

From *æghwæðer* to *either*:

The distribution of a negative polarity item in historical perspective

Volker Gast

16. Juli 2012

Abstract

The English dual quantifier *either* has an intricate history. While it is commonly regarded as an existential quantifier with a distributional restriction to nonveridical (or ‘non-affirmative’, ‘downward entailing’, etc.) contexts in the modern language, its Old English precursor *æghwæðer* (contracted, *ægðer*) was a dual distributive universal quantifier, i.e. a quantifier meaning ‘each of two’. This study investigates the processes of change leading from the universal quantifier of Old English to the nonveridical existential quantifier of Modern English. It is argued that this process was set in motion by the decline of another dual quantifier, OE *awðer*/ME *outher* ‘one or other of two’. This quantifier was first replaced by *either* in combination with clause-internal nonveridical operators, where a wide-scope universal quantifier was equivalent to a narrow-scope existential quantifier (e.g. in interaction with a modal operator). Gradually ‘absorbing’ *outher*, *either* then extended its distribution further and came to be used in nonveridical contexts with a clause-external nonveridical operator as well (e.g. in conditional clauses). In such contexts *either*, which was still interpreted as a universal quantifier in veridical contexts, could only have a universal reading when interpreted with extra-clausal, i.e. exceptional, scope. Such exceptional scope behaviour, in conjunction with the rise of a competing universal quantifier in veridical contexts (*both*[e]), led to the reanalysis of *either* as a nonveridical existential quantifier, which thus acquired the distribution that it has in present-day English. The paper is intended as a case study on the interaction of lexical content, scope and polarity properties in the genesis of a polarity-sensitive operator, as well as the role of competition between (near) equivalent expressions in diachronic change.

1 Introduction

Two major use types of *either* can be distinguished, those where it functions as a dual quantifier, and those where it functions as a particle.¹ The attribute ‘dual’ is here used in a grammatical sense, i.e. as standing for a number category whose members denote sets with a cardinality of two. Within the quantifying use types we can moreover make a syntactic distinction between those cases where *either* has the distribution of a pronoun (cf. 1), and those where it takes the position of a determiner (cf. 2).

- (1) “I’m not going to translate for either of you,” he said softly. [BNC CAO 1996]
- (2) What kind of redress does either kind of prisoner have against these conditions? [BNC H45 1049]

Within the family of particle uses, we can also distinguish two major types. First, *either* can be used as a contrastive disjunctive particle preceding the focus and correlating with *or*, as in (3) (cf. Haspelmath 2007 on contrastive disjunction).

- (3) Any effect produced must surely be wishful thinking either on the part of the practitioner or the patient, or both. [BNC C9V 1138]

Second, *either* is used in a postfocal position, as a negative correlate of *too* (cf. König 1991: 61, who regards postfocal *either* as “a suppletive form of *too*”; cf. 4).

- (4) My mother doesn’t like me either. [BNC EVC 1946]

Postfocal *either* is also found following a disjunction in other types of nonveridical contexts, e.g. with constituent negation as in (5), and without negation as in (6) (cf. also Rullmann 2002 on such disjunctive postfocal uses).

- (5) There were no men, or women either [BNC]
- (6) If John had said so, or William either, I could believe it. (Rullmann: 2002: 112)

This study focuses on quantifying uses of *either* as illustrated in (1) and (2) above, but occasional reference will be made to the particle uses as well.

What makes the historical study of *either* particularly interesting is the fact that this element derives from a universal quantifier (Old English *ægðer*) while functioning as an existential quantifier (with a restriction to nonveridical contexts) in Modern English. The question arises how and why this change came about. Before considering the diachronic development of *either*, the ‘target state’ of this development – the distribution of *either* in Modern English – is outlined in Section 2. Section 3 contains an overview of the dual quantifiers of Old English. Section 4 describes and analyses the changes that took place in Middle English. Section 5 concludes with a summary and some general remarks on the study of historical developments in the domain of polarity-sensitive items.

¹I wish to thank the participants of the Workshop ‘Beyond *any* and *ever*’ as well as two anonymous reviewers for helpful comments and valuable suggestions. Any inaccuracies are my own.

2 Quantifying *either* in Modern English

In descriptive grammars, *either* is commonly regarded as the dual form of (number-unspecified) *any* (see e.g. Quirk et al. 1985: 391). This means that *either* is an existential quantifier which is restricted to a domain of quantification with a cardinality of two, and to ‘nonveridical’ contexts, i.e. contexts in the scope of a nonveridical operator as defined in (7) (e.g. Zwarts 1995, 1998; Giannakidou 1998, 2011).²

- (7) A propositional operator O is
- a. veridical iff $Op \rightarrow p$
 - b. nonveridical iff $\neg [Op \rightarrow p]$

Either in (8a) and (9a) can be interpreted as shown in (8b) and (9b), respectively.³ (8c) and (9c) illustrate that (8a) and (9a) are nonveridical contexts.

- (8) a. I don’t know either man.
 b. $\neg \exists x \in \llbracket \text{two men} \rrbracket [(I,x) \in \llbracket \text{know} \rrbracket]$
 c. $\neg [\neg p \rightarrow p]$ (true)
- (9) a. If I see either man, I will call you.
 b. $\exists x \in \llbracket \text{two men} \rrbracket [(I,x) \in \llbracket \text{see} \rrbracket] \rightarrow (I,\text{you}) \in \llbracket \text{call} \rrbracket$
 c. $\neg [[p \rightarrow q] \rightarrow p]$ (true)

Like *any*, *either* is also used as a free choice element, as in (10) and (11).

- (10) ANYBODY could do that!
- (11) You can pay with EITHER card.

While the dual-of-*any* analysis is certainly not entirely mistaken, there are (at least) four respects in which *either* differs from *any* (cf. also Huddleston and Pullum 2002: 387–388). First, *either* invariably carries lexical stress and is thus, to an extent, inherently contrastive. Second, unlike *any*, *either* is also found in veridical contexts with a universal reading. Specifically, it occurs in prepositional phrases like *on either side* and *in either hand*, where it is equivalent to *each* and (distributive) *both*. A pertinent example is given (12). As will be seen below, universal uses of *either* in prepositional phrases as illustrated in (12) are a remnant of Old English.

