The Germanic Terminology of *Compositio* and Its Implementation in the Early Middle Ages. In Lukas Bothe, Stefan Esders & Han Nijdam (eds.), *Wergild*, *Compensation and Penance: The Monetary Logic of Early Medieval Conflict Resolution*, 92–112. Leiden: Brill.

Gagné, Christina L., Thomas L. Spalding & Kelly Nisbet. 2016. Processing English Compounds: Investigating Semantic Transparency. *SKASE Journal of Theoretical Linguistics* 13(2). 2–22.

Gantert, Klaus. 1998. *Akkomodation und eingeschriebener Kommentar: Untersuchungen zur Übertragungsstrategie des Heliandsdichter*. Tübingen: Narr.

Green, Dennis Howard. 2000. *Language and History in the Early Germanic World*. Cambridge & New York: Cambridge University Press.

Hay, Jennifer. 2001. Lexical Frequency in Morphology: Is Everything Relative?. *Linguistics* 39(6). 1041–1070.

Johnson, Martha Booker, Micha Elsner & Andrea D. Sims. 2023. High Frequency Derived Words Have Low Semantic Transparency Mostly Only If They Are Polysemous. Paper presented at International Symposium of Morphology. Ohio State University, USA.

Jones, Daniel. [1918] 1969. *An Outline of English Phonetics*. 9th edition. Cambridge: W. Heffer & Sons Ltd.

Jurasinski, Stefan. 2007. 4 Germanism, Slapping and the Cultural Context of Æthelberht's Code: A Reconsideration of Chapters 56–58. In Stephen R. Morillo, Alan M. Stahl, John Langdon, Julie Kerr, Kenneth Pennington, Kim Starr-Reid, Martin Aurell, Nicholas L. Paul, Robert F. Berkhofer III & Stefan Jurasinski (eds.), *Haskins Society Journal 18: 2006*, 51–71. Boydell & Brewer: Boydell & Brewer.

Kastovsky, Dieter. 1992. Semantics and Vocabulary. In Richard M. Hogg (ed.), *The Cambridge History of the English Language Vol. 1: The Beginnings to 1066*, 290–408. Cambridge: Cambridge University Press.

Kastovsky, Dieter. 2006. Vocabulary. In Richard M. Hogg & David Denison (eds.), *A History of the English Language*, 199–270. Cambridge: Cambridge University Press.

Krahe, Hans & Wolfgang Meid. 1967. *Germanische Sprachwissenschaft*, *Band 3: Wortbildungslehre* (Sammlung Göschen). Berlin & New York: De Gruyter.

Kremer, Anette & Stefanie Stricker. 2018. Complex Words in the Early Medieval *Leges Barbarorum* and their Contribution to Expanding the Old High German Lexicon. In Sabine Arndt-Lappe, Angelika Braun, Claudine Moulin & Esme Winter-Froemel (eds.), *Expanding the Lexicon: Linguistic Innovation*, *Morphological Productivity*, *and Ludicity*, 43–66. Berlin & Boston: De Gruyter.

Lambert, Tom. 2017. *Law and Order in Anglo-Saxon England*. Oxford: Oxford University Press.

Lass, Roger. 1994. *Old English: A Historical Linguistic Companion*. Cambridge: Cambridge University Press.

Lendinara, Patrizia. 1997. The Kentish Laws. In John Hines (ed.), *The Anglo-Saxons from the Migration Period to the Eighth Century: An Ethnographic Perspective*, 211–243. Woodbridge: The Boydell Press.

Libben, Gary, Christina L. Gagné & Wolfgang U. Dressler. 2020. The Representation and Processing of Compound Words. In Vito Pirrelli, Ingo Plag & Wolfgang U. Dressler (eds.), *Word Knowledge and Word Usage: A Cross-Disciplinary Guide to the Mental Lexicon*, 336–352. Berlin & Boston: De Gruyter Mouton.

Liebermann, Felix. 1903–1916. *Die Gesetze der Angelsachsen*, Volumes 1–3. Halle: Niemeyer.

Levi, Judith N. 1978. *The Syntax and Semantics of Complex Nominals.* New York, San Francisco & London: Academic Press.

Luhmann, Niklas. [1972] 1987. *Rechtssoziologie*. 3rd edition. Opladen: Westdeutscher Verlag.

Marchand, Hans. 1967. Expansion, Transposition, and Derivation. *La Linguistique* 3(1). 13–26.

Munske, Horst Heider. 1973. *Der Germanische Rechtswortschatz im Bereich der Missetaten. Philologische und Sprachgeografische Untersuchungen*, *Volume 1: Die Terminologie der älteren westgermanischen Rechtsquellen* (Studia Linguistica Germanica). Berlin & New York: De Gruyter.

Oliver, Lisi. 2002. *The Beginnings of English Law*. Toronto, Buffalo & London: University of Toronto Press.

Oliver, Lisi. 2009. Royal and Ecclesiastical Law in Seventh-Century Kent. In Stephen Baxter, Catherine E. Karkov, Janet L. Nelson & David Pelteret (eds.), *Early Medieval Studies in Memory of Patrick Wormald*, 97–113. Farnham, Burlington: Ashgate.

Oliver, Lisi. 2011. *The Body Legal in Barbarian Law*. Toronto, Buffalo & London: Toronto University Press.

Oliver, Lisi & Stefan Jurasinski. 2021. *The Laws of Alfred: The Domboc and the Making of Anglo-Saxon Law*. Cambridge: Cambridge University Press.

Ong, Walter J. 1982. *Orality und Literacy: The Technologizing of the Word*. Londo & New York: Routledge.

Plag, Ingo. 2003. *Word-Formation in English*. Cambridge: Cambridge University Press.

Richards, Mary P. 2003. The Body as Text in Early Anglo-Saxon Law. In Benjamin C. Withers & Jonathan Wilcox (eds), *Naked before God: Uncovering the Body in Anglo-Saxon England*, 97–115. Morgantown: West Virginia University Press.

Seemann, Henning, Renate Rolle & Else Ebel. 1999. Haar- und Barttracht. In Heinrich Beck, Dieter Geuenich & Heiko Steuer (eds.), *Reallexikon der Germanischen Altertumskunde*, *Band 13: Greifvögel – Hardeknutl*. 2nd edition. 232–240. Berlin & New York: De Gruyter.

Ronneberger-Sibold, Elke. 2006. Lexical Blends: Functionally Tuning the Transparency of Complex Words. *Folia Linguistica* 40(1–2). 155–181.

Sauer, Hans. 2019. Aspects of Old English Word-Formation: Compounds in the OE Elegies and the Capitula of Theodulf. *British and American Studies* 25. 215–235.

Sauer, Hans. 1985. Laȝamon's Compound Nouns and their Morphology. In Jacek Fisiak (ed.), *Historical Semantics – Historical Word-Formation*, 483–532. Berlin & New York: De Gruyter.

von See, Klaus. 1964. *Altnordische Rechtswörter: Philologische Studien zur Rechtsauffassung und Rechtsgesinnung der Germanen*. Berlin & Boston: De Gruyter Mouton.

Skinner, Patricia. 2017. *Living with Disfigurement in Early Medieval Europe*. New York: Palgrave MacMillian.

Sonderegger, Stefan. 1962/1963. Die Sprache des Rechts im Germanischen. *Schweizer Monatshefte* 42. 259–271.

Spencer, Andrew. 2003. Does English Have Productive Compounding? In Geert Booij, Janet DeCesaris, Angela Ralli & Sergio Scalise (eds.), *Topics in Morphology: Selected Papers from the Third Mediterranean Morphology Meeting*, *Barcelona*, *20–22 September 2001*, 329–341. Barcelona: Institut Universitari de Lingüística Applicada, Universtitat Pompeu Fabra.

Spencer, Andrew. 2011. What's in a Compound? *Journal of Linguistics* 47(2). 481–507.

Štekauer, Pavol, Ana Díaz-Negrillo & Salvador Valera. 2011. Meaning Predictability and Conversion. *Folia Linguistica* 45(1). 165–197.

Steuer, Heiko. 2006. Warrior Bands, War Lords and the Birth of Tribes and States in the First Millennium AD in Middle Europe. In Ton Otto, Henrik Thrane & Helle Vandkilde (eds.), *Warfare and Society: Archaeological and Social Anthropological Perspectives*, 227–36. Aarhus: Aarhus University Press.

Daniela Fruscione
Goethe-Universität
Theodor-W.-Adorno-Platz 1
D–60629 Frankfurt am Main
fruscione@jur.uni-frankfurt.de

Letizia Vezzosi
University of Florence
Dipartimento di Formazione, Lingue, Intercultura, Letterature e Psicologia
Via Santa Reparata 93
I–50129 Florence
letizia.vezzosi@unifi.it

Ursula Lenker

Historical Continuity in the Morphological Marking of Subjectivity? Textual Perspectives on the Origin of English Adverbial *-ly* in Late Old and Early Middle English[*]

Abstract: Despite the fact that the Present-Day English "adverbial signature" – the suffix *-ly* – is unique to English among the Germanic languages and that its emergence seems to contradict general tendencies of language change in English (the loss of inflectional endings and the fact that English is otherwise happy to allow zero-derivation), neither the early history of *-ly* in Old and Middle English nor the exact date and reasons for its remarkable spread have been fully understood. Recently, both synchronic and diachronic studies have paid considerable attention to the specific semantics of adverbs in *-ly*: This claim for a particular abstract or figurative meaning of adverbs in *-ly*, however, rests almost exclusively on one study, Donner's lexicographical examination of *MED* material (1991). This article will test the potential of comprehensive textual studies for explaining the origin and later spread of English adverbial *-ly* by investigating the particular abstract/figurative, and generally subjective, semantics in the early use of adverbial *-ly*, focussing on two late Old English translations of the *Theodulfi Capitula* and the early Middle English poem *The Owl and the Nightingale*, one of the earliest idiomatic and colloquial English texts.

Keywords: PDE *-ly*; adverb formation; adjective formation; subjective meaning; concrete vs. abstract meaning; figurative meaning; semantic constraint; early Middle English; Old English; Old English translations of the Latin *Theodulfi Capitula*

1. Introduction

By the phrases "*awful* stable; *really* changing" quoted in the title of her study of adverbs in Present-Day British English dialects, Tagliamonte directs readers to her most surprising findings. In contrast to other research which has characterized the use of suffixless adverbs in Present-Day English on sociolinguistic grounds as 'non-standard', Tagliamonte found complex interrelations between social and system-internal determinants in the uses of suffixless adverbs vs. adverbs suffixed by *-ly*. Among the social determinants, gender, age,

---

education and region emerged as important, as is to be expected, since suffixless adverbs are routinely disapproved of by prescriptive grammars (though not so much in the United States as in Britain; cf. Tagliamonte 2018: 118–120).

By differentiating adverbial sub-groups, however, Tagliamonte was able to expose a system-internal determinant in the adverbial sub-group of manner adverbs, namely a specific semantic constraint, showing contrasting profiles for concrete and abstract meanings (2018: 114). Such a difference can be illustrated by the uses of *cheap* / *dear* / *wrong* (concrete) vs. *cheaply* / *dearly* / *wrongly* (abstract, figurative) in (1) (examples taken from one of the first notes on this difference by Jespersen 1949: VII, 48–52, at 48):

(1) a. sell / buy *cheap* vs. he got off *cheaply*

    b. buy *dear* vs. love *dearly*

    c. cut *deep* vs. *deeply* offended / *deeply* regret

    d. read *wrong* vs. act *wrongly*

In her multi-factorial analysis of her synchronic UK dialect data,[1] Tagliamonte finds that

> concrete [manner; UL] adverbs have considerably more suffixless forms in all generations. In contrast, abstract adverbs occur rarely with anything but the *-ly* suffix among the older speakers and not at all among the younger speakers (Tagliamonte 2018: 119).

She concludes:

> Perhaps the strongest finding in this study is that despite centuries, social stigma, standardization, normative pressure and geographic dispersion, the age-old suffixless adverb [...] operates with an enduring underlying system, an emblem of historical continuity in synchronic data (Tagliamonte 2018: 138).

In the present study, I will focus on Tagliamonte's claim of a "historical continuity" in the specific abstract meanings of adverbs in *-ly* and its consequences for understanding the emergence and spread of adverbial *-ly*. Tagliamonte rests this claim primarily on research by Donner (1991), a study of about 1,500 Middle English manner adverbs retrieved from the *Middle English Dictionary* (*MED*). Donner nicely illustrates the contrasting semantic

---

[1] Cf. the results of an earlier study by Tagliamonte & Ito (2002: 255), which, in statistical modelling, yield this semantic constraint concrete vs. abstract (or figurative) as the most significant factor for this variation of manner adverbs in York.

profiles of both Middle English adjectives and adverbs with and without *-ly*, which he characterizes as a "freely disregarded convention" (Donner 1991: 7), but no fixed rule, by:

> *foul* may refer to how pigs root, *foully* to how men sin; [...] *high* to how a sword is raised, *highly* to how ladies are attired; *narrow* to how closely captives are bound, *narrowly* to how severely sinners are judged; *dear* to how something is bought, *dearly* to how someone is kissed (Donner 1991: 4).

For the earlier history of adjectival and adverbial English *-ly*, Donner (1991) is by far the most comprehensive study, in spite of its restriction to manner adverbs and its limitations due to the at the time not yet complete *MED* (*A* to *sheden*). A substantial collection of Old English adjectives and adverbs in *-ly* is found in Uhler (1926), whose results, however, are partly outdated because of Uhler's limited access to data in the 1920s. Moreover, Uhler essentially set out to investigate the synonymy of adjectives and adverbs with and without OE *-lic(e)* (cf. the term *Bedeutungsgleichheit* 'equivalence of meaning' in the title of his book). As far as adjectives in *-lic* are concerned (the basis for the emergence of adverbial *-ly*; see Section 3.1), however, most other (and more recent) studies on the history of Germanic adjectival *-ly* find contrast between endingless and suffixed adjectives rather than synonymy, emphasizing subjective meanings for Germanic adjectives in *-ly* from their earliest attestations, in addition to their other meaning 'pertaining to' (Guimier 1985; McIntosh 1991; Schmid 1998; see Section 3.3).[2]

Apart from Uhler (1926) and Donner (1991), we only find occasional notes on such semantic profiles for adjectival and adverbial *-ly* in different periods of English. Donner's study (1991: 1), for instance, was inspired by a remark by Jespersen that "the suffix [*-ly*] usually serves to impart a figurative sense to whatever literal meaning the word expresses without one" (Jespersen 1949: VII, 48–52, at 48; see examples (1a.)–(d.)). All of these studies (from Uhler 1926 to Tagliamonte 2018) are almost exclusively concerned with adjectives, degree adverbs (intensifiers) or de-adjectival manner adverbs. In a recent study, however, I suggested that the special abstract and figurative, and even more pronounced subjective, meanings of Old and Middle English adjectives in *-lic* and, consequently, of de-adjectival adverbs in *-lic(e)*, were crucial for the remarkable success of English adverbial *-lice/-ly* and its spread to all adverbial subclasses, in particular stance and linking

---

[2] A distinct pattern is found in adjectives denoting periodic recurrence, such as *daily*, *monthly* or *weekly* (common to all Germanic languages, including English; cf. *OED* s.v. *-ly*, suffix[1]). Cf. Lenker (forthc. b).

adverbials, which have only been attested in greater number (and unambiguous form) from the late Middle English period onwards (Lenker forthc. a).[3] It could be shown that, overall, we see semantic and functional diversification in the category 'adverb', gradually becoming more varied in signalling epistemic, evidential and textual speaker attitudes. In Lenker (forthc. a), this diversification is seen to have been supported by the new distinct mark of adverbial status, the adverbial suffix *-ly* and its specific functions of signalling a variety of subjective meanings, i.e. meanings that are "based in the speaker's subjective belief state/attitude toward the proposition".[4] For the lack of other data, this account by Lenker (forthc. a), however, was also based primarily on Donner (1991).

In order to extend the data basis for both my suggestion of the origin and spread of adverbial *-ly* and Tagliamonte's claim of "historical continuity", the present study will investigate the adverbs – in particular those in earlier *-e* (now suffixless; see Sections 3.1 and 3.2) and *-lice*/*-ly* – in two texts from the late Old English and the early Middle English periods, i.e. from the beginnings of adverbial *-ly* (cf. Section 3.1). The texts – two Old English translations of the *Theodulfi Capitula* (Sauer 1978) and the early Middle English animal debate-poem *The Owl and Nightingale* (ed. Stanley 1960; Sauer 1983; Cartlidge 2001) – were not only selected because they were edited by the late Professor Sauer, in whose memory the symposium "Historical English Word-Formation" was held in 2023,[5] but because they allow a comparison of late Old English and early Middle English within about 150–200 years. More importantly, these investigations illustrate the benefits of

---

[3] Lenker (forthc. a) was completed and accepted in 2021 but has not seen print yet.

