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## **Manuscripts as Sources for Linguistic Research: A Methodological Case Study Based on the *Mirror of Lights*<sup>1</sup>**

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**Abstract:** This article explores the problematic issue of using editions as sources for studies of English historical morpho-syntax. It presents a methodological case study of the variation between *he* and *it* in reference to inanimate objects (such as *mercury*) in *Mirror of Lights*, an alchemical text that survives in multiple copies from the 15th and 16th centuries. The study reveals that the manuscript versions differ greatly in how they employ *he* and *it*, underscoring that linguistic studies based on one version would provide very different results from those using another version as the source. The article argues that it is crucial that such manuscript variation is taken into consideration in morpho-syntactic studies. It suggests that an electronic edition that incorporates all copies of the text would make the full variation available to linguists, while a traditional critical edition would highlight the pattern of one version but obscure or ignore the patterns of other manuscripts. The article also discusses the more general problem of including a multiversion text such as the *Mirror of Lights* into a corpus, and suggests some possible solutions.

**Keywords:** *editions; manuscripts; corpus compilation; morpho-syntactic variation; he vs. it; alchemical texts*

### **Introduction**

Studies of English historical morpho-syntax are usually based on editions of manuscript texts or on corpora that contain extracts from editions.<sup>2</sup> However, using editions for linguistic research can be problematic, as a number of recent studies have shown (see e.g. Kytö and Walker 2003; Bailey 2004; Grund, Kytö and Rissanen 2004; and especially Lass 2004a). It has been pointed out

that some modern editions that are used for linguistic investigations are not appropriate as sources because they were not produced with linguistic research in mind. The texts of these editions have been modernized, normalized or modified in various ways, often to help a specific group of intended readers deal with the texts. Editions may also contain transcription errors that distort the language of the original manuscript texts. An even more serious problem is that traditional editions of texts that exist in several copies commonly present one version, but may incorporate readings from several different manuscript witnesses into the text of the edition (cf. e.g. *The Riverside Chaucer*, Benson 1987, xlv). In this case, the result is an eclectic or hybrid text for which there is no actual historical witness; rather, it is a modern editor's reconstruction of what he or she believes that the original or an earlier textual state looked like, based on comparisons of the extant manuscripts and other factors. Needless to say, reconstructed texts are composite texts linguistically, in which the language of several witnesses has been merged by a modern editor. Furthermore, editions of this kind often place variant readings in a critical apparatus or exclude them completely. Such a treatment of variation highlights one variational pattern, that is to say, that of the version printed, but may obscure others, and may thus not provide all the information available in the manuscripts concerning a certain morpho-syntactic feature.

In this article, I will further explore the problematic issue of using editions as linguistic sources by examining whether different manuscript versions of the same text can provide evidence that would be important and valid for historical linguists studying morpho-syntactic variation. As a methodological test case, I will use the variation between *he* and *it* referring to inanimate objects found in the *Mirror of Lights*, an alchemical text that survives in several copies from the 15th and 16th centuries. Alchemical texts provide an excellent test bed for a study of this kind: copies of the same text often vary widely, most likely since they were

produced by knowledgeable copyists and practitioners who revised their exemplars in accordance with their own experience or reading of other sources. Naturally, this also means that the employment of a certain linguistic feature may vary substantially. I will show that this is the case as regards *he* and *it* in the manuscripts of the *Mirror of Lights*. I will suggest that, to be able to chart the full scope and characteristics of the variation between *he* and *it*, it is crucial to consult all the copies of the text. This suggestion obviously has repercussions for how editions should be prepared, and for how linguists use sources such as the *Mirror of Lights* to reconstruct various aspects of the history of the English language. I will present a possible solution to the problem of preparing an edition for linguistic use, and discuss some wider implications for corpus-based studies. Before I present my case study, however, I will provide a short introduction to scientific texts in English from the late Middle English and early Modern English periods, especially texts on alchemy. I will also briefly discuss editorial and linguistic approaches to the problems posed by multiple versions of the same text, and I will introduce the morpho-syntactic phenomenon under study.

### **Scientific Texts in Middle English and Early Modern English**

From the 12th century to the 14th century, scientific texts produced or copied in England were exclusively written in Latin and French. However, at the end of the 14th century, scientific texts began to appear in English, and they became more and more common throughout the 15th and 16th centuries (see e.g. Keiser 1998; Voigts and Kurtz 2000). The increasing number of English writings on science has been attributed to the growing vernacular readership at the time and conscious language policies on the part of the Lancastrian monarchs (Norri 1992, 30; Pahta 1998, 59–61; Taavitsainen 2000, 132). However, despite recent scholarly attention to early texts on science, the dynamics of this vernacularization process have yet to be fully explored.

Works on medicine make up the largest category of scientific texts in late Middle English, and they have received a great deal of attention from linguists interested in the Englishing of scientific texts (see Taavitsainen and Pahta 2004, and their voluminous bibliography). A corpus comprising medical texts in Middle English is also available (Taavitsainen, Pahta, and Mäkinen 2005). However, the role of sciences other than medicine in this process has not been charted to a similar extent. Alchemical texts, which survive in great numbers from the 15th and 16th centuries, have received almost no attention, despite their potential importance in the development of English scientific prose: there are few editions, and the few that exist are primarily of verse tracts (for a discussion of available editions, see Grund 2002, 265–6). There are even fewer studies based on these editions or on manuscript texts (see, however, Grund 2003, 2004a–b, 2006). Alchemical texts outline the practical procedures and the underlying theoretical framework of the production of the philosophers' stone or elixir, which was thought to transmute base metals into silver and gold, or to cure illnesses and prolong life. Although alchemy is considered a pseudo-science or occult discipline today, it was widely thought of as a science in the Middle Ages. Medieval scholars such as Albertus Magnus (*c.* 1200–1280) and Roger Bacon (*c.* 1220–1292) took a keen interest in the potential of alchemy, although they also had reservations (Crisciani 1996; Kibre 1980, 190–5). In some respects, alchemy can even be seen as a precursor of modern chemistry. Although alchemy and the chemistry that developed in the late 17th century were fundamentally different, and although alchemy (at least the part that was concerned with transmutation) was falling into disrepute at the end of the 17th century, many prominent scientists and chemists at the time, such as Robert Boyle and Isaac Newton, read, copied, and composed alchemical texts (Principe 1998; Dobbs 1975). Comparing texts on alchemy and texts on chemistry can thus help establish to what extent the language of later texts on chemistry was related to and influenced by the language of

alchemical texts. More generally, the study of alchemical texts can contribute significantly to our knowledge of the vernacularization process in late medieval and early Modern England.