- (12) Sophie froze, a glass in either hand, her gaze fixed on the bathroom door, her lips parted in a silent cry. [BNC FP7 409]

²The notion of ‘veridicality’ as opposed to, for instance, ‘downward entailment’ in the sense of Ladusaw (1979), has the advantage of covering negative polarity uses as well as free choice readings of *either*. Note that the entailment relations in (7) are assumed to hold relative to an ‘individual anchor’ in the sense of Farkas (1992), so common doxastic verbs do not create nonveridical contexts. For further details, cf. Zwarts (1995, 1998), Giannakidou (1998, 2011) and references cited in Giannakidou (2011).

³Alternatively, (9a) can be interpreted as a wide-scope universal quantifier, cf. Hintikka (1980):

$\forall x [x \in \llbracket \text{two men} \rrbracket \wedge (I,x) \in \llbracket \text{see} \rrbracket] \rightarrow (I,\text{you}) \in \llbracket \text{call} \rrbracket]$.

The relationship of quantification and scope will play a prominent role in the argument made in this paper.

The third difference between *either* and *any* is that *either* is only used with count nouns, while *any* (like *some*) can also be used with mass nouns (e.g. *I don't have any wine*). This difference is obviously related to the fact that *either* requires a domain with a cardinality of two and, hence, a count noun to combine with. Finally, *either* differs from *any* in terms of the discourse pragmatic status of the domain of quantification. This difference, too, is obviously not totally unrelated to the number difference between *either* and *any* (dual vs. number-unspecified). While *any* can be used with both given and new domains, *either* requires a domain that is under discussion. *Either*-DPs behave like definites, and *either* can be regarded as a ‘strong’ determiner in the sense of Milsark (1977). This is illustrated by (13) and (14).

- (13) a. There didn't exist any trees before the world was created. (domain new)
 b. I got three books for Christmas, but I haven't read any of them. (domain given)
- (14) a. *There didn't exist either sex before the world was created. (domain new)
 b. I got two books for Christmas, but I haven't read either of them. (domain given)

To summarize, Modern English *either* can be characterized as an existential quantifier with the attributes ‘dual’ and ‘strong’, and with a distributional restriction to nonveridical contexts. As we have seen, under specific circumstances it may also occur in veridical contexts with universal quantificational force. Given that these uses represent a remnant of Old English (cf. Section 3), it seems reasonable to regard them as exceptional.

Having outlined the most important distributional properties of *either* in Modern English, we will now go back to Old English and try to reconstruct the developments that have led to this distribution.

3 The dual quantifiers of Old English

Old English had a morphologically quite transparent paradigm of dual quantifiers, which is shown in Table 1. The paradigm contains the universal quantifier *æghwæðer* (contracted *ægðer*), the existential quantifier *āhwæðer* (\sim *awðer*), and the negated existential quantifier *nāhwæðer* (\sim *nawðer*). For the sake of simplicity, I will mostly use the contracted forms in the following when referring to any of these quantifiers.

	NEG	GEN	CON	‘which of two’	contracted
a AND b		æ	ge	hwæðer	ægðer
a OR b		ā		hwæðer	awðer
NOT (a OR b)	n	ā		hwæðer	nawðer

Table 1: Old English dual quantifiers

All dual quantifiers are based on the root *hwæðer* ‘which of two’ and contain the prefix *ā-*, before *ge-* ([je]) *æ-*. This prefix is widespread in the domain of quantification and distributivity (cf. Germ. *je-mand* ‘someone’ < OHG *êo-man*, *je* ‘ever, each’). It derives from the Indo-European root **aiu-*, *āiu-* ‘age, eternity’ (cf. Gr. *aiō-*, arch. *aiwon*, Lat. *aev-*, West Germanic *aiwo[n]* ‘age, eternity’), but its originally temporal meaning was generalized to the domain of referentiality at

some point (e.g. ‘if there was ever [a] man’ \sim ‘if there was any man’). In the paradigm in Table 1, \bar{a} - can be assumed to be responsible for the interpretation of the three elements as quantifiers (rather than, say, question words).

$\mathcal{A}ghwæðer$ differs from $\bar{a}hwæðer$ in terms of only one element, i.e. the multifunctional prefix *ge-*, which is also found in combination with non-finite forms in Old English and which has, in all likelihood, originally a sociative, comitative or conjunctive meaning (cf. Latin *cum* ‘with’). It is therefore glossed as ‘con’ for ‘conjunction’ in Table 1. $\mathcal{N}awðer$ simply adds the negative prefix *n-* to $\bar{a}wðer$.

In order to understand the developments leading from the paradigm shown in Table 1 to the situation in Modern English, we will have to consider the interpretation of the relevant quantifiers in different polarity contexts as well as their scope properties. Example (15) illustrates the use of (the universal quantifier) $\mathcal{A}gðer$ in a veridical context (we can assume a [veridical] assertion operator for such examples).

(15) Old English

Ond se cyning $\mathcal{A}ghwæðer$ -um þissa biscopa his gyfe sealde.
 and DET king each.of.two-DET.PL DET.GEN.PL bishop.GEN.PL his gift gave
 ‘And to each of these (two) bishops the king gave a gift.’ [Beda 504, 28; a900]

$\mathcal{A}gðer$ is also used in nonveridical contexts. In this case its scope is clause-bound, but $\mathcal{A}gðer$ seems to take scope over any clause-internal nonveridical operator, judging from the records available to us. (16) illustrates that $\mathcal{A}gðer$ does not take scope beyond the local clause. The context of this example makes it clear that $\mathcal{A}gðer$ is contained in the scope of (the conditional subjunction) *gif*. With an extra-clausal scope interpretation of $\mathcal{A}gðer$, (16) would translate as ‘If either of them is foolish’ (\equiv ‘for each x , if x is foolish ...’). The scope of $\mathcal{A}gðer$ is here indicated by the position of the universal quantifier in the glosses. $\mathcal{A}gðer$ itself corresponds to the variable bound by the universal quantifier.

(16) [Foolish teachers come for the pupil’s sins. Therefore often through the teacher’s folly the disciples come to grief, and often through the teacher’s wisdom foolish disciples are preserved.]

