https://doi.org/10.51814/nm.125298

Network Diagrams as a Means of Comparing Spelling Systems

MARIE VAŇKOVÁ

Abstract The purpose of this paper is to explore the possibilities of using network diagrams as a means of analysing spelling systems of early Middle English texts. The diagrams are available in a recently constructed electronic tool based on the Linguistic Atlas of Early Middle English (LAEME), which means that their applicability to actual analyses has not yet been properly assessed. The tool (henceforth Spelling database) can visualise connections between letters and digraphs which are used interchangeably or the correspondences between two letters (digraphs) found in two different texts.

The paper demonstrates the use of the Spelling database on a comparison of the texts in two selected manuscripts available in LAEME (Lambeth 487 and Trinity B.14.52). The study focuses mainly on the differences, similarities and connections between the individual spelling systems. The results show which tasks are relatively easy to perform using the diagrams and what are the chief drawbacks of the proposed method.

Keywords Linguistic Atlas of Early Middle English, network diagram, Middle English, spelling, Lambeth Homilies, Trinity Homilies

1. Introduction

Early Middle English (EME) material presents a challenge for researchers because of the scarcity and apparently chaotic nature of available data. However, the lack of institutional regulation and the diversity of spelling systems in the period also open space for studies of written language which could hardly be carried out on a corpus of Modern English texts. The extant EME texts are notorious for their "mixed" character, i.e. the fact that a single copy of a text is at least to some extent an amalgamation of features introduced by two or more copyists. The ratio of features carried over from the exemplar and the features introduced by the scribe responsible for a given copy can vary in dependence on the scribe's dialect and his "strategy" (McIntosh as cited in Laing, 2004: 52). As a result, studies of ME text can shed some light on the process of copying and the development of written language in a period which lacked a generally accepted standard.

The purpose of the present paper is to explore and assess the possibilities of using network diagrams for analyses of spelling systems and their interaction. The method proposed in this article was applied to a case study of extracts from two ME manuscripts. The study was performed using the Spelling database – a new electronic tool created from The Linguistic Atlas of Early Middle English (LAEME). The method, which seeks to respond to the highly specific nature of EME texts, relies heavily on the comparison of the varying realisations of segments in a single text as well as across multiple texts. This kind of analysis should facilitate the "isolation of different layers of copying" (Laing, 2004: 57) and reveal how the spelling systems in two or more texts under comparison map onto one another. The analysis partly draws on concepts and models proposed by the authors of LAEME.

The opening section of the article briefly describes the main features of extant EME texts, the Spelling database which was used to analyse the selected manuscripts, and further specifies the objectives of the study. It also explains the essential terms and theoretical and methodological concepts relevant to the analysis. A special emphasis is placed on the problem of interpreting network diagrams. The next section summarizes the most important facts about the analysed manuscripts. It is followed by a description of the procedures applied to the comparison of the manuscripts. The section immediately preceding the conclusion presents selected results of the analysis.

2. Analysing written language

Early Middle English has been repeatedly described as a period of "close correlation between spoken and written language" (Horobin & Smith, 1999: 362). According to Vachek (1989), the written norm of EME was at the initial stage of its development, which is characterized by relatively "close ties between phonemes and graphemes" (Vachek & Luelsdorff, 1989: 118) as well as "smaller stability (…) with all of its numerous differentiations, regional as well as individual" (Vachek & Luelsdorff, 1989: 119).

In accordance with these observations, it is assumed here that individual letters (digraphs) in EME texts were intended to represent sounds. There are a few reservations to note. Firstly, some of the ME texts are ultimately derived

from OE sources, so we cannot completely exclude the influence of the OE writing tradition which declined after the Norman Conquest. Secondly, the extant texts are copies rather than originals, which means that their spelling systems can be significantly influenced by their exemplars. Also, it is not unreasonable to assume that scribes may have incorporated certain spellings found in the exemplar into their own system.

The irregularity of EME spelling is sometimes regarded as an obstacle to the reconstruction of sounds represented in writing (Vachek & Luelsdorff, 1989: 119); however, reconstruction of sounds is not the only direction that analyses of ME sources may take. The method proposed in the present paper focuses on the structure of the spelling systems and their interaction rather than the identification of sound to spelling correspondences. The sample analysis tests the method's potential to deal with the following tasks:

a) Understand the process of copying and the choices made by the scribes.
b) Isolation of different layers of copying (cf. Laing, 2004).
c) Distinctive features of each spelling system and its inner structure, including the use of different symbols to spell what should be the same sound.
d) Developments – changes in the systems, their interaction.

2.1. The tool

The analysis was performed using the Spelling database - an electronic tool created on the basis of the data from the Linguistic Atlas of Early Middle English (LAEME). The Spelling database and its online interface, were designed by the author of this paper to facilitate data navigation and save time spent on mechanical tasks, thereby allowing the researcher to analyse a larger amount of data and adopt more of an explorative approach. Furthermore, the tool should make it possible to carry out a comprehensive study of a text or a comparison of two texts instead of focusing on a group of pre-selected features. The main difference between LAEME and the spelling database is that while the smallest comparable unit in LAEME is the morpheme, the smallest comparable unit in the spelling database is a segment, which usually corresponds to a single letter or a digraph (Vaňková, 2021). A previous article about a sample study performed using the tool (Vaňková, 2021) focused on

demonstrating practical application to a set of tasks and a description of the interface. The focus of the present paper is less technical and more theoretical and methodological.

2.2. Terminology and theoretical concepts[1]

When discussing the outputs from the Spelling database, the paper employs several terms which need to be clarified first. An *item* usually corresponds to a single morpheme (lexeme in monomorphemic words), e.g. FATHER/NOUN, MAN/NOUN and it can have two or more forms (realisations), e.g. *feader*, *uader* (FATHER/NOUN). Adjectives and adverbs are treated separately and each verb has several items for different tenses and moods. Items are derived from the tags in the LAEME corpus, which means that same as LAEME *lexels* (lemmata), some *items* are PDE forms of words while others are historical forms.

Whenever this article gives a frequency of *items* associated with a certain feature (such as the use of a specific letter), it refers to the number of lexemes having this feature irrespective of token frequency. For instance, there are 11 items which version L of *The Poema Morale* spells alternatively with 'f' and 'u' (EVIL/ADJECTIVE, LÉOF/ADJECTIVE, EVER/ADVERB and eight more). The number of occurrences of each item in the text may vary, for example, EVIL/ADJECTIVE is spelled seven times with 'u' and only once with 'f', while LÉOF/ADJECTIVE is spelled three times with 'u' and four times with 'f'.

Each item can have multiple forms (spelling variants). All forms grouped under a single item are split into a sequence of comparable segments[2] occupying numbered positions. The abstract positions in each item are called *slots*. See the table below for illustration.

1 Litterae as abstract units of a spelling system are written in inverted commas in this article, e.g. 'f', 'v'. Actual word forms are written in italics. Items (lexical units) are written in small capital letters, e.g. "final *-st* in RIGHT/N". *Sets* are written in curly braces, e.g. {'h', 'ch'}. These conventions partly conform to the notation proposed by Benskin (Benskin, 1997, 2001 as cited in Laing & Lass, 2009: 1, note 2) and Laing & Lass (2013).

2 The alignment process was semi-automatic in most cases.

Table 1: An illustration of the segmentation of words in the spelling database (slots).

Slot 1	Slot 2	Slot 3	Slot 4	Slot 5
f	ea	d	e	_
u	a	d	e	r

Similarly to the Introduction to LAEME (Laing & Lass, 2013), this paper employs the medieval term *littera* (rather than grapheme) to refer to the letters used by the scribes. The sense of the term is extended here to include digraphs (polygraphs). Thus, a littera essentially corresponds to the letter(s) which fill a single slot. Any group of litterae which sometimes appear in the same slot is called a *set*. For instance, the litterae 'f' and 'u' from slot 1 of the item father constitute a set. The term *correspondence* is used to describe a special kind of set – the relation between two litterae which appear in the same slot in two different texts. For example, if text A spells FATHER/NOUN as *feader* and text B as *uader* there is a correspondence between 'f' and 'u', between 'ea' and 'a' etc.

The term *set* is derived from *Litteral Substitution Sets* (LSS) developed by the authors of LAEME, Laing & Lass (2009). LSS is defined as "A set of litterae in variation for the same potestas[3] or etymological category" (Laing & Lass, 2009: 2). LSSs provide a framework for analyses of the diverse spelling systems employed by ME scribes, their interaction and development. The main difference between Laing and Lass' concept of LSS and *sets* (which are generated automatically in the Spelling database) is that a LSS typically groups reflexes of a certain OE littera, while *sets* in the tool simply show which litterae are sometimes used interchangeably at the same position (i.e. in the same word) regardless of etymology.

Besides building upon LAEME methodology, the rationale behind the Spelling database is conspicuously similar to the statistical language models developed by Jacob Thaisen (Thaisen, 2020), which also work with segments and treat spelling features independently of their presumed sound value. Thaisen's approach places more emphasis on quantification and employs

3 Roughly corresponds to "sound value".

more sophisticated statistical methods to calculate the level of similarity between two manuscripts.

2.2.1. Sets and networks

Segmented data can be searched and displayed in novel ways and it also easily lends itself to quantification. Besides simply counting all the occurrences of a certain segment in the text, which could be at least partly done without prior segmentation, it is possible to quickly identify the *sets* of two (or more) different litteare used to spell what is supposed to be the same unit, e.g. the initial segment of a certain word and calculate which variant is dominant.