### *Mirror of Lights*

A prime example of an alchemical text from the late Middle English period is the *Mirror of Lights*, which is the text used as a test case in this article. It is an anonymous reworking of an earlier Latin text entitled *Semita recta* ('the right path'), which is often found spuriously attributed to the famous 13th-century scholar Albertus Magnus in manuscripts and early printed editions. The *Mirror of Lights* survives in nine more or less complete copies from the 15th and 16th centuries and in several fragments (for more details, see Grund 2006, 32–8). For this study, I have used seven of the complete manuscripts, which are listed in Table 1.

[TABLE 1 HERE]

The *Mirror of Lights* meticulously outlines the technical procedures that need to be carried out to produce various elixirs, and it also provides an introduction to alchemical practice. The text's introductory material suggests that it was probably intended and possibly used as a manual or reference guide for basic alchemical experimentation. The assumption that it was considered a practical handbook is also supported by the state of the text in the extant manuscripts. The copies of the *Mirror of Lights* differ substantially from one another in some parts of the text, which suggests that knowledgeable scribes or practitioners of alchemy most likely reworked the text in accordance with their own experience of experimentation and/or in accordance with ideas in other texts (cf. Grund 2006). The text comparison in Table 2 illustrates the striking differences that may occur between different versions.<sup>3</sup>

[TABLE 2 HERE]

Since the two versions of the recipe for sal ammoniac are so radically different, it is unlikely that one derives from the other, i.e. that Version 1 is an abbreviation of Version 2, or that Version 2 is an elaboration of Version 1. Instead, it seems more logical to suggest that a scribe replaced one with the other, perhaps because he felt that the recipe in his exemplar was incorrect and/or because he had a better recipe at his disposal.<sup>4</sup>

The copies of the *Mirror of Lights* are by no means peculiar in this respect. Rather, many, if not most, alchemical and scientific texts exhibit similar tendencies of reworking and adaptation. Voigts (2004), for example, discusses an astrological text that exists in three distinct versions, and Tavormina (2005) shows that conspicuous differences occur in a set of medical texts dealing with uroscopy. Such cases present text editors with some very nasty problems. What is the "text" in these cases? Is there a "text," or should we rather talk about "texts"? How should this text or these texts be presented in an edition? Although these are primarily a text editor's problems, I will show that they may become a historical linguist's problems if he or she wants to use such a text as material for research.

### **Textual Scholarship, Linguistic Research, and Multiversion Texts**

The problems posed by literary texts that exist in multiple versions have long been recognized by textual scholars, and there is a wealth of research on interpreting and editing such texts (for a good overview, see Greetham 1992, chs. 8–9; McCarren and Moffat 1998, esp. chs. 3–4; see also Minnis and Brewer 1992, esp. chs. 1, 4, 8; Machan 1994). In Middle English textual criticism and editing, much of the debate has focused on what authority should be afforded individual

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manuscripts of a particular text, and *if* and *how* an editor should attempt to reconstruct an earlier, even authorial, but no longer extant version from the surviving manuscripts. Although there are several schools of editing practice with a variety of theoretical underpinnings (see e.g. Moffat 1998, 25–42), most editions of Middle English texts tend to be critical or eclectic editions, in the sense that they rarely present a manuscript as is, but rather emend one manuscript version, usually on the basis of other witnesses, in order to recapture an earlier textual state. Variant readings in other versions are commonly recorded in an apparatus. However, calls have recently been made for more attention to individual manuscripts (see e.g. Machan 1994, 190–1), and electronic editing projects are producing editions of single manuscripts of texts such as Chaucer's *Canterbury Tales* and Langland's *Piers Plowman*, which exist in widely dissimilar copies (see further below).

Historical linguists have also to some extent recognized the importance of manuscripts *vis-à-vis* (eclectic, critical) editions, which is demonstrated by the great body of research on the language of individual manuscripts. The linguistic value of manuscripts is also in the foreground in projects such as *LALME* (McIntosh et al. 1986) and *LAEME*, where manuscripts, often versions of the same text, serve as the exclusive sources for data on dialectal usage. Dictionary projects, such as the *Oxford English Dictionary* and the *Middle English Dictionary*, have also considered the problems inherent in critical editions. The compilers of the *Middle English Dictionary*, for example, extracted variant readings from the critical apparatus of the editions employed in order to illustrate significant manuscript variation (Ogden, Palmer, and McKelvey 1954, 17–8). However, while some scholars and projects have acknowledged and dealt with the problems of critical editions that narrow down a greatly varied manuscript tradition to one canonical text, such editions are still frequently employed as sources in English historical linguistics. With the advent of historical corpora, which include extracts from editions, the

problematic nature of critical editions seem to have been, if not forgotten, then at least largely ignored (cf. Curzan and Palmer 2006). But, as I will show, the nature of the source may have an impact on the quantitative results as well as qualitative conclusions about a certain case of morpho-syntactic variation.

### *He vs. It*

I have chosen to focus on the variation between *he* and *it* referring to inanimate objects as the methodological test case of morpho-syntactic variation in manuscripts. Example 1 illustrates this variation.

- (1) fflowre of lede ys called amyne & when he ys made into water. hit rubieth as doth another. (British Library MS Harley 3542, f. 2v) [fflowre = substance in powder form; rubieth = rubifies, turns red]

This vacillating use is of special interest because it seems to be more widespread in alchemical texts than in other contemporaneous texts. Studying this phenomenon in alchemical writings thus complements existing research and provides a fuller picture of the scope of the varying use of anaphoric pronouns in late Middle and early Modern English.