Gif ðonne [[$\mathcal{A}gðer$ bið unwis ...]], ðonne is to geðencenne ...
 if then [$\forall x$ [x is foolish ...]] then is to think ...

‘If then both (teachers and students) are foolish, we must consider [what Christ himself said in his Gospel.]’⁴

[Alfred, Gregory’s Pastoral Care 1, 29; a900]

In (17), $\mathcal{A}gðer$ takes wide scope relative to a clause-internal nonveridical operator.

(17) Hwa is þætte ariman mæge hwæt þær moncynnes forwearðon on $\mathcal{A}gðere$ hand?
 who is that number can what there men.GEN perished on $\mathcal{A}gðer$.DAT hand
 ‘Who (is there that) can number those that fell on each side?’
 [Alfred, Orosius I, 11; c893]

⁴Translated by Henry Sweet (*King Alfred’s West-Saxon Version of Gregory’s Pastoral Care*, 1871, London, Trübner).

For the sake of simplicity, I will analyse the free relative clause in (17) as an indirect question, i.e. the sentence is taken to mean ‘Who knows how many men fell on each side?’⁵ (18) provides a paraphrase of the free relative clause as a (direct) question. The question operator Q can be interpreted as a request to provide a list of referents to which the properties assigned to the variable x apply. Given that there are two armies involved, and given that the universal quantifier binding the variable a ranging over armies takes scope over the question operator Q , in the form shown in (18) the question elicits two lists. With *ægðer* taking narrow scope, it would elicit a (single) list of warriors that fought in both armies (and died).

- (18) $\forall a [Qx \in \llbracket \text{men} \rrbracket [x \in \llbracket \text{die} \rrbracket \wedge x \in a]]$
 ‘For both armies a ,
 provide the set of all x from the set of men such that x died and x forms part of a !’

(17) also illustrates the fact pointed out by Einkenel (1904: 66) that *either* was particularly common in prepositional phrases throughout the history of English:

Æghwæðer, which was later heavily affected by *ælc > each*, is particularly remarkable in combination with *healf*, *ende* und *hand*. [my translation]⁶

As was mentioned in Section 2, this tendency is reflected up to the present day, as *either* is still used in veridical contexts with a universal interpretation when it occurs within PPs. This type of reflection of earlier language stages in later ones has been called ‘persistence’ by Hopper (1991).

The existential quantifier *awðer* was typically used in nonveridical contexts, with narrow scope relative to the nonveridical operator – in (19), the conjunction *ær* ‘before’.

- (19) 7 þær hæfdon longsum gefeoht, ær þara folca aþer (= awðer) fluge.
 and there had long fought before DET people one.or.other fled
 ‘...and they fought long before either of the two parties fled.’
 [Alfred, Orosius 198, 25; c893]

I have not found any examples of OE *awðer* in veridical contexts. This does probably not mean that *awðer* did not occur in such contexts, however, as there are some relevant examples from Early Middle English (cf. 20).

- (20) Early Middle English

Forrþi wendenn þeʒʒ full wel þatt owwþer off þa tweʒʒ off dæþe wære risenn
 therefore knew they full well that one.of.two of the two from death was risen
 upp.
 up

‘Therefore they knew very well that one of the two had risen from death.’

[Ormulum 10344; a1180]

⁵A free relative clause in the scope of a question operator as in (16) can be assumed to ‘inherit’ the question feature – and, hence, the nonveridicality – of the matrix clause. Free relative clauses are not *per se* nonveridical (e.g. *I wonder/*know who has ever walked this way*).

⁶“Bemerkenswert ist das später von *ælc > each* so stark beeinträchtigte *ægghwæðer* bei *healf*, *ende* und *hand*.”

Note moreover that there are occasional occurrences of OE *oðer* with the meaning ‘one of two’ in veridical contexts (without a correlate in the discourse environment as required by ModE *other* < OE *oðer* < Gm. **antharaz*, cf. Germ. *ander*-). Bock (1887) assumes that such occurrences of *oðer* are contracted forms of *awðer* (cf. also Wülfing 1894: §359^a for this position; but see Nusser 1913: 37ff for a counter-argument). From a semantic point of view, the Bock/Wülfing-hypothesis is certainly conceivable. (21) is a pertinent example from the Anglo-Saxon version of the Bible.

- (21) Andreas, Simones broður Petres, wæs oðer of þam twam, þa gehyrdon æt
 Andreas, Simon.GEN brother Peter.GEN was one of the two REL heard PREP
 Iohanne, and him fyligdon.
 John and him followed
 ‘Andrew, Simon Peter’s brother, was one of the two who heard what John had said and
 who had followed Jesus.’
 [Anglo-Saxon Bible, John 1, 40; c990]

For the sake of completeness, an example of the negated universal quantifier *nāhwæðer/nawðer* is given in (22).

- (22) naðer (= nawðer) ne mehte on oþrum sige geræcan
 neither not wanted on other victory reach
 ‘Neither wanted to grant the other the victory.’
 [Alfred, Orosius 96, 33; c893]

All of the dual quantifiers mentioned above are commonly found in ‘correlative’ uses, i.e. as precursors of the modern particles *either* and *neither*. *Ægðer* correlates with the conjunction *ge* ‘and’ to introduce conjunctions (cf. 23), *awðer* correlates with *oþþe* ‘or’ in disjunctions (cf. 24), and *nawðer* cooccurs with the negator *ne* in negated conjunction (cf. 25).

- (23) se was ægðer, ge heora cyning, ge heora biscop
 DET was both CONJ their king CONJ their bishop
 ‘He was both their king and their bishop.’
 [Alfred, Orosius 238, 14; c893]
- (24) eala, wære he auðer, oþþe hat, oþþe ceald.
 alas were he one.of.two or hot or cold
 ‘Alas, were he either hot or cold’
 [Alfred, Gregory’s Pastoral Care 445, 36; a900]
- (25) næron nawðer ne on Fresisc gescæpene, ne on Denisc
 not.were neither not on Frisian shaped not on Danish
 ‘They were neither in the Frisian nor in the Danish shape.’
 [Sax. Chron. 897; c890]

Even though the history of the correlative constructions illustrated in (23)–(25) is largely parallel to the development of the individual quantifiers, there are some particularities that deserve further examination. For example, the Middle English forms of quantifying *ægðer* stopped being used in veridical contexts, while the particle uses are regularly found in such contexts up to the present day – with a disjunctive function as illustrated in (24) for *awðer*, however. For reasons of space, these differences cannot be addressed in the present study. Some information on the

development of the particle constructions can be found in Einkenel (1904), Nusser (1913) and, somewhat more recently, in Rullmann (2002).