[4] The concept of 'subjectivity', originally very broadly understood as 'speaker-involvement' or a 'speaker imprint', has become a highly contested notational term, with a variety of – often conflicting – definitions being used by different schools of linguistic thought (for an early summary account, see de Smet & Verstraete 2006). Recently, the conceptualizations of Traugott vs. Langacker (and schools of thought) have provoked protracted discussions about the definitions of the terms and their explanatory value. For the purposes of the present article, I use the term *subjective* in its broadest sense, as signalling 'speaker involvement', from the use of an adverb in a figurative sense (involving cognitive processes by a speaker for presenting a particular subjective purpose) to a speaker's personal expression of his or her own attitudes and beliefs (as most evident in stance adverbials, such as *certainly* etc.; cf. Section 2.2). In this, I generally follow Traugott who sees a process of *subjectification* when "meanings tend to become increasingly based in the speaker's subjective belief state/attitude toward the proposition" (Traugott & Dasher 2001: 95).

[5] I purposely decided against text samples collected in the established balanced corpora, because I wanted to investigate all realisations of adverbs in a complete text in order to arrive at a fuller understanding of adverb use. Also, corpora do not allow for a comparison of manuscript variants to the Latin exemplar, such as manuscripts H and C of the Old English translations of the *Theodulfi Capitula*. A wide-scale text- and corpus-based study on early Middle English poetry has been conducted for Lenker (forthc. b).

studying complete texts in their manuscript and transmission contexts. This is particularly crucial for the two independent Old English translations of the *Theodulfi Capitula*, both of which are accompanied by the specific Latin texts serving as exemplars for the respective translations. It emerges that the mechanistically morphological translation of *ThCap2* (Oxford, Bodleian Library, Bodley 865; see Section 4.1.1) is of little use for our study of the particular figurative or subjective semantic profiles of Old English adjectives in *-lic*, illustrating the importance of the material from *The Owl and the Nightingale*, which can be characterized as one of the most idiomatic early Middle English texts that have come down to us (see Section 4.2.1).

On these texts, I will primarily examine the semantic constraints sketched above, but will also briefly test the more general findings of Lenker (forthc. a) regarding the diversification of adverbs in the history of English, in particular the more recent uses of subjective sentential adverbs such as stance and linking adverbs. For this reason, Section 2 will introduce the formal and functional heterogeneity of adverbs from a diachronic perspective. Section 3 will then summarize the well-understood formal developments in the emergence of the new adverbial suffix *-ly* (by re-analysis from adjectival *-lic* + adverbial *-e*) and will address unresolved questions (date, reasons) for this development, which is unique to English among the Germanic languages. Section 4.1 will then summarize patterns of adverb formation in the two Old English translations of the *Theodulfi Capitula* (and their respective dependence on Latin) and will then provide detailed analyses of adverbs in the early Middle English animal debate-poem *The Owl and the Nightingale* (henceforth: *O & N*; Section 4.2).

2. Adverbs: Formal and Functional Heterogeneity

2.1 Forms

Adverbs are the 'mixed bag' among the word classes, both formally and functionally. For Present-Day English, for instance, the *Grammar of Spoken and Written English* (Biber et al. 2021: 537–540) distinguishes between the adverb forms "simple" (*here*, *soon*, *well*), "fixed phrases" (*of course*, *kind of*, *at last*), "compound" (*anyway*, *nowhere*, *heretofore*), "*-ly* suffix" (*carefully*, *obviously*) and "other suffix" (*homewards*, *clockwise*).

When compared to Old English, we notice the loss of the adverbial use of case forms such as the masculine genitive singular {-es} (*dæg-es* 'daily; by day', *þanc-es* 'gladly, voluntarily'), the dative plural {-um} (*hwil-um* 'at times') or the – endingless – accusative singular neuter (*eall* 'completely', *full* 'perfectly, very', *genoh* 'enough, sufficiently'; cf. Lenker forthc. a: Tab. 11.2).

Adverbs in *-ly* have a share between 33 and 52 per cent of all adverb tokens in today's written English (33 % FICTION, 38 % NEWS, 52 % ACADEMIC PROSE – cf. 21 % CONVERSATION; adapted from Biber at al. 2021: 537). When we disregard "simple adverbs" with their extremely high token counts (especially in CONVERSATION, FICTION and NEWS) and centre on adverb types, we see that the ending *-ly* has become "the real indication of the adverbial function" (Jespersen 1942: 408), the "adverbial signature" of English.

2.2 Functions

In today's English, adverbs show wide functional diversity. They may function as pre-modifiers in adjective or adverb phrases ('degree adverbs', among them the so-called 'intensifiers'; PDE *very*, *terribly*), 'circumstance adverbs'[6] with scope over the verb phrase (time, space or manner adverbs; PDE *now*, *here*, [*wept*] *bitterly*) or 'sentence adverbs'. Sentence adverbs – a relatively recent layer of adverbs – may again be differentiated into so-called 'stance adverbs', signalling speaker perspective on the certainty (cf. epistemic *certainly*, *probably*), contents (cf. attitudinal *fortunately*) or style (cf. *frankly*) of the proposition and 'linking adverbials', signalling the speaker's perspective on cohesion of sentences, paragraphs or discourse (cf. PDE *additionally*, *therefore*). Adverbs in *-ly* may be used for all of these functions in Present-Day English.

When taking a diachronic approach, we see that only the functions of modifier (degree adverb/intensifier) and of circumstance adverb have been attested in a rather stable way throughout the history of English (Lenker forthc. a: Section 11.2). Apart from epistemic truth-intensifiers such as OE *soþlice* or *witodlice* 'truly' which might appear to be stance adverbials but are better classified as discourse markers in episode boundary marking function,

---

[6] For the adverbials, I follow the terminology of the *Grammar of Spoken and Written English* (Biber et al. 2021: 754–884) and distinguish circumstance adverbials, stance adverbials and linking adverbials; this tri-partite classification basically corresponds to Quirk et al. (1985)'s adjuncts, disjuncts and conjuncts, respectively.

translating Latin *autem* or *enim* (Lenker 2000; see also below Section 4.1.1), most of the adverbs in stance adverbial function have only been regularly used since Early Modern English (cf. Swan 1988, 1989, 2011; Lenker forthc. a). A functional diversification can also be seen in the sub-category of linking adverbials, where Old and Middle English speakers did not employ distinct adverbs, but polyfunctional 'ambiguous adverbs/ conjunctions' such as OE *for þæm* (*þe*) 'adv. for this reason; conj. because' or ME *vor-þat*, *vor-þi*, *vor-þon* 'adv. for; conj. because' (cf. Lenker 2010; see also below Section 4.2.2). Following Traugott's views on subjectification (e.g. Traugott & Dasher 2001; see n. 4 above), these recent layers of sentence adverbs can be characterized as having a subjective meaning in that they signal the speakers' perspective on the contents or style of the proposition or the speakers' view on textual cohesion; their formation is generally considered to be a case of word-formation and not contextual inflection (i.e. not triggered by a verb phrase; cf. Section 3.1). This explains the position of adverbs at the interface of inflection and word-formation.[7] Such subjective uses commonly involve a figurative use of an originally concrete adverb (often spatial), as in originally spatial *hence* (from this position here (SPACE) > from this position in the author's line of reasoning) or *additionally* as in "*Additionally*, the project supports another group of women weavers in Ifkara […]" (cf. *OED* s.v.).

2.3 Previous Research

In both synchronic and diachronic research, however, the significance of these adverbial sub-classes has not been generally recognized (apart from Tagliamonte 2018 and Lenker forthc. a and c). Research regularly only distinguishes between modifiers (degree adverbs) and adverbials (which are lumped together in one group); see, for instance, *eWAVE*[8] distinguishing features 220 ("Degree modifier adverbs have the same form as adjectives (*real good!*)") and 221 ("Other adverbs have the same form as adjectives (*come quick!*)").

The evident heterogeneity of adverbs and their extremely large number across different registers are most probably the main reasons for the limited synchronic and diachronic

---

[7] For a discussion of this question, see the rather extreme view of Giegerich (2012), who considers adverbs in *-ly* to be inflected adjectives and, consequently, adverbs not containing *-ly* to be "uninflected adjectives" (2012: 341).
[8] https://ewave-atlas.org/parameters (accessed 25 January 2024).

research on adverbs. Because of the plethora of formal, functional and social parameters to be taken into consideration and the at times conflicting findings across these parameters, Tagliamonte speaks of the "variegated system of adverbs" (2018: 107). For this reason, most recent research has concentrated on specific linguistic items which are easily retrievable in corpora. Examined from various sociolinguistic approaches, these studies have found strong – and often diverging – effects of register, formality and social factors such as age, class and education (also due to normative influence on the use of *-ly*; see the survey in Tagliamonte 2018: 114–120). A primary study ground are the highly frequent and continuously changing intensifiers, which, as famously put by Bolinger (1972: 18), "are the chief means of emphasis for speakers for whom all means of emphasis quickly grow stale and need to be replaced".[9]

Most researchers applying a wider perspective on formal and functional aspects of adverb use note that quantitative investigations are seriously impaired by the high frequency and token-predominance of individual adverbs, primarily intensifiers and adverbs used as discourse markers (see Macaulay 1995 on *really*; Nevalainen 1997; Tagliamonte 2018). Consequently, researchers report that their corpus material had to be "deliminated" or "pruned" (Nevalainen 1994: 141–142). Most sizeable cross-period quantitative studies have hence restricted their investigation to so-called 'dual adverbs', i.e. adverbs used in both a suffixless and a suffixed form, thus dealing only with a very small fraction of adverbs (cf. Nevalainen 1994, 1997; Opdahl 2000; Tagliamonte & Ito 2002).[10] This focus on individual high-frequency items, in turn, means that those de-adjectival adverbs in *-ly* which have low token but high type frequency (i.e. most adverbs except for intensifiers such as *really*) are generally underrepresented in research.[11] These limitations also suggest that the history of English adverbial *-ly* might not have been portrayed in a

---

[9] For Present-Day English, see, e.g., Ito & Tagliamonte (2003) and literature; on their history, see Peters (1993), Méndez-Naya (2003), Breban & Davidse (2016); Stratton (2022); for a survey of literature, see Lenker (forthc. a: Section 11.3.2).

[10] These studies delve into the dual adverbs showing a difference in meaning such as *hard/hardly* (*to work hard* vs. *to hardly work*). They commonly also discuss the interface between adjective and (endingless) adverb in different distributional patterns, such as *He cut open the melon* vs. *He cut the melon open*, after copular-like verbs such as *look beautiful*, *behave properly* or as the first element of complex premodifiers such as *fresh(ly) cut sandwiches*. See also Valera Hernández (1996).

[11] Notable exceptions – apart from Macaulay (1995) and Tagliamonte (2018) – are the studies by Álvarez Gil on Early Modern English adverbs (1998) and the contrastive studies in Pounder (2001).

sufficiently nuanced way. Tagliamonte even finds that many "examinations of adverb variation in the literature are anecdotal rather than exhaustive" (2018: 121), a situation the present contribution aims to remedy through its pilot studies of full texts.

3. The History of English *-ly*

3.1 Reanalysis

The basics of the history of the English adverbial suffix form OE *-līce* by re-analysis have been well understood for quite some time (cf. *OED* s.v. *-ly* suffix[2]). See, for instance, Jespersen (1942: V, 408):

> *-ly* [*-li*] as an adverbial suffix originates from OE *-lice*, from *-līk* (= adjectival *-ly*) + the adverbial suffix *ō*. Thus it only belonged to advs corresponding to adjs in *-līc* (*-ly*), and the adverbial element was *-e*, which disappeared in ME. But as early as in OE the suffix was added to other adjs to form advs, *-ly* becoming the real indication of the adverbial function, and later was used to an ever increasing degree.

Old English de-adjectival adverbs were formed by the suffix OE *-e* (originally an ablative form *-ō*). This suffix does not add any specific semantic meaning, but its use is triggered by syntactic requirements: It is thus a case of contextual inflection.

In Old English, these syntactic requirements are met in degree words pre-modifying an adjective or adverb such as the intensifier *swiþ-e* 'strongly; very' (< adj. *swiþ* 'strong'; for ME, cf. example (5)) and in manner adverbs modifying a verb phrase. In (2a.), *heard-e* 'in a hard way' (< adj. *heard* 'hard') modifies *feoll* 'fell'; *wid-e* 'widely' (< adj. *wid* 'wide') in (2b.) modifies *sprang* 'spread':

(2) a. and he *hearde* feoll (*DOEC*; ÆCHom II, 10, 90.301)
     'and he fell (down) in a hard manner'

   b. Beowulf wæs breme   blæd *wide* sprang (*DOEC*; Beo A4.1)
      'Beowulf was famed / renown widely spread'

While final /e/ and levelled /ə/ were generally lost by the beginning of the Middle English period in other inflectional endings, final *schwa* was preserved longer in this adverbial use (Pounder 2001: 307; see also Tab. 4 on the data from *O & N*). While the adverbial suffix *-e* is commonly still present in written Middle English, these adverbs are suffixless in Present-

Day English (i.e. are 'zero-adverbs' or 'flat adverbs' such as PDE [*to work*] *hard* or [*to run*] *fast*).[12]

Since Old English had a large number of denominal and deadjectival adjectives in *-lic* (cf. PDE *friend-ly*, *clear-ly*), we also find a large number of adverbs in *-lic-e*, formed by adding the adverbial suffix *-e* to adjectives in *-lic*. There are also numerous instances of parallel forms of adjectives, such as *biter* (adj.) and *biterlic* (adj.) 'bitter' or *heard* (adj.) and *heardlic* (adj.) 'tough, heardy, resolute' (cf. Uhler 1926; McIntosh 1991).

(3) a. adj. biter   adv. [biter]-e   adj. heard   adv. [heard]-e

    b. adj. biter-lic adv. [biter-lic]-e   adj. heard-lic adv. [heard-lic]-e

In all the instances of (3), the adverb is formed by the suffix *-e*, which is added to simple adjectives in (a.) and complex adjectives in *-lic* in (b.). The complex adjectives in *-lic* are commonly more abstract and figurative and more subjective than their parallel forms without *-lic:* cf. *biter* 'having a bitter taste' vs. *biterlic* 'painful' or *heard* 'hard' vs. *heardlic* 'tough, hardy; resolute' (see Section 3.3).

Formally, these parallel adverbial forms most probably served as a model for the re-analysis towards the new adverbial suffix *-līce* /li:ʧə/. Already in Old English, we find adjectives such as *bealdlice* 'boldly; confidently, impudently', formed from the simplex adjective *beald* 'bold' (an adjective *bealdlic* is not attested; for *boldeliche* in *O & N*, see example (20)); similarly, the adverb *swetlice* 'pleasantly' does not have an adjectival basis **swetlic*, but simple *swet* 'sweet'. This indicates that the parsing of the adverbs cited in (3b.) must have changed, i.e. re-analysed, from *[biter-lic]-e* and *[heard-lic]-e* to *[biter]-[lice]* and *[heard]-[lice]*, yielding the new adverbial suffix *-lice*, which was in turn added to the adjectives *beald* and *swet*, which do not have adjectival forms ending in *-lic*. While the formal-morphological processes of re-analysis from *-e* /ə/ to the phonetically more salient *-līce* (ME *-lich*(*e* /li:ʧə/ and later *-li/ly* /li/) are comparatively straightforward, the reasons behind its emergence and the reasons of the spread of *-ly* itself are often misrepresented.

---

[12] Another source of suffixless adverbs are the originally endingless case forms (acc. sg. neuter), such as *all* or *full* (see Sections 3.1–2).

3.2 Formal Explanations: Ambiguity Adverbs – Manner Adverbs

In the few studies commenting on the reasons for this re-analysis and thus the birth of a new inflectional form in English (which is otherwise characterized by a massive loss of inflectional endings in early Middle English), the establishment of the more salient form *-ly* /li/ is seen to be grounded in the loss of the formal distinctions between adjectives and adverbs, allegedly resulting in "confusion" and thus "a need for avoiding ambiguity" (Mustanoja 1960: 314). This is said to apply especially to adverbs functioning as adverbials, but not for those functioning as modifiers, which are much more frequently suffixless (cf. OE *genoh*; ME *ful*; PDE *very*, *real*), since they are positioned in a fixed, and thus disambiguating, constituent order, before or after (cf. PDE *enough*) the element they modify. The ambiguity in manner adverbs is particular to English since its main reason is not considered to be the levelling and loss of the inflectional ending *-e* in adverbs, but the loss of endings in adjectives in early Middle English.

While Old English had two fully-fledged paradigms of strong and weak adjectives inflected for case, gender and number, early Middle English basically only has two forms of adjectives, a) a suffixless one and b) a form in *-e*[13], so that both of these forms are formally identical with adverbs, namely a) suffixless adverbs going back to acc. neuter case forms (e.g. *eall*, *full* or *genoh*; cf. Section 3.1–2) and b) manner and degree adverbs in *-e*.

While the Old High German adverbial ending *-e* is also lost, German speakers did not have much need for compensation of this loss, since German adjectives still inflect. We may thus have formal identity and ambiguity in the lexicon form of the German adjective and adverb, but not in actual language use, where the attributive adjective is inflected for case, gender and number (examples adapted from Pounder 2001: 301):

(4) PDE adj. *loud*   PDG adj. *laut*
     a loudØ sigh   ein laut**er** Seufzer (Nom. Sg. masc.)
     a loudØ street   eine laut**e** Straße (Nom. Sg. fem.)
     PDE adv. *loud**ly***   PDG adv. *lautØ*
     Susie sighed loud**ly**.   Susi seufzte lautØ.