Since the point of this article is to use this variation as a test case, I will not describe the possible reasons for this fluctuating usage in great detail. However, I will give some background information in order to contextualize the phenomenon. Previous studies on anaphoric pronouns in late Middle English and early Modern English, such as Nevalainen and Raumolin-Brunberg (1994) and Curzan (2000; 2003), have shown that, although *it* was the more common pronoun, *he* could be used to refer to a range of inanimate objects.<sup>5</sup> These objects include the planets and other celestial bodies, body parts, water, and the wind. Some objects could also be

referred to with *she*, such as cities, ships, and some celestial bodies (Nevalainen and Raumolin-Brunberg 1994, 183–4; Curzan 2000, 568; 2003, 129–130). In late Middle English and early Modern English texts on alchemy, on the other hand, *he* is used with a number of referents that have not been recorded in earlier studies. The objects that are referred to with *he* in the alchemical texts primarily include substances that are employed in alchemical practice, such as *mercury*, *sulfur*, and *sal ammoniac*, but other objects, such as *fire*, are also referred to with *he* (cf. Grund 2004a, 140–2). In most of these cases, *he* can be found in variation with *it*, but, notably, I have found no instances of *she* referring to inanimate objects in alchemical texts. Various explanations may be suggested for this usage of *he* in alchemical writings, such as traces of grammatical gender, influence from other languages (especially Latin), shifts in the notion of animacy, and personification (see Mausch 1986, 94; Lass 1992, 108; Nevalainen and Raumolin-Brunberg 1994, 183–4; Curzan 2003, 130–1). I will explore these issues further in a forthcoming study.

### **The Problem: Variation between *He* and *It* in the Copies of the *Mirror of Lights***

The frequency of *he* and *it* varies substantially in the copies of the *Mirror of Lights*, and, more importantly, the relative frequency of the two differs from copy to copy.<sup>6</sup> The distribution of the two pronouns in the manuscripts is shown in Table 3.<sup>7</sup>

[TABLE 3 HERE]

Perhaps the most striking trend in the distribution is that the overall frequency of the pronouns varies greatly in the different copies (from 96 in MS Kk. 6. 30 to 168 in MS Sloane 316), even though we are ostensibly dealing with one and the same text. There are several reasons for this

variation. One of the main explanations lies in the tendency to rework the text. The adaptation of the *Mirror of Lights* by different scribes and practitioners has led to the existence of alternative versions of some sections, as was seen earlier in Table 2. Moreover, some sections are absent in one copy but present in another.<sup>8</sup> There are also instances where one or more manuscripts use a formulation that does not involve a pronoun, whereas *he* or *it* is found in another copy, as shown in Examples 2a and 2b; or a noun may be employed instead of a pronoun, as is illustrated in Examples 3a and 3b.<sup>9</sup>

(2a) vryne of chyldern helpys to fixe sal Armoniake (Cambridge University Library MS Kk. 6. 30, f. 3v)

(2b) Agyll es xqintgoll. Cap: 39. It doth helpe to fix \* into the N<v>kif Gozif (British Library MS Sloane 316, f. 25v) [Agyll es xqintgoll = Urynn of childrenn; \* = sal ammoniac; N<v>kif Gozif = Lapis Rebis]<sup>10</sup>

(3a) Thanne covche hem þus bed vpon bed til it be full (Trinity College, Cambridge, MS R. 14. 37, f. 140v)

(3b) then cowche them thus bed vpon bed in a potte, till the pott be full (Trinity College, Cambridge, MS O. 2. 33, Part II, p. 31)

Table 3 also illustrates that the proportions of *he* and *it* fluctuate, *he* varying between 10 and 16% of the cases of third person reference to inanimate objects. Although this variation may seem fairly minor, the fact remains that stability does not exist across the manuscripts. Furthermore, the figures hide some peculiarities in the distribution. (Here, I will concentrate on the usage of *he*.) Even though the frequency of *he* only varies between 15 and 22 instances, all of the manuscripts

actually only agree six times in their usage of *he*. In fact, if we count all instances where at least one manuscript contains *he*, there are 43 examples of *he* usage, as may be seen in Table 4. (Note that the absence of a pronoun is marked in the table with a dash.)

[TABLE 4 HERE]

In the 43 possible cases of *he*, the manuscripts agree among each other in a number of ways, as may be seen in Table 4. In some instances, one manuscript is unique in using *he*, while the other manuscripts prefer *it*, do not use a pronoun, or do not contain the passage at all.

The question is what this variable use tells us and what the significance is of looking at the variation in all the manuscripts. It is clear that if only one or a few of the seven manuscripts were consulted, potentially important evidence of the usage of *he* would be lost, since no manuscript contains more than 22 of the 43 possible instances. Statistical counts based on one copy would also differ from counts based on another copy. This is particularly significant since *he* is obviously a low-frequency feature; every instance of *he* thus provides important evidence for charting the extent of its usage.

The importance of consulting several copies of the *Mirror of Lights* becomes even more evident if we consider the referents of *he* in the manuscripts. Table 5 demonstrates that there are major quantitative and qualitative differences between the manuscripts.<sup>11</sup>

[TABLE 5 HERE]

For example, whereas MS R. 14. 37 and MS Sloane 513 each employ *he* twice in reference to *mercury*, MS Sloane 316 contains as many as eight instances of *he* referring to *mercury*. Again,

although this variation among the manuscripts may appear to be fairly minor, it could influence counts in more large-scale studies. We could imagine a scenario where five alchemical texts survive in two copies each, and one copy of each text contained two instances and the other copy of each text contained eight. If a researcher used all the manuscripts with eight instances, the count would be 40, whereas the total would only be 10 if the low-frequency copies were used. Although this is hypothetical, it is not an unrealistic situation, as shown by the variation in the *Mirror of Lights*.

Of even more significance is that some manuscripts do not exhibit instances of certain referents of *he*. For example, only MS Sloane 513 uses *he* to refer to "metal," as may be seen in Example 4 (rows 42 and 43 in Table 4).

(4) make a lytel hole in þe crusible þat þe **metal** may ren out & wen þou meltust hit set hit þer þou haue gode blast þerto & blow to hit fast & wen hit is moltun kest hit into an yngote þat is wel talewed for þis mas hit whit & now he is abul to reseyue a whit tynture or a red for he is clensud fro al maner of corrupcion of foul sulphur (British Library, MS Sloane 513, ff. 165r–5v) [yngote = a mould that metal is cast in; talewed = greased (with tallow); mas = makes]<sup>12</sup>

In example 5 (row 38 in Table 4), *he* refers to "pot," or, less likely, to "ceruse."<sup>13</sup> Whichever *he* refers to, *he* is only found in three manuscripts: MS R. 14. 45, MS O. 2. 33 and MS Harley 3542. The remaining manuscripts use *it*.