4 Changes in Middle English

4.1 Forms and contexts

In Middle English, the system of dual quantifiers as shown in Table 1 above disintegrated, and the quantifiers changed in terms of both form and function. I will use ‘EITHER’ (< *ægðer*) and ‘OUTHER’ (< *awðer*) as generic labels for the (Late) Middle English successors of OE *ægðer* and *awðer*, with the small caps indicating that these labels are generalizations over the various forms found in Middle English texts.

Moreover, I will distinguish two stages (within ME) in the development of EITHER, i.e. EITHER₁ and EITHER₂. The Modern English quantifier will simply be termed ‘*either*’. Accordingly, we will be dealing with four stages as shown in Table 2. Note that these stages do not only relate to the forms and functions of *ægðer*/EITHER/*either*, but to the entire systems of quantifiers. It should also be mentioned that both Stage II and Stage III are located in Late Middle English. The Early Middle English system of dual quantifiers seems to have been more similar to the Old English system than to the Late Middle English one.

Old English	Middle English		Modern English
Stage I	Stage II	Stage III	Stage IV
<i>ægðer</i>	EITHER ₁	EITHER ₂	<i>either</i>

Table 2: The four stages from OE *ægðer* to ModE *either*

The main objective of this study is to determine the development of *ægðer*/EITHER/*either* in terms of the interpretations that this quantifier could have in specific contexts. There are two possible readings, i.e. universal and existential, and two major context types, i.e. veridical and nonveridical. For reasons to become apparent, it is necessary to distinguish two types of nonveridical contexts, depending on the type of nonveridical operator. Nonveridicality may be triggered either by clause-internal operators (e.g. by modals, cf. 26), or by clause-external ones (e.g. conditional operators, cf. 27). The level of ‘clause’ is represented as ‘TP’ here, and is assumed to correspond to a proposition at the level of interpretation.

- (26) [TP You may take either card.]
 [Prop \diamond [you take either card]]
- (27) If [TP you take either card], you will lose.
 [Prop You take either card] \rightarrow you will lose

We will be concerned with four quantification/context-combinations:

1. universal quantification in veridical contexts, e.g. *Both men were drunk*;
2. existential quantification in the scope of a clause-internal nonveridical operator, e.g. *You may take either card*;

3. existential quantification in the scope of a clause-external nonveridical operator, e.g. *If you take either card, you will lose*;
4. existential quantification in veridical contexts, e.g. *One of the two men died*.

Cases 2 and 3 can alternatively be regarded as expressing universal quantification, with the quantifier taking scope over the (clause-internal or clausal-external) nonveridical operator. The four quantification/context-combinations are summarized in Table 3.

context	veridical	nonveridical				veridical
		clause-internal		clause-external		
quantification	universal	universal	existential	universal	existential	existential
scope	narrow	wide	narrow	wide	narrow	narrow

Table 3: Quantification/context combinations

4.2 The decline of OUTHER

The starting point of the developments in Middle English is probably the decline of OUTHER, which gradually dropped out of use in Late Middle English. This development is described by Einenkel (1904: 64) as follows (my translations):

... *ahwæðer* disappears as early as Early Modern English, not without having transferred its sense to *æghwæðer*.⁷

The ‘transfer’ of meaning mentioned by Einenkel (1904) is probably best understood as a replacement of OUTHER by EITHER in specific contexts. This process of replacement probably started in nonveridical contexts with a clause-internal nonveridical operator. In such contexts, a universal quantifier (like EITHER₁) is often equivalent to an existential quantifier (like OUTHER) if the former is interpreted with wide scope and the latter with narrow scope relative to the nonveridical operator. This type of equivalence can be illustrated with examples containing a possibility modal. Consider (28).

- (28) with luytel aise he miȝte sitte ... and onaisiliche ligge also opon eþur side
 with little ease he could sit and uneasily lie also on either side
 ‘With a little ease he could sit ... and uneasily also lie on either side.’
 [SLeg. Becket 2212; c1300]

Eþur in (28) can be interpreted as an existential quantifier in the scope of a circumstantial modal or, alternatively, as a universal quantifier taking scope over a dynamic modal. The relevant readings are paraphrased in (29) and (30), respectively. Existential quantification is here represented as (internal) disjunction, universal quantification as (external) conjunction.⁸

- (29) a. \diamond_{circ} [He lay on the left side \vee he lay on the right side]

⁷ “... *ahwæðer* stirbt schon im NE. aus, aber nicht ohne seinen sinn vorher an *æghwæðer* abgegeben zu haben.”

⁸ Cf. Zimmermann (2000) on the problem of the ‘choice effect’, i.e. the equivalence of ‘X may A OR B’ to ‘X may A AND X may B’.

- b. The circumstances allowed him_i: PRO_i to lay on the left side
OR
PRO_i to lay on the right side
- (30) a. \diamond_{dyn} [he lay on the left side] \wedge \diamond_{dyn} [he lay on the right side]
b. He_i was able [PRO_i to lay on the left side]
AND
he_i was able [PRO_i to lay on the right side]

Given that the Middle English forms of *may* and *might* had both circumstantial and dynamic (as well as epistemic) readings, the modal in (28) could be interpreted in either way. Accordingly, the quantifier EITHER/*eþur* could have a (narrow-scope) existential as well as a (wide-scope) universal reading. Such a relation of equivalence between wide-scope universal quantifiers and narrow-scope existential quantifiers interacting with a nonveridical operator can be stated more generally as in (31) ('O_↓' stands for a nonveridical operator):⁹

- (31) For any predicate P, and for any set {a,b}:
 $\forall x \in \{a,b\} [O_{\downarrow} [P(x)]] \equiv O_{\downarrow} [\exists x \in \{a,b\} [P(x)]]$

The Old English example in (32) illustrates the generalization in (31) for negation. The two interpretations are given in (33).