---

[13] For the text of our early Middle English case study, *O & N*, Stanley (1960: 13–14) summarizes: "Adjectives have final **e** except when declined strong in the nom. sg. with nouns of any gender [endingless], or in the acc. sg. with neuter [endingless] or masc. [**ne** or endingless] nouns".

In German, the inflectional endings mark the adjectives, while in Present-Day English, it is the adverb which is marked. Disambiguation of adjectives and adverbs is said to have become crucial after the loss of inflectional endings in the adjectives in early Middle English, at a time when adjectives may still precede or follow the noun they modify, thus providing a syntactic context for ambiguity between an adjective modifying the noun in post-position (part of the NP) and a manner verb modifying the verb of the clause (cf. Mustanoja 1960: 314; Pounder 2001: 316–319). While the emergence of the adverbial suffix *-ly* at first glance seems to run counter to the loss of inflectional endings in English, it has thus been suggested that it has, by contrast, rather been triggered as a consequence of this loss, compensating for the loss of inflectional endings in the adjectives. Such an understanding does, however, chronologically not correspond to Jespersen's (and other researchers') view that *-lice* was "the real indication of the adverbial function" (Jespersen 1942: V, 408) already in Old English (see above Section 2.1 and my data in Section 4.1).

Moreover, my examination of this assumption in the comprehensive textual study of the twelfth-century *O & N* (cf. Section 4.2) evinces that such ambiguities are in fact very rare in actual language use; in *O & N*, there is no case of ambiguity of post-posed adjective vs. adverb which would have yielded semantic or pragmatic misunderstanding, even though the formal parsing would, of course, be different.

(5) þe Hule ne abot noȝt swiþ longe / Ah ȝef ondsware *starke and stronge* (*O & N*, 1175)
'The owl did not pause for very long, but came back with a bold [post-posed adj.] and robust [post-posed adj.] answer' OR
'The owl did not pause for very long, but answered in a bold [adv.] and robust [adv.] way'

(6) Þar *nowe* sedes boþe isowe (*O & N*, 1129)
'Wherever new [adj. pl.] seeds have been sown' OR
'Wherever seeds have recently [adv.] been sown'

This lack of attestations of ambiguity between adjective and adverb, which will be substantiated in a fuller account in the next section (3.3), suggests that the semantic constraint of adverbial *-ly* to figurative and abstract, and more generally subjective meanings described above may have been of more importance than the formal ambiguities between adjective and adverb claimed in the literature.

3.3 The Semantics of English Adjectives in -*lic*/-*ly*

For the background of this semantic constraint, it is necessary to briefly introduce the history of the English adjectival suffix -*lic*/-*ly*. Old English -*līc* as an adjectival suffix is well attested in all Germanic languages (Old High German -*lîk*, Present-Day German -*lich*; Old Norse -*lig-r*/-*leg-r*, Swedish, Danish -*lig*). These Germanic adjectives in *-*lîko* are compounds containing the noun *-*lîkom* 'appearance, body' so that the primary meaning of adjectival -*ly* is 'having the appearance or form of a man' (*OED* s.v. *ly* suffix[1]; cf. Guimier 1985; Schmid 1998: 97–98). This is extended to subjective meanings 'having the qualities appropriate to, characteristic of'. Essentially, the derived adjectives often carry "a metaphorical or moral meaning" (Guimier 1985: 157), which can be characterized as figurative and, more generally, subjective in that this meaning is based in the speaker's subjective belief or attitude toward the proposition (following the definition of subjectivity by Traugott; cf. fn. 4). Adjectives in -*ly* surviving into Present-Day English are thus frequently eulogistic, such as *knightly*, *queenly* or *scholarly* (vs. *manly*, *womanly* adj. to *mannish*, *womanish*; *OED* s.v. *ly* suffix[1]).[14]

4. Case Studies

The following case studies will test the suggestion that semantic reasons – specifically the subjective meanings of adverbs in -*liche*/-*ly* marking the speaker's individual perspective on the verbal phrase in manner adverbs – are more important for the emergence and spread of adverbial -*ly* than reasons of disambiguation of forms. Overall, the case studies are designed to provide a broader database to primarily test such a semantic constraint on manner adverbs in -*ly*, which Tagliamonte characterizes as "age-old", "operating with an enduring underlying system, an emblem of historical continuity" (2018: 138; see above Section 1).

---

[14] The later history of adjectival -*līc*/-*ly* is in the centre of Lenker (forthc. b and c). Please again (cf. fn. 2) note that adjectives denoting 'periodic recurrence' such as *daily*, *weekly* or *yearly* belong to still another use of the suffix (*OED* s.v. -*ly* suffix[1]).

4.1 Case Study 1: The Old English Translations of the Latin *Theodulfi Capitula*

There have as yet been no extensive investigations of adverbs in complete texts from the Old or Middle English period, so that one may as well start at any text. Since the symposium on "Historical English Word-Formation" in 2023 was held in memory of the late Professor Hans Sauer, I selected a text he had edited for his doctoral thesis in 1978, the Old English translations of the *Theodulfi Capitula*. More importantly, the two surviving Old English versions of the *Theodulfi Capitula*, which differ from each other, allow a minute investigation of Old English texts and their Latin exemplars, illustrating the benefits of such a philological approach.

4.1.1 Texts and Transmission

The *Theodulfi Capitula* are a handbook for parish priests, written in Latin around 800 by Theodulph, bishop of Orleans (*c.* 750–821), one of the principal theologians of the Carolingian period (acting also an advisor to Charlemagne). They consist of two parts (altogether 45 chapters), containing guidelines for parish priests concerning their personal conduct and their duties and, in the second part, instructions on what to teach their congregations. As one of the first handbooks collecting ordinances, it cannot easily be grouped with a particular genre, since its shows characteristics of the later capitularies (containing neutral pieces of legislation), interspersed with prayers and personal address. Their basic character is instructional (Sauer 1978: 1–11).

Two independent Old English translations of the *Theodulfi Capitula*, which both can be dated to the late tenth century, have survived in two eleventh-century manuscripts.

- *ThCap1*: Cambridge, Corpus Christi College, 201 (last quarter of the 11th century); fols 179–222: Latin text, fols 231–269: Old English text; incomplete translation (2,872 words)
- *ThCap2*: Oxford, Bodleian Library, Bodley 865 (early 11th century); chapters xxv–xlvi only, each Latin chapter being followed by its Old English translation (7,291 words)

Apart from the fact that we have two Old English translations – independent of one another – of one and the same text, these manuscripts are particularly valuable for our investigation since both manuscripts contain both the Latin and the Old English texts; in both cases, the Old English text was translated from the specific Latin text in the same

manuscript. This allows a characterization of *ThCap1* as a comparatively free translation (with additions, paraphrases and commentaries; Sauer 1978: 121–150), while *ThCap2*'s translator follows his Latin exemplar and its structures mechanically, indeed almost slavishly (Sauer 1978: 150–164):

> Die ThCapA [= *ThCap1*] sind eine verhältnismäßig freie Übertragung, bei der der Übersetzer hinzugefügt, weggelassen, paraphrasiert und kommentiert hat, wo es ihm nötig schien. […] Die ThCapB [= *ThCap2*] sind dagegen eine ziemlich wörtliche, oft beinahe mechanische Übersetzung, bei der sich der Übersetzer getreulich an die lateinische Vorlage gehalten hat (Sauer 1978: 119).

> 'ThCapA [= *ThCap1*] are a relatively free translation in which the translator has added, omitted, paraphrased and commented where he felt it was necessary. […] ThCapB [= *ThCap2*], by contrast, are a fairly literal, often almost mechanical translation, in which the translator faithfully adhered to the Latin original'.

ThCap2, in particular, reveals the major problem of our databases for early English when it comes to investigating system-internal trajectories of change, namely their dependence on Latin. For a first example, compare Tab. 1, listing the modifiers (degree adverbs) and discourse markers (episode boundary markers; cf. Section 2.2) used in *ThCap1* and *ThCap2*, respectively.

Tab. 1: Modifiers and Discourse Markers

	ThCap1 **(2,872 words)**	*ThCap2* **(7,291 words)**
degree adverbs	*genoh* 'enough' (3), *swiþe* 'very' (25)	*forneah* 'almost' (3)
discourse markers	*witodlice* (3)	*eornostlice* (4), *soþlice* (23), *witodlice* (18)

Tab. 1 shows that the use of these high-frequency items varies considerably, even though we are investigating contemporaneous texts based on the same Latin text. *ThCap1* uses the common Old English intensifier *swiþe* in 25 instances, while we do not find a single example of this in – much longer – *ThCap2*. Conversely, we have altogether 41 instances of the discourse markers *soþlice* and *witodlice* in the mechanistic translation in *ThCap2* (*soþlice* translating mostly Latin *autem*; cf. also Lenker 2000), while *ThCap1* has only 4 instances of *witodlice*, and none of *soþlice*. Such findings, of course, seriously impair quantitative studies on the semantics of de-adjectival adverbs in -*e* and -*lice* in Old English.

4.1.2 De-adjectival Adverbs in *-e* and *-lice*

Tab. 2 lists adverbs in *-e*, the traditional Germanic suffix forming de-adjectival adverbs. While *ThCap2*, most strikingly, does not use a single adverb in the earlier de-adjectival pattern in *-e* inherited from Germanic, *ThCap1* has 15 tokens belonging to 5 types. All of the adverbs in *-e* in the more idiomatic *ThCap1* are concrete manner adverbs; most interestingly, all of these are also attested as adverbs in *-e* in *O & N* (see Tab. 5). The ones that have survived – *fast* and *long* – are also suffixless in Present-Day English.

Tab. 2: De-adjectival Adverbs in *-e*

ThCap1	ThCap2
fæste 'firmly' (1), *georne* 'eagerly' (6), *hraþe* 'quickly' (1), *gelome* 'often' (4), *longe* 'long' (3)	–

Tab. 3 gives an overview of all adverbs in *-lice*; we see in Tab. 3a that only 5 of them are used in both *ThCap1* and *ThCap2*; Tab.s 3b and 3c list adverbs in *-lice* exclusive to *ThCap1* (Tab. 3b) and *ThCap2* (Tab. 3c), respectively. In order to put these findings into context, I also give the numbers of attestation from the *DOE* (based on the whole Old English corpus; *DOEC*), both for the adverbs and, if attested, their bases, i.e. adjectives in *-lic*. This can only be done for adverbs starting from *A–I* (i.e. the letters covered by the still incomplete *DOE*).[15]

Tab. 3a: De-adjectival Adverbs in *-lice* Attested in Both *ThCap1* and *ThCap2*

	ThCap1	ThCap2	DOE adv.	DOE adj. in -lic
arleaslice 'impiously'	1	1	26	–
clænlice 'purely'	3	2	55	10
gastlice 'spiritually'	4	3	90	700
geornlice 'eagerly'	3	2	650	8
healice 'magnificently, gloriously'	2	1	75	400
not yet covered by the *DOE*: *syferlice* 'purely'	3	1		

---

[15] The frequencies of the lexemes not yet covered by the *DOE* have been tested in *VARIOE* (Cichosz et al. 2021), based on the more restricted corpus material of the *York-Toronto-Helsinki Parsed Corpus of Old English Prose*. This study confirms the results for the full Old English corpus underlying the *DOE*: From the list of adverbs in *-lice* attested only once in *ThCap2*, only *wærlice* 'safely' is attested more than once (55 times), while the others are not listed at all. The situation is entirely different for the adverbs in *-lice* exclusive to *ThCap1*: Apart from *genehlice*, all of them are attested 8 or more times (up to 71 times for *lustlice*).

Tab. 3b: De-adjectival Adverbs Attested in *ThCap1* only

	ThCap1	*DOE* adv.	*DOE* adj. in *-lic*
arwurðlice 'honourably; fittingly, properly'	3	100	16
deagollice 'secretly, privately'	1	200	3
estlice 'kindly, graciously'	1	16	7
fæstlice 'fast; vigorously, thoroughly'	2	150	7
færlice 'suddenly, unexpectedly'	1	200	80
hihtlice 'pleasantly; joyfully, hopefully'	1	6	14
hluttorlice 'with a pure heart, sincerely'	1	9	–
not yet covered by the *DOE*: *genehlice* 'sufficiently, abundantly' (1), *gerysenlice* 'becomingly, fitly' (1), *geþyldelice* 'patiently' (1), *gemænlice* 'commonly; in general, without exception' (1), *lichamlice* 'physically' (3), *lustlice* 'gladly, willingly' (3), *stiðlice* 'strongly, strictly' (1), *syngallice* 'perpetually, continually' (1), *ungeteoriendlice* 'indefatigably' (1)			

Tab. 3c: De-adjectival Adverbs Attested in *ThCap2* only

	ThCap2	*DOE* adv.	*DOE* adj. in *-lic*
andiendlice 'enviously'	1	Hapax	
arfæstlice 'piously; mercifully'	1	23	4
earfoþlice 'with difficulty'	1	90	26
flæsclice 'as regards the (human) body, corporeal'	1	8	140
hwonlice 'to (only) a small extent'	1	55	4
gallice 'wantonly, lustfully'	1	Hapax	
haliglice 'in a saintly manner, devoutly'	1	5	
not yet covered by the *DOE*: *wærlice* 'safely' (1)			
Hapaxes: *leahtorfullice* 'viciously' (1), *(ge)metfæstlice* 'immoderately' (1), *staðolfæstlice* 'steadfastly, constantly, firmly' (1), *strudgendlice* 'rapaciously, greedily' (1), *unendebyrdelice* 'irregularly' (1), *unforwandiendlice* 'without regard to fear or shame' (1), *unmedomlice* 'unmeetly, unworthily' (1), *witeleaslice* 'with impunity' (1)			

These tables first of all show the large number of types – often with very few tokens – of these adverbs in *-lice*; for many, but not all of them, adjectives in *-lic* are attested, often in much smaller numbers than the adverbs. This illustrates that – as many studies have suggested – "the ending *-ly* has become the real indication of the adverbial function" (Jespersen 1942: 408) already in Old English (thus challenging the claim that his suffix

spread because of ambiguities of form in early Middle English). A closer look at *ThCap2*, which diverges in some of the patterns, corroborates this dating. It will be sufficient to demonstrate this aspect by a passage containing the most striking examples:

(7)   *Witodlice* þas ealle *eac swylce* on him selfum gehwa sceal *gastlice* don, 7 an oþrum *flæsclice* gefyllan, for þam þe *forneah* naht fremiaþ þas ealle ece lif to begytanne, gif he *gallice* 7 *ofermodlice* 7 *andiendlice* 7 *strudgendlice* his lif drohtnað, 7 gif he *leahterfullice* 7 *unendebyrdelice* lyfað, & fram oþrum godum weorcum æmtigað. [ThCap2 361.5]

<u>Nam</u> hec onmia et in se quisque debet <u>spiritualiter</u> agere, et in aliis <u>carnaliter</u> adimplere, quia <u>pene</u> nihil prosunt hec omnia ad uitam eternam capessendam, si <u>luxuriose</u>, si <u>superbe</u>, si <u>inuide</u>, et – ne singula replicem – si <u>uitiose</u> et <u>inordinate</u> uiuat, et a ceteris bonis operis uacet.

'Truly [discourse marker], each one must likewise act spiritually on himself, and fulfil it carnally in others, because all these things are of almost no use to the obtaining of eternal life, if he lives luxuriously and proudly, if he envies, and if he lives licentiously and disorderly, and away from other good works'.

In the short passage in (7), we find one simple and one suffixless adverb each, the manner adverb *eac* 'also' and the degree adverb *forneah* 'almost' (translating Latin *pene*; 4 instances in *ThCap2*, but none in *ThCap1*) as well as 9 different adverbs in *-lice*. This large number (compare the 15 tokens of *-liche* in the full text of *O & N* discussed below in Section 4.2) can be explained by the translation strategy of *ThCap2*, where every single Latin adverb in *-e* and *-(i)ter* is translated by an Old English adverb in *-lice* (both Latin *-e* and *-(i)ter* form adverbs from adjectives; cf., e.g., *spiritualis* 'spiritual' (adj.), *spiritualiter* 'spiritually').[16] Since this morphologically mechanistic translation was most certainly aimed at a better understanding of the morphology of the Latin text, it is evidence that Old English speakers did indeed consider *-lice* to be the adverbial signature of Old English.

Even more crucial for our investigation of the allegedly subjective semantics of adverbial *-lice* is the formation pattern of the adverbs in *-lice* in *ThCap2*. All of them are derived from complex adjectives (i.e. not from inherited simplex adjectives), all of which can further be shown to be calques (loan translations) dependent on Latin (cf. Schmid 1998: 98); this also applies to *soþlice* (cf. Latin *ver-o* 'truly'). Such calques on Latin are unlikely to reveal inherited or evolving semantic profiles specific to Germanic or Old

---

[16] The only exception here is the translation of Latin *nam* 'for', which is regularly translated by Old English *soþlice* or *witodlice* in texts highly dependent on Latin (Lenker 2010).