The main part of the analysis presented here focused on sets of litterae which are used interchangeably by the individual scribes and on the correspondences between different realisations of segments across texts. The tool can visualise sets and correspondences as networks of two kinds:

a) A network generated from a single text (henceforth *single network*) shows which litterae sometimes appear at the same position. For instance, the scribe who copied version L of the *Poema Morale* sometimes uses two of more forms of a single word, one of which is spelled with *h* and the other with *ch*, e.g. AE:HT/N *is* spelled either *ehte* or *echte*. This feature of the text is reflected in the network:

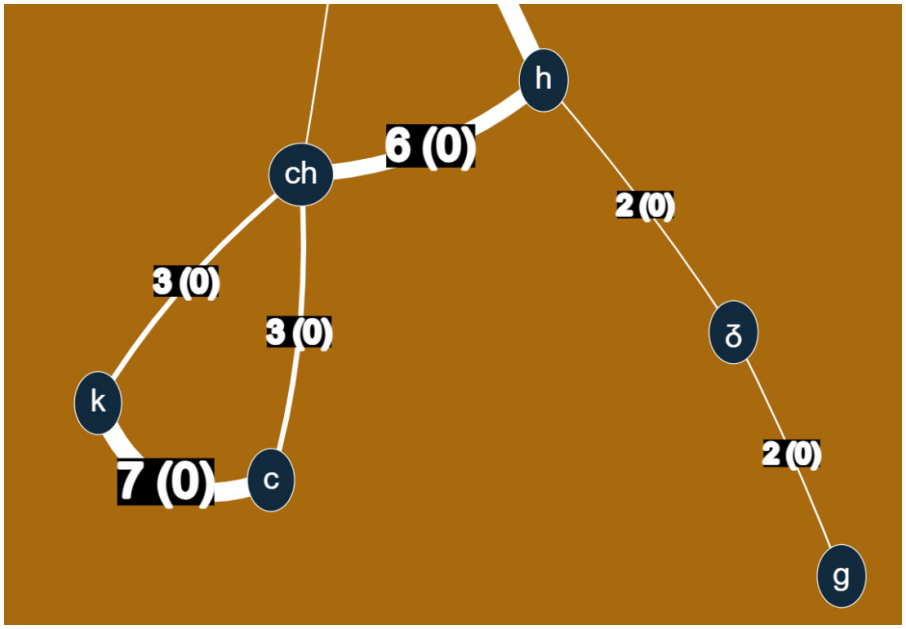


Figure 1: Network diagram showing interchangeable litterae in one text.

The number of slots (positions) in which ‘h’ and ‘ch’ are used interchangeably is displayed on the corresponding edge in the network, i.e. there are six slots in version L which are spelled alternatively with {‘h’, ‘ch’}. The second position in AE:HT/N is one of them. The number of slots is equal to the number of items in most cases. The diagram further shows that ‘ch’ is used interchangeably with ‘c’ (3 items) and ‘k’ (3 items) and the two appear at the same position in 7 items etc. The number in brackets is only relevant when comparing two different texts (see below).

b) A network generated from two texts shows the *correspondences* between differing realisations of the same segment in the two texts. For instance, the scribe responsible for version T of the *Poema Morale* (PMT) sometimes writes ‘f’ at positions where the scribe who copied version L (PML) writes ‘u’ and vice versa. The part of the network showing this correspondence looks like this:

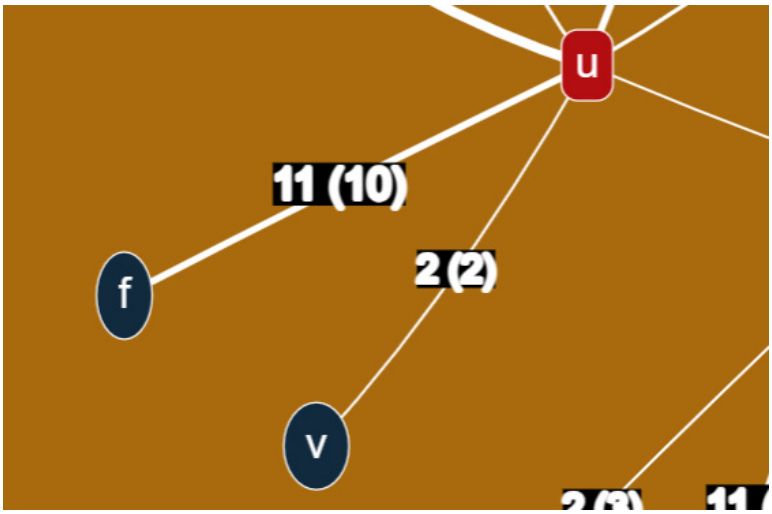


Figure 2: Network diagram showing correspondences between litterae in two different texts.

The littera from PML is displayed in red and the littera from PMT is displayed in blue in the original picture. The first number (11) indicates how many items sometimes have ‘f’ in PML and ‘u’ in PMT. The second number (10, in brackets) gives the incidence of the opposite configuration (i.e. ‘u’ in PML and ‘f’ in PMT). The edges in both networks function as links to lists of items (words) in which the respective correspondence occurs. The diagram also shows that another alternative of ‘u’ in PML is ‘v’ in PMT. The list of items

associated with {'v', 'u'} further clarifies that both texts in fact use the variants interchangeably in the same slots in UN- and UNDER.

The structure of data obtainable from single networks in fact considerably resembles Lass and Laing's (Laing & Lass, 2013: 2.5) *scribal lexicon* – a model for analysing spelling systems, which includes LSSs. The sets and correspondences visible from networks are something that researchers normally look for when analysing spelling systems manually. The visualisation should mainly provide a comprehensive overview of sets and correspondences which would otherwise have to be constructed manually. Moreover, single networks facilitate the identification of litterae which have the greatest number of alternatives in the spelling system under examination.

2.2. Interpreting networks

This section summarizes the most solid assumptions about the interpretation of network diagrams, which had been considered before the sample study. In other words, it suggests possible explanations of what certain configurations of data in the network may reveal about the spelling system, the exemplar and the process of copying.

2.2.1. Single networks

Single networks visualise sets of litterae which are used interchangeably in a specific text. Every set should thus reveal a potential inconsistency in the examined spelling system. It is important to stress that "inconsistency" is not understood as a defect but rather as a natural feature of ME spelling systems which needs to be accounted for in order to gain more insight into the nature of ME texts and the process of copying. If we exclude the possibility that the differing representations are in fact a matter of morphology (for example, the medial vowel in foot/n can express the grammatical number), we are left with three basic scenarios of how the perceived inconsistency in the spelling might have originated:

a) a) The scribe perceived all the litterae in the set as valid representations of the intended sound. The choice of a particular littera may depend on the adjacent letters but it can also be random. For instance, scribe

A of *The Trinity Homilies* uses a few slightly different forms of the verb SPEAK in the present tense: *specð* (13 instances), *spechð* (1 instance) and *spekeð* (4 instances). While the preference for 'k' (rather than 'c') before 'e' is a regular feature of this text (and many others), the single occurrence of *spechð* alongside the more common *specð* does not follow such a clear pattern. It is always questionable whether the scribe in fact deliberately reproduced the forms from the exemplar because he considered them acceptable or if he replaced exemplar forms with two or more of his own variants. Whatever the case, if this scenario applies, the set in question reflects the scribe's choices and a certain fluidity in his perception of sound values of the litterae.

b) The mixed forms were present already in the exemplar and the scribe reproduced them mechanically. This approach essentially corresponds to "literatim copying" (McIntosh as cited in Laing, 2004: 52). If this scenario applies the examined set provides information about the exemplar rather than the spelling system of the scribe.

c) The exemplar was relatively more consistent than the copy but the scribe deliberately rewrote some of the forms while failing to replace others – a phenomenon previously labelled "partial translating" (McIntosh as cited in Laing, 2004: 52).

Distinguishing between the scenarios is impossible without reference to other texts copied by the same scribe and/or other copies of the same text. For instance, the presence of a certain form in another copy of the same text may speak in favour of exemplar origin. In order to assess if the scribe rewrote the form purely mechanically or if he deliberately decided not to change it, the spelling needs to be compared with another text copied by the same scribe. It may also be helpful to consider the incidence of the individual variants. The tool can also quantify the occurrences of the individual litterae in a set, which makes it easy to determine if one of the variants is dominant while others are marginal. Hudson (1966) suggested that marginal variants probably reflect the language of the exemplar (Hudson, 1966, 361-362).

2.2.2. Double networks

Double networks, i.e. the networks generated from two texts should reveal variation in representation of certain segments, which may or may not reflect differences in sound. The data can be combined with single networks. The default assumption is that if a scribe commonly uses two litterae interchangeably, it is more likely that he perceived their sound values as equivalent (in certain contexts).

When interpreting the networks, it is vital to consider that some of the correspondences work (predominantly) in one direction only but there are usually numerous correspondences which work in both. For example, 'a' in text A corresponds to 'ea' in text B, not vice versa. Contrarily, 'i' in text A sometimes corresponds to 'u' in text B in 14 items (lexemes), while the reverse occurs in 15 items. Such numbers may indicate that both scribes use the two litterae interchangeably in the same items or that there is a group of items in which one of the scribes uses 'i' and the other uses 'u' and another (overlapping) group in which one scribe writes 'u' and the other writes 'i'.

Double networks may reveal differences between two spelling systems, whether or not the texts in question are related (copied by the same scribe or sharing a common source) as long as they share at least some lexical units. If the texts under comparison shared an exemplar, the correspondences may in fact reflect changes to their common source.

3. The Study

The study designed to assess the potential of network diagrams consisted in a detailed comparison of homiletic texts found in two medieval manuscripts, namely MS Lambeth 487 and MS Trinity B.14.52. The texts are split into eight different files in LAEME and each file should represent a distinct type of "language"[4]. The spelling features of the texts had been previously analysed (Sisam, 1951; Laing & Lass, 1995; Laing, 2004) and hypotheses were formulated regarding their exemplars as well as copying strategies of the scribes. However, none of the previous studies covered all the texts included

4 The term *text language* is used by the authors of LAEME to refer to the linguistic system specific to a particular text (Laing & Lass, 2013: 1.1).

in the present study. This balance between previous research and some unexplored directions of analysis was the main reason for the choice of these particular manuscripts. Moreover, the sample should exemplify various copying strategies and connections between the texts (shared exemplar, one scribe copying from two exemplars etc.).