(5) And loke thy **pot** with þy ceruse lye euene yn þe myddes and þat he be wele couered (Trinity College, Cambridge, MS R. 14. 45, f. 72v) [ceruse = white lead]

As a result of these differences, a qualitative study based on one manuscript may reach conclusions that would not hold if several or all of the copies had been consulted. For example, a study using MS R. 14. 45 would show that *he* is not used to refer to *sulfur* and *metal*. A researcher consulting only MS Sloane 513, on the other hand, would find *he* referring to *metal*, but not to *sulfur* (or *spirit*), *medicine/stone*, *pot*.<sup>14</sup> It is thus clear from Tables 4 and 5 and the examples above that the qualitative as well as quantitative information that can be obtained varies from manuscript to manuscript (cf. Curzan and Palmer 2006).

The variation among the manuscripts obviously opens up a number of tricky questions, and provides challenges for text editors as well as historical linguists. Among the most fundamental issues are *whose* usage is actually reflected in the manuscripts, and to what extent all the data in the manuscripts are valid for historical linguists. These issues are intricately connected, and the answer to the second question depends on how the first issue is approached. A potential problem with using several different versions of a text as sources of data is that we are obviously dealing with a mix of usages. However, this problem is not restricted to multiversion texts; it is a problem that is inherent in most manuscript texts from the Old English to the early Modern English period, even if the text only exists in one copy. Lass (2004b) has recently addressed this problematic issue, pointing out that early English texts are often taken as uniform utterances or linguistic objects despite the fact that many texts are the product of several stages of copying.<sup>15</sup> That is to say, a particular case of variation in a text may not be the result of variation in one person's usage; rather, many manuscript texts reflect layers of uses by different individuals (Lass 2004b, 155). The problem is of course even more evident in a text that exists in several copies. If there is variation in the copies, all the uses cannot be original. Rather, the variation in the manuscripts may be partly original, and partly the result of uses by a number of scribes

transmitted over a (long) period of time. In other words, the manuscripts provide a plurality of uses instead of one authorial use.

Naturally, the usage of *he* and *it* may to some extent be traced through collations of manuscripts, stemmatics, and similar methods. The collations that I have made so far suggest that there are two major branches of manuscripts: MS R. 14. 37, MS Kk. 6. 30, MS Sloane 316, and MS Sloane 513, on the one hand, and MS R. 14. 45, MS O. 2. 33, and MS Harley 3542. A few instances of *he* follow this division. This can be seen most clearly in rows 36 and 38 in Table 4. The fact that some variation adheres to this division of the manuscripts suggests that part of the variation derives from earlier manuscripts in the transmission of the text, which have not survived. However, I have not been able to establish closer relationships between individual manuscripts, and there is plenty of evidence that contradicts the assumption of the two branches of manuscripts described above. Such counter-evidence is even seen in the variation between *he* and *it*, as in rows 7, 13, 17, and 30 in Table 4. It is thus difficult, if not impossible, to reconstruct what the original *Mirror of Lights*, or even the earliest ancestor of the now extant manuscripts, looked like. It also follows that we cannot determine from what stage of the transmission a particular feature was inherited: it may have been in the original, or in an ancestor of one or more manuscripts. Even in unique instances, it cannot be taken for granted that the usage reflects that of the scribe of the manuscript; it might just as well have existed in the scribe's exemplar, which may not have survived. The upshot of this is that we cannot pinpoint whose usage a manuscript represents. We have to accept that what we have at our disposal is a very mixed usage, that is, a facet of the well-known problem of "bad data" in historical linguistics (Labov 1994, 11).

In a case like the usage of *he* (and *it*) in the *Mirror of Lights*, I would argue that it is not of crucial importance to determine where the usage comes from, and it is indeed impossible to do so with any degree of certainty, as seen above. What is crucial, though, is to make use of all

the information available in order to chart the extent and nature of the variational usage of *he* and *it*. In other words, what we are studying is a linguistic feature as it appeared in a text over a period of time, and not one person's employment of it. I will return to some further considerations of this issue when I discuss the problem of multiversion texts and corpora.

### **The Solution: An Electronic Edition?**

The discussion in the previous section makes clear that the *Mirror of Lights* would not be well served by a traditional critical or eclectic edition that presents a hybrid text based on several manuscript witnesses. In fact, it would be very difficult to produce such an edition since it is virtually impossible to determine on the basis of the widely different manuscript witnesses what the original or an earlier ancestor of the surviving manuscripts looked like (see also Lass 2004a, 29–31). Moreover, and most importantly for this discussion, much of the linguistic variation in the manuscripts such as that between *he* and *it* presented above would be lost to linguistic research. The ideal situation would instead be to have all the manuscript versions of a text such as the *Mirror of Lights* accessible. Although researchers may of course consult the original manuscripts, this is not an option for most linguists, since the manuscripts are dispersed at different repositories, and it takes a great deal of time to go through the manuscripts to find the relevant data. A possible solution would of course be a traditional edition with a comprehensive list of variant readings in a critical apparatus. However, the editor would face difficult decisions about what manuscript to present in full and what manuscripts to place in the apparatus. Furthermore, the apparatus would quickly become unwieldy, and it would not be possible to cite the manuscripts in the apparatus in full; only the actual variant readings would be accessible.

Voigts (2004) and Fredriksson (2002) present two possible ways of dealing with texts similar to the *Mirror of Lights*. Voigts suggests that a parallel text edition may provide a

smooth way of dealing with the multiversion text on astrology that she discusses (see also Fellows 1998). Fredriksson, on the other hand, opts for presenting one version of her Latin text on medicine as an example of the text used at a particular point in time.<sup>16</sup> Neither Voigts's nor Fredriksson's solution is very practical in the case of the *Mirror of Lights*. The *Mirror of Lights* is an extensive text, as opposed to Voigts's astrological tract. Having a parallel edition of at least seven different copies in book format would therefore mean serious layout problems and would probably make a publisher balk. As for Fredriksson's approach, I have myself used that strategy for an early Modern English text on alchemy (Grund 2004a). However, this strategy has the obvious drawback of only making one version available and obscuring the others, as in a critical edition. Such an edition would probably not make available the full extent of the linguistic variation. Even if it did, it would make it very difficult to retrieve the data.