English adjectives/adverbs in *-lice*, but merely attest to the morphological status of *-lice* as a suffix deriving adverbs from adjectives (in a much more salient way than by the suffix *-e* alone, which is highly polyfunctional in Old English as a root element or as an inflectional and derivational morpheme). Another indicator of the predominantly morphological significance of *-lice* as a marker of adverbs in such mechanically translated texts[17] is the large number of hapax legomena in *ThCap2* (checked against the *DOEC*, i.e. all surviving Old English texts), namely *andiendlice, gallice, leahterfullice, strudgendlice* in (7) and, from the rest of the text, *unforwandienlice, ungeteoriendlice* and *witeleaslice*.

4.1.3 Evidence for Subjective Semantics of Adverbs in *-lice*

For studying the alleged subjective semantics of adverbs in *-lice* in relation to the subjective semantics of inherited adjectives in *-lic* in Germanic languages (cf. Section 3.3), the adverbs shared by *ThCap1* and *ThCap2* and those exclusive to *ThCap1* are thus a much more appropriate source, even though, of course, also *ThCap1* is not as completely independent of Latin as *O & N*. The figurative and, generally, more subjective meanings of the adverbs in *-lice* used in the more independent material in *ThCap1* are commonly unveiled by their translations. This first impression can be substantiated by a closer look at selected examples of contrastive profiles of adverbs in *-lice* (figurative) vs. those ending in *-e* (concrete); cf. *fæstlice* (8a; abstract: 'urgently') vs. *fæste* (8b; concrete: 'firmly'):

(8)   a.   *fæstlice* 'urgently; strictly'
          forþon hit is swiðe *fæstlice* on canonum forboden (*ThCap1*, 321.1)
          'because it is very urgently prohibited in the regulations'

     b.   *fæste* 'firmly'
          þonne ætstent þæt hus *fæste*, forþan þe hit wæs getimbrod on þam stane (*DOEC*, ÆHomM 12 276)
          'then this house will stand firmly, because it was built on stone'

     c.   *fæste* 'rigorously'
          & ure Drihten swyðe *fæste* on Synai þæm munte þa scylde forbead (*ThCap1*, 343.1)
          'and the Lord very rigorously prohibited crime on Mount Sinai'

---

[17] See Kornexl (2001), for a discussion of the morphological character of such calques and whether they are "unnatural words".

Example (8c.), also from the more idiomatic *ThCap1*, shows that adverbs in *-e* may also be used in more abstract meanings. This underlines Donner's view that we are not dealing with "fixed rules" (1991: 1) but rather tendencies: While adverbs in *-e* (the inherited Germanic derivation pattern) may be polysemous in having both concrete and abstract meanings, the semantics of adverbs in *-lice* is generally restricted to figurative, and more generally, subjective meanings in that they are based in the speaker's subjective belief or attitude toward the proposition.

Such a semantic profile of adverbs in *-lice* can, for instance, also be seen in the pair *clæne* vs. *clænlice*: While *clæne* may carry the concrete meaning 'clean; with nothing remaining' and extended 'utterly; altogether' (*DOE* s.v. sense 1), *clænlice* is almost exclusively used in the figurative, subjective sense 'with spiritually pure intent, in a manner free from sin' (*DOE* s.v. sense 3). This use is also attested in (9a.) and (9b.), from *ThCap1* and *ThCap2*:

(9)   a.   On þas tid sceal beon forhæfednes gehwylcra smeametta & syferlice & *clænlice* <is> to libbenne. (*ThCap1*, 391.1)

b.   To forhæbbane is soþlice on þysum haligostum dagum fram gemæccum, & *clænlice* & arfæstlice is to lybbanne (*ThCap2*, 397.1)
'During this time there must be abstinence of whatever delicacy [*ThCap2* 'sexual intercourse'] and one must live chastely and purely'

For a last pair illustrating the semantic profile of *-lice*, see *healice* vs. *heage* in (10), where again *healice* (10a.) is used figuratively, reflecting the subjective belief of the speaker with respect to honouring Sunday, while *heage* in (10b.) is used in its concrete sense 'high (up into the sky)':

(10)   a.   *healice* 'highly; greatly, exceedingly, profoundly'
Sunnandæg is swiðe *healice* to weorðianne (*ThCap1*, 337.1)
'Sunday has to be honoured very highly'

b.   *heah* 'high (without ending)'
seo buruhwaru [...] & gesawon ðone smic swyðe *heage* astigan (*DOEC*, Josh 8.20)
'The citizens ... and saw the smoke rise very high into the sky'

4.2 Case Study 2: *The Owl and the Nightingale* (*c.* 1189–1216; Kent)

The Owl and the Nightingale is doubtlessly one of the best candidates for a study on the idiomatic use of adverbs of different forms because it can be dated to the particular period

of early Middle English (M1 in the *Helsinki Corpus*) which was identified as the period in which adjectives and de-adjectival adverbs collapse formally, leading to an alleged ambiguity between adjectives and de-adjectival adverbs used as adverbials (see Sections 3.2 and 3.3). More importantly, this text can be characterized as "one of the earliest substantial texts to have been written in English in a style that seems fluently colloquial" (Cartlidge 2001: vii).

4.2.1 Text and Transmission

O & N is the earliest Middle English example of the very popular medieval genre of "animal debate poem".[18] Its 1794 lines (about 10,940 words) are composed in 897 in octosyllabic couplets; within the general framework of the four-stress line, however, it shows some considerable freedom (cf. Stanley 1960: 35–36).

The text has survived in two late-thirteenth-century manuscripts – London, British Library, Cotton Caligula A. ix [C] and Oxford, Jesus College, 29 (II) [J] – from the West Midlands; both are descendants from a lost exemplar, probably also from the West Midlands. For the original composition of the text, the general consensus now is that it should be dated between 1189 and 1216; linguistic evidence suggests an ultimate origin in Kent (Cartlidge 2001: xv).

With respect to their use of adverbs, the two manuscripts only diverge in any relevant way (i.e. beyond orthography) in the sub-group of intensifier:[19] The Cotton manuscript (C) contains a number of words which are absent in manuscript J; these omissions are characterized by Cartlidge as "all of them qualificatory or emphatic in function and inessential to the flow of meaning" (2001: xlii–lxiii). Among them are the intensifiers *suþe* 'very' (1 instance ; l. 667) and 12 of the altogether 90 instances of *wel* 'very' (l. 153, 170, 356, 376, 419, 546, 615, 1231, 1473, 1546, 1604, 1770), which the scribe of J chose not to copy from his exemplar. This attests to the considerable metrical freedom of the textual versions and, with respect to our case study, the frequently noticed fact that intensifiers behave

---

[18] This summary on the text has been compiled from information found in the introductions of the editions by Stanley (1960), Sauer (1983) and Cartlidge (2001) and the text profile from *The Parsed Corpus of Middle English Poetry (PCMEP)* https://pcmep.net/textdetails.php?poem_name=OwlNight (accessed 25 January 2024).

[19] There are a few cases where J has a word not contained in C, among them the adverbs *ayeyn* 'back' (l. 818), *eft* 'again' (l. 1090) and *nu* (l. 1399) (Cartlidge 2001: xliii, n. 120).

differently from other adverbs, both diachronically and in actual language use by particular speakers (cf. Section 2.3).

4.2.2 Adverbs in *The Owl and the Nightingale* – Functions

The characterization of *O & N* as being composed in "idiomatic" early Middle English is also reflected in its use of adverbs. Most of the adverbs are used as degree adverbs (104 tokens for the only 2 types *suþe* and *wel*) and manner adverbs; we find only two adverbs which are used as stance adverbials (*certes* and *iwis*). Unambiguous linking adverbs are also rare.

   Based on his linguistic analysis of this text, Cartlidge characterizes its grammar as "clearly early Middle English" (2001: xlvii). With respect to its lexis, Cartlidge found that the text contains only very few loanwords, 19 out of 1488 items (1.3 per cent) from Latin, 46 (3.1 per cent) from French and 23 (1.6 per cent) from Old Norse (*ibid.*); this shows that we are dealing with a text not impaired by (translation from) Latin and French, unlike most other texts from the earliest Middle English period (M1). Among the adverbs, the only direct loan from French is the singular instance of the stance adverb *certes* (l. 1769), emphasizing the proposition of the main clause 'that's true'.

   (11)   "*Certes*," cwaþ þe hule, "þat is soð: þeos riche men wel muche misdoð, […] (*O & N*, 1769)
          'Certainly, said the Owl, that's true. These wealthy men/people do much wrong …'

In its use of only two stance adverbs, *O & N* corresponds to the findings of Swan (1988; 1989) and Lenker (2010), namely that stance adverbs only become more frequent at the end of the Middle English or beginning of the Early Modern English period. Both researchers have also found that the only stance adverbs attested earlier are so-called truth-intensifiers, such as *certes* or *iwis* (< OE *gewis*; 5 instances; l. 35, 118, 1189, 1335, 1443).

   (12)   An wite, *iwis*, hwuch beo þe gome […] (*O & N*, 1769)
          'And know for sure about the sport […]

At first glance, another candidate of a stance adverbial may be one adverb in *-liche*, namely *sikerliche* (l. 1139); the textual context, however, reveals that it is not a sentence adverb, but a manner adverb modifying *wite* 'know':

(13) Nu þu miȝt wite *sikerliche*
        þat þine leches boþ grisliche (*O & N*, 1139–1140)
        'Now you may know for sure / that your appearance is grisly'

We thus have only 2 adverbs (5 tokens) in stance adverbial function. This function is commonly not expressed by adverbs, but by prepositional phrases, such as *mid riȝte* 'properly, justly, rightly' (12 instances). Note, however, that also these prepositional phrases are mostly truth-intensifiers, since uncertainty is mostly expressed in the verb phrase in early Middle English, either by the subjunctive or by impersonal verb construction with the verb *thinche* 'it seems / seemed to me / you ...' (cf., e.g., *O & N*, l. 225, 840, 1787; see also example (18b.) below).

With regard to the other sub-type of sentence adverbial which has been identified as a recent layer, namely linking adverbials, we see that *O & N* does not use any derived adverb for this function but employs so-called 'ambiguous adverbs/conjunctions' such as *for*, also in complex forms such as *vor-þat*, *vor-þi*, *vor-þon* 'conj. because; adv. for'. Others, such as *eft* 'then' or *nu* 'now' may serve as manner adverbs (time) or linking adverbials. Unambiguous forms are *hure* 'at least; especially' (< OE *huru*; l. 11, 481) and *þar-uore* 'therefore' as well as other forms of so-called *here*/*there*-compounds (Österman 1997; Lenker 2010) which can also work on the local level of discourse and hence need not connect sentences or stretches of discourse. These are a new formation pattern in early Middle English texts, replacing the Old English patterns. In these formation patterns, too, *O & N* clearly shows idiomatic patterns of early Middle English.

4.2.3 Adverbs in *The Owl and the Nightingale* – Forms

Among the about 160 adverbial types[20] and the about 900 tokens of adverbs in *O & N*, there are only 13 types (15 tokens; TTR (type-token ratio) 0.86) of de-adjectival adverbs in *-liche* (i.e. less than 2 per cent; compared to 33 per cent adverbs in *-ly* in today's English FICTION; see Biber at al. 2021: 537). Adverbs in *-e*, i.e. following the earlier morphological pattern inherited from Germanic/Old English, are attested in 31 types and 107 instances (TTR

---

[20] This calculation rests on the glossaries of the editions by Stanley (1960) and Cartlidge (2001) and my analysis of the text. The type count includes compound forms (this is why I say "about"). I do not give a precise number of the tokens, though, because of the extraordinarily large number of ambiguous adverbs/conjunctions, none which, however, is formed in *-e* or *-liche* (see Section 4.2.2).

0.28); if we exclude the forms of *suþe* (with spelling variants *swiþe*, *sviþe*, *swiþ*, *swuþe*, *suiþe*) used as intensifiers, we arrive at 31 types and 94 instances (TTR 0.32; *suiþe* is attested once in its full lexical meaning 'quickly', l. 376).

4.2.4 De-adjectival Adverbs in *-e*

Tab. 4 and 5 list all of the de-adjectival adverbs in *O & N*. As noted above, adverbs in *-e* (Tab. 4) are much more frequent than those in *-liche* (Tab. 5) in this idiomatic early Middle English text. They also have a much higher token number, even if we exclude the intensifier *suþe* (see Section 4.2.3). The only 'dual adverb' in this text is *derne – dernliche* 'secretly'.

Tab. 4 furthermore allows a comparison of the attestations of adverbs to the adjectives they are derived from; in order to test the suggestion by earlier research (see Section 3.2) that the emergence of the more salient adverbial suffix *-liche* is grounded in ambiguities with forms of adjectives, the right-hand column lists both the adjective lemma and, more importantly, the attestations of homonymic forms of adverb and inflected adjective (i.e. cases where both adverb and inflected adjective end in *-e*). All in all, the only ambiguous cases are the adverb/adjective forms cited as examples (5) and (6) above (*starke*, *stronge* and *nowe*), but none of these give rise to any potential for semantic or pragmatic mis-understanding.

This shows that the forms in *-liche* are not used to disambiguate any of the items attested in identical form in the highly idiomatic *O & N*. A purely formal reason for the emergence of adverbial *-liche* (see Section 3.2) is thus not evinced by this study of adverbs in *O & N*.

Tab. 4: *O & N*: Adverbs in *-e*[21]

Adverb	Adjective
brihte 'clearly' (1245, 1656)	*briȝt* (form *briȝte* 240, 250, 1681)
coue 'swiftly' (379)	
derne 'in the dark' (1357)	
faire 'well, agreeable' (924, 1556)	*fair* (form *faire* 1046, 1338)
faste 'tight, firmly' (656, 796)	
ȝeorne 'eagerly' (538, 661, 1352, 1581)	

---

[21] ME *iliche* (< OE *gelice*) 'immutably, continually' (l. 618, 718) is excluded because of its different formation pattern. No line numbers are given for the adjectives *heh* and *rad*/*rade* because they are phonetically (or rather: orthographically) so different from the adverb forms that there is no reason for alleging ambiguity.

Adverb	Adjective
ʒomere 'mournfully, dolefully' (415)	
heʒe 'high, loud' (989, 1646)	*heh*
ihende 'near, close' (1131)	
ilome 'often, repeatedly' (49, 290, 1211 etc; 6 instances)	
lome (1545)	
loʒe 'low' (1052, 1456)	
longe 'long' (41, 81, 253 etc.; 16 instances)	*long* (form *longe*: 45, 140, 331, 334, 523, 790, 857, 1591)
lude 'loud' (112, 141, 982, 1255)	*lud* (form *lude* 314)
narewe 'closely' (68)	*narewe* (377)
nowe 'newly' (1129 – or adj.)	
raþe 'soon, quickly' (1086, 1147, 1700)	*rad/rade*
scharpe 'shrilly' (141)	*scharp* (form *scharpe* 153, 1676)
schille 'piercingly' (1656)	*schille* (142, 558, 1721)
sore 'sorely, bitterly' (885, 1150, 1352 etc.; 8 instances)	*sore* (540, 689, 690 etc.; 6 instances)
starke (1176 or adj.)	*starc* (form *starke* 524, 1176 or adv.)
sterne 'sternly' (112)	
stille 'still' (282, 655, 1019, 1255)	*stille* (261, 546, 979)
stronge 'strong' (254, 972) – or adj. (12)	*strong* (form *stronge* 155, 269, 524, 1082, 1176, 1684)
suþe 'extremely, very, strongly' (2, 12, 155 etc.; 22 instances) *suiþe* 'quickly' (376)	
þicke 'thick' (430)	*þicke* (17, 587, 580, 616, noun 'undergrowth' 1626)
þunne 'thinly' (1529)	
unneaþe 'nearly, with difficulty' (1605)	*unneaþe* (1618)
unwreste 'badly' (342)	*unwreste* (178, 1170)
uuvele 'badly, wickedly' (63, 1206)	*uuel* (form *vuele* 247, 1171, 1172, 1376)
wide 'far and wide' (288, 300, 430, 710)	
wroþe 'angrily, wickedly, cruelly' (63, 415, 972, 1360, 1529)	*wroþ* (form *wroþe* 1145)
Compounds *ouer-longe* 'for too long' (450) *ouer-swiþe* 'excessively' (1518)	

The comparison of adverbs in *-e* and their formally identical adjectives in *-e* in Tab. 4 does not support the alleged formal reasons of disambiguation suggested for the emergence of adverbial *-liche*. For none of the potentially ambiguous adverbs (i.e. those showing formal identity between inflected adjectives in *-e* and adverbs in *-e*) do we find an adverb in *-liche*,

which would have been more salient in its adverbial form. The only case of a dual adverb – *derne* and *dernliche* – are not attested in homonymic form in the text. Again, this suggests that semantic (rather than formal) constraints may have been a key factor in the emergence (and subsequent spread) of the English adverbial signature *-ly*.