3.1. The manuscripts and texts

Both manuscripts belong to the group of relatively older sources available in LAEME. Lambeth was copied around the year 1200 according to LAEME and Trinity is dated to the last quarter of the 12th century. According to their localisation in LAEME, Lambeth represents the language of South West Midlands, while Trinity belongs to the East of England (with the exception of *Sermon in Isaiah* – see below).

3.1.1. Trinity

Three scribes contributed to the manuscript and the material is divided into four files in LAEME. The contributions of scribes B (*Trinity Homilies* = THB) and C (*Sermon on Isaiah* = TC) have one file each. The work of scribe A is further divided into two files. The first file contains the rhyming sermon *Poema Morale* (PMT) and the second file comprises A's passages from *Trinity Homilies* (THA). The languages of scribes A and B are all placed in Essex and their localisations slightly differ. Scribes TA and TB wrote alternating stints and sometimes collaborated on copying the same homily (Laing, 2004: 67). *Sermon on Isaiah* (scribe C), which is comparatively very short, is localised in West Berkshire.

A previous analysis of the Trinity MS (Laing, 2004) revealed differences between the language of *The Poema Morale* (PMT) and *Trinity Homilies* (THA) copied by scribe TA. The explanation proposed by Laing (2004) is that the scribe was a *literatim* copyist (Laing, 2004: 69), i.e. his language in fact represents the language of his exemplars. Scribe TB was characterised by Laing (2004) as an "exemplar constrained translator", which means that he left some of the familiar forms unchanged but adjusted others to his own usage (Laing, 2004: 69). Laing's analysis also revealed a shift in the spelling practices between Homilies XXIII and XXIV.

3.1.2. Lambeth

The parts of MS Lambeth available in LAEME are copied in two different hands. Scribe LA copies the incomplete L version of *The Poema Morale* (PML) and sixteen prose homilies – *Lambeth Homilies* (LH) and scribe B copies *On Ureisun of Oure Louerde* (LB). Five of the homilies also appear in Trinity (Laing, 2004: 72). A study of the work of scribe LA performed by Sisam (1951), identifies two distinct types of language, presumably reflecting two distinct languages in LA's exemplars. If Sisam's analysis is correct, a part of *The Trinity Homilies* (language 1) was copied from exemplar X (LAX, #2000), while the rest of the *Homilies* and *The Poema Morale* (language 2) were copied from exemplar Y (LAY, #2001). Exemplar X included three homilies derived from OE sources (Sisam, 1951: 109). The distinction between the two languages is based on a set of features, which are summarized in the table below. Although the number of features is small, the evidence appears to be solid thanks to the high incidence of forms having the features. For example, PML has over 30 instances of *-cht* spellings, which should be characteristic of exemplar Y.

Table 2: The features of Lambeth exemplars X and Y defined by Sisam (Sisam, 1951: 107).

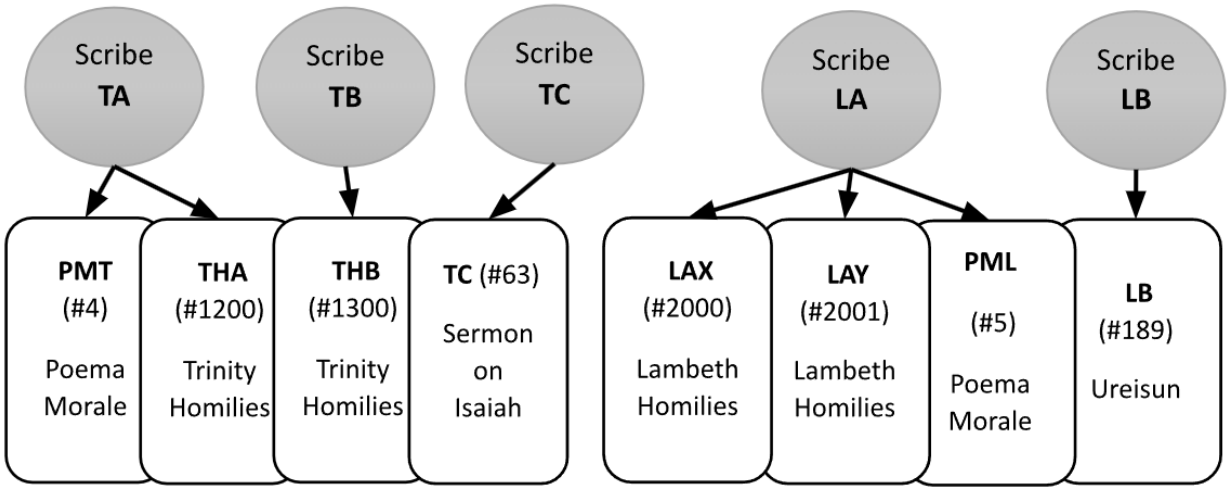
Exemplar X, LAX	Exemplar Y, LAY + PML
final *-h*, *-ht* for historical [xt] e.g. *peh*, *rih*	a number of final *-ch*, *-cht* spellings for historical [xt]
'eo' for OE 'éo', e.g. *heouen*, *seolf*	'o' for OE 'éo', e.g. *solf*
frequent 'ea' for OE 'éa', 'æ'	only four instances of 'ea' for OE 'éa', 'æ'
occasional 'eo' for OE 'ó'	-

Considering the character of these differences, Sisam (1951) conjectures that exemplar X was written in an older type of language (Sisam, 1951: 110); however, this view was later challenged by Millett (2007) who points out that the supposedly archaic features of X in fact appear also in later manuscripts which used "AB language" (Millett, 2007 as cited in Laing & Lass, 2013). The differences between the languages are considered orthographical in LAEME,

which is why all the texts copied by LA share the same localisation[5]. The work of scribe LB (*Ureisun*) is placed further to the West and it is not covered by Sisam's (1951) study.

The *Poema Morale* survives in five more versions[6]. The individual texts included in the sample study differ in length; however, the texts of the PM are of a similar length and the same is true of THA-LAY and THB-LAX. Figure 3 shows the individual parts of the manuscripts, i.e. LAEME files along with the scribes responsible for copying. The sigla in bold are going to be used to refer to the individual texts (scribes) throughout this paper.

Figure 3: An overview of Trinity and Lambeth MSS, texts and scribes.



4. Method

It was assumed that a study of a relatively small set of related texts should be ideal for observing the individual spelling systems and the similarities and differences between the texts at the same time. The comparison was performed primarily using network visualisations described above. It included an analysis of networks generated from the individual texts (PMT, THA, THB, TC, PML, LAX, LAY, LB) as well as networks showing the correspondences between selected texts from this group. The analysis of networks was complemented with maps and tables showing realisation

5 This is in accordance with the methodology developed by the authors of LAEME.
6 Oxford, Bodleian Library, Digby 4 (D), British Library, Egerton 613 (e, E), Oxford, Jesus College 29 (J), Cambridge, Fitzwilliam Museum, McClean 123 (M).

of certain segments across multiple texts. The next section describes these procedures in more detail.

4.1. Single networks

Network visualisations were used to identify the *sets* of litterae used interchangeably and the *sets* from the individual texts were compared. The main goal was to determine which sets were specific to a limited group of texts (or a single text) and which are "universal", i.e. appear in all of the examined texts.

4.2. Double networks

Double networks allowed to make a comprehensive list of possible correspondences between litterae in two different texts. The data was used to identify any systematic differences between the two manuscripts (Trinity and Lambeth) as well as differences between different types of language found in a single manuscript. The correspondences were stored in tables and the proportions of correspondences going in only one way were calculated.

Each list of correspondences between two texts was considered to get a general picture of the differences. The correspondences were grouped according to the *sets* retrieved in the previous step of the analysis. For example, all correspondences involving 'f', 'u' and 'v', which typically constitute a *set* in a single text, were analysed together. The goal was to look for patterns in the distribution of the forms. The table below shows the data for the {'ie', 'ea'} correspondence for illustration. It can be seen, among other things, that 'ie' seems to be characteristic of Trinity - only scribe TC sometimes uses 'ea'.

Table 3: An overview of the correspondence between 'ie' and 'ea' in the research sample.

'ie'	'ea'
PMT	TC
PMT	LB
THB	TC
THB	LAX
THA	LAX

The analysis did not cover all the possible combinations of texts. Its scope was restricted to the combinations given in the table below. The combinations of texts appearing in the same manuscript were analysed first. The comparison of texts from Trinity with Lambeth soon revealed the main differences between the manuscripts. As the analysis progressed, the patterns became increasingly repetitive, providing very little new information. This is why some of the combinations were eventually left out.

Table 4: An overview of texts compared using network diagrams.

	PMT	THA	THB	TC	PML	LAX	LAY	LB
PMT	**X**	yes	yes	yes	yes			yes
THA	yes	**X**	yes	yes		yes		
THB	yes	yes	**X**	yes		yes	yes	
TC	yes	yes	yes	**X**				
PML	yes				**X**	yes	yes	yes
LAX		yes	yes		yes	**X**	yes	yes
LAY			yes		yes	yes	**X**	yes
LB	yes				yes	yes	yes	**X**

4.3. Working with item lists

Any list of items can be used to generate a table showing the realisation of a specific segment across several texts. The lists in the present study usually comprise items spelled with a specific littera or a set of litterae in a specific text or in two different texts, for example, all items from PMT spelled with ‘ie’.

