## From Old English to Middle English: Universal Quantifiers

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This talk investigates universal quantification in Middle English. While quantification in Old English (OE) has received some attention recently from a formal semantic perspective, the subsequent period of Middle English (ME) has not yet seen a formal analysis. The talk investigates what changed from OE to ME, and how to analyse (universal) quantification in ME in two different stages, early ME and late ME.

The descriptive literature on ME, e.g. Kahlas-Tarkka (1987), shows that nominal universal quantification in ME was predominantly effected by words originating from OE *ælc* 'each', such as *euch, illc, ech* etc., as well as combinations of *æfre* 'ever' and *ælc*, such as *euerech, æuric, eueri* etc. It is also clear from Kahlas-Tarkka's work on OE that significant changes took place in between OE and ME, with ME losing many of the expressions of universal quantification from OE (e.g. *æghwa, æghwilc, gehwa*, and (largely) *gehwilc*, all of which could mean 'every(one)'). Her work, however, does not illuminate the interpretive development of the expressions concerned in formal semantic terms.

A recent compositional analysis in Beck (2020) argues that the **OE quantificational system** is based on an alternative semantics. In the tradition of Kratzer & Shimoyama (2002), an indeterminate pronoun ('who', 'what') is identified as an alternative denoting expression at the heart of the OE quantifiers (e.g.  $\alpha ghwa=a+ge+'who'$ ). A c-commanding operator quantifies over the alternatives introduced by the pronoun. The analysis captures the fact that OE words like  $\alpha ghwa$  'everyone' can participate in FCI and NPI readings as well as universal interpretations, and that words like gehwa 'everyone/someone' can in addition be interpreted as existential quantifiers. (1) and (2) provide OE examples (from Beck (2020); FCI uses omitted for reasons of space), and (3) illustrates the analysis of a universal interpretation.

| (1) | a. | & suelc mon<br>and such man<br>XX gesuflra<br>twenty 'gesufl'<br>(codocu1,Ch_1195_<br>'And whoever has the | loaves to the<br>[HarmD_5]:9.7<br>nis land [is to gi     | church for Ea<br>(5)<br>ve] twenty 'ges | each<br>ldredes saule &<br>ldred's soul and<br>ufl' loaves to th |             |  |  |  |
|-----|----|--|--|---|--|-------------|--|--|--|
|     | b. | <b>Sunday</b> , for the sou<br>And a. a. a.  | to worulde   | buton                                   | æghwilcum  |             |  |  |  |
|     | υ. | and ever ever ever   |  |   | A-GE-which   |             |  |  |  |
|     |    | 'And ever, to time w   |  |   |  |             |  |  |  |
|     |    | (Ælfred's Boethius,  |  | ·                                       | •  | (NPI)       |  |  |  |
| (2) | a. | Swa bonne her  | •  | arleasan                                | • //   |             |  |  |  |
| (-) |    | so then here   | from that  |   | people though  |             |  |  |  |
|     |    | Godes dome,  |  | a gehwy                                 | · · · ·  | land        |  |  |  |
|     |    | God's judgement  |  | ties every                              |  | land        |  |  |  |
|     |    | forheregeode wærd  | · · ·  |   | U /  |             |  |  |  |
|     |    | wasted were  |  | de,Bede 1:12.5                          | 2.27.487)  | (universal) |  |  |  |
|     |    | 'So then here almos  | ere almost every city and district was wasted by this im |   |  |             |  |  |  |
|     |    | though it was by the just judgment of God.' (Miller)   |  |   |  |             |  |  |  |
|     | b. | & brohte   | of his   | weorce                                  | gehwylce   | grene &     |  |  |  |
|     |    | and brought  | of his   | work                                    | GE-which   | green and   |  |  |  |
|     |    | wel stincende  | wyrta.   |   |  |             |  |  |  |

|     |    | good smelli<br>(cogregdC,G<br>'and brought | DPref_a<br>from his |           | some gi          | reen and             | d pleasa        | untly sm | elling h              | ( <i>existe</i><br>erbs.' | ential)    |
|-----|----|--|---------------------|-----------|------------------|----------------------|-----------------|----------|-----------------------|---------------------------|------------|
|     | c. | Ne heold                                   |                     | no        | þa               | Eastra               |                 | swa      | swa                   | sume                      | men        |
|     |    | neg held                                   | he                  | not       | the              | easter               |                 | so       | as                    | some                      | men        |
|     |    | wenað,                                     |                     | Iudeu     | m                | on                   |                 | rtyneni  | htne                  | monar                     | 1          |
|     |    | think                                      |                     | Jews      |                  | on                   |                 |          | 1                     | moon                      |            |
|     |    | gehwylce                                   | 0                   |           | wucar            | ,                    | ac              | а        | symle                 |                           |            |
|     |    | GE-which                                   | •                   | in        |                  |                      | but             | ever     |                       |                           |            |
|     |    | Sunnandæge                                 |                     |           | •                |                      | mona            | n        | oð                    |                           | gesnihtne, |
|     |    | Sunday                                     |                     |           | enth             |                      | moon            |          | 1                     | twenti                    | eth night  |
|     |    | 1  | geleaf              |           | -                | •                    |                 | æriste   | ,                     |                           |            |
|     |    | for the                                    | belief              |           | (of) th          | e lordly             | /               | resurr   | ection, .             | ••                        |            |
|     |    | (cobede,Bede                               |                     |           |                  |                      |                 |          |                       | (NPI)                     |            |
|     |    | 'He did not ke                             | eep East            | ter, as s | ome im           | agine, i             | n agree         | ment w   | ith the J             | lews, or                  | n the      |
|     |    | fourteenth nig                             | ght of th           | e moor    | n on <b>an</b> g | <mark>y day</mark> o | f the we        | eek, but | always                | on Sun                    | day, from  |
|     |    | the fourteenth                             | n night o           | of the m  | noon up          | to the t             | wentiet         | th night | , from b              | elief in                  | our        |
|     |    | Lord's resurre                             | ection, .           | ' (Mill   | er)              |                      |                 |          |                       |                           |            |
| (3) | a. | indeterminate                              | e pronot            | ın:       | [[a-ge-          | hwa]]Alt             | $= \{ x : x \}$ | t∈D}     |                       |                           |            |
|     | b. | alternative pr                             |                     |           |                  |                      |                 |          | left <sub>w</sub>   x | ∈D}                       |            |
|     | c. | operator:                                  | 1                   |           | 0                |                      |                 |          | p∈[[XP]               |                           | ()=1       |
|     | d. | [ALL [a-ge-                                | hwa let             | 7] ]]_ (w |                  |                      | ·               |          | $eft_w   x \in$       |                           | ,          |
|     |    | [[ · · · · · · · · · · · · · · · · · ·     |                     | •] ]]0 (  | ) -              |                      | -               | left in  |                       | 2).P(                     | ) 1        |
|     |    |  |                     |           |                  |                      |                 |          |                       |                           |            |