We will start with a discussion of the adverbs in *-e*. Apart from the intensifier *suþe* 'very', *O & N*'s adverbs in *-e* are circumstance adverbs used in their concrete, non-figurative sense. This can be seen in the many examples of *longe* 'a long time' (14), an adverb which shows historical continuity in being 'flat', i.e. does not have any ending in Present-Day English (cf. PDE *It won't last long*; Pullum & Huddleston 2017: 568–569).

(14) And warp a word þarafter *longe* (45)   (Rhyme: *songe*)
    Þarmid þu clackes oft and *longe* (81)   (Rhyme: *songe*)
    Þos Hule luste suþe *longe* (253)   (Rhyme: *stronge*)
    Eurich murȝþe mai so *longe* ileste (341)
    Þat *longe* abid þar him nod nis (466) etc.

This semantic profile also fits *fast* 'firmly' (15), also a flat adverb in Present-Day English, showing historical continuity from Old English onwards in its concrete meaning (cf. OE *fæste* 'firmly' in (8) contrasting with *fæstlice* 'strictly; urgently').

(15) 3if tueie men goþ to wraslinge
    An eiþer oþer *faste* þringe (*O & N*, 795–796)
    'If two men go to a wrestling match / and each of them throws the other firmly down'

The semantic profile of adverbs in *-ly* had to be verified especially for the potentially abstract/figurative and thus subjective ones such as *suiþe* (circumstance adverb 'quickly' in (16)), which is more often used as the intensifier 'very', and *ȝorne* 'eagerly' ((17); cf. German subjective *gerne* 'with pleasure', signalling the speaker's attitude towards a directive):

(16) He gengþ wel *suiþe* awaiwart (*O & N*, 376)
    'He goes quickly away'

(17) An secheþ *ȝorne* to þe warme. (*O & N*, 538)
    'And seek eagerly for a warm place'
    An *ȝeorne* fondeþ hu heo muhe (*O & N*, 1581)
    'And eagerly strives …'

4.2.5 De-adjectival Adverbs in *-liche*

In order to substantiate the claim in the focus of this study, we will now have a closer look at the instances of adverbial *-liche* in order to establish their semantics and test the specific subjective meaning of manner adverbs in *-liche.*

Tab. 5: *O & N*: Adverbs in *-liche*

boldeliche 'boldly, courageously' (401, 1707)
dernliche 'secretly' (1423)
fuliche 'completely, quite' (1687)
gideliche 'foolishly, madly' (1282)
grimliche 'fiercely' (1332)
hardeliche 'bravely' (402)
hwatliche 'actively, quickly' (1708)
ikundeliche 'naturally, by natural instinct' (1424)
liȝtliche 'easily' (854); 'casually, negligently' (1774)
misliche 'irregularly' (1773)
opeliche 'openly' (853)
readliche 'readily' (1281)
sikerliche 'for certain' (1139)

Just as the Old English adverbs in *-lice*, these adverbs in ME *-liche* have a low token number. Most of the translations in Tab. 5 indicate the particularly subjective meanings of these adverbs in *-liche.* As noted above, the only dual adverb attested in both forms in *O & N* is *derne – dernliche* 'secretly'. The passages featuring *derne – dernliche* are, for that matter, the least obvious ones as concerns a semantic distinction.[22]. We might relate this to Donner's finding that the semantic constraint is a "freely disregarded convention" rather than a fixed rule (Donner 1991: 7). A closer look at the instances in context, however, shows that the meaning of *dernliche* (18a.) implies a particularly subjective stance by the speaker; the girl is qualified not only as loving 'secretly', but in – so the belief or attitude of the narrator – in a prohibited or even 'sly' way (*MED* s.v. *dernelīche* 3c 'stealthily, slyly'). In (18b.), the subjective stance is not expressed by the adverb, but by the verb *þenche* 'it may seem to her' (see Sections 3.3. and 4.1.3 on verbal markings of subjectivity in Middle English).

---

[22] The other adverb not fitting the figurative/subjective semantic profile of adverbs in *-liche* is *icundliche* 'by nature' (*O & N*, l. 1424). This was clearly formed as a calque on Latin *naturaliter* in Old English (cf. *DOE* s.v. *gecyndelice*); on such calques, see Section 4.1.1.

(18)   a.   ȝef maide luueþ *dernliche*,
       heo stumpeþ & falþ *icundeliche*:
       for þah heo sum hwile pleie,
       heo nis nout feor ut of þe weie; (*O & N*, 1423–1426)
       'If a girl loves secretly, / she will trip and fall because of her nature/naturally; / for although she plays round for a while, / she is not far off course'.

       b.   ȝef wimmon þencheþ luuie *derne*,
       [ne] mai ich mine songes werne. (*O & N*, 1357–1358)
       'If women think / it seems to women they can love secretly, / I can[not] withhold my song'.

In our examination of the Old English texts (*ThCap1* and *ThCap2*), we have also seen that the forms in *-e* (such as *clæne* 'purely' and *fæste* 'vigorously'; see Section 4.1.3) can acquire figurative meanings in addition to their concrete ones, so that we are not dealing with a fixed rule in these cases. Adverbs on *-liche*, by contrast, are generally more subjective in that their employment is based in the speaker's subjective belief or attitude toward the proposition.

   In order to provide some more support for the specific semantic profile of adverbs in *-liche*, we will compare some of *O & N*'s adverbs in *-liche* to their counterparts in *-e* (if attested at all in the *MED*),[23] as was done above for the Old English examples from the more independent Old English version of the *Theodulfi Capitula*, *ThCap1* (examples (8)–(10)).

(19)   *opeliche* 'obviously' – *liȝtliche* 'easily'
       Ac hit is alre wnder mest
       Þat þu darst liȝe so *opeliche*.
       Wenest þu hi bringe so *liȝtliche*
       To Godes riche al singinge? (*O & N*, 852–855)
       'But it's really astonishing / that you dare to tell such an obvious lie. / Do you expect to bring them [= humankind] so easily / to God's kingdom, all singing?'.

       a.   adverb *open*:
       He strak þe Duk in þe schelde, Wyde *opyn* in þe felde (*MED*; c1440 Degrev. (Thrn) 1310)
       'He stroke the duke [...] wide open in the field'

       b.   adverb *liht*(*e*):
       [...] and liȝt armed (*MED*; a1450(1408) *Vegetius(1) (Dc 291) 76b)
       '[...] and lightly armed'

---

[23] *Sikerliche* is discussed above as example (13).

In comparison with *open* and *liȝt*, the subjective meanings of *opeliche* and *liȝtliche* are evident: It is the speaker's (= the Owl's) belief that makes her accuse the interlocutor of lying, since this lie is evident to her; this subjectivity also applies for qualifying the Nightingale's attempts to bring humankind to God's kingdom by *liȝtliche* 'easily'.

Such a subjective meaning is also obvious in *hardeliche* 'bravely' in (20), and perhaps also in *boldeliche* (also 20), which is interpreted as 'courageously' (i.e. a speaker perspective reflecting the attitude of the speaker towards the proposition) in the glossaries and translations.

(20) Ac noþeles he spac *boldeliche*;
   Vor he is wis þat *hardeliche*
   Wiþ is uo berþ grete ilete
   Þat he uor areȝþe hit ne forlete: (*O & N*, 401–404)
   'But nevertheless she spoke out courageously; / because it is wise to put on a brave show / in front of one's enemy rather than giving up out of cowardice'.

The negative speaker attitude on the proposition is evident in *misliche* 'unfairly' and – again – *lihtliche* in (21). Here, the subjective quality of the semantics of the adverbs is further highlighted by the intensifier *wel*, which premodifies both adverbs.

(21) "Certes," cwaþ þe Hule, "þat is soð,
   Þeos riche men wel muche misdoð
   Þat leteþ þane gode mon,
   Þat of so feole þinge con,
   An ȝiueþ rente <u>wel</u> *misliche*,
   An of him leteþ <u>wel</u> *lihtliche*; (*O & N*, 1769–1774)
   '"To be sure," said the owl, "that's true; [1770] / these powerful men act very wrongly / when they neglect that good man / who knows about so many things, / and distribute income very *unfairly*, / and don't take him *seriously*"'.

It will not have escaped the reader that all the instances of -*liche*, are found in the end rhymes, either with an inflected adjective (*grisliche* in (12)) or another adverb in -*liche*. While this may impair the individual analysis, it should not be overrated, since – as has been noted above in Section 4.2.1 – there is much freedom in *O & N* as concerns stress patterns. Also, the examples collected in (14), of which there would have been many more,

show the preference of the author of *O & N* for rhyming pairs of adverbs (or adverb and inflected adjective).[24]

5. Conclusions

The detailed textual analysis of adjectives and adverbs ending in *-e* and *-liche* (later *-ly*) in late Old English and early Middle English texts aimed to shed light on one of the open morphological questions in the history of English, namely the fact that neither the early Old and Middle English history of what is now the English 'adverbial signature' *-ly* nor the exact date and reasons for its remarkable spread are fully understood, even though the suffix *-ly* is unique to English among the Germanic languages and even though its emergence seems to contradict general trends of language change in English, the loss of inflectional endings and the fact that English is otherwise happy to allow zero-derivation. My examination of the forms could show that the alleged reason for the emergence and spread of adverbial *-liche* (cf. Mustanoja 1960: 314; Pounder 2001: 316–319), namely an 'ambiguity of forms' between inflected adjectives ending in *-e* and adverbs ending in *-e* in early Middle English, can be ruled out: In the early Middle English texts, there are only very few cases of ambiguity and none of them has any potential for misunderstanding.

The present study thus adopted another perspective related to recent synchronic and diachronic research (Tagliamonte 2018; Lenker forthc. a), which has focussed on the contrasting semantic profiles of manner adverbs marked by *-e* (suffixless in Present-Day English; concrete meaning) and those marked by OE *-lice* / ME *-liche* / PDE *-ly* (figurative, subjective meanings). These contrasting semantic profiles have their origin in the fact that Germanic complex adjectives in *-lic* (the basis for later re-analysed adverbial *-ly*) are commonly more abstract or figurative and more subjective than their parallel forms without *-lic* (cf. *biter* 'having a bitter taste' vs. *biterlic* 'painful' or *heard* 'hard' vs. *heardlic* 'tough, hardy; resolute') (see Section 3.2). From the comprehensive contextual studies of two eleventh-century Old English translations of the Latin *Theodulfi Capitula* and the early

---

[24] The analyses of other early Middle English poetry in Lenker (forthc. b) – among them *Havelok the Dane*, *King Horn* and *Floris and Blancheflour* – have confirmed the contrasting profiles for adverbs in *-e* vs. those in *-liche*. The predominance of adverbs in *-liche* in rhyme-end is position is much less frequent in the other poems, however, and thus peculiar to *O & N*.

Middle English poem *The Owl and the Nightingale*, it emerges that the suffix *-lice* had become – morphologically – "the real indication of the adverbial function" (Jespersen 1948: 408) already in Old English (when adjectives and adverbs show negligible ambiguity), but primarily in mechanistic translations in calques marking the morphology of Latin de-adjectival adverbs (*ThCap2*). *ThCap1* and, in particular, *The Owl in the Nightingale*, definitely support the claim for a "historical continuity" in a semantic constraint in manner adverbs from Old English to Present-Day English dialects (Tagliamonte 2018). In texts independent of Latin or French models, such as the *O & N*, adverbs in *-ly* are generally characterized by their figurative and, generally, subjective meaning, which – ultimately – also reinforced their widespread and diversified uses of English adverbs in *-ly* as linking, and in particular, stance adverbials.

References

Álvarez Gil, Francisco J. 1998. -ly Adverbs in the Corpus of History English Texts (1700–1900): A Metadiscourse Approach. Doctoral thesis, Universidad Las Palmas de Gran Canaria.

Biber, Douglas, Stig Johansson, Geoffrey Leech, Susan Conrad & Edward Finegan. 2021. *Grammar of Spoken and Written English*. Amsterdam: Benjamins.

Bolinger, Dwight. 1972. *Degree Words.* The Hague: Mouton.

Breban, Tine & Kristin Davidse. 2016. The History of *very*: The Directionality of Functional Shift and (Inter)Subjectification. *English Language and Linguistics* 20(2). 221–249.

Cartlidge, Neil (ed.). 2001. The Owl and the Nightingale: *Text and Edition*. Exeter: University of Exeter Press.

Cichosz, Anna, Piotr Pęzik, Maciej Grabski, Michał Adamczyk, Paulina Rybińska & Aneta Ostrowska. 2021. *The VARIOE Online Morphological Dictionary for YCOE*. Łódź: University of Łódź. http://varioe.pelcra.pl/morph (accessed 25 June 2024).

de Smet, Hendrik & Jean-Christophe Verstraete. 2006. Coming to Terms with Subjectivity. *Cognitive Linguistics* 17(3). 365–392.

DOE = Dictionary of Old English: A to I online, eds. Angus Cameron, Ashley Crandell Amos, Antonette diPaolo Healey et al. Toronto: Dictionary of Old English Project, 2018. https://tapor-library-utoronto-ca.emedien.ub.uni-muenchen.de/doe/ (accessed 12 March 2024).

DOEC = Dictionary of Old English Web Corpus. 2009. https://tapor.library.utoronto.ca/doecorpus/ (accessed 12 March 2024).

Donner, Morton. 1991. Adverb Form in Middle English. *English Studies* 72. 1–11.

eWAVE 3.0 = Kortmann, Bernd, Kerstin Lunkenheimer & Katharina Ehret (eds.). 2020. *The Electronic World Atlas of Varieties of English*. http://ewave-atlas.org (accessed 25 January 2024).

Giegerich, Heinz. 2012. The Morphology of *-ly* and the Categorial Status of 'Adverbs' in English. *English Language and Linguistics* 16(3). 341–359.

Guimier, Claude. 1985. On the Origin of the Suffix -ly. In Jacek Fisiak (ed.), *Historical Semantics: Historical Word-Formation*, 155–170. Berlin: De Gruyter.

Ito, Rika & Sali A. Tagliamonte. 2003. *Well weird*, *right dodgy*, *very strange*, *really cool*: Layering and Recycling in English Intensifiers. *Language in Society* 32(2). 257–279.

Jespersen, Otto. 1942. *A Modern English Grammar on Historical Principles.* Part VI: *Morphology*. London: Allen & Unwin.

Jespersen, Otto. 1949. *A Modern English Grammar on Historical Principles.* Part VII: *Syntax*. London: Allen & Unwin.

Kornexl, Lucia. 2002. 'Unnatural words'? – Loan-Formations in Old English Glosses. In Dieter Kastovsky & Dieter Stein (eds.), *Language Contact in the History of English*, 195–216. Frankfurt a. M.: Lang.

Lenker, Ursula. 2000. *Soþlice* and *witodlice*: Discourse Markers in Old English. In Olga Fischer, Anette Rosenbach & Dieter Stein (eds.), *Pathways of Change: Grammaticalization in English*, 229–249. Amsterdam: Benjamins.

Lenker, Ursula. 2010. *Argument and Rhetoric: Adverbial Connectors in the History of English*. Berlin: Mouton de Gruyter.

Lenker, Ursula. Forthc. a. The History of Adverbs. In Joan Beal (ed.), *New Cambridge History of the English Language.* Volume 3: *Change, Transmission and Ideology*, Chapter 11. Cambridge: Cambridge University Press.

Lenker, Ursula. Forthc. b. Middle English Adjectives and Adverbs in *-līch(e)/-ly*. Paper presented at the 13th *ICOME*, Málaga, 2024.

Lenker, Ursula. Forthc. c. Grammaticalization and Word Formation Cont'd: Histories of English *-ly*. Paper presented at Abschiedsworkshop von Ilse Wischer, Potsdam, 22 March 2024.

Macaulay, Ronald K. S. 1995. The Adverbs of Authority. *English World-Wide* 16(1). 37–60.

McIntosh, Angus. 1991. Old English Adjectives with Derivative *-lic* Partners: Some Semantic Problems. *Neuphilologische Mitteilungen* 92. 297–310.

MED = Middle English Dictionary. https://quod.lib.umich.edu/m/middle-english-dictionary/dictionary (accessed 12 March 2024).

Méndez-Naya, Belén. 2008. Special Issue on English Intensifiers. *English Language and Linguistics* 2008(2). 213–394.

Mustanoja, Tauno F. 1960. *A Middle English Syntax*, Part I. Helsinki: Société Néophilologique.

Nevalainen, Terttu. 1994. Diachronic Issues in English Adverb Derivation. In Udo Fries, Gunnel Tottie & Peter Schneider (eds.), *Creating and Using English language Corpora: Papers from the Fourteenth International Conference on English Language on Computerized Corpora, Zürich 1993*, 139–147. Amsterdam: Rodopi.

Nevalainen, Terttu. 1997. The Processes of Adverb Derivation in Late Middle and Early Modern English. In Matti Rissanen, Merja Kytö & Kirsi Heikkonen (eds.), *Grammaticalization at Work: Studies of Long-Term Developments in English*, 145–189. Berlin: Mouton.

OED = Oxford English Dictionary. https://www.oed.com/ (accessed 12 March 2024).