I would argue that at least a partial solution to the problem is an electronic edition that contains transcriptions of all the available versions (cf. Machan 1994, 190–1). Electronic editing has made tremendous progress in the last 10 years, as is attested by *SEENET*, *The Canterbury Tales Project*, *The Electronic Beowulf*, and more small-scale projects such as the edition of Henry Machyn's diary (Bailey et al. forthcoming). Editions produced by these societies and projects clearly demonstrate the usefulness of electronic editions for linguistic research (see also Bailey 2004). They provide electronically searchable texts and aim to make available all the versions rather than one canonical text. They thus enable a researcher to capture variation across different manuscript copies, which would greatly facilitate the study of the scope and characteristics of any given case of morpho-syntactic variation in these texts. I am currently working on an electronic edition of the *Mirror of Lights* in the belief that it will be a significant step toward solving the problem. Such an edition would be useful not only for linguistic studies

of various kinds, but also for studies of the development and adaptation of alchemical theories and practices.

### **Manuscript Variation, Electronic Editions, and Corpora: The Bigger Picture**

The electronic edition of the *Mirror of Lights* that I am working on follows the recent call by Lass (2004a) for manuscripts of early English texts to be the basis for linguistic research. Lass argues that very conservative diplomatic transcriptions should be made of manuscripts in any kind of representation of a text, whether it be in an edition or in a corpus (2004a, 22, 39–40). He forcefully rejects the use of the type of editions that are normally employed for linguistic research, i.e. editions that modernize, normalize, emend or otherwise change the text of the original manuscripts. He claims that, because of these changes, such editions "are not sources of 'data' for historians, and should not be included in corpora which purport to serve as inputs for serious historical linguistic scholarship" (2004a, 36; I have left out the italics of the original).

However, editions or corpora that are produced in accordance with Lass's recommendations have their own problems. There is an especially acute problem involving the inclusion of a text such as the *Mirror of Lights* in a corpus and its subsequent use in large-scale variationist studies of morpho-syntactic features. Simply put, the problem has to do with comparability with other texts, and whether the witnesses of the *Mirror of Lights* should be considered manifestations of the same text or independent texts.

There are at least two ways of approaching this problem; both of them have their own advantages and drawbacks. If we consider the witnesses of the *Mirror of Lights* discrete texts, which may be a tenable position considering the substantial textual differences among the copies, they could all be included in a corpus. This would make accessible the full variation found in the manuscripts. Although Lass (2004a) does not discuss multiversion texts explicitly,

the concept of manuscripts as "texts" seems to be behind his reasoning. This assumption is also supported by the fact that the corpus that Lass uses as his model is the *LAEME* corpus, which includes multiple versions of the same text (see Laing 2002, 298, 302 fn. 10). Treating multiversion texts in this way makes sense for dialectological research, which is Lass's focus, although he does claim that his discussion extends to English historical linguistics in general. Especially if the aim is to produce a linguistic atlas, all manuscripts are valuable evidence, since the type of data used in dialectological research (primarily spelling and morphology) varies very much according to scribe and hence manuscript. However, for morpho-syntactic studies, it is problematic to include several copies of the same text in a corpus. If all the copies of the *Mirror of Lights* were used, there would be overlaps in uses, that is to say, the same examples would appear several times, and hence be counted several times in a quantitative study. Laing (2002, 302 fn. 10) recognizes this problem in her morpho-syntactic analysis of negation patterns in the *LAEME* corpus. However, she only addresses the problem by acknowledging that her figures need to be treated with caution since "some of the syntactic structures counted here may in this sense be duplicates" (Laing, 2002, 302 fn. 10).<sup>17</sup> Of course, if we take the extreme position, it could be argued that overlaps in usage do not matter since every manuscript is an *utterance* or a *linguistic object*, however mixed. Every scribe can be claimed to have had the choice of keeping a feature or replacing it with another. All the data would then be equally valid for linguistic research. This claim is obviously an oversimplification, since it is questionable whether all linguistic uses in a manuscript, especially morpho-syntactic ones, can be considered potentially substitutable (see Laing 2002, 302 fn. 10, 309, 313). Overlapping examples are thus a serious problem for quantitative studies, if several copies of nominally the same text are included in a corpus. Furthermore, if a text survives in a particularly large number of copies, the data from this text will be over-represented in comparison with data from a text that only exists in one or a few

copies. For qualitative studies, by contrast, I would argue that it is a clear advantage to have access to all the manuscripts since they may provide otherwise inaccessible information (as we saw in the case of the absence or presence of certain referents of *he* in the copies of *Mirror of Lights*).

If, on the other hand, the manuscripts of the *Mirror of Lights* are considered manifestations of the same text, it would be more logical to have only one representative of the text in a corpus. Again, there are several problems with such a strategy. First of all, it would be difficult to determine which manuscript is a clear representative of the *Mirror of Lights* as a text, since there is considerable variation among the manuscripts. In fact, the choice might have to be more or less arbitrary. A possibility would be to select a copy that can be dated or whose copyist is known, as this would provide at least some kind of extralinguistic frame for the usage (cf. Grund 2004a, 126). However, in most cases, such extralinguistic information is not available for early scientific texts, especially alchemical texts.<sup>18</sup> It is also true that having just one version of the text would be equal to presenting an edition with a canonical text with no access to other manuscript witnesses and then basing a corpus on this edition (although the text would not be an eclectic text as in many modern editions). As pointed out several times before, linguistic evidence that could be crucial to charting the characteristics of a certain morpho-syntactic phenomenon would be lost in this way, especially if the feature studied is a low-frequency feature like *he* referring to inanimate objects.<sup>19</sup>

In my mind, both options provide possible ways of dealing with a text such as the *Mirror of Lights*, but they both require the corpus user to be well-informed about the set-up and content of the corpus. If all the versions are included, it should be possible for the user to select one version for primary investigation, since the overlapping uses provide clear problems for quantitative studies (see further below). Again, the corpus user's choice of version would have to

be more or less arbitrary or perhaps based on extralinguistic considerations. (At the very least, the linguistic features of a particular version should not be the basis of the selection.) With an inclusive strategy like this, the full extent of the linguistic variation would be readily available to the researcher. Naturally, a corpus where all the versions of all the texts are included is to some extent wishful thinking, since it would require a great deal of money and time to produce. Even if only extracts are incorporated, the amount of work would be considerable. The compilers of the *LAEME* corpus aim at including all early Middle English texts, which is feasible considering the limited amount of material. However, such a strategy becomes increasingly more difficult for later periods since the amount of material is staggeringly greater.