The observations from Kahlas-Tarkka raise the question of **what changes during the ME period**, both empirically and analytically. The talk presents a corpus study of ME quantificational pronouns based on data collection from the PPCME (Kroch & Taylor (2000); details on the study will be presented in the talk). The study assembled a body of data representing the interpretive possibilities of the decendants of OE quantifiers. This data set is compared to the findings for OE in Beck (2020); an analysis of ME (universal) quantification is developed plus an understanding of the change from OE to ME.

The study found important differences for early ME as compared to late ME. In **early ME** (roughly, 1150-1250), expressions going back to OE *ælc* (e.g. *euch, illc*) and (rarely) *gehwilc* (e.g. *iwillc*) as well as complex quantifiers (e.g. *eauer euch*) allow interpretations as universals, FCI and NPI, cf. (4). At the same time, no existential interpretations of the descendants of *gehwilc* were found, and the OE *ge*-quantifiers seem to no longer systematically exist. In **late ME** (1420-1500), a reduction in forms to roughly *ech* and *eueri* goes hand in hand with further interpretive reduction: only universal interpretations were found in the corpus. (5) illustrates.

| (4) | a. | · · · · · · · · · · · · · · · · · · · | h one<br>DRM,I,224.18:                   | king o<br>54)               | <b>king</b> oppnede þær<br>king opened there<br>4)<br>ed there his store of his |   | his               | store |                | hise m<br>his tre<br>( <i>unive</i> |               | ss,      |
|-----|----|---------------------------------------|--|-----------------------------|---|---|-------------------|-------|----------------|-------------------------------------|---------------|----------|
|     | b. | ah<br>but<br>hire<br>her              | buten<br>without<br>helendes<br>healer's | euch<br>any<br>hont<br>hand | <b>fearla</b><br>fear   | c | bitahte<br>entrus | e     | al<br>all<br>) | hire<br>her<br>( <i>NPI</i> )       | feht<br>fight | in<br>in |

|     |    | 'but without any fear entrusted all her fight into her Healer's hands,' |                 |           |                 |                  |                               |                 |  |  |
|-----|----|---|-----------------|-----------|-----------------|------------------|-------------------------------|-----------------|--|--|
|     | c. | to euch   | preost mei      | ancre     |                 | schriuen         | hire                          | of swich        |  |  |
|     |    | to each   | priest may      | ancho     | ress            | confess          | hersel                        | f of such       |  |  |
|     |    | utterliche  | sunnen          | þe        | alle            | biualleð.        |                               |                 |  |  |
|     |    | obvious   | sins            | that      | all             | befall (CMA      | ANCRIV                        | V-2,II.255.143) |  |  |
|     |    | 'An anchores  | s may confess l | herself 1 | to <b>any j</b> | priest of obvio  | t of obvious sins that happen |                 |  |  |
|     |    | to anyone' (S   | avage & Watso   | on p174   | )               |                  |                               | (FCI)           |  |  |
| (5) | a. | [] saue owy   | r Lord of hys r | nercy, a  | as sche         | seyd hir-self, g | af hir <b>eo</b>              | ch day for þe   |  |  |
|     |    | most party too owerys of compunceyon for hir synnys wyth many byttyr    |                 |           |                 |                  |                               |                 |  |  |
|     |    | (CMKEMPE  | ,16.325)        |           |                 |                  |                               | (universal)     |  |  |
|     | b. | & so he dede  | euery day.      | (CMK      | EMPE            | ,34.768)         |                               | (universal)     |  |  |

Analysis: These results indicate that early ME still used an alternative semantics, as witnessed by the polarity sensitive interpretations of the expressions concerned (see e.g. Chierchia (2013) for such an analysis). But the loss of ge-pronouns makes for a poorer quantificational system in which quantificational force is much less variable. Here, this is modelled via a formal feature  $[\forall]$ , cf. (6). In late ME, on the other hand, all evidence of an alternative semantics has disappeared. The uses of *ech* and *eueri* found by the study are all compatible with present day English usage. This suggests that at the end of the ME period, a standard Generalized Quantifier semantics could have been in place, cf. (7).

| (6) | Early ME indeter   | minate pronouns (e.g. euch, illc):             | [u∀