Opdahl, Lise. 2000. *LY or zero suffix? A Study in Variation of Dual Form Adverbs in Present Day English*. 2 vols. Frankfurt a. M.: Lang.

Österman, Aune. 1997. *There* Compounds in the History of English. In Matti Rissanen, Merja Kytö & Kirsi Heikkonen (eds.), *Grammaticalization at Work: Studies of Long-Term Developments in English*, 191–276. Berlin: Mouton de Gruyter.

Peters, Hans. 1993. *Die englischen Gradadverbien der Kategorie* booster. Tübingen: Narr.

Pounder, Amanda. 2001. Adverb-Marking in German and English: System and Standardization. *Diachronica* 18(2). 301–358.

Pullum, Geoffrey & Rodney Huddleston. 2002. Adjectives and Adverbs. In Rodney Huddleston & Geoffrey K. Pullum (eds.), *The Cambridge Grammar of the English Language*, 525–596. Cambridge: Cambridge University Press.

Quirk, Randolph, Sidney Greenbaum, Geoffrey Leech & Jan Svartvik. 1985. *A Comprehensive Grammar of the English Language*. London: Longman.

Sauer, Hans (ed.). 1978. Theodulfi Capitula *in England: Die altenglischen Übersetzungen zusammen mit dem lateinischen Text*. Munich: Fink.

Sauer, Hans (ed. and trans.). 1983. *The Owl and the Nightingale/Die Eule und die Nachtigall*. Stuttgart: Reclam.

Schmid, Hans Ulrich. 1998. -lîh-*Bildungen: Vergleichende Untersuchungen zu Herkunft*, *Entwicklung und Funktion eines althochdeutschen Suffixes*. Göttingen: Vandenhoek & Rupprecht.

Stanley, Eric G. (ed.). 1960. *The Owl and the Nightingale*. London: Nelson.

Stratton, James M. 2022. Old English Intensifiers: The Beginnings of the English Intensifier System. *Journal of Historical Linguistics* 12(1). 31–69.

Swan, Toril. 1988. *Sentence Adverbials in English: A Synchronic and Diachronic Investigation*. Oslo: Novus.

Swan, Toril. 1989. The Development of Sentence Adverbs in English. *Studia Linguistica* 42(1). 1–17.

Tagliamonte, Sali & Rika Ito. 2002. Think *real different*: Continuity and Specialization in the English Dual Form Adverbs. *Journal of Sociolinguistics* 6(2). 236–266.

Tagliamonte, Sali. 2018. *Near* done; *awful* stable; *really* changing: The Suffixless Adverb in Dialects of the UK. *Diachronica* 35(1). 107–143.

Traugott, Elizabeth Closs & Richard Dasher. 2001. *Regularity in Semantic Change*. Cambridge: Cambridge University Press.

Uhler, Karl. 1926. *Die Bedeutungsgleichheit der altenglischen Adjektiva und Adverbia mit und ohne* -lic (-lice). Heidelberg: Winter.

Valera Hernández, Salvador. 1996. *Adjetivos y adverbios en Inglés: La relación de homomorfia*. Granada: Universidad de Granada.

Ursula Lenker

Dept. for English and American Studies/English Linguistics

Literature of the Middle Ages

University of Munich (LMU)

Schellingstraße 3/RG

D–80799 München

Ursula.Lenker@lmu.de

Mihaela Buzec

Framework Proposal:
A Semantic Feature Analysis of Kennings to Support Their Role in Aiding Word Retrieval in Oral Old English Poetry

Abstract: The purpose of this paper is to explore the role of the use of kennings in Old English poetry beyond their rhetorical power, more specifically, their role as mnemonic devices. Generally, kennings are used to refer to a certain entity using a more complex and descriptive way, more than one individual tag. This way of encoding referents seems to carry more than aesthetic value for poets and bards. Since Old English poetry is believed to be oral in nature, an argument could be made for the use of specific structures that can aid word and context retrieval, especially in longer-form content. As such, kennings would function as anchors; this function is permitted because kennings contain semantic information that supports word retrieval. The framework for analysing this type of word-formation is based on Semantic Feature Analysis, which is a therapy line for aphasia and anomia to improve word retrieval in post-stroke patients. Beyond this analysis, this paper will argue for the importance of considering alternate, novel techniques and methodologies for the study of Old English and for the diachronic study of language altogether, hoping to help bridge the gap between different areas of research.

Keywords: kennings; Semantic Feature Analysis; Old English; word-formation; word retrieval

1. Introduction

The rhetorical devices of Old English (OE) poetry have been the subject of many studies over the decades, each with a different framework for interpretation. Although many scholars focus on the stylistics and formal reasons for the implementation of these devices, a relatively new research enterprise is being considered, with researchers looking into the cognitive processes that underlie the interpretation and justify the use of rhetorical devices. The current study presents just such a proposal, grounded in cognitive linguistics. The object of analysis chosen for this study is the kenning, a very productive word-formation tool in Old English. The theoretical framework is centred around lexical and semantic

processing as they are explored in Semantic Feature Analysis (SFA), a therapy line for anomia, a language impairment primarily affecting the retrieval of nominals.

The specific SFA structure selected for this paper is the chart-based one, as initially developed by Ylvisaker & Szekeres (1985). All the kennings interpreted in this study are taken from the epic poem *Beowulf*, as found in Fulk et al. (2008) fourth edition; from the Old English *Genesis* (Krapp 1931); and from the Old English *Andreas* (Krapp 1932). The contexts for the interpretation of the *Beowulf* kennings are selected from Fulk's (2010) Modern English translation. The choice of these sources for kenning selection for this particular paper is justified because of the poems' long form, which implies a cognitive load on the person reciting them, especially considering different contexts for different episodes. The role of kennings is considered here not for what it offers to the listener (interpretation of perception), but for what it offers to the one reciting the poem (usefulness of the mechanism). To foreshadow the answer to this question, the different kennings used for the same concept will provide a key to a semantic network built around said concept by the tags used in the kennings, therefore allowing the poet or the bard elegant word- and context-retrieval solutions.

The structure of the present paper includes a very brief overview of the two main concepts – kennings and SFA – before moving on to the proposal itself and the presentation of an initial analysis. Further recommendations for analysis and limitations are given towards the end of the paper.

2. Kennings

Kennings are nominal compounds that consist of at least two parts, one representing the base word and the other representing a modifier. Implicitly, they also have referents in the entities or concepts that are replaced by the kenning. Kennings have long been studied within Old Norse literature, as has the role they play in Old English poetry.[1] There is some debate over what constitutes a kenning, including not only their function but their nature as well. The distinction between kenning and *kend heiti*, for instance, is one such example, with some authors arguing that a *kend heiti* is simply a grouping of words or a compound

---

[1] On Old English, see, e.g., Marquardt (1938), Klaeber (1950), Gardner (1969), and, most recently, Fulk (2021).

that describes the referent as something expected, whereas a kenning implies a metaphor, a comparison with something the referent is not (Lee 1998; Mitchell & Robinson 1998). In this view, the distinction is one similar to that between metaphor and metonymy, as Gvarishvili (2016: 351) explains: "The dividing line between the kenning and *kend heiti* is [the] difference between a metaphor and metonymy, kennings having the underlying driving force of the former and kend heitis of the latter." However, Fulk et al. (2008: lxiv) and others name any compound that contains a circumlocutory word a kenning. This debate is justified, as researchers seek to create a comprehensive anatomy of Old English poetry with an appropriate taxonomy.

Summaries of the various definitions and complexities of kennings can be found in Fulk (2021: 70–74) and Marold (2012). The latter notes two main positions: the kenning as a circumlocution, and the kenning as a metaphor. Metaphorical kennings are, of course, very important to distinguish for stylistic studies and research that analyse the poetic force of these compounds. However, for the purpose of this study, the broadest definition for kennings fits better, as circumlocutions represent complex enough compounds for the creation of semantic networks. As such, the appropriate definition of kenning for the present study is one selected from Marold (2012: lxx), as identified in Meissner (1921): "a kenning replaces a noun of ordinary discourse, consists of at least two parts and follows typical circumlocutionary patterns".

3. Cognitive Linguistics Used for Interpreting Kennings

The proposal put forth in this paper is novel in the selection of framework, but not in the conceptualisation of the approach. Cognitive linguistics has a rich tradition, arguably starting with Ronald Langacker who posits that our language is inherently symbolic in all aspects, across grammatical units, which he explores in his article "An Introduction to Cognitive Grammar" (1986). Other researchers have linked the study of metaphors and metonymies with cognitive linguistics, including the already established traditions started by Lakoff or Turner, and the important work "Metaphors We Live By" by Lakoff & Johnson (1980). In that work, the authors note that there exist "automatic direct links between form and content, based on general metaphors in our conceptual system. Such links make the

relationship between form and content anything but arbitrary" (Lakoff & Johnson 1980: 126). In this interpretation, the idea of a justified, specifically chosen form for a word comprising a metaphor is explained as being integral to human perception. However, "relatively little work has focused on figurative language in diachrony" (Broz 2011: 165). For example, the work of Broz (2011) focussed on using the cognitive linguistics framework of "blends and prisms" to help interpret the semantic composition of a kenning. Additionally, Holland (2005) proposed that for the interpretation of kennings, one can employ semantic frames as put forth in the work of Fillmore (1982).

The present proposal revolves around the function of kennings, less so around their stylistic power. Also, the person of interest for this analysis is not the one listening to the poem, but the one reciting it. The cognitive processes underlying the interpretation of a kenning are less important for the proposed framework than are the semantic associations made by the person who is supposed to easily navigate the cognitive load of a long poem. Kennings create associations between concepts and features in a more imaginative way, but their function seems nevertheless to involve this type of matching and association between one core feature of the concept they represent and the context in which that particular concept appears. Understanding kennings as a result of a semantic feature association would explain that through the usage of this device, the arbitrariness of word-formation would be replaced by an inherently motivated and deliberate naming process. In this way, kennings would seem to support an active type of recall.

4. Semantic Feature Analysis

Semantic Feature Analysis (SFA) is a framework used in the treatment of disorders that involve word retrieval deficiencies such as the treatment of anomia, a naming impairment associated with aphasia, among others. It is a technique based on creating a matrix of defining features for a target concept. First developed by Ylvisaker & Szekeres (1985), SFA as a treatment method employs a chart (Fig. 1) that guides the patient in identifying key features that are semantically linked to the target word, in hope of eliciting a response. Al-though other researchers have used the name SFA to refer to various adaptations to the treatment, the one variant that is employed for the present study is the original, chart-based

one. The basis of the technique lays in theories of semantic processing and lexical access, as well as the interaction between the two processes.

> Because it is suggested that anomia results from an impaired semantic network, the goal of therapy is to alter the semantic network connectivity through refinement of the damaged network. Hypothetically, SFA improves the retrieval of conceptual information by accessing and refining semantic networks (Maddy, Capilouto & McComas 2014: 255).
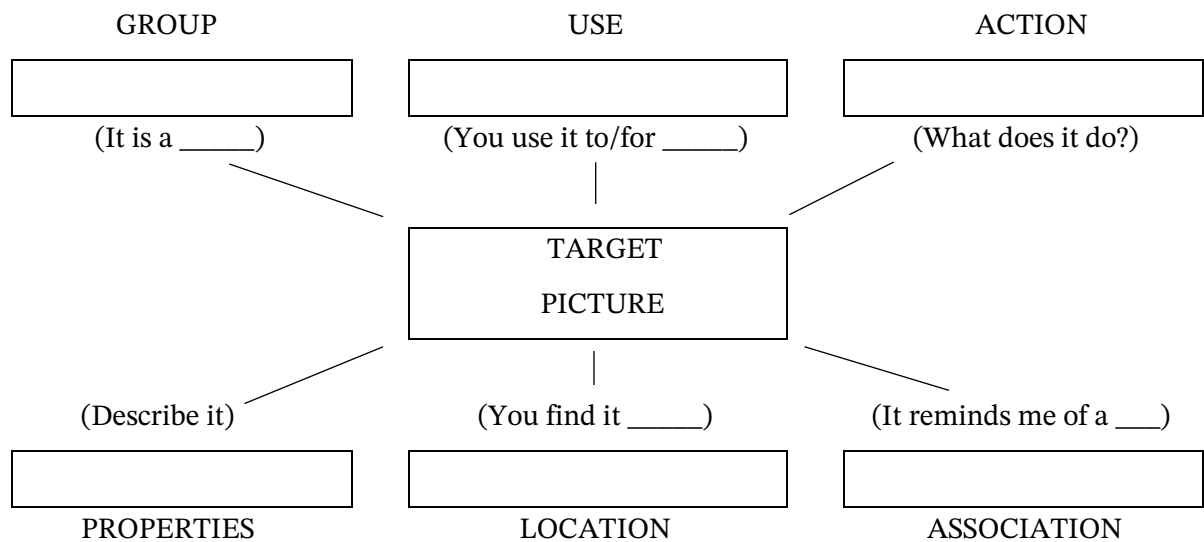

Fig. 1: Semantic Feature Analysis chart (Boyle 2010: 413)

A concept can be imagined as being the target of naming, and its various semantic features as doors of access. To get to a tree, we can take the route of its location, i.e. "it is found in forests", or of its properties, i.e. "it has leaves, a root, a trunk", its action, i.e. "it gives fruit" etc. By extension, the present analysis argues for a similar effectiveness in SFA's reverse use, meaning that if we start from the concept (the referent of the kenning), we can use different doors of access that consist of various semantic features of the concept (the components of the kenning), to reach a related context.

The effectiveness of SFA has been studied in relation to anomic aphasia, and the rates of success in word retrieval improvement indicate that constructing such a (mental) map to navigate the concepts and their features is helpful in naming and remembering. Results of a systematic review "indicate that SFA is an effective intervention for improving confrontational naming of items trained in therapy for individuals with non-degenerative aphasia" (Maddy, Capilouto & McComas 2014: 259).

Anomia is believed to be the result of an impairment to semantic networks. SFA used for treatment would then theoretically help reconstruct a broken network. In the framework proposed here, kennings would be interpreted as a result of semantic feature association, and they would function as a basis for building semantic networks and offering clues for the specific contexts in which they appear. To make matters more concrete, the reader could exercise this approach with an imagined example. Consider the idea of the body and its duality. A kenning for the body such as 'house of bones' would signal to the reader/listener (and the user of language) the idea of the corporality and physicality of the body. These semantic features then activate a network that builds on these aspects, offering a contextualisation that relies on such concepts. Thus, it is expected to find such kennings in fighting scenes, battles, feasts, etc. Contrastively, a kenning that would name the body the 'house of the soul' would signal a semantic network that reflects the spiritual side of humans, building up to a context such as a funeral, death, etc.

If we take this idea as our starting point, the use of different kennings for the same concept would be justified then – besides the requirements for the alliterative form of a poem – through the creation of different semantic networks that would characterise the contexts in which the different kennings are to be used. The paper continues with an example of the framework in use and proposals for other possible analyses.

5. Examples of Framework in Use

One of the concepts frequently described through kennings in Old English poetry is that of the sea. In this section, two instances of kennings for 'sea' as they appear in *Beowulf*, *Genesis*, and *Andreas* are selected, along with their immediate contexts. In these passages, the framework then recommends checking for semantically related items that could be prompted by the use of a particular kenning and its embedded semantic concepts.

The first example of a kenning for the concept of 'sea' appears at the very start of the poem, in line 10a, as *hronrade* ('whale-road') or 'the way of the whale'. In this context, the sea is not a central concept; it appears when the poet explains the extent of the renown of the king, Scyld Scefing. A semantic network that can be inferred here is related to the feature 'property', even more specifically related to the size of the associated concept, the

whale. Being a very large creature, it lends this quality to its home as well, which is the sea. As the renown of the king spreads over the sea, the poet emphasises the far-reaching reputation of Scyld Scefing, as can be seen in the prose translation of lines 7a–11: 'He lived to see remedy for that: grew up under the heavens, prospered in marks of distinction, until every neighbour across **the whale-road** had to answer to him, pay tribute. That was a good king' (Fulk 2010: 87; emphasis added). However, another interpretation can be related to the fact that this is the first mention of the sea in the poem, in which sea voyages and sea fights are central. With this first image, the poet establishes the grandeur of this element and its importance to the peoples featured in the poem.

Another instance of this kenning can be found in the Old English *Genesis A*, in line 205a:

Brucað blæddaga   and brimhlæste
and heofonfugla.   Inc is halig feoh
and wilde deor   on geweald geseald,
and lifigende,   ða ðe land tredað,
feorheaceno cynn,   ða ðe flod wecceð
geond **hronrade**.   Inc hyrað eall.
(Krapp 1931: 8; *Genesis A*, l. 200–206,
emphasis added).

'Brook these blessed days and the ocean's bounty
and the birds of heaven. You are given dominion
over the wild beasts and the clean cattle
and all things living, those that tread upon the land,
imbued with life, and those that the flood rouses
throughout **the whale-road** – all shall heed you.'
(Hostetter 2018, emphasis added)

In this passage we find the instructions given to Adam and Eve, who are given dominion over all of Earth and the life in the sea. Once again, the grandeur of the sea as recalled via the specific kenning is related to the context in which the reader finds it, namely mentioning the abundance of life and territory represented by the sea.