- (32) ne eagen [hafað] ægðer twega
NEG eyes.GEN has either two.GEN
‘(It does not have) either of two eyes.’
[Anglo-Saxon Riddles 40, 11; a1100]
- (33) a. $\forall e \in \{\text{left eye, right eye}\} [(\text{he}, e) \notin \llbracket \text{have} \rrbracket]$
b. $\neg \exists e \in \{\text{left eye, right eye}\} [(\text{he}, e) \in \llbracket \text{have} \rrbracket]$

Alternative scope construals are not the only reason why universal and existential quantifiers may be (near) equivalent. In some cases the exact type of quantification is simply not very relevant. Consider the passive sentence in (34), whose implicit subject can be interpreted either existentially or universally (i.e., ‘*x* was known’ can either imply that ‘everybody knew *x*’ or that ‘somebody knew *x*’).

- (34) Two nomys had þat noble ... knowen in his cuntre kyndly by aither.
two names had that nobleman known in his country commonly by EITHER
‘Two names had that nobleman ... known in his country by one/both of them.’
[Destruction of Troy 10929–30, a1400]

(34) has several readings. For example, it could be taken to mean that each subject knew the king by both names (i.e. Pyrrhos or Neoptolemos).¹⁰ In that case, both the implied subject

⁹As a reviewer points out, the equivalence in (31) holds generally only for antimorphic operators in the sense of Zwarts (1995, 1998) and Giannakidou (1998, 2011). It does not apply to examples like *The IRS rarely audits anyone* (from Ladusaw 1979: 102), as this example does not imply that everybody was audited rarely by the IRS. For *either*, the equivalence does seem to hold, however: *Students rarely attended either lecture* is equivalent to *Both lectures were rarely attended by (any) students*, as far as I can tell. This is probably related to the fact that *either*, unlike *any*, combines with given and finite domains; cf. Section 2.

¹⁰In Greek mythology, the name Neoptolemos is used, but the Aeneid has Pyrrhos (for a son of Achilles and Deidamia).

and *ayther* have a universal interpretation, and scope relations do not matter. More likely, each subject knew the king by at least one of his names. This interpretation results from an existential reading of *ayther* in the scope of a universally quantified implied subject, as shown in (35).

(35) For all people *p*: There is a name *n* such that *p* knows the king by *n*

Yet another reading results when *ayther* is interpreted as a universal quantifier with wide scope, and the implied subject is existential (cf. 36). In this case, for both names *n* there are at least some subjects that know *n*. Unlike (35), (36) allows for the possibility that there are subjects that do not know either of the king's name.

(36) For both names *n*: There is some person *p* that knows the king by *n*

What the writer of (34) wants to say is, basically, that Pyrrhos/Neoptolemos had two names which were both used in his kingdom (unlike the two [given] names of, say, Barack Hussein Obama). How many of those names were known to exactly how many subjects is probably irrelevant. Even though wide-scope universal and narrow-scope existential readings of EITHER are not identical in such cases, they were probably similar enough to be 'confused', thus contributing to a general feeling of equivalence of EITHER and OUTHER (in specific contexts).

Such a feeling of equivalence also arose in reciprocal predications. Old English regularly used *ægðer* in combination with *oþer* to express reciprocity, as in (37):

(37) and heora þær ægðer oþerne ofslog
 and of.them there both/each other.ACC killed
 'And there they killed each other.'
 [Alfred, Orosius 68, 18; c893]

A similar construction is found in Middle English with OUTHER (here realized as *aþer*):

(38) aþer askede of oþeres stat
 one.of.two asked about other.GEN state
 'They enquired about each other's health.'
 [Bevis of Hampton, 1990; c1300]

The use of an existential quantifier in reciprocal constructions is familiar from Modern English, where *one another* is used (more or less) interchangeably with *each other*. Such strategies are pervasive in the languages of the world (cf. Heine and Miyashita 2008: 180–1) and well attested among the Germanic languages (cf. Plank 2008). According to Nusser (1913: 57), the use of OUTHER in reciprocal predicates is the main reason for the 'confusion' of EITHER₁ and OUTHER:

At any rate, the recurrent reciprocal usage constitutes the transitory stage between the two meanings. [my translation]¹¹

In my view, the reciprocal construction should be regarded as an independent development, as it comes with rather specific context conditions. Still, the occurrence of OUTHER with (actually or apparently) universal meanings may have contributed to the 'absorption' of OUTHER by EITHER.

¹¹ "Jedenfalls bildet die so häufige reziproke Verwendung die Übergangsstufe zwischen den beiden Bedeutungen ..."

Note that there are also occasional examples of universal OUTHER in non-reciprocal contexts, as in (39), testifying to the ‘confusion’ in (Late) Middle English.

- (39) On outhere side that day gret blood was shad.
 ‘A lot of blood was shed on each side that day.’
 [Lydg. FP (Bod 263) 8.722, ?a1439]

While EITHER took over great parts of the distribution of OUTHER in nonveridical contexts, in veridical contexts OUTHER was replaced by another item, i.e. the numeral OON ‘one’. This numeral had been in use as an existential quantifier since Old English times in non-dual contexts – especially in partitive DPs (e.g. *aan of þam* ‘one of them’). We can, again, use an example from the Bible to illustrate the rise of OON as an existential quantifier in dual contexts. In (21) above we saw an example of *oper* with the meaning ‘one of two’ from the Anglo-Saxon version of the Bible. The Wycliffe-Bible, translated at the end of the 14th century, has *oon* in this context (cf. 40).