If just one representative version is chosen (irrespective of how it is chosen), corpus users should be made aware that the corpus text may differ substantially from other versions of the text. They may thus want to consult additional versions. This is where an electronic edition would come in handy. Checking whether additional data are found in other copies of the text would be greatly facilitated by electronically searchable transcriptions. This would also have the advantage of making available the full text of all the versions, whereas corpora frequently only include extracts. On the other hand, the researcher would have to use both a corpus and possibly several electronic editions, whose search engines may be of varying quality.

Furthermore, both solutions are obviously of greater use for qualitative studies than for quantitative studies, since auxiliary checking would not solve the problem of how to quantify the varying use in the different copies (i.e. the problem of duplicates discussed above). Perhaps what is needed is a more flexible approach to quantification, whether the data are collected from several manuscripts of the same text included in the same corpus, or from one representative text supplemented with additional information from other witnesses found in an electronic edition. One way of doing this would be to calculate a mean based on the different copies and use this as

representing the *Mirror of Lights* as a text. Another possibility would be to use the aggregate total of all the manuscripts, as long as the study deals with proportions.<sup>20</sup>

### Concluding Remarks

A text such as the *Mirror of Lights* presents significant problems for both text editors and historical linguists. I have argued that many of the problems can be solved by producing an electronic edition of all manuscript versions instead of a critical edition in book format. In an electronic edition, text editors would not have to make an attempt to reconstruct an earlier ancestor of all the extant manuscripts, which would be virtually impossible in most cases anyway, and historical linguists would get access to the full scope of the linguistic variation in electronic format. However, an electronic edition does not solve all the problems. If we want to include the *Mirror of Lights* in a large-scale corpus-based study of a morpho-syntactic phenomenon such as *he* and *it*, we would have to adopt a different strategy. Possible solutions would be either to include all versions in a corpus or to include one representative version. Both of these solutions require corpus users to be aware of the problems and limitations of the material that they are using. In the first scenario, users must be aware of potentially overlapping uses, and they may want to use just one of the available versions for primary investigation. In the second scenario, users should be informed that the representative version may very well be strikingly different from other versions of the text, and that it would be beneficial to consult additional copies of the text in, e.g., an electronic edition.

Although I have focused on one alchemical text and the variation between *he* and *it*, the findings of this study have wider implications. The problems of multiversion texts are not restricted to alchemical texts or even scientific texts. There are many other texts that exist in substantially different versions, such as Chaucer's *Canterbury Tales*, the *Short Metrical*

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*Chronicle*, and *Piers Plowman*, to name but a few. Although every text is unique and brings with it a unique set of problems, the fact remains that potentially important linguistic information might be lost to historical linguists if not all manuscript copies are made available. This presents a challenge for text editors and corpus compilers alike. Hopefully, in the future, editors and corpus compilers can work together to produce electronic tools, whether in the form of editions or corpora, that can be used for a wide range of linguistic, literary, historical, and paleographic research.

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<sup>2</sup> I am primarily concerned with Middle English and early Modern English texts, but much of the discussion is relevant for earlier as well as later texts that originate in manuscripts.

<sup>3</sup> In the transcription of the examples, the main principle has been to follow the manuscript as closely as possible. The capitalization and punctuation of the manuscripts have been retained. Abbreviations have been expanded and marked by italics. Since word division is frequently difficult to determine, I have used modern word divisions. The lineation of the manuscripts has not been kept. Angular brackets (< >) enclose readings that are uncertain because of damage or illegibility in the manuscript. Glosses have been added within square brackets at the end of the examples.

<sup>4</sup> Neither recipe is found in the *Semita recta*, the main source for the *Mirror of Lights*. In fact, none of the copies of the *Semita recta* that I have consulted contain a recipe for sal ammoniac at all.

<sup>5</sup> I will use *object* in a very wide sense, excluding people and other animate entities.

<sup>6</sup> The form *it* represents all spellings of the pronoun, including "it", "yt", "hit," and "hyt." The pronoun *he* is spelled "he" in all manuscripts.

<sup>7</sup> Naturally, I only count *it* used in subject position.

<sup>8</sup> In MS Kk. 6. 30, for example, several sections that are found in all the other copies are absent. These absences are partly to be explained by the fact that some sections have been physically cut out of the manuscript, leaving holes in the text.

<sup>9</sup> In a full variational study, features such as lexical repetition would have to be taken into consideration. However, for the purpose of this study, I will concentrate on the use of *he* and *it*. Furthermore, I have not considered knock-out factors. That is to say, there may be cases where either of the two variants may not be an option; rather, one is

exclusively preferred, for example, with a certain referent. In such a case, the variants are of course not truly substitutable.

<sup>10</sup> MS Sloane 316 frequently uses coded language and alchemical sigils (such as \* for *sal ammoniac*). The coding scheme relies on the substitution of one letter for another, such as 'l' for 'n' and vice versa. Alchemical sigils are commonplace especially in post-medieval texts, although the sigils used by MS Sloane 316 are not the most common type.

<sup>11</sup> It is sometimes difficult to determine the exact referent of *he* since several noun phrases appear in the near context. A case in point is *he* referring to *blood*, *lapis*, or *stone* (see Table 5) in “¶ The privy stoon The blood of man is callid lapis occultus þat is a privy stoone precious ffor he is hidd in mannys veynis and is friend to kynde” (Trinity College, Cambridge, MS R. 14. 37, f. 118v). As the referent is unclear, I have given all possible referents. Furthermore, as may be seen in Table 5, I have added double labels when the manuscripts employ (near) synonyms (cf. *quicksilver* and *mercury*). Finally, in a few instances, the manuscripts attribute the same section to different substances. This is, for example, the case with *he* referring to the *flower of tartar* or the *flower of vitriol*.