This specific kenning is found in the Old English poem *Andreas* as well, in line 821a:

þus Andreas   ondlangne dæg
herede hleoðorcwidum   haliges lare,
oððæt hine semninga   slæp ofereode
on **hronrade**   heofoncyninge neh.
(Krapp 1932: 25; *Andreas,* l. 818–821,
emphasis added)

'Thus the whole long day Andrew
praised the teaching of the Holy One in utterances
until sleep overcame him suddenly
on the **whale-road**, beside the King of Heaven.'
(Hostetter 2017, emphasis added)

This section describes Andreas falling asleep while at sea, after a long day of spreading the word of God and the knowledge of God's might and miracles, slumbering *heofoncyninge neh* 'near the King of Heaven'. This passage, although not referring directly to the size of the sea itself or the length of the journey, still relates to a grandeur of the work done by Andreas and the beliefs being spread.

Another kenning for 'sea' is *swanrade* ('swan-road'), which appears in line 200a of *Beowulf*. This name for the sea, which can be translated as 'the way of the swan', is present before a passage in which the ship's image is central. The common shape of a ship was similar to that of a swan, so the feature 'association' is selected here (i.e. 'the ship reminds me of a swan'). Building further, the kenning showcases the feature 'use' or 'property' in describing the sea as the navigation channel for ships. In this sequence, the image of the ship appears multiple times:

Hiġelāces þeġn	'At home, Hygelac's man,
gōd mid Ġēatum, Grendles dǣda;	good among the Geats, heard about that, Grendel's doings
sē wæs moncynnes mæġenes strenġest	of humans he was the mightiest in strength
on þǣm dæġe þysses līfes,	in that day of this mortal existence
æþele ond ēacen. Hēt him ȳðlidan	noble and prodigious. He directed that
gōdne ġeġyrwan; cwæð, hē gūðcyning	a good wave-wanderer be readied for him; he said he intended to go see that war-king
ofer **swanrāde** sēċean wolde,	over the **swan-road**, that famous lord
mǣrne þēoden, þā him wæs manna þearf.	now that he had need of men.
Ðone sīðfæt him snotere ċeorlas	Wise men blamed him little for that undertaking
lȳthwōn lōgon, þēah hē him lēof wǣre;	though he was dear to them;
hwetton hiġe(r)ōfne, hǣl scēawedon.	they urged on the valiant one, read the auguries.
Hæfde se gōda Ġēata lēoda	The good one had selected fighters
cempan ġecorone, þāra þe hē cēnoste	from among the men of the Geats, the boldest
findan mihte. Fīftȳna sum	he could find. One of fifteen
sundwudu sōhte; secg wīsade,	he went to the **sailing-wood** the champion,
lagucræftiġ mon landġemyrċu.	that sea-crafty man, showed the way to the land's end.
Fyrst forð ġewāt; **flota** wæs on ȳðum	The time arrived; the **vessel** was on the waves,
bāt under beorge. Beornas ġearwe	the **boat** under the headland. Ready men
on stefn stigon. Strēamas wundon,	climbed onto the prow. Currents eddied,
sund wið sande. Secgas bǣron	sea against sand. Champions hauled
on bearm nacan beorhte frætwe,	into the bosom of the craft gleaming equipment
gūðsearo ġeatolīċ; guman ūt scufon,	stately battle-gear; the heroes,
weras on wilsīð wudu bundenne.	men on a mission, pushed off the vessel of joined planks.
Ġewāt þā ofer wǣġholm winde ġefȳsed	Driven by the wind, **the foamy-necked ship** then

flota fāmīheals fugle ġelīcost,	passed over the sea-waves **most like a bird**
oð þæt ymb āntid ōþres dōgores	until after the lapse of a normal space of time, on the following day
wundenstefna ġewaden hæfde,	the ring-prowed craft had reached the point
þæt ða līðende land ġesāwon,	where the travelers saw land,
brimclifu blīcan, beorgas stēape,	ocean-cliffs standing out, steep headlands
side sǣnæssas; þā wæs sund liden,	broad sea-scarps; then the journey had concluded
ēoletes æt ende.	at the far end of the voyage.'
(Fulk et al. 2008: 9–10; *Beowulf*, l. 194b–224a, emphasis added)	(Fulk 2010: 100–101, emphasis added)[2]

In the same sequence, in line 218b, the poet even comments on the ship that it is 'remarkably bird-like'. The kenning *swanrad* then can be interpreted as a keyword that creates the semantic network of the concept 'sea' by relating it heavily to the concept of 'ship' or 'boat', the shape of the object, and the journey taken by people who embark on boats to traverse seas.

The same kenning appears in the *Andreas* text as well, in line 196b:

Hu mæg ic, dryhten min, ofer deop gelad	'How can I, my Lord, across the deep waters
fore gefremman on feorne weg	accomplish this journey upon the far-flung wave
swa hrædlice, heofona scyppend,	so hastily, O Heaven-shaper
wuldres waldend, swa ðu worde becwist?	and Wielder of Glory, as your word instructs?
ðæt mæg engel þin eað geferan,	That your angel can easily travel,
halig of heofenum con him holma begang,	holy from the heavens, the course of waters known to him,
sealte sæstreamas ond **swanrade**,	the salty sea-streams and the **swan-road**,
waroðfaruða gewinn ond wæterbrogan,	the struggle of surf and the water-terrors,
wegas ofer widland.	the ways over the wide-lands.'
(Krapp 1932: 8; *Andreas*, l. 190–198a, emphasis added)	(Hostetter 2017, emphasis added)

In this section, Andreas asks God how he can embark on this journey over the sea, i.e. the swan-road, for later in the text to receive the answer of setting out on this journey swiftly, aboard a ship, at dawn. Again, this kenning appears in a context where the image of the ship immediately follows.

Other Old English poems can provide a corpus for this type of analysis. When selecting a kenning, the context is very important, as it will offer clues and means of interpretation.

---

[2] The lines are not one-to-one matches, but rather they are aligned artificially for ease of reading.

For example, the concept of 'sword' is also re-expressed in Old English poetry through kennings. A good question to ask is related to the duality of interpretation of a sword: when is it a 'life-taker', which is a negative sense, and likely to occur when an important or good character dies; and when is it a 'foe biter', which is a positive sense, likely occurring in scenes of combat and referring to the swords of central or good characters?

Similarly, the concept of the body picked for illustrative purposes earlier in the article is frequently referred to through kennings. To reiterate briefly, sometimes the body is referred to as 'the house of the soul', which is likely to appear in a context such as a funeral, when the spirit is evoked, and the role of spirituality takes centre stage. Other times, the body is called 'the house of the bones', bringing to the forefront the corporality of humans, and it is likely that we see this in contexts of battles or when de-emphasising the spiritual side of entities.

All these interpretations should be considered in context, from the perspective of the bard or the narrator, as a sort of clue or checkpoint that would allow them to position themselves well and precisely in the story they are telling.

Apart from intra-poem analyses, inter-poem ones could also prove fruitful, i.e. looking at different uses of kennings across works and authors. These inquiries could allow us to check whether there are arguments for considering these kennings as cognitive mechanisms used by the bards of the specific time period and whether they only appear with this purpose in long-form content.

6. Limitations

The present paper is first and foremost a proposal, and it is not meant to be interpreted as a definitive answer for the cognitive interpretation of kennings, but rather as an idea whose goal it is to look beyond the aesthetic power of the kenning and to take the focus off of the listener and place it onto the storyteller. Of course, such proposals always have limitations, as Broz (2011: 174) mentioned as well referring to Niles' caveat:

> It should be noted that it may be a futile task to search out nuances in meaning in the use of one alternative expression in place of another, because, as Niles (1981: 497) pointed out, the poet's 'chief concern was not to develop subtle shades of meaning but simply to compose in alliterative form'.

However, such proposals are meant to extend a challenge not through the analysis itself, but through the encouragement towards different ways of thinking about texts and cultures that we have studied for such a long time now.

7. Conclusions

Applying more novel approaches to the diachronic study of language can help us reframe the questions and see a new side of something familiar. As cognitive linguistics is constantly evolving, it is fairly certain that uncovered insights into the way our minds work can be applied to our recent ancestors who spoke and wrote Old English. These explorations would allow us to see their techniques and their choices for using language as very much intentional, tools meant for memorisation and performance-enhancing in a time when there were no smart tools or internet, no electricity, and not even wide-spread knowledge of reading and writing as we understand those terms today. We are very distanced from such a time, so going in the analysis with a better understanding of the human mind can help bridge the gap between us and our *Beowulf*-reciting relatives.

References

Boyle, Mary. 2010. Semantic Feature Analysis Treatment for Aphasic Word Retrieval Impairments: What's in a Name? *Topics in Stroke Rehabilitation* 17(6). 411–422.

Broz, Vlatko. 2011. Kennings as Blends and Prisms. *Jezikoslovlje* 12. 165–186.

Fulk, Robert D., Robert Bjork, John D. Niles et al. (eds.). 2008. *Klaeber's Beowulf and the Fight at Finnsburg*. 4th edition. Toronto: University of Toronto Press.

Fulk, Robert D. (ed. & transl.). 2010. *The Beowulf Manuscript: Complete Texts and The Fight at Finnsburg*. Cambridge: Harvard University Press.

Fulk, Robert D. 2021. Kennings in Old English Verse and in the Poetic Edda. *European Journal of Scandinavian Studies* 51(1). 69–91.

Gardner, Thomas. 1969. The Old English Kenning: A Characteristic Feature of Germanic Poetical Diction? *Modern Philology* 67(2). 109–117.

Gvarishvili, Zeinab & Tsira Chkonia. 2016. Kenning and Kend Heiti as the Base Model of the Modern Cognitive Metaphor. In International Black Sea University, Faculty of Education and Humanities (editorial board), *6th International Research Conference on Education, Language & Literature: Conference Proceedings*, 350–356. Tbilisi: International Black Sea University.

Holland, Gary. 2005. Kennings, Metaphors, and Semantic Formulae in Norse *dróttkvætt*. *Arkiv för nordisk filologi* 120. 123–147.

Hostetter, Ophelia Eryn (transl.). 2017–2024. Old English Poetry Project: Andreas. https://oldenglishpoetry.camden.rutgers.edu/andreas/ (accessed 29 July 2024).

Hostetter, Ophelia Eryn (transl.). 2018–2024. Old English Poetry Project: Genesis A & B. https://oldenglishpoetry.camden.rutgers.edu/andreas/ (accessed 29 July 2024).

Klaeber, Frederick (ed.). [1922] 1950. *Beowulf and the Fight at Finnsburg*. 3rd edition with supplements. Boston: D. C. Heath.

Krapp, George Philip (ed.). 1931. *The Junius Manuscript*. The Anglo-Saxon Poetic Records 1: A Collective Edition. New York: Columbia University Press.

Krapp, George Philip (ed.). 1932. *The Vercelli Book*. The Anglo-Saxon Poetic Records 2: A Collective Edition. New York: Columbia University Press.

Lakoff, George & Mark Johnson. 1980. *Metaphors We Live By*. Chicago & London: University of Chicago Press.

Langacker, Ronald W. 1986. An Introduction to Cognitive Grammar. *Cognitive Science* 10(1). 1–40.

Lee, Alvin A. 1998. *Gold-Hall and Earth-Dragon: Beowulf as a Metaphor.* Toronto: University of Toronto Press.

Maddy, Katie M., Gilson J. Capilouto & Karen L. McComas. 2014. The Effectiveness of Semantic Feature Analysis: An Evidence-Based Systematic Review. *Annals of Physical and Rehabilitation Medicine* 57. 254–267.

Marold, Edith. 2012. A Modern Definition of the Kenning. In Diana Whaley (ed.), *Poetry from the Kings' Sagas 1: From Mythical Times to c. 1035* (Skaldic Poetry of the Scandinavian Middle Ages 1), lxx–lxxiii. Turnhout: Brepols.

Marquardt, Hertha. 1983. *Die altenglischen Kenningar. Ein Beitrag zur Stilkunde altgermanischer Dichtung* (Schriften der Königsberger Gelehrten Gesellschaft. Geisteswissenschaftliche Klasse. 14. Jahr, Heft 3). Halle: Niemeyer.

Meissner, Rudolf. 1921. *Die Kenningar der Skalden: Ein Beitrag zur skaldischen Poetik*. Bonn & Leipzig: Schroeder.

Mitchell, Bruce & Fred C. Robinson (eds.). 1998. *Beowulf: An Edition.* Oxford: Wiley-Blackwell.

Slade, Benjamin. 2002–2022. *Beowulf on Steorarume (Beowulf in Cyberspace).* https://heorot.dk (accessed 2 February 2023).

Ylvisaker, Mark & Shirley Szekeres. 1985. Cognitive-Language Intervention with Brain-Injured Adolescents and Adults. *Annual Convention of the Illinois Speech- Language-Hearing Association.* Mini-seminar presented at the annual convention of the Illinois Speech-Language-Hearing Association.

Mihaela Buzec
Babeș-Bolyai University, Faculty of Letters
Cluj-Napoca, Romania
mihaela.buzec@ubbcluj.ro

Regina Ruf & Michael Redmond

Conference Report:
Challenging Construction Grammar: New Insights from Morphology (8–12 April 2024; Monte Verità, Switzerland)

As reflected in its title, this workshop, which took place from the eighth to the twelfth of April 2024 at Monte Verità, Ascona, Switzerland, focused on constructional perspectives in their application to morphology (Hoffmann & Trousdale 2013). As Construction Grammar has become an important theoretical framework within linguistics, it has been applied in morphological studies from both synchronic (e.g., Booij 2010; Jackendoff & Audring 2020) and diachronic perspectives (Hartmann 2019; Van Goethem & Norde 2020). Nevertheless, Construction Morphology is a comparatively young branch of Construction Grammar that poses many open questions and challenges. The questions that were asked within this workshop relate to the connection between morphology and Construction Grammar as a framework, the handling of phenomena situated at the interface of morphology and syntax, and how phenomena that are specific for the scope of morphology can be captured from a constructional point of view.

To address this issue, young and early career researchers were invited to present their current work. These contributions were complemented by the contributions of the invited plenary speakers Muriel Norde (Humboldt University of Berlin), Francesca Masini (University of Bologna), Livio Gaeta (University of Turin), Kristel Van Goethem (University of Louvain) and Steffen Höder (University of Kiel).

The workshop was organised by Elena Smirnova (University of Neuchâtel), Martin Hilpert (University of Neuchâtel) and Jenny Audring (University of Leiden), and made possible with the generous support of SCF (Congressi Stefano Franscini, https://csf.ethz.ch), the SNF (Swiss

Opening the program, **Kim-Kristin Droste** (University of Osnabrück) challenged Construction Grammar by asking how relations between antonymous constructions with locative prefixoids can be modelled in the constructicon. The corpus-based study using the BNC and Timestamped JSI Web Corpus 2014–2021 English aimed to deal with prefixal *up* and *down* such as in words like *upriver, downfall, uplifted* generating vertical and horizontal links associated with inheritance and sister relations respectively. The difference in productivity of *up* and *down* – *down* being more productive than *up* – is supported by quantitative measures of productivity. The two patterns show constructional similarity and mutual productivity, which is an indication that the answer of how to model antonymous constructions in the constructicon may be found within analogy forming horizontal links, whereas vertical links could be a result of extensions of the schema and upward strengthening.

Droste was commended for the convincing presentation of her interesting and theoretically relevant study.

Focused on *quasi* 'almost' in French from a diachronic perspective, **Quentin Feltgen** (University of Ghent) traced its development from the revival of this form in the nineteenth century. Three different and simultaneous developments can be observed. Firstly, the use of *quasi-* as a morpheme, which preferentially combines with nouns, driven by the rise of a paradigm of such Latin-inspired morphemes involved in the derivation of academic and technical words. Secondly, the rise of *quasiment*, an old regional variant of *quasi*, which takes over most of its former uses, and enters a paradigm with other colloquial adverbs ending with *-ment*. Lastly, the specialisation of *quasi* with adjectives, leading to a neat division of labour across all three forms. This picture exemplifies how morphological and syntactic constructions may arise in parallel within a shared form-based constructional system.

Flavio Pisciotta (University of Salerno) dealt with links across the syntax-lexicon continuum by observing a functional overlap between Light Verb Constructions (LVCs) considered as multiword constructions and synthetic verbs (SVs) derived from psych nouns in Italian. This leads to examples like *simpatizzare* (SV) – *avere/provare simpatia*

(LVC). The data were subdivided into stative, inchoative and causative subsets to allow for formalisation. The study shows that there are semantic factors leading to the preference of a syntactic or a morphological strategy: The stative group is represented by LVCs whereas the SVs form the group of inchoatives. Within the group of causatives both LVCs and SVs can be found. This shows that the causative subgroup consists of competing patterns and forms.

Francesca Masini's (University of Bologna) presentation focused on multiword expressions (MWEs) being defined as units consisting of two or more words situated in the middle of the lexicon-syntax continuum. Despite the clear link between 'morphological' lexemes and 'phrasal' lexemes, these two objects are still mostly investigated separately. From an intralinguistic perspective MWEs are very active, i.e. they are neither marginal nor static. From a crosslinguistic point of view, two issues arise: Firstly, the language bias in constructional research, and secondly, typological considerations, that are dominated by studies of just a few languages. This means, constructional research has been done in few languages with a preference for well-known languages. Consequently, there are challenges faced in the typologically sound study of complex lexemes. A deeper interaction between lexical typology and word formation is highly desirable from both the intralinguistic and crosslinguistic perspective. Although MWEs are part of the picture in Construction Grammar, they are still not as well integrated into the constructionist agenda as they could be. Possible reasons are the persistence of a modular view and the lack of established and shared methodologies.

Michael Redmond's (University of Neuchâtel) presentation approached the diachrony of the German concessive subordinating conjunction *obschon* 'although' from a diachronic perspective. Whereas corpus data from the fifteenth to nineteenth centuries confirm the previously described tendency that a historically distanced *ob* and *schon* move into adjacency, it was observed that diachronic accounts from purely morphological perspectives are insufficient to explain their univerbation, as syntactic regularities restrict the required adjacency of the two. This means that constructional approaches must posit other factors, which may motivate the observed development. Most notably, analogy with syntactic and intonatory patterns found elsewhere in the language suggest the integration of *obschon* into well entrenched schematic categories, offering an explanation as to why

this pattern overcame said syntactic restrictions. Thus, the presentation argued for more integrative approaches in morphology, which take issues on different structural levels into account.

Eva Zehentner (University of Zurich) challenged Construction Grammar by investigating ditransitive clauses in English with regards to the diachronic shifts from morphological to syntactic means of disambiguating agents from recipients. As English developed from a more synthetic language to a more analytic system, it lost most of its case marking and other nominal and verbal inflectional patterns. Instead, it developed a stricter constituent order and increased preposition use to distinguish arguments in Present-Day English (PDE). At this point, Zehentner raised the question if it is really that simple. By investigating corpus data, it was shown that a double strategy usage is most common, even in PDE, and that there is a correlation with the length of sentences. In summary, in light of Zehenters work, the situation appears to be more complex than initially assumed.

Carlotta J. Hübener's (Humboldt University of Berlin, University of Duisburg-Essen) presentation dealt with morphologisation, the process by which linguistic structures abandon phrase-typical features and take on word-typical features. Based on an exhaustive study of Old High German glosses, Hübener showed that synthetic compounds such as *brotbecko* 'bread baker' undergo morphologisation. In the data, verb phrases lose importance as sources of analogy for the form of first constituents of synthetic compounds. Morphologisation could also be attested at other linguistic levels such as spelling. In order to describe this phenomenon, morphology and syntax must be seen as the poles of a continuum, with words being multi-level bundles of features. Hübener criticised the unclear concept of 'word' in Construction Grammar, which cannot easily be reconciled with the morphologisation process found in the data.

A different perspective was shown by **Steffen Höder** (Kiel University) by combining Construction Grammar with a phonological perspective with a focus on German, Danish and Swedish. As constructions are defined as consisting of form and function, phonology is assigned to the form side. Descriptions are often based on conventional orthography rather than phonetic reality. This is where Höder argues for the inclusion of phonology in constructional considerations based on the 'double articulation' (Martinet 1949) of language consisting of a finite set of distinctive units such as sounds and phonemes on the

one side, and the infinite combination into meaningful units such as words or morphemes on the other side. Meaningful units do not necessarily have to be made up of distinctive ones, but they can incorporate meaningful units which leads to submorphemic constructions and phonological schematicity. With regards to phonological schematicity, comparison of German and Danish show that recurring sound correspondences in pairs of (related) languages can be found, which are derived from schematic lexical diaconstructions (cf. i.e. Höder 2012; 2014a). These can also be considered as phonological language markers in multilingual communities. Therefore, Höder argues for the inclusion of phonology into constructional considerations.

Opening the Wednesday session, **Muriel Norde** (Humboldt University of Berlin) picked up one of the major topics of the workshop: productivity and creativity. Within the framework of Diachronic Construction Morphology (Norde & Trousdale 2023), Norde considers Sampson's (2016) discussion of F-Creativity, sanctioned by the known system, and E-Creativity, creativity outside of the known system, which has the consequence of expanding the previously available system. With reference to examples of creativity which do not appear to adhere to Samspson's typology, Norde suggests a tripartite typology in which F1-creativity and F2-creativity represent fully and partially sanctioned types of creativity respectively and are complemented by E-creativity. Drawing on two groups of Dutch pseudo-participles with *be-* and *ont-* prefixes showing bahuvrihi and privative semantics respectively, Norde proposes a diachronic development, in which, however, the two types diverge: Distributional features indicate that both types constitute different types of creative language usage. Norde's presentation thus presents a finer analysis of what speakers are doing when they are using novel language.

Following this, **Chiara Paolini** (Catholic University of Leuven) presented work prepared with colleagues **Alessandro Lenci** (University of Pisa) and **Denis Paperno** (Utrecht University) concerning use of the denominal uses of Italian *-ata*, which is observed to show a great semantic variety differing from that seen in its deverbal usage. This talk tackled the difficulties observed in previous functional descriptions by departing from categorical paraphrases insufficient to capture the complexity of the phenomenon at hand and studying semantically motivated groupings with a distributional analysis. The study, which employed vector offsets (Bonami & Paperno 2018) to test the goodness of

clusters, shows exemplars to be grouped in semantically motivated clusters and argues for the consideration of analogy as a driving force in usage-based analyses, as the results suggest how speakers produce and interpret novel *-ata* derivations based on such comparisons with semantically similar exemplars.

Paolini was commended for her work which showed an interesting methodological approach and fascinating results.

Jakub Sláma (Charles University in Prague) addressed the interwovenness of argument structure constructions and derivational morphology in Czech – an issue which has been neglected in studies of Slavic languages. In his presentation, Sláma presented arguments as to why it is possible to postulate constructions in Czech, in which the modulation of the argument structure of lexical verbs can be seen in connection with the presence of prefix derivation and reflexive morphemes. This issue is further complicated by the issue of aspect in derivational morphology in Czech verbs, which is affected by such prefix derivation. The study identified 13 schematic constructions in neologisms and corpus data, which by means of aspect-modifying derivational prefixes also bring about a change in argument structure, and, which play an important role in the formation of neologisms. In this way, the study presents a step away from traditional views on morphology and adapts a constructionist view in order to account for the semantic and structural peculiarities represented in such neologisms.

Regina Ruf's (University of Neuchâtel) presentation gave insight into the development of German complex prepositions forming multi-word units with a focus on the types *mit Hilfe* 'with the help of' and *mit Ausnahme* 'with the exception of' following the general pattern [P N$_{dev}$ P/GEN]. These two constructions show similar behaviour in that they represent fixed lexical items, have high token frequency and reduced compositionality. They do, however, vary with regards to their meaning, with one showing instrumental meaning and the other one exceptive meaning. Moreover, not only can *mit Hilfe* but also *mithilfe* be found in corpus data. Ruf argues with reference to corpus data that this development is a product of univerbation, which can be attributed to the frequency of *mit Hilfe*. Such a development cannot be found for *mit Ausnahme*. One reason may be the lower frequency of *mit Ausnahme*, another, the appearance of numerous alternatives acting as competitors such as *ausgenommen* 'excluded', *ohne* 'without' or *bis auf* 'except for'.

Hendrik Kligge's (University of Erlangen-Nuremberg) work took on assumptions and generalisations made regarding the homogeneity of morphological knowledge within inflectional paradigms among speakers. In his study of the dative inflection of German adjectives, Kligge showed that there is variation among speakers and pursued the hypothesis that this may be considered in relation to plurilingualism and familiarity with the written standard as reflected in familiarity with literature. The results suggested a correlation between mono- and plurilingualism and the acceptability of forms produced in a fill-the-gap-test, which Kligge attributed to the complexity of the phenomenon and its poor mental representation stemming from its low frequency and phonological similarity to other patterns. In testing the familiarity of respondents with German literature, Kligge's data demonstrated a correlation between accepted adjective declination and literary knowledge among monolingual German speakers. This research reflects that differences in paradigm-acquisition are related to varying factors, and that experience with the written language importantly appears to help users disambiguate and strengthen their mental representations of paradigms.

Kligge received the award for best presentation by a doctoral or post-doctoral contribution for his interesting, convincing and entertaining work.

Kristel van Goethem (University of Louvain) opened the Thursday program with a presentation of work undertaken in collaboration with **Isa Hendrikx** (University of Liège). The work presented focused on the production of compounds in Dutch as produced by francophone learners in school contexts, as these languages differ in terms of the structure, frequency and productivity of compounds and functionally similar syntactic solutions. The study pursued a second goal of investigating effects of *Content and Language Integrated Learning* (CLIL) programs on learner competencies, adopting a Diasystematic Construction Grammar framework (cf. Höder 2012; 2014a; 2014b; 2018). It was hypothesised that learners would tend to adopt strategies found in French, rather than forming correct Dutch compound structures and that those participating in a CLIL program would adopt more Dutch structures. While the study showed a range of more-or-less successful strategies, it confirms that francophone Dutch learners produced phrasal structures overproportionately, but also that there was an overgeneralisation of Dutch compound structures for cases, where native speakers reach to more idiomatic phrasal

constructions. Whereas those learners not in CLIL programs relied more on their native constructions, CLIL-learners' results indicated more native-like production, showing a positive effect of the CLIL program. The presentation thus shone light upon the difficult task of navigating linguistic similarities and differences in acquiring constructions in another language.

Hikaru Hotta (University of Neuchâtel) presented a holistic analysis of the Japanese self-quotative construction *kana to omou,* composed of *kana*, a (negative) epistemic clause-final particle common in soliloquy, with *to omou* 'I think', associated with epistemic meaning but also quoting one's own thoughts aloud and carrying intersubjective load. Hotta suggests an interpretation of *kana to omou* as a unified epistemic marker: The interpretation of *kana* is obligatorily that of reduced certainty when occurring with *to omou*, although more variation can be observed outside of this syntagma. Collocations of *kana to omou* with markers of judgement and intensifiers furthermore demonstrated a rather high degree of certainty in the speaker's judgement, conflicting with the compositional meaning of *kana to omou.* Hotta therefore presents arguments as to why *kana to omou* might thus be seen as a single unit spanning a clause boundary.

Rafael Soto Setzke (Radboud University) argued in his talk for the dynamicity of paradigms within the framework of Construction Grammar, as a means of approaching the boundary between morphological and grammatical paradigms. The introduction of paradigms into usage-based frameworks to account for certain phenomena in language that would otherwise be difficult to explain has recently been demanded again and again. Based on the assumption that grammatical paradigms are hyper-constructions, Soto Setzke asked how it is possible to conduct empirical testing. So far, there is no consensus about the mental representation of paradigms. Soto Setzke proposes that the process of paradigmatisation is based on the cross-domain human ability to categorise. He argues that this approach would be more accessible for experimental methods and could provide empirical grounding. Following this presentation, it can be said that the concept of paradigms is necessary to explain many linguistic phenomena, especially in morphology, but that its integration into constructional approaches thus far leaves much unsaid.

Livio Gaeta (University of Turin) gave insight into paradigmatic and syntagmatic aspects of Construction Morphology with a focus on zero morphemes, productivity, and

creativity. From a theoretical perspective, zero morphemes are necessary to explain new signs. They are conceptual aids provided by Construction Morphology, in which relationships are generally represented hierarchically. On a usage-based approach, productivity can be considered as a function of the number of connections within a network and the size of the network. Productivity is accompanied by creativity, although constructional approaches still struggle to clearly delineate the two, as exemplified by Ungerer & Hartmann's (2023) discussion of snowclones, which are defined as cliché patterns or frames and give rise to many slightly different variations. In light of this, if we compare the productivity values of typical alternatives like the Italian suffix *-issimo* to the values of certain types of prefixes such as *mega-* 'mega-'*, iper-* 'hyper-', etc., we can assign the former to the set of typical productive word-formation patterns, whereas the latter quite closely resemble the creativity attributed to snowclones. In Gaeta's approach to Construction Morphology, cases like the formation of Italian colour adjectives like *grigiolino* 'greyish' can be considered in terms of syntagmatic and paradigmatic telescoping. The pattern, which derives from *grigio lino* 'linen grey' is motivated by homophony with diminutive suffix *-lino,* and spreads to other colour adjectives resulting in *verdolino, beigiolino, biancolino,* for example. This can be seen as interaction between different levels of analysis. Nevertheless, one problem remains: the definition of productivity and creativity. This issue can be better understood if we adopt a usage-based approach that distinguishes between productive patterns and creative snowclones.

In addition to the program described, **Stefan Hartmann** (University of Düsseldorf) held two practical workshops. The first was dedicated to data visualisation in GGPLOT2 in R with a focus on best practices in the preparation of bar, scatter, and box plots. The second workshop was focused on the application of statistical methods to count-data in R. Many thanks, Stefan, for sharing your expertise.

The final discussion lead by Elena Smirnova, Martin Hilpert and Jenny Audring took up different topics addressed during the workshop as discussed by the participants. The workshop presented proposed solutions and approaches to morphology within the framework of Construction Grammar that encourage further work in this area. There is agreement that there are still many points that remain unresolved and could not be solved

within the workshop. This concerns, among other things, wordhood, cognitive representation of paradigms and (types of) creativity and productivity which are difficult to define.

All in all, the workshop helped to emphasise morphology within Construction Grammar and at the same time to address difficulties and challenges arising from its study and application.

References

Bonami, Olivier & Denis Paperno. 2018. A Characterisation of the Inflection-Derivation Opposition in a Distributional Vector Space. *Lingue e Linguaggio* VII.2. 173–196.

Booij, Geert Evert. 2010. *Construction Morphology*. Oxford: Oxford University Press.

Hartmann, Stefan. 2019. Compound Worlds and Metaphor Landscapes: Affixoids, Allostructions, and Higher-Order Generalizations. *Word Structure* 12(3). 297–333. DOI: 10.3366/word.2019.0151.

Höder, Steffen. 2012. Multilingual Constructions: A Diasystematic Approach to Common Structures. In Kurt Braunmüller & Christoph Gabriel (eds.), *Hamburg Studies on Multilingualism*, Vol. 13, 241–257. Amsterdam: Benjamins. DOI: 10.1075/hsm.13.17hod.

Höder, Steffen. 2014a. Constructing Diasystems: Grammatical Organisation in Bilingual Groups. In Tor A. Åfarli & Brit Maehlum (eds.), *Studies in Language Companion Series*, Vol. 154, 137–152. Amsterdam: Benjamins. DOI: 10.1075/slcs.154.07hod.

Höder, Steffen. 2014b. Convergence vs. Divergence from a Diasystematic Perspective. In Kurt Braunmüller, Steffen Höder & Karoline Kühl (eds.), *Studies in Language Variation*, Vol. 16, 39–60. Amsterdam: Benjamins. DOI: 10.1075/silv.16.03hod.

Höder, Steffen. 2018. Grammar is Community-Specific: Background and Basic Concepts of Diasystematic Construction Grammar. In Hans C. Boas & Steffen Höder (eds.), *Constructional Approaches to Language*, Vol. 24, 37–70. Amsterdam: Benjamins. DOI: 10.1075/cal.24.02hod.

Hoffmann, Thomas & Graeme Trousdale. 2013. *The Oxford Handbook of Construction Grammar*. Oxford & New York: Oxford University Press.

Jackendoff, Ray & Jenny Audring. 2020. Relational Morphology: A Cousin of Construction Grammar. *Frontiers in Psychology* 11. 2241. DOI: 10.3389/fpsyg.2020.02241.

Martinet, André. 1949. La double articulation linguistique. *Travaux du Cercle Linguistique de Copenhague* 5. 30–37.

Norde, Muriel & Graeme Trousdale. 2023. Issues in Diachronic Construction Morphology. *Constructions and Frames* 15(2). 145–159. DOI: 10.1075/cf.00070.nor.

Sampson, Geoffrey. 2016. Two Ideas of Creativity. In Martin Hinton (ed.), *Evidence, Experiment and Argument in Linguistics and the Philosophy of Language*, 15–26. Frankfurt am Main: Lang. DOI: 10.3726/978-3-653-05840-6.

Ungerer, Tobias & Stefan Hartmann. 2023. *Constructionist Approaches: Past, Present, Future*. 1st edition. Cambridge: Cambridge University Press. DOI: 10.1017/9781009308717.

Van Goethem, Kristel & Muriel Norde. 2020. Extravagant "Fake" Morphemes in Dutch: Morphological Productivity, Semantic Profiles and Categorical Flexibility. *Corpus Linguistics and Linguistic Theory* 16(3). 425–458. DOI: 10.1515/cllt-2020-0024.

Regina Ruf
Université de Neuchâtel
Institut de langue et littérature allemandes
Espace Tilo Frey 1
CH–2000 Neuchâtel
regina.ruf@unine.ch

Michael Redmond
Université de Neuchâtel
Institut de langue et littérature allemandes
Espace Tilo Frey 1
CH–2000 Neuchâtel
michael.redmond@unine.ch