Item lists are essential for mapping of links between multiple spelling systems because they allow the researcher to check if a specific correspondence between two texts, e.g. the ‘ie’ (PMT) – ‘eo’ (LAX) is linked to ‘eo’ (LAX) – ‘o’ (LAY) visible in the network for LAX - LAY. On a more general level, the combination of networks and item lists should enable us to define patterns of correspondences between the texts which could be associated with a list of proposed interpretations, thereby providing a framework for analyses based primarily on networks.

The following section uses the example of a shortened item list for 'ie' in PMT to illustrate a possible approach to analysing the data in a systematic manner.

Table 5: An illustration of comparing forms in a group of related items.

item	word class	PMT	THA	THB	PML	LAX	LAY
dear	**adverb**	**ie (2)**	e (1)	e (2)	o (2)	eo (1)	eo (1)
georne	**adverb**	**ie (2)**	e (2), ie (1)	e (3), eo (1)	o (1)	eo (4), e (2)	o (1)
friend	**noun**	**e (3), ie (2)**	e (1)	e (5)	o (4), eo (1)	eo (4), o (1)	eo (1)
gift	**noun**	**ie (2)**	i (1)	i (19)	e (2)	i (9), e (5)	i (2), ei (1)
heart	**noun**	**e (4), ie (1)**	e (11), eo (5)	eo (50), e (11)	o (1), e (1)	eo (33)	o (6), eo (4)
there	**adverb**	**a (66), ie (1)**	**a (18)**, e (1)	e (48), a (3)	e (36)	e (54), a (2)	e (16)
give	**verb, present tense**	**ie (5)**	i (1), ie (1)	i (21)	e (3)	e (11), i (5)	e (1)

1. One of the texts is chosen as the reference text. Reference texts are used to define the list of items to be analysed and they should ideally have the same variant in all the items on the list. The variant in the reference text is then compared against variants in the remaining texts. The reference text for the item list above is PMT.

2. The second step is to group the items in each text according to the litterae which correspond to the littera in the reference text. If there is only one variant in a cell or if one of the variants is dominant, all cells sharing the variant are coloured accordingly for convenience (for example, all the cells with 'eo' as the dominant variant in the table above have the same colour). The colouring should highlight the following:

a) Which texts use the same littera in a subset of items. For instance, the table shows that ‘eo’, which is the majority variant in LAX is also found in THB (HEART) and LAY (DEAR, FRIEND).

b) If the groups of items sharing the same variant in a specific text overlap or not. For example, the dominant variant in the top three items is ‘e’ in THA and ‘o’ in PML but the texts are similar in that they use the same vowel letter in all the items. Contrarily, PML uses the same vowel letter (‘e’) in GIVE, GIFT and THERE, while THA has ‘i’ in GIVE and GIFT but ‘a’ in THERE.

4.4. Combining networks with maps

The analysis was not primarily concerned with searching for regional patterns of distribution of certain forms, which is why maps were consulted selectively rather than systematically. The main advantage of maps is that they provide a concise presentation of a feature’s distribution in the LAEME corpus because they can display the full range of realisations of a certain segment in all the available texts in a single picture.

The maps included in the analysis were usually based on a specific correspondence between two texts, the localisations of which differ in LAEME. A specific correspondence can be used to retrieve a list of items in which the correspondence occurs, which in turn allows to plot the variant representations on the map and check if there is a discernible pattern in their geographical distribution.

For instance, LAY has ‘o’ in a group of words spelled with ‘ie’ in PMT. The list of items sharing this pattern of correspondence between the systems was used to create a map, which shows the regional distribution of ‘o’, ‘ie’ in the examined items and all the other litterae appearing in the same slots. Each text on the map is represented by a pie chart reflecting token frequencies of the individual litterae found in the selected slots (items). The size of the pie chart depends on the total number of litterae included in the calculation.

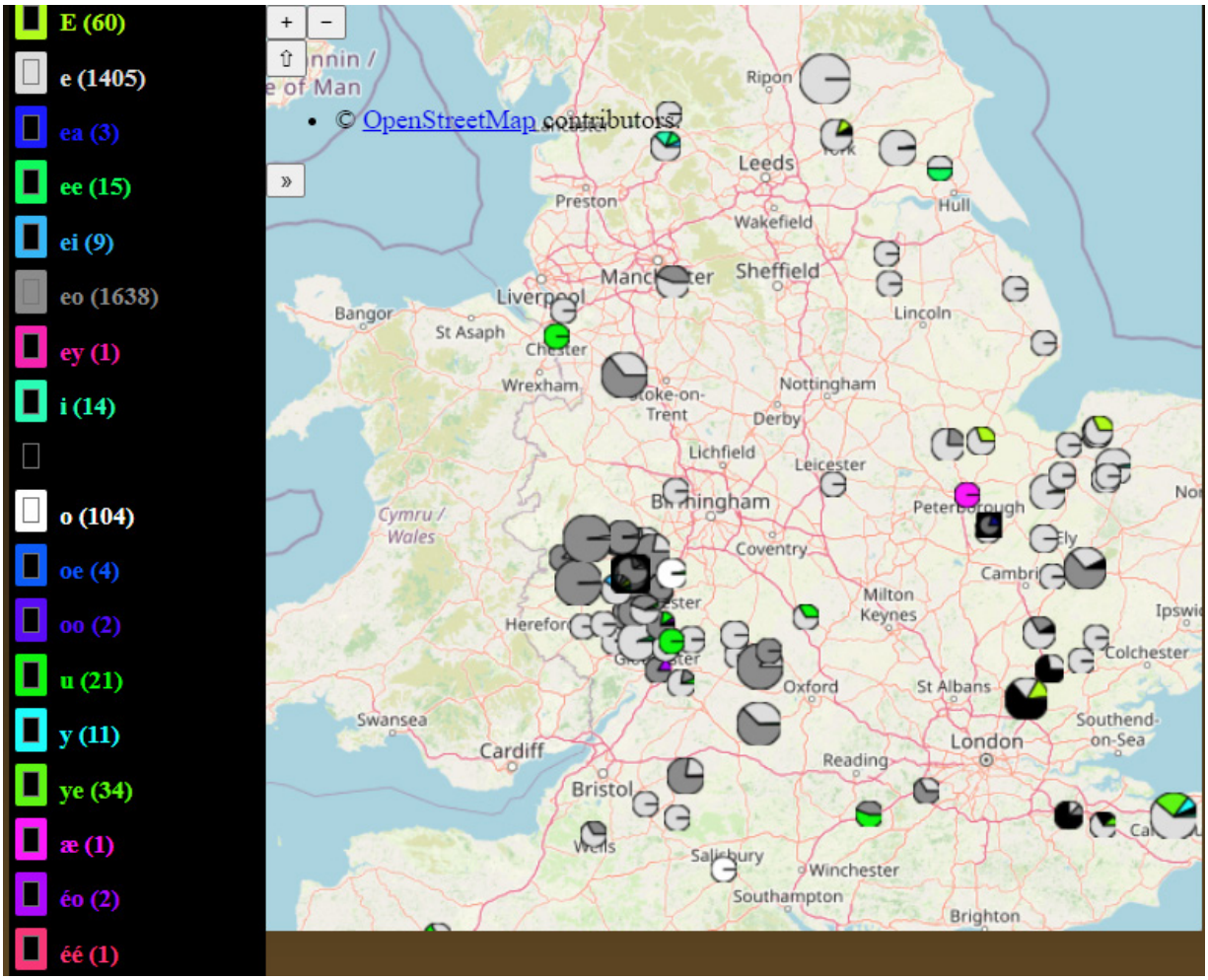


Figure 4: Map showing the distribution of litterae in nine items associated with the correspondence {'o', 'ie'} in LAY and PMT. The variants with 'o' are displayed in white and the variants with 'ie' in black.

The map shows the distribution of litterae in nine lexical items (LÉOF/ADJECTIVE, GEORNE/ADVERB, DEER/NOUN, FIEND/NOUN, HEART/NOUN, NEED/NOUN, THIEF/NOUN, ÞÉOSTERNESS/NOUN), excluding personal pronouns and the verb to be, which were analysed separately because of their high frequency. Both 'o' and 'ie' are relatively uncommon variants. 'O' is the prevalent spelling in PML, LAY and also in *The Owl and the Nightingale* in MS Cotton Caligula A ix, which is a later manuscript than Lambeth. Isolated occurrences of 'o' are in fact present in several other texts in the same region but this cannot be seen from the pie charts because the number of occurrences is too small. The usual alternative to 'o' in the region and the dominant variant in LAX is 'eo'. It is worth noting that the two eastern texts with the highest proportion of 'eo' spellings are in fact THA and THB, wherein the littera is more common than 'ie'. 'Ie' prevails in PMT, version D of *The Poema Morale* localised in

Kent (MS Digby 4, #8) and also in MS Stowe 34 (#64). The data supports the hypothesis that there is a connection between LAX and the Trinity version of the Homilies as well as the claim that the exemplars for PMT and TH were written in two distinct kinds of language.

5. Results

The analysis led to a number of minor observations which are not always easy to place in a wider context or to present in an orderly manner. Therefore, the presentation of results is limited to a selection of the most relevant features. The first part of the section discusses configurations of features particular to a specific manuscript, text or exemplar. The second part provides an overview of sets found in the individual texts and comments on their similarities and differences across the texts.