<sup>12</sup> In the other manuscripts, which read *it* instead of *he* in the second instance, the reference may be to *mass* rather than to *metal*. Instead of “for þis mas hit whit,” these manuscripts read “this masse ys white” (Trinity College, Cambridge, MS O. 2. 33, Part II, p. 32), or a similar formulation.

<sup>13</sup> Considering the context, it seems more likely that the *pot* is intended to be covered than the *ceruse*. The *Mirror of Lights* frequently calls for vessels or receptacles to be sealed with clay, stopped, or covered. If the *ceruse* had been intended to be covered the text would probably have stated with what it should be covered, presumably another substance.

<sup>14</sup> It seems more likely that *he* refers to *sulfur* in this instance, but it cannot be ruled out that *he* may refer to *spirit*. It is not possible to determine with certainty whether *he* refers to *medicine* or *stone*.

<sup>15</sup> Lass discusses primarily Old English texts, but his analysis is equally valid for Middle English texts and some early Modern texts that originate in manuscripts.

<sup>16</sup> In the English translation accompanying the Latin text, Fredriksson nonetheless tries to recapture what the original text might have looked like, which creates an odd discrepancy between the Latin and English texts.

<sup>17</sup> In Laing's defense it must be said that quantification plays a minimal role in her study, and that she also underscores that the article represents work in progress which is based on a not-yet-completed corpus.

<sup>18</sup> The practicing of alchemy was forbidden by English law as early as 1403–4 (Gheoghegan 1957, 10). Although few, if any, practitioners appear to have been prosecuted for carrying out alchemical experimentation, the threat of legal repercussions may have induced scribes to remain anonymous. Another factor contributing to the dearth of extralinguistic information may be that alchemy was essentially a secretive art, which is often claimed to be reserved for the initiated (Roberts 1994, 66–8).

<sup>19</sup> It could of course be argued here that, since most, if not all, corpora contain a selection of texts, any text that was not included may have provided vital information.

<sup>20</sup> I am grateful to Erik Smmitterberg for these suggestions.

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Michigan Press.

**TABLE 1**

Manuscripts of the *Mirror of Lights*

Manuscripts	Folios/Pages	Date (Century)
Cambridge, Trinity College MS R. 14. 37	115r–147r	15th
Cambridge, Trinity College MS R. 14. 45	67r–77v	15th
Cambridge, Trinity College MS O. 2. 33	pp. 11–37 (Part II)	16th
Cambridge University Library MS Kk. 6. 30	1r–10v	15th
London, British Library MS Harley 3542	1r–14r	15th
London, British Library MS Sloane 316	18r–54r	16th
London, British Library MS Sloane 513	155r–168r	15th

**TABLE 2**

Comparison of Two Versions of *Mirror of Lights*

Version 1: Trinity College, Cambridge, MS R. 14. 37, f. 126r.	Version 2: Trinity College, Cambridge, MS R. 14. 45, ff. 70v–71r.
<p>¶ The Preparacione of Sal Armoniac</p> <p>Sal Armoniac is thus preparat Take of þe blak colm of an ovenis mouth and blak scraping of a Cawdrone or of a pot / And of comune salt of euerich ylych moche / and grynde hem well togidere // And thanne take stale vryne of childryn well sodyn and skummid / And þanne make a lyCe of þese þyngis sethyng togideris ¶ Thenne skyfte it from the dreggis and loke þat it bee so strong þat it wole bere an egge ¶ Thanne coagule it into salt wiþ a lyght sethyng / and it schal be sal Armoniac wiþ the beste manere // Othur good makynge of Sal Armoniac may þou fynden in this book And þou well theraftur [Sal Armoniac = ammonium chloride; colm = soot, coal-dust; sodyn = boiled; skummid = cleared of impurities; lyCe = lye]</p>	<p>Sal armoniac is thus made and preparate Take vryne of olde childrene &amp; boille it &amp; skymme it well til it be clene and after þis lete it stonde in the vessell a nyCt And on the morwe departe þe clere fro the fece and cast away the feces and put to viii partis of this vryne on parte of cals vife commune and stere them well togedre with a stykke and lete it stand so iii daies and ilke a day stere it ones or twies with a stykke that all the strengthe of the qwyke lyme go into þe vryne After this all þat wole renne þurgh a lynnene clothe and is clere and clene kepe well / þan take wyne dregges and brenne them by themself and askys of glas and calcene them by themself / askes of mannys blode ffirst the blode well dried in the sonne and afterward / well branned and calcened take of thees ilkene ylyke mekyll iii lb of eche of them þat is to wit ix pounde of all and blynde hem all togedre &amp; boille them alle togedre that alle the vertu of the askis be boilled out and the water that is clenched out of them by a thik cloþe hilde it ageyne vpon the same askes and heth þe vertue eftesones and hilde vp as þou did first and clense as þou did / and than take the lye that is thus made of childrene vryne and hete it hote and hilde it vpon the seconde partie of thy melled askes and do</p>

	<p>therwith as þou did erst and afterward with þe thrid part of þyne askes do as þou dide first and cast till þou haue alle þe strengthe of þy melled askes brought into þe lie of children vryne than take <i>comune salt preparat</i> and to iii partis of hym put one parte of the strong lie / and grynde all togedre well and solue it welle and it shall be vi-folde so stronge as it was bifore / and thus munge tokedre all the lye first made hote / and whan it is colde distille it by filter / and than yn a caudren vapore it tulle the fente water vapore away and þan lete it kele &amp; it is an harde stone þat is called <i>sal armoniac</i> craftely made better tulle <i>alkamye</i> þan þe naturell / put þis salt into a newe erthene potte and drie it on a furneis as þou doost <i>commune salt</i> &amp; this salt is kyng of Saltis</p> <p>[fece = feces, sediment; cals vife = calx vive, quicklime, calcium oxide; askys, askis, askes = ashes; hilde = pour; heth = heat; melled = mixed; munge = mix; tulle <i>alkamye</i> = to/for alchemy]</p>
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**TABLE 3**