- (40) And Andrewe, the brother of Symount Petir, was oon of the tweyne, that herden of Joon, and hadden sued hym.
 ‘Andrew, Simon Peter’s brother, was one of the two who heard what John had said and who had followed Jesus.’
 [Wycliffe-Bible, John 1, 40; c1390]

To summarize, the developments sketched in this section led to a gradual replacement of OUTHER by two competitors: in veridical contexts OUTHER was replaced by OON, and in clause-internal nonveridical contexts it was gradually ousted by EITHER₁. This change is shown in Table 4.

context	veridical	nonveridical				veridical
		clause-internal		clause-external		
quantification scope	universal narrow	universal wide	existential narrow	universal wide	existential narrow	existential narrow
Stage I	<i>ægðer</i>	<i>awðer</i>				
Stage II		EITHER ₁		OUTHER		OON

Table 4: From Stage I to Stage II

4.3 Scope-widening: From EITHER₁ to EITHER₂

According to the developments sketched in Section 4.2, EITHER₁ had not undergone any lexical-semantic changes in comparison to *ægðer*. It was still a universal quantifier, and its scope properties were (basically) ‘canonical’. EITHER₁ could take scope over a clause-internal nonveridical operator but not over a clause-external one. Even so, the distribution of EITHER₁ seems to have changed in comparison to OE *ægðer* – basically because of the decline of a competitor, i.e. OOUTHER, in contexts where both quantifiers were in principle available.

In the further course of its development, EITHER seems to have completely ‘absorbed’ OUTER in nonveridical contexts. OUTER is only rarely attested after the 15th century in most varieties of English.¹² As a consequence of this process, EITHER₁ extended its distribution further and took over OUTER-contexts in which it could previously not be used. Specifically, it came to be used in the scope of a clause-external nonveridical operator. The most typical cases of clause-external nonveridical operators are probably provided by conditional clauses, as in (41).

- (41) Had eydur of hom byn to lacke, full evyll we had ben steyd.
 had either of them been to lack full evil we had ben stayed
 ‘Had either of them been absent, great evil we would have incurred.’
 [Gowther, Adv 19, 3, 1; a1500]

Eyður – the form of EITHER₂ used in the relevant text – is either interpreted as a narrow-scope existential quantifier, or as a universal quantifier which takes scope beyond the conditional clause. The two interpretations are shown in (42).

- (42) a. narrow-scope existential
 $\exists x [x \text{ is absent }] \rightarrow \text{we incur great evil}$
 b. wide-scope universal
 $\forall x [x \text{ is absent } \rightarrow \text{we incur great evil }]$

(41) is a context where in Old English, we would have expected *awðer* within the conditional. According to the information available to us, OE *ægðer* would have been interpreted as a universal quantifier within the nonveridical context in such cases (cf. 16 above). (41) consequently illustrates the distributional extension that EITHER underwent in Middle English, thus turning into EITHER₂.

In veridical contexts, EITHER₂ was still interpreted as a universal quantifier for most of the Middle English period. Two examples from the 15th century are given in (43) and (44).

- (43) And so ayther knyghtes made them redy with two grete spearys.
 ‘And so both knights prepared with two great spears.’
 [Malory, Works, Win-C, 517/24; a1470]
- (44) Ayther were armed on a stede.
 ‘Both were armed on a stud/stallion.’
 [Sir Triamour, Cambridge Ff.2.38; a1500]

Unless we regard EITHER₂ as polysemous – with a universal interpretation in veridical contexts and with an existential interpretation in nonveridical contexts – we are bound to conclude that it could take scope beyond the local clause in examples like (41). In general, the scope of universal quantifiers is taken to be clause-bound in Modern English, however (cf. May 1988; Fox and Sauerland 1996). If this is true of Middle English, too – which I assume – EITHER₂ thus had ‘exceptional’ scope properties, insofar as its scope was ‘exceptionally wide’. As I will argue in Section 4.4, the exceptional scope behaviour of EITHER₂ – in conjunction with the emergence

¹²Some (especially Northern) varieties have preserved forms based on OUTER even in the Modern language, e.g. West Yorkshire: *Tha can tak aather on ‘em* ‘You can take either of them’; cf. Wright (1889–1905: 243).

of a universal quantifier with ‘canonical’ scope properties, i.e. BOTHE– led to the reanalysis of *either* as a narrow-scope existential quantifier.

The distribution of quantifiers at Stage III can be represented as shown in Table 5, where BOTHE– the Middle English precursor of Modern English *both* – is integrated into the picture already.

context	veridical	nonveridical				veridical
		clause-internal		clause-external		
quantification	universal	universal	existential	universal	existential	existential
scope	narrow	wide	narrow	wide	narrow	narrow
Stage I	<i>ægðer</i>	<i>awðer</i>				
Stage II		EITHER ₁				OON
		OUTHER				
Stage III	BOTHE					
		EITHER ₂				OON

Table 5: From Stage I to Stage III

4.4 The rise of BOTHE

Just like OUTHER, EITHER was affected by the rise of competing quantifiers which took over part of its distribution. The (non-dual) distributive quantifier *eech* (< OE *ælc*) had provided an alternative to *ægðer* since Old English times. Moreover, Middle English witnessed the emergence of an additional competitor, which I will call ‘BOTHE’ – again, using small caps to indicate that this term is a generalization rather than any specific quantifier (though the forms of BOTHE are actually much more homogeneous than those of EITHER, and BOTHE often surfaces as *bothe*). The origin of BOTHE is not entirely clear. The Middle English dictionary derives it from a combination of Old English *bā* ‘both’ with *þā* ‘these’. The form *bā* (as well as the alternative forms, e.g. *bo*) is very rare, however. The Anglo-Saxon Bible contains the example given in (45), where *ba* is reinforced by *twa* ‘two’.

- (45) *Sorgedon ba twa, Adam and Eue.*
 be.worried both two, Adam and Eve
 [Anglo-Saxon Bible, Genesis 765; c990]

The OED regards BOTHE as a borrowing from Old Norse (cf. the masculine form *báðar*). It is also conceivable that some form of BOTHE coexisted with *ægðer* in Old English – perhaps in specific (informal) registers, perhaps only in specific (specifically Northern) varieties – and that it was strengthened under influence from Old Norse. Figuring out the details of the history of BOTHE is an interesting task for historical linguists which I will not pursue any further. What is relevant here is that BOTHE is widely attested from the 12th century onwards. The earliest record found in the MED dates from an entry in the Peterborough Chronicle:

- (46) *and hæfde þa baðe to gedere þone kingdom on Scotlande & þone eorldom.*
 and had then both together DEM rule P Scotland and DEM earldom

‘And then he ruled over both these kingdoms together, Scotland and this earldom (Northamptonshire).’

[Peterb. Chron. LdMisc 636, an 1124; a1126]

The replacement of EITHER by BOTHE in veridical contexts can, again, be illustrated by comparing the Anglo-Saxon version of the Bible with the Wycliffe translation. The passage in (47) and (48) has *ægðer* in the Old English version and BOTHE in the Middle English version.

(47) ac hig doð niwe win on niwe bytta, and ægþer byð gehealden.
but the do new wine into new wineskins and both are preserved
‘... they pour new wine into new wineskins, and both are preserved.’

[Anglo-Saxon Bible, Matthew 9, 17; c990]

(48) But men putten newe wyne in to newe botels, and bothe ben kept.

[Wycliffe-Bible, Matthew 9, 17; c1390]

The disappearance of EITHER₂ from veridical contexts (with the exception of cases within PPs, cf. Section 2/ex. 12) resulted in the distribution of Modern English *either*. Unlike EITHER₂, *either* can be interpreted as an existential quantifier with a restriction to nonveridical contexts. And unlike EITHER₂, it can be assumed to exhibit ‘canonical’, i.e. clause-bound, scope. In fact, it is likely that the non-canonical scope behaviour of EITHER₂ favoured the replacement of this item by BOTHE in upward entailing contexts (which, in a way, ‘repaired’ the situation of exceptionality). Note also that EITHER₂, with its broad scope domain, was probably ambiguous in specific contexts, e.g. in the scope of a clause-external nonveridical operator.

In the course of the replacement of EITHER by BOTHE there seems to have been an intermediate stage at which the two quantifiers were used together (in specific varieties at least). A relevant example from Early Modern English is given in (49).

(49) They all endeavour . . . to kepe still eyther bothe kingdome safe.

‘They all endeavour to (continue to) keep both kingdoms safe.’

[T. Norton, Inst. Christian Relig. I, pref.; 1561]

We can now complete the table with the developments leading from Old English to Modern English (cf. Table 6). Note that some relevant quantifiers are disregarded here, e.g. the distributive quantifier *each*, which also provides a possible alternative to EITHER/*either* in many contexts.

Table 6 shows a ‘rightward shift’ in the history of *either*, from universal quantification in veridical contexts to existential quantification in nonveridical contexts. We may ask whether this distributional shift was primarily caused by the decline of other quantifiers, with EITHER filling the resulting gaps, or whether EITHER extended its distribution ‘aggressively’, as it were. As has been pointed out, the changes from Stage I to Stage III seem to have been caused by the disappearance of OUTHER. This is suggested by the fact that OUTHER did not only decline in nonveridical contexts, where it was replaced by EITHER, but also in veridical contexts, where OON took its place. Accordingly, OUTHER seems to have become more and more rare altogether, and the ‘rightward movement’ of EITHER in Table 6 can be regarded as a ‘drag chain’, using a metaphor from historical phonology.

context	veridical	nonveridical				veridical
		clause-internal		clause-external		
quantification	universal	universal	existential	universal	existential	existential
scope	narrow	wide /	narrow	wide /	narrow	narrow

Stage I	<i>ægðer</i>	<i>awðer</i>				
Stage II	EITHER ₁				OON	
	OUTHER					
Stage III	BOTHE					
	EITHER ₂				OON	
Stage IV	<i>both</i>	<i>either</i>				<i>one</i>

Table 6: From Stage I to Stage IV

The replacement of EITHER by BOTHE in veridical contexts did not result from the decline of EITHER, which was particularly ‘vital’ in Late Middle English. EITHER was probably ‘pushed’ out of the domain of veridical contexts by BOTHE. As has been mentioned, this development may have been related to the exceptional scope behaviour of EITHER₂. The assumption of BOTHE ‘intruding into’ the domain of EITHER is supported by the chronology of events. BOTHE emerged as a full-fledged alternative to universal EITHER₂ in the 13th century, and the two elements co-existed for a certain time as universal quantifiers in veridical contexts. EITHER₂ did not stop being used in this function until two centuries later. Accordingly, the replacement of EITHER by BOTHE in veridical contexts seems to have been a matter of competition between two ‘vital’ elements, rather than the consequence of an overall decline one of the quantifiers – speaking in terms of historical phonology, this would have been a ‘push chain’.

5 Summary and conclusions

I have aimed to provide a description and analysis of the changes leading from OE *ægðer*, a distributive universal quantifier, to ModE *either*, an existential quantifier with a distributional restriction to nonveridical contexts. I have distinguished three steps in this development:

1. the decline of (the existential quantifier) OUTHER, accompanied by a distributional extension of EITHER in combination with clause-internal nonveridical operators;
2. the total disappearance of OUTHER, accompanied by a distributional extension of EITHER in combination with clause-external nonveridical operators;
3. the disappearance of EITHER from veridical contexts, probably caused (or at least favoured) by the emergence of BOTHE.

I have conjectured that the distributional extension of EITHER in steps (i) and (ii) was primarily caused by the decline of OUTHER. In other words, EITHER was ‘dragged’ into the distributional domain of OUTHER. The distributional restriction of EITHER in step (iii), by contrast, seems to be related to the very broad range of contexts that this quantifier covered at a certain stage,

thus being susceptible to replacement by a more specialized competitor, i.e. BOTHE.

It should be mentioned that this analysis represents an idealization in many respects, as it abstracts away from regional variation and simplifies situations of distributional overlap considerably. Such idealization and simplification is probably inevitable, as dual quantifiers are not particularly frequent, and with the additional complication that the body of Old and Middle English texts available to us is not homogeneously distributed over the regions of the British Isles. Moreover, it is impossible to determine potential ambiguities of quantifiers in Old and Middle English examples. In most cases, the texts allow us to reconstruct the meaning intended by the writer, but we cannot tell what alternative interpretations may in principle have been available.

I hope to have shown that a sound diachronic analysis of quantifiers like *either* is only possible if we distinguish two factors determining the interpretation at each stage: (i) the type of quantification, which can reasonably be regarded as the lexical content of quantifiers like *either*, and (ii) the scope interaction with nonveridical operators, which is probably best regarded as a syntactic property of the quantifiers. This ‘two-dimensionality’ in the interpretation of quantifiers creates a non-trivial problem. We can only observe sentence-level interpretations; these interpretations may result from alternative quantification/scope-combinations. We are thus dealing with an equation with two variables (lexical content and scope) and just one given (sentence-level interpretation) – i.e., an equation that has more than one solution (e.g. wide-scope universal and narrow-scope existential quantification).

The problem of quantification/scope-interaction is relevant to a number of processes in other domains of polarity-sensitivity as well. For example, scalar additive operators such as *even* have also extended their distribution across specific types of polarity-contexts, gradually changing either their scope properties or their lexical meanings. In Gast and van der Auwera (2011: Section 9.3), we have argued that diachronic change in the domain of scalar additive operators often starts with (syntactic) reanalysis of scope relations, followed by a process of lexical reanalysis ‘accommodating’ the new distribution of the item in question. This process is largely parallel to what I assume to have happened to EITHER in Late Middle English.

The question arises to what extent the type of development by which (syntactic) scope reanalysis acts as a catalyst of lexical reanalysis represents a general process in diachronic change. I believe that it does. If that is correct, it would be desirable to develop a ‘general diachronic theory of scope’, as it were. I have postulated ‘non-canonical’ scope properties for EITHER₂, assuming that (Late) Middle English had something like ‘canonical’ (i.e. clause-internal) scope rules for quantifiers, more or less like Modern English. While I consider this assumption very likely, it is of course far from self-evident and in need of further examination. There is no guarantee that the scope properties of a language remain constant over time, especially when a language undergoes such a drastic syntactic reorganization as did Middle English. What needs to be done, thus, is to establish ‘system-wide’ scope rules as a parameter of diachronic variation at the syntax-semantics interface. I believe that the development of such a ‘general diachronic theory of scope’ is a major desideratum if we want to go beyond the analysis of specific items like *either* and understand the mechanisms of diachronic change in the domain of polarity-sensitive items more generally.

References

- Bock, K. 1887. Die syntax der pronomina und numeralia in könig alfreds orosius. Doctoral Dissertation, Universität Göttingen.
- Einenkel, Eugen. 1904. Ahwæðer (æhwæðer) > either. *Anglia* 15:62–71.
- Farkas, Donka F. 1992. On the semantics of subjunctive complements. In *Romance languages and linguistic theory*, ed. P. Hirschbühler and K. Koerner, 69–104. Benjamins.
- Fox, Danny, and Uli Sauerland. 1996. Illusive scope of universal quantifiers. In *Proceedings of NELS*, ed. K. Kusumoto, volume 26, 71–85. Amherst: GLSA.
- Gast, Volker, and Johan van der Auwera. 2011. Scalar additive operators in the languages of europe. *Language* 87:2–54.
- Giannakidou, Anastasia. 1998. *Polarity sensitivity as (non)veridical dependency*. Amsterdam: John Benjamins.
- Giannakidou, Anastasia. 2011. Positive polarity items and negative polarity items: Variation, licensing, and compositionality. In *Semantics: An international handbook of natural language meaning*, ed. K. von Stechow, C. Maienborn, and P. Portner, 1660–1712. Berlin: de Gruyter Mouton.
- Haspelmath, Martin. 2007. Coordination. In *Language typology and syntactic description, vol. ii: Complex constructions.*, ed. Timothy Shopen, 1–51. Cambridge: Cambridge University Press, 2nd edition.
- Heine, Bernd, and Hiroyuki Miyashita. 2008. The intersection between reflexives and reciprocals. In König and Gast (2008), 169–223.
- Hintikka, J. 1980. On the *any*-thesis and the methodology of linguistics. *Linguistics and Philosophy* 4:101–122.
- Hopper, Paul. 1991. On some principles of grammaticalization. In *Approaches to grammaticalization*, ed. E. Trugott and B. Heine, 17–36. Amsterdam: John Benjamins.
- Huddleston, Rodney, and Geoffrey Pullum. 2002. *The cambridge grammar of the english language*. Cambridge: Cambridge University Press.
- König, Ekkehard. 1991. *The meaning of focus particles. a comparative perspective*. London: Routledge.
- König, Ekkehard, and Volker Gast, ed. 2008. *Reciprocals and reflexives. theoretical and typological explorations*, volume 192 of *Trends in Linguistics*. Berlin: de Gruyter Mouton.
- Ladusaw, William. 1979. Polarity sensitivity as inherent scope relations. Doctoral Dissertation, University of Texas, Austin.
- May, Robert. 1988. Ambiguities of quantification. *Linguistic Inquiry* 19:118–135.

- Milsark, Gary. 1977. Towards an explanation of certain peculiarities of the existential construction in english. *Linguistic Analysis* 3:1–29.
- Nusser, Oskar. 1913. *Geschichte der disjunktivkonstruktionen in englischen*. Heidelberg: Carl Winter.
- Plank, Frans. 2008. Thoughts on the origin, progress, and pronominal status of reciprocal forms in germanic, occasioned by those of bavarian. In König and Gast (2008), 347–373.
- Quirk, Randolph, Sidney Greenbaum, Geoffrey Leech, and Jan Svartvik. 1985. *A comprehensive grammar of the english language*. London: Longman.
- Rullmann, Hotze. 2002. A note on the history of *either*. In *Proceedings of the 38rd Meeting of the Chicago Linguistics Society*, ed. Maria Andronis, Erin Debenport, Anna Pycha, and Keiko Yoshimura, volume 38, 111–125. Chicago: Chicago Linguistics Society.
- Wright, J. 1889–1905. *English dialect dictionary*. Oxford: Oxford University Press.
- Wülfing, Ernst. 1894. *Die syntax in den werken alfreds des großen*. Bonn: Hanstein's Verlag.
- Zimmermann, Thomas Ede. 2000. Free choice disjunction and epistemic possibility. *Natural Language Semantics* 8:255–290.
- Zwarts, Frans. 1995. Nonveridical contexts. *Linguistic Analysis* 25:286–312.
- Zwarts, Frans. 1998. Three types of polarity. In *Plurality and quantification*, ed. Fritz Hamm and Erhard Hinrichs, 177–238. Dordrecht: Kluwer.