5.1. Characteristic features of individual MSS and texts

5.1.1. MS Trinity

The texts in Trinity share several features which are either absent or almost absent from Lambeth. The most conspicuous ones are the extensive use of the digraph ‘ie’, the use of ‘s’ (PMT) or ‘sh’ (THA and THB) rather than ‘sc’ (Lambeth) and sporadic use of diacritics, for example THA as well as THB contain some instances of ‘á’, ‘é’, ‘ó’ but the number of occurrences of each littera is always below 10 and the forms containing these litterae tend to be marginal, e.g. HERE/ADVERB is spelled only once with ‘é’ (*hére*) and 23 times with ‘e’ (*here*, *her*, *ere*) in THB. Trinity also has occasional instances of ‘æ’. As for unusual spellings of specific words, Trinity has initial ‘hp’ in how and initial ‘s’ in SHALL.

5.1.2. Trinity Homilies, scribe A (PMT and THA)

The text of PMT seems to be the most consistent one (as noted by Laing, 2004: 69), even if we take into account its comparatively shorter length. The consistency is reflected in a complete absence of certain inconsistencies, which invariably occur in most of the remaining texts, namely {‘þ’, ‘ð’}

(‘þ’ is used systematically in the initial position), {‘g’, ‘ȝ’} and {‘s’, ‘sh’, ‘sc’}. Moreover, PMT manages to keep ‘hp’ apart from ‘p’ with only one exception (HOW is spelled *hpu* five times and *pu* once). ‘Hp’ is restricted to the initial position of wh-words in PMT, while THA mixes ‘hp’ and ‘p’ in these items. These characteristics of PMT suggest, if nothing else, that the scribe was capable of preserving the consistency of spelling found in his exemplar. Another distinct feature of the text is the consistent use of initial ‘s’ in SHALL and other items typically spelled with ‘sc’ or ‘sh’ in the other texts. The littera ‘s’ in the same or similar positions is also found in other copies of the *Poema Morale* and the same can be said about the previously mentioned ‘ie’.

The most conspicuous and systematic correspondences between PMT and THA (copied by the same scribe) are summarized in the table below. Considering the above-mentioned similarities between PMT and other versions of *The Poema Morale*, these correspondences are likely to reflect differences between the exemplar of PMT and the exemplar of TH.

Table 6: The most prominent correspondences between PMT and THA.

PMT	THA	items	items - reverse
ð	g	19	0
e	u	7	1
s	sh	7	0
ie	eo	5	0
h	gh	3	0
ss	s	3	0
a	e	41	3
e	eo	7	1
a	æ	4	1
þ	ð	10	1
ea	o	5	1

The digraphs ‘sh’ and ‘gh’ do not appear in PMT at all and ‘eo’ is restricted to the personal pronoun *eop* (YOU, plural, objective case). This agrees with

the assumption that they were taken from the exemplar of the Trinity Homilies, which is further supported by the fact that the same digraphs occur also in THB. The results support Laing's claim that scribe TA was a "literatim" copyist (Laing, 2004: 69).

The correspondences between PMT and TH, combined with the comparison of TH and LH lead to the following observations regarding the work of the scribe(s) responsible for the exemplar of TH:

The TA scribe fairly systematically uses 'sh' in his copy of THA. The likely original variant seems to have been 'sc', which is the prevalent spelling in LH. At the same time, one of the scribes before TA and TB probably replaced most of the occurrences of 'ȝ' with 'g' and introduced the digraph 'gh'. The littera 'ȝ' is almost absent from THA and in THB 'ȝ' does not appear before the previously mentioned shift in usage after Homily XXIII (cf. Laing, 2004: 69). The distribution of forms with 'ie' partly coincides with 'ȝ'. It is interesting to note that, unlike {'ȝ', 'gh'}, the use of 'sh' remains consistent throughout the text of the Homilies. This could suggest that the scribe responsible for the replacement of 'ȝ' with 'g' might not have introduced 'sh'.

5.1.3. THA vs THB

The correspondences between PMT – THA and PMT – THB partly overlap, which is in accordance with the assumption that the exemplar of PM differed from the exemplar of TH.

Table 7: The most prominent correspondences between THA and THB.

THA	THB	items	Items -reverse
ch	h	6	0
þ	þ	4	0
ea	o	4	0
ie	i	12	4
h	hȝ	4	1
g	ȝ	28	3
o	eo	4	1

ð	t	5	2
s	sh	15	3
ie	e	22	19
ie	eo	10	4
a	e	89	39
e	u	19	13
e	eo	23	12
ea	e	19	5

Some of the correspondences between PMT – THA and THA – THB share a cascade-like pattern, i.e. the correspondence between PMT – THA also exists between THA – THB. For instance, the digraph 'ea' in PMT usually corresponds to 'o' in THA and, in turn, 'ea' in THA sometimes corresponds to 'o' in THB. The same is true of {'s', 'sh'}, {'ie', 'e'}, {'ie', 'eo'}, {'a', 'e'}, {'e', 'u'}, {'e', 'eo'} and {'ea', 'e'}. In the case of PMT and THA, PMT rarely mixes its dominant variant with the one found in THA. The texts of the TH often mix both variants in the same (sets of) items. For instance, in items where PMT strongly favours 'e' and never uses 'u', THA and THB have numerous instances of 'u' as well as 'e'. The most straightforward explanation seems to be that scribe TB went further in replacing some of the exemplar features ('ie', 'e', 'h' …) with his own forms ('e', 'u', 'ȝh' …). The problem with this hypothesis is that some of the forms supposedly introduced by the scribe (mainly those with 'u' and 'eo') do not fit in very well with THB's localisation in LAEME (the case of 'eo' has been already discussed with Figure 4).

5.1.4. Observations from maps - Trinity

A few of the features which set the Homilies apart from PMT appear predominantly or even exclusively in the Southwest Midlands, which makes the instances in the Essex texts stand out on the map. Such features include mainly the use of 'eo' in DEER, HEART, NEED, BE/PRESENT SUBJUNCTIVE, HOLD/PAST SUBJUNCTIVE and FIEND/NOUN (also present in version D of the PM) and the use of 'u' in EVIL, SIN, HLYSTAN and SELF. These could be residual forms taken from the exemplar. Paradoxically, the forms with 'eo' appear to be more "western"

than the variants with ‘e’ in TC, even though the latter is placed more to the West.

The case of ‘eo’ and ‘u’ is rather exceptional, though. More often than not, the distribution of the two variants in a correspondence was irregular. Still, some of the maps helped to identify relatively rare spelling features. For instance, the distribution of ‘a’ in items associated with the prominent correspondence {‘a’, ‘e’} in PMT – PML shows no discernible regional tendency. Several forms with ‘a’ in PMT (namely LEAD/VERB PRESENT, HAÉLUN, DEED, NEVER, EVER, ÉCE) seem to be concentrated in a small group of texts. Their distribution is shown in Figure 5.

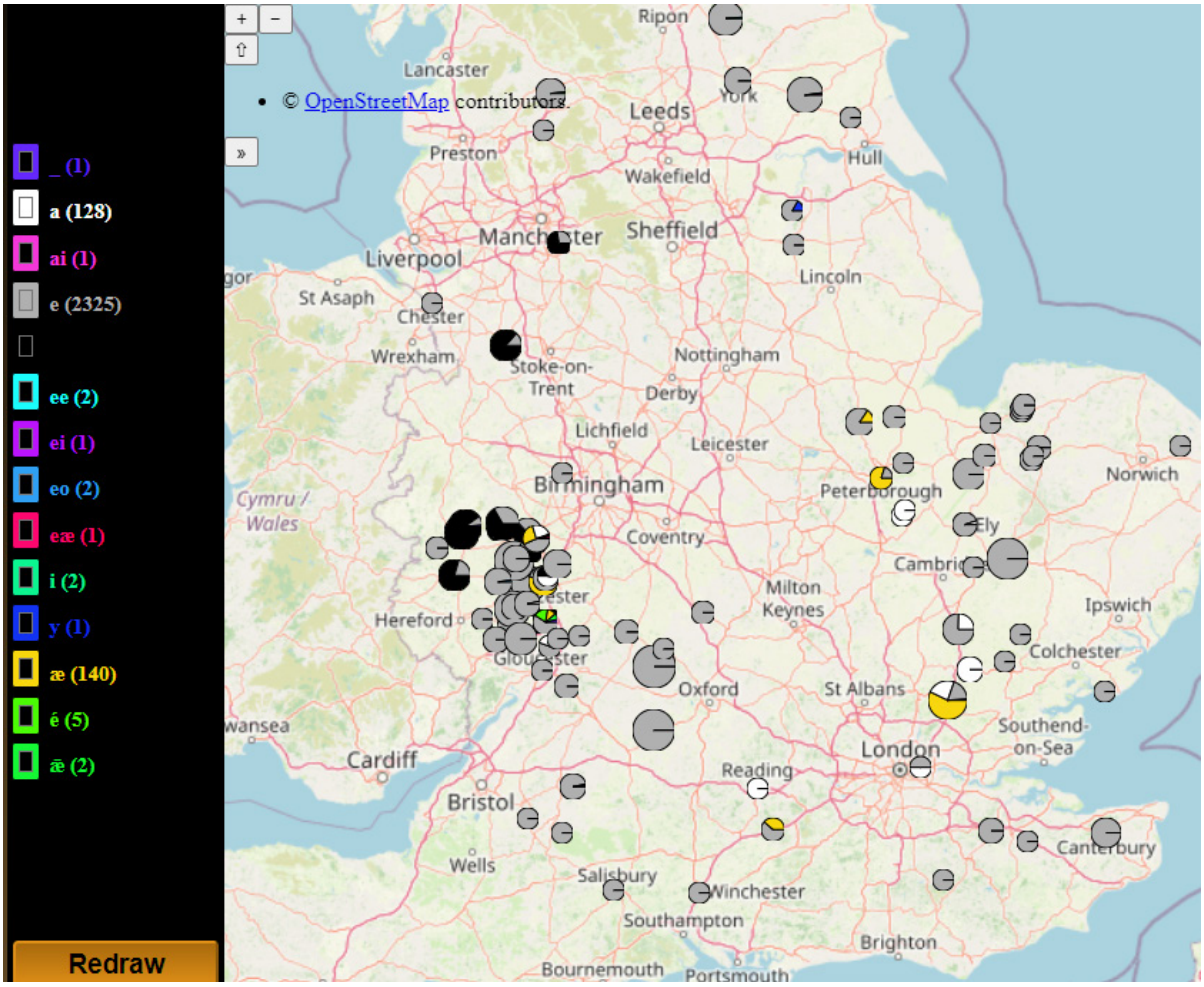


Figure 5: Map showing the distribution of litterae corresponding to PMT ‘a’ (white) in LEAD/VERB PRESENT, HAÉLUN, DEED, NEVER, EVER, ÉCE.

‘A’ appears chiefly in PMT. THA has the second highest incidence of ‘a’ but the distribution of forms is quite chaotic in comparison with PMT. Besides the eastern texts localised relatively close to PMT, the forms with ‘a’ are found in

a few West Midland texts. The map also shows a cluster of texts in which the dominant variant is ‘ea’ (displayed in black).

5.1.5. Sermon of Isaiah (TC)

The text of the sermon is very short, which significantly limits the amount of available data. Moreover, spellings which commonly appear in all of the other analysed texts were of little value. The analysis identified only several features which set TC apart from some of the other texts. Shall is spelled with initial ‘s’ (the regular variant in PMT), not with ‘sh’, which is the dominant variant in TH. The text shares a few rather uncommon features with THB, namely ‘u’ as the nuclear vowel in KIN, ‘hc’ in place of the much more common ‘ch’, there THERE spelled with ‘a’ (also in THA) and *hie* as the form of third person plural personal pronoun. Considering the features shared with THB, it does not seem unlikely that the exemplars of both texts were written in a similar kind of language. If this is so, the absence of ‘sh’ from TC could speak in favour of the hypothesis that ‘sh’ was introduced by scribes TA and TB.

5.1.6. MS Lambeth

The digraph ‘ie’, characteristic of MS Trinity, is also found in Lambeth but the occurrences are restricted to verbal endings. An exception is found in the single instance of everyet spelled *eauerȝiete* in LAY. All of the Lambeth texts except PML contain numerous instances of ‘eo’, which correspond to several different vowels in Trinity. For example, LAX has over 1000 instances of ‘eo’ in 178 different items. The corresponding spellings in THA are ‘e’ (114 items), ‘o’ (31), ‘i’ (17), ‘ie’ (13), ‘u’ (9) and ‘a’ (8). The correspondence between ‘eo’ and ‘ie’ is of special interest because unlike the other litterae ‘ie’ is virtually absent from Lambeth and characteristic of Trinity. Another relatively regular difference between Trinity and Lambeth is the fairly consistent use of ‘sc’ in the initial position in Lambeth in items which presumably underwent palatalisation of /sk/ (the corresponding litterae in Trinity are ‘s’ and ‘sh’). The fact that there is not a single instance of ‘sh’ in Lambeth suggests that ‘sh’ might not have been present in the ultimate shared source. Also, the Lambeth texts sometimes employ initial ‘h’ in *wh*-words and generally use fewer ‘ð’ and more ‘þ’ instances.

5.1.7. PML and PMT

The comparison of PMT and PML is particularly valuable because the texts have comparable length and almost identical content. PML is clearly less consistent than PMT. This fact agrees with the stemma constructed by Zupitza (1878: 36), according to which PML is more distant from the original version than PMT. Multiple layers of copying could account for greater variation in PML's system.

Table 8: The most prominent correspondences between PMT and PML.

PMT	PML	items	Items -reverse
ð	þ	19	0
ie	o	16	0
ea	e	11	0
s	sc	9	0
ea	a	4	0
ie	i	6	0
p	u	5	0
ie	eo	4	0
ie	e	19	2
h	ch	16	2

The most prominent correspondences are summarized in table 8 and some of them are also visible in figure 6. Most of the correspondences overlap with the correspondences between TH and LH. The situation is more complicated with 'ea', which occurs in LAX (see section 5.1.10. below).

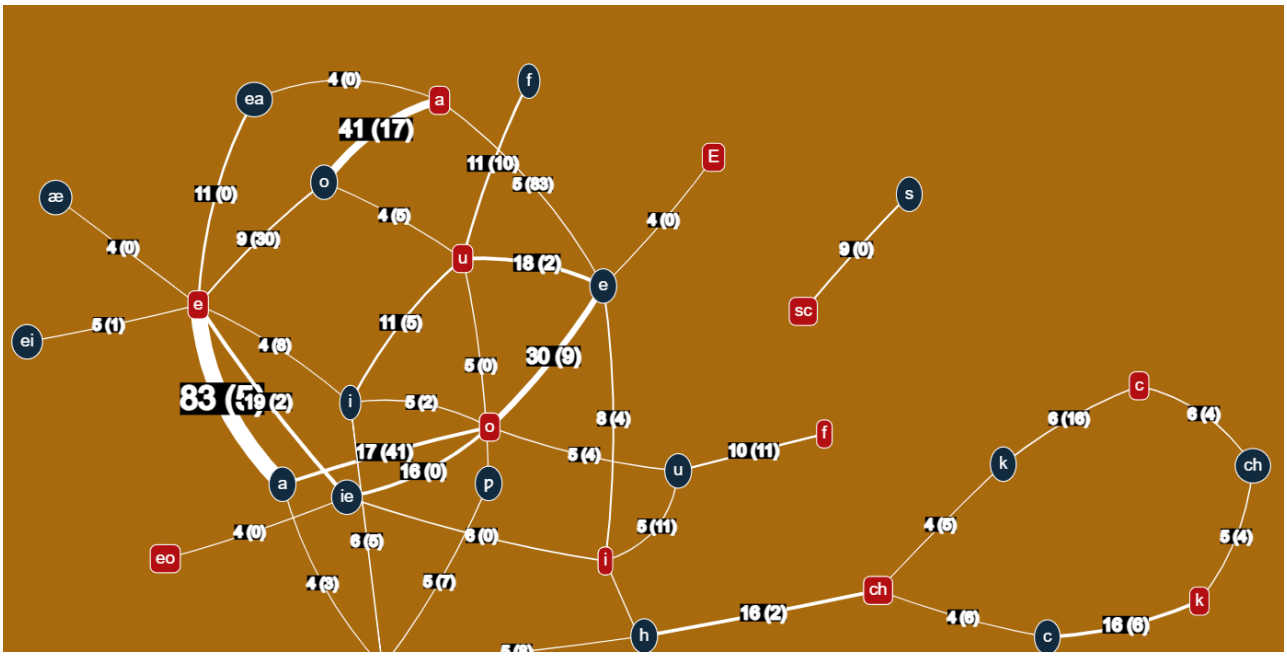


Figure 6: Double network generated from PMT (blue, oval shape) and PML (red, rectangular shape).

The figure shows mainly correspondences between vowels plus correspondences involving {'c', 'k', 'ch', 'h'}. Compared with the tabular representation of the same data, the network makes it more obvious that a single littera can correspond to a number of other litterae, especially in the case of vowels. The number of vowels in PMT corresponding to a single littera in PML tends to be higher than the number of vowels in PML corresponding to a littera in PMT. For instance, PML 'o' corresponds to seven different vowels in PMT but 'o' in PMT has only three counterparts in PML. This is probably due to the higher consistency of PMT's spelling system.

5.1.8. *On Ureisun of our Louerde* (LB)

Judging by Sisam's (1951) features distinguishing between LAX and LAY+PML, LB seems closer to LAX. There are no instances of the final *-ch*, *-cht* and 'eo' is clearly preferred to 'o' in items which are spelled with 'o' in PML and LAY (EARTHLY, HEAVENLY, DEAR, LÉOF and others). The littera 'Eo' in LB often corresponds to 'ie' or 'e' in Trinity. Unlike LAX, LB does not use 'f' in words like HEAVEN, EVER, BELIEF etc.; however, LAX itself mixes 'f' with 'u', which may reflect a similar irregularity in its exemplar(s).

5.1.9. Overlaps between the two manuscripts

Uncommon forms occurring in both manuscripts are likely to come from their ultimate shared archetype. Of all the texts in Trinity, THB is the one which shares the greatest number of features with Lambeth. They include above all very uncommon spellings ‘hg’, ‘hȝ’ found in place of ‘h’, ‘ȝ’, ‘ȝ’ and a set of digraphs like ‘dð’, ‘dþ’ which are also very rare. The ‘hg’, ‘hȝ’ spellings are particularly interesting in that they appear almost exclusively in THB and LAX (and no other texts in LAEME), albeit they are not numerous (18 instances in THB and 12 instances in LAX). The most straightforward explanation would seem to be that the forms appeared in an archetype shared by THB and LAX, except that the spellings are not found in the Homily shared by THB and LAX. Still, this does not completely exclude the possibility that the forms come from THB’s exemplar. As Trinity scribes TA and TB worked from the same exemplar and ‘hg’ appears only once in TA’s passages, it is possible that TA replaced the remaining forms. If so, we should consider the possibility that at least some differences between the texts copied by TA and TB could reflect changes introduced by TA, while TB’s work might be a more faithful reproduction of the exemplar.

It seems highly likely that there is a connection between ‘gh’ and ‘hg’. The littera ‘Hg’, as a reverse variant of ‘gh’, was probably introduced by the same scribe as ‘hc’ (THB), which generally corresponds to ‘ch’ in other texts. The correspondences further suggest a possible link between ‘gh’ and ‘ch’. There is a distinct group of words spelled with ‘gh’ in TH, which fairly regularly corresponds to ‘ch’ in other manuscripts, mainly #273 (London, British Library, Cotton Cleopatra C.vi). Moreover, ‘c’ is occasionally used interchangeably with ‘g’ (e.g. in ÞYNCAN, STRENGTH in THB, THANK in LAX).

It is of some interest that #273 also shares with LAY and PML a few rather uncommon g-spellings of words like ÞYNCAN (*þingþ* - PML, *þingð* - LAY), SWINC (*sping* - #273, *spinge* - LAY) or THANK (*þong* - #273), which are typically spelled with ‘ch’ in the rest of the Trinity and Lambeth texts. THA is the only Trinity text with some instances of ‘ch’ for historical ‘h’, which Sisam (1951) listed among the defining features of LH exemplar Y.

5.1.10. An example of distribution of variants across texts: ‘ea’ and equivalents

One of the most regular and orderly distributions of variants is found with the digraph ‘ea’ and its equivalents. The items spelled with ‘ea’ can be divided into two groups which usually remain distinct in the examined texts. The first group comprises items in which ‘ea’ (or its equivalent) is followed by *-ld* (OLD, HOLD, BEHOLD etc.). The items in the second group often have attested OE forms spelled with ash.

Table 9: The distribution of litterae corresponding to PMT ‘ea’.

Text	Group 1 (-eald)	Group 2
PMT	ea	ea
THA	ea/o	ea/e
THB	o/e (old)	ea/e
TC	No examples	No examples
PML	a	ea/e
LAY	a	e
LAX	a/o (old)	ea/e
LB	No examples	ea/e

LAX differs from LAY and PML not only in the use of ‘ea’ in the first group but it also contains several very rare forms with ‘ea’, some of which are found nowhere else in LAEME (NEED, DO, SEE, BE, ANY(THING), ERE). This would suggest that the use of ‘ea’ is a very prominent feature of exemplar X.

5.2. The sets and their comparison

The comparison of networks generated from the individual texts revealed the sets of litterae which are typically used interchangeably. This section of the paper discusses the sets along with the texts in which they appear and points out the differences between the texts.

5.2.1. Sets containing ‘c’, ‘ch’, ‘k’

All the texts use {‘c’, ‘ch’, ‘k’} interchangeably at least to some extent. The prevalent pattern is that the incidence of {‘c’, ‘k’} is higher than {‘c’, ‘ch’} and the incidence of {‘ch’, ‘k’} is lower. LAY and THA slightly differ from the other texts in that the number of slots with alternating {‘c’, ‘ch’} is comparable to {‘c’, ‘k’}.

The use of ‘ch’ in typical ‘h’ contexts (especially before ‘t’) noted by Sisam (1951) and presumably coming from exemplar Y of *Lambeth Homilies* and PML is reflected in the alternation of ‘h’ and ‘ch’ in PML and LAY. The only other text sharing this feature is THA, which means that it occurs in both manuscripts (Trinity and Lambeth). The texts from Lambeth occasionally use {‘h’, ‘c’} (FRIGHT, BRIGHT, AC, FIRST PERSON SINGULAR PRONOUN, SECOND PERSON PLURAL PRONOUN), which could be connected with the use of ‘ch’ in ‘h’ contexts. In the case of ac, both variants are very common. Contrarily, BRIGHT with ‘c’ (LAY) is exceptional.

The text with the most complex network is LAX, which also contains instances of ‘cch’ (alternating with ‘ch’) and ‘ck’ (alternating with ‘k’). None of the litterae is present in the other Lambeth texts but some instances appear in the TH, mostly in THB.

5.2.2. Sets containing ‘s’, ‘sh’, ‘sc’

PMT is the only text which consistently uses the same litterae at the same positions. Both texts of TH sometimes alternate {‘s’, ‘sh’} and THB also uses ‘ssh’ (‘shsh’) as an alternative to ‘sh’, ‘ss’ and ‘s’. While ‘ssh’ is almost absent from THA (2 instances only), ‘ss’ does occur in similar contexts as in THB. The forms with ‘ssh’, ‘shsh’ (1 occurrence only) probably result from the previously mentioned systematic replacement of ‘s’ with ‘sh’ in words spelled with ‘ss’ in the exemplar.

The Lambeth texts share one common pattern – namely {‘s’, ‘sc’}, which is connected with the fact that ‘sc’ is a marginal variant in Trinity but a prevalent one in Lambeth. There is a clear overlap between the use of ‘sc’ in Lambeth and ‘sh’ in Trinity. The variant ‘sch’ is restricted to PML and LAY, where it occasionally alternates with ‘sc’. Therefore, ‘sch’ could be another feature of exemplar Y.

5.2.3. Sets containing ‘f’, ‘u’, ‘v’

The most common set in this group is {‘f’, ‘u’}, which appears in all the texts, including LB, which is very short. Both versions of the PM also occasionally use ‘v’ in place of ‘u’ and PML sometimes mixes ‘f’ and ‘bb’. The latter is found also in the other texts but its incidence in PML is markedly higher.

5.2.4. Sets containing ‘d’, ‘t’, ‘þ’, ‘ð’

All the texts often use at least some of the litterae in this group interchangeably. The configurations in the network differ only slightly. The most conspicuous divergence from the common pattern is that the frequent alternation of ‘þ’ and ‘ð’ is completely absent from PMT. All the Trinity scribes clearly prefer ‘þ’ to ‘ð’ in the initial position. The same is partly true of LAX but not the other Lambeth texts, i.e. the use of ‘þ’ and ‘ð’ in LAX is more similar to Trinity than the other Lambeth texts. The texts of LH differ from TH in that they employ several digraphs composed of ‘d’, ‘þ’, ‘ð’ and ‘h’, which are not found in the other texts (‘ðd’, ‘ðh’, ‘ðþ’).

5.2.5. Sets containing ‘þ’, ‘hþ’

It is possible to identify four distinct configurations which are shared across some of the texts. The most widespread one is (a) the interchangeability of ‘þ’ and ‘u’, which appears in all of the texts except PMT. (b) Occasional use of ‘h’ in typical ‘hþ’ contexts is found in all Lambeth texts. This feature is very unusual and it is restricted to a few texts in LAEME as a whole. The only text which uses ‘h’ in these positions regularly is *The South English Legendary* (Oxford, Bodleian Library Laud Misc 108, part 1 - #1600).

The two remaining features appear in both manuscripts: (c) TH and LAX sometimes alternate ‘þ’ and ‘hþ’. (d) THB and LAX also occasionally write ‘þ’ when ‘þ’ would be normally expected . The likely reason for this is the similarity of letter shapes, which was previously invoked as an explanation of certain spelling features also by the authors of LAEME Laing & Lass (2009).

5.2.6. Sets containing ‘g’, ‘ȝ’

Similarly to the previous groups, PMT is significantly more consistent in comparison with the other texts. TH as well as all the Lambeth texts sometimes alternate {‘g’, ‘ȝ’}. Both texts of the TH also sometimes use ‘g’ interchangeably with ‘gh’. A similar feature appears in LAX (but not LAY), which alternates ‘ȝ’ and ‘ȝh’ or ‘hȝ’. The rare digraphs ‘hȝ’ and ‘hg’ are restricted to THB and LAX, which could be suggestive of a shared source. The last shared pattern is {‘g’, ‘h’} (or {‘ȝ’, ‘h’} in texts which use insular g). It is found in Lambeth and even more frequently in THB.

5.2.7. Comments

The sets of alternating litterae appearing in the individual texts are quite similar – a number of sets appear in all or most of the examined texts. The analysis revealed only few patterns which are restricted to one of the examined MSS or specific text(s). Some of the sets are present in only one of the analysed MSS and others suggest a certain similarity between TH and LAX.

The most consistent text appears to be PMT and the least consistent ones are THB and LAX. Unfortunately, the lack of consistency is almost certainly due to the length of the texts as well as the fact that there probably were some differences in the languages of the individual homilies.

5.2.8. Vowels letters

In total, there are 25 pairs of vowels letters which are sometimes used interchangeably in the examined texts. Six of them are found in all of the analysed texts, six are unique to LAX and the rest appear in a specific subset of the examined texts.

The most common pattern by far is {‘a’, ‘e’}, followed by {‘a’, ‘o’}, {‘e’, ‘o’} and{‘e’, ‘i’}. The two remaining universal patterns are {‘i’, ‘u’} and {‘i’, ‘o’}. The set {‘a’, ‘u’} is present in all the texts except PML and LAY, i.e. the two Lambeth texts presumably copied from the same exemplar. This may again reflect the relatively closer connection between Trinity and LAX.

As for the differences between the two manuscripts (Trinity and Lambeth), seven patterns appear predominantly in Trinity and four in Lambeth. Two of

the patterns in Trinity ({'æ', 'e'} and {'á', 'o'}) contain litterae which are used only sporadically in the manuscript. These are found in PMT and LHB. The digraphs 'ie' and 'ea' sometimes alternate with 'e' in all three Trinity texts. The remaining patterns are similar in that they include digraphs but they are restricted to TH: {'i', 'ie'}, {'ea', 'o'} and {'eo', 'o'}. The last two patterns which Trinity does not share with Lambeth, {'eo', 'ie'} and {'i', 'y'}, appear in THB only. The absence of these patterns from Lambeth is mostly due to the fact that Lambeth rarely uses 'ie' and 'ea'.

The only pattern occurring in all the three Lambeth texts and nowhere else is {'a', 'i'}. The much less frequent {'e', 'ei'} is found only in LH. The set{'e', 'eo'}, which is also a common feature of the Lambeth texts also appears in THB. Similarly, {'o', 'u'} occurs in LH and THB (but not in PML). The six remaining patterns unique to Lambeth all belong to LAX only. They are {'e', 'u'}, {'a', 'ee'}, {'ea', 'eo'}, {'a', 'eo'}, {'u', 'eo'} and {'ia', 'ie'}.

Most of the patterns which are not common to all of the texts contain a digraph. This may suggest that the scribes' tendency to replace alien digraphs was stronger in comparison to single vowel letters. There are a few exceptions. The set {'a', 'i'} is associated with items like NIGHT, MIGHT, MAY, where the vowel is followed by *-ht*. The variants with 'a' are quite rare. The items behind the set {'o', 'u'} (common to LH and THB) cannot be easily characterised as a group.

6. Conclusion

The concluding section of this paper comments on the method's potential to answer the questions formulated at the beginning (section 2), quoting the most relevant findings of the study. It also points out the main drawbacks and deficiencies of network diagrams.

The easiest task appears to be the isolation of "layers", which consists mainly in establishing group of features shared by a specific subset of the analysed texts. Such groups in the case study comprised, for example, the extensive use of 'ȝ', 'ie' and 's' in the PM, 'sh' in Trinity and corresponding 'sc' in Lambeth or the distribution of 'ea' and its equivalents.

As regards the process of copying, the most gratifying part of the analysis concerns the strikingly systematic use of 'sh' in TH, especially the discrepancy

between the distribution of ‘sh’ and ‘gh’. Another interesting spelling feature is the presence of ‘hg’ (‘hȝ’) in THB and LAX. The co-occurrence of the feature in two related manuscripts suggests that ‘hȝ’ might be more than an accidental reversal of the much more common ‘ȝh’. The analysis of sets led to the rather general observation that scribes appear to be more careful and systematic in rewriting digraphs.

As for the distinctive features of the individual spelling systems, the most systematic and regular characteristics can be ascertained relatively quickly. In the case of the present analysis, they usually merely confirm results of previous studies; however, the method could be applied to compare spelling systems of texts which have not been researched as thoroughly as the MSS analysed here. The analysis revealed not only prominent patterns of correspondences between the systems but also a number of minor features which only become useable as evidence if they can be accumulated.

As for the internal logic of the systems, the analysis was not very effective. The comparison of sets led only to the observation that some of the text exhibit a preference for ‘þ’ in the initial position (as opposed to ‘ð’ elsewhere).

The sets of alternating litterae are typically very similar and many of them appear in both of the examined manuscripts, which is perhaps not surprising, considering that the examined texts share some common sources. The similarity appears to be closer in consonantal sets in some respects because there are fewer consonantal sets restricted to a certain text of manuscript. It could be worthwhile to compare the (dis)similarity of sets in two or more unrelated and possibly more “distant” texts, such as the *Cursor Mundi* localised in the North in LAEME and the *Kentish Sermons* localised in the South.

Some of the examined maps point to similarities between the texts covered by the study and other texts in LAEME. For example, the relatively uncommon digraph ‘ie’ is conspicuously frequent in #64 and #65 (London, British Library, Stowe 34) and several features from PMT or PML were found also in other copies of the PM. These accidental findings might suggest another possible direction of inquiry and a more thorough analysis could add to our understanding of relations between the texts.

6.1. Limitations and future applications of the methodology

The analysis of TH and LH was seriously complicated by the uneven length of the texts as well as the fact that exemplar languages of the individual homilies might have differed. The study could have produced better results if it had paid a closer attention to the distribution of spelling features and the shared homilies.

The biggest technical problem with network visualisation is that it fails to show which litterae are actually mixed with others and this distorts the picture of the correspondences between the texts. For instance, the double network for LAX and LB displays the correspondence between ‘e’ in LAX and ‘eo’ in LB (11 items), producing the impression that ‘e’ in LAX is the usual equivalent of ‘eo’ in LB. However, a closer look at the 11 items and their forms shows that both texts in fact use ‘eo’ in most cases and the vast majority of the spellings with ‘e’ in LAX are marginal variants. This issue could be solved with a more sophisticated network diagram, which would display not only the correspondences between different litterae but also correspondences between the same litterae. In the scenario described above, such a diagram would make it evident that even though ‘eo’ in LB can correspond to ‘e’ in LAX, its correspondence to ‘eo’ is even more frequent.

The interpretation of “double” networks requires a good deal of flexibility because the diagrams can point in various directions and lead to different kinds of observations. While some of the correspondences reflect more or less systematic differences between the spelling systems, others can point to rare forms, e.g. a single occurrence like exceptional ‘ie’ is reflected in the correspondence {‘ie’, ‘eo’}. This difficulty stems from the nature of the analysed texts rather than the design of the tool. It should be taken into account when defining the scope and goals of future analyses. For instance, a study describing the most prominent spelling differences in a larger group of texts may simply restrict itself to correspondences above a certain threshold frequency and disregard the minor spelling features.

As for the future applications of networks as well as other features of the Spelling database, some possible directions of research, such as comparing two dissimilar texts, have been already suggested above. In addition, further research may explore the possibilities of combining networks with item lists and maps, ideally on a smaller sample which would allow the researcher

to use these functions systematically, e.g. generate a map for every single correspondence between two texts and calculate to what extent the correspondences reflect regional variation. Another option could be to focus on the interaction between the scribe's spelling system and the text being copied. A single network could provide a convenient point of departure for a study which would map potential changes in the scribe's spelling practices in the course of copying.

Also, the analysis mainly exploited the networks' potential to provide a comprehensive list of correspondences between texts, and its relatively wide scope left little space for assessing the advantages of networks as opposed to tables, which definitely seems worthwhile. In order to perform such an assessment, it would seem advisable to make it central to a potential new study and limit the amount of analysed material. N

MARIE VAŇKOVÁ
CHARLES UNIVERSITY, PRAGUE

References

Dossena, Marina & Roger Lass (eds.) 2004. *Method and Data in English Historical Dialectology*. Bern – New York: Peter Lang.

Horobin, Simon & Jeremy Smith 1999. A database of Middle English spelling. *Literary and Linguistic Computing*, 14 (3), 359–374. https://doi.org/10.1093/llc/14.3.359

Hudson, Anne 1966. Tradition and Innovation in Some Middle English Manuscripts. *The Review of English Studies*, Vol. 17, No. 68: 359-372. http://dx.doi.org/10.1093/res/XVII.68.359

Kopaczyk, Joanna, Benjamin Molineaux, Vasilios Karaiskos, Rhona Alcorn, Bettelou Los, and Warren Maguire 2018. Towards a Grapho-Phonologically Parsed Corpus of Medieval Scots: Database Design and Technical Solutions. *Corpora* 13 (2): 255–69. https://doi.org/10.3366/cor.2018.0146

Laing, Margaret 1992. A Linguistic Atlas of Early Middle English: The Value of Texts Surviving in More than One Version. *History of Englishes: New Methods and Interpretations in Historical Linguistics: Topics in English Linguistics* 10: 566–81. Berlin – New York: Mouton de Gruyter. http://dx.doi.org/10.1515/9783110877007.566

Laing, Margaret 2004. Multidimensionality: Time, Space and Stratigraphy in Historical Dialectology. *Method and Data in English Historical Dialectology: Linguistic Insights 16*, eds Marina Dossena & Roger Lass. 49-96. Bern: Peter Lang Publishing Group.

Laing, Margaret 2013. A Linguistic Atlas of Early Middle English, 1150–1325, Version 3.2. Edinburgh: © The University of Edinburgh. [http://www.lel.ed.ac.uk/ihd/laeme2/laeme2.html].

Laing, Margaret & Roger Lass 2009. Shape-Shifting, Sound-Change and the Genesis of Prodigal Writing Systems. *English Language and Linguistics* 13 (1): 1-31. https://doi.org/10.1017/S1360674308002840

Laing, Margaret & Roger Lass 2013. Introduction to LAEME. [http://www.lel.ed.ac.uk/ihd/laeme2/laeme_intro_ch1.html].

Millett, Bella 1997. The pastoral context of the Trinity and Lambeth homilies. *Essays in Manuscript Geography: Vernacular Manuscripts of the English West Midlands from the Conquest to the Sixteenth Century*, ed Wendy Scase. 43-64. Turnhout: Brepols.

Sisam, Celia 1951. The Scribal Tradition of the Lambeth Homilies. *The Review of English Studies*, Vol. 2, No. 6, 105-113. http://dx.doi.org/10.1093/res/II.5.105

Thaisen, Jacob 2020. Standardisation, exemplars, and the Auchinleck manuscript". *The multilingual origins of standard English*, ed Laura Wright. 165-190. De Gruyter Mouton.

Vachek, Josef & Philip A. Luelsdorff 1989. *Written language revisited*. Amsterdam: John Benjamins. http://dx.doi.org/10.1075/z.41

Vaňková, Marie 2021. Article details to be added by the author.

Zupitza, Julius. 1878. Zum Poema Morale. *Anglia* 1: 5-38. DigiZeitSchriften. [https://www.digizeitschriften.de/dms/img/?PID=GDZPPN000010030]. http://dx.doi.org/10.1515/angl.1878.1878.1.5

Appendix

List of Abbreviations

EME	Early Middle English
LA	MS Lambeth 487, scribe A
LAX	Lambeth Homilies copied from exemplar X (MS Lambeth 487, scribe A)
LAY	Lambeth Homilies copied from exemplar Y (MS Lambeth 487, scribe A)
LB	MS Lambeth 487, scribe B
LH	Lambeth Homilies
LSS	Litteral Substitution Set
ME	Middle English
MS	manuscript
OE	Old English
PDE	Present day English
PM	Poema Morale
PML	Poema Morale, version L (MS Lambeth 487, scribe A)
PMT	Poema Morale, version T (MS Trinity B.14.52, scribe A)
TA	MS Trinity B.14.52, scribe A
TB	MS Trinity B.14.52, scribe B
TC	MS Trinity B.14.52, scribe C
TH	Trinity Homilies
THA	Trininy Homilies, scribe A
THB	Trinity Homilies, scribe B