*He and It Referring to Inanimate Objects in the Copies of the Mirror of Lights*

	R. 14. 37	R. 14. 45	O. 2. 33	Kk. 6. 30	Harley 3542	Sloane 316	Sloane 513
He	15 (10%)	17 (14%)	19 (15%)	15 (16%)	20 (16%)	22 (13%)	20 (14%)
It	136 (90%)	105 (86%)	104 (85%)	81 (84%)	105 (84%)	146 (87%)	127 (86%)
	151	122	123	96	125	168	147

**TABLE 4**

Instances of *He* and *It* in the Copies of the *Mirror of Lights*

	R. 14. 37	R. 14. 45	O. 2. 33	Kk. 6. 30	Harley 3542	Sloane 316	Sloane 513	Referent
1	it	it	it	it	it	HE	it	mercury/quicksilver (spirit?)
2	—	—	—	—	—	HE	—	mercury
3	—	—	—	—	—	HE	—	mercury
4	—	—	—	—	—	HE	—	mercury
5	HE	—	HE	HE	HE	HE	HE	mercury/quicksilver
6	(that)	(him)	(him)	(him)	(him)	HE	(him)	mercury <sup>1</sup>
7	—	HE	HE	—	HE	—	HE	mercury
8	—	—	—	HE	—	HE	—	mercury
9	HE	—	it	it	it	it	it	sulfur (spirit?)
10	—	—	—	—	—	HE	—	sulfur (spirit?)
11	it	it	HE	it	it	it	it	sulfur (spirit?)
12	HE	HE	HE	HE	HE	HE	HE	arsenic/orpement (spirit?)
13	HE	—	HE	HE	—	HE	HE	arsenic
14	it	HE	HE	it	HE	it	—	sal ammoniac artificial
15	—	—	—	—	—	HE	—	sal ammoniac artificial
16	it	—	—	HE	—	it	—	sal ammoniac
17	HE	—	—	HE	HE	HE	HE	sal ammoniac
18	—	HE	HE	HE	HE	HE	HE	sal ammoniac

<sup>1</sup> The manuscripts that contain *that* and *him* use a different construction than MS Sloane 316.

19	HE	—	—	—	—	—	—	sal ammoniac
20	HE	HE	HE	HE	HE	HE	HE	sal common
21	HE	HE	HE	HE	HE	HE	HE	sal alkali
22	HE	HE	HE	HE	HE	HE	HE	sal alkali
23	HE	HE	HE	—	HE	HE	HE	blood/lapis/stone
24	—	—	—	—	—	it	HE	blood/lapis/stone
25	—	HE	—	—	—	—	—	hen's egg
26	—	—	—	—	—	—	HE	flower of tartar
27	HE	HE	HE	HE	HE	HE	HE	flower of tartar
28	it	—	—	HE	—	it	it	flower of copper/ flower of attrament
29	HE	HE	HE	HE	HE	HE	HE	flower of copper/ flower of attrament
30	it	it	it	HE	HE	it	it	flower of lead
31	HE	HE	HE	HE	HE	HE	it	mercury
32	(it)	HE	(it)	(it)	HE	(it)	(it)	sal common <sup>2</sup>
33	it	it	it	it	it	it	HE	flower of tartar
34	it	it	it	it	it	it	HE	flower of attrament
35	it	it	it	it	it	it	HE	flower of bras
36	it	HE	HE	it	HE	it	it	flower of bras
37	HE	HE	HE	it	HE	HE	HE	flower of bras
38	it	HE	HE	it	HE	it	it	pot (ceruse?)
39	it	(him)	HE	it	HE	it	it	arsenic <sup>3</sup>
40	HE	it	it	—	it	HE	it	medicine/stone
41	—	HE	HE	—	HE	—	—	mercury

<sup>2</sup> In the manuscripts that use *it* to refer to *sal common*, *it* is actually an object. Cf. "Sal comen is þus prepared solue hit in hot watur" (MS Sloane 513, f. 158v) and "Salt commune is þus preparat first he shall be solued in hote water" (Trinity College, Cambridge, MS R. 14. 45, f. 70v).

<sup>3</sup> MS R. 14. 45 uses an impersonal construction with *him*.

Peter Grund. 2006. "Manuscripts as Sources for Linguistic Research: A Methodological Case Study Based on the Mirror of Lights." *Journal of English Linguistics* 34(2): 105–125. (accepted manuscript version, post-peer review)

42	—	—	—	—	—	—	HE	metal
43	it	it	it	—	it	it	HE	metal/mass

**TABLE 5**

Referents of *He* in the Copies of the *Mirror of Lights*

	R. 14. 37	R. 14. 45	O. 2. 33	Kk. 6. 30	Harley 3542	Sloane 316	Sloane 513
Mercury/Quicksilver (Spirit?)	2	3	4	3	4	8	2
Sulfur (Spirit?)	1	—	1	—	—	1	—
Arsenic/Orpement (Spirit?)	2	1	3	2	2	2	2
Sal ammoniac artificial	—	1	1	—	1	1	—
Sal ammoniac	2	1	1	3	2	2	2
Sal common	1	2	1	1	2	1	1
Sal alkali	2	2	2	2	2	2	2
Flower of tartar/ Flower of vitriol	1	1	1	1	1	1	3
Flower of copper/ Flower of attrament	1	1	1	2	1	1	2
Flower of bras	1	2	2	—	2	1	2
Flower of lead	—	—	—	1	1	—	—
Blood/Lapis/Stone	1	1	1	—	1	1	2
Hen's egg <sup>4</sup>	—	1	—	—	—	—	—
Pot (ceruse?)	—	1	1	—	1	—	—
Medicine/stone	1	—	—	—	—	1	—

<sup>4</sup> The *hen's egg* is described as a stone that can help make volatile substances (*spirits*) solid when the stone is reduced to a watery or oily substance.

Peter Grund. 2006. "Manuscripts as Sources for Linguistic Research: A Methodological Case Study Based on the Mirror of Lights." *Journal of English Linguistics* 34(2): 105–125. (accepted manuscript version, post-peer review)

Metal	—	—	—	—	—	—	2
	15	17	19	15	20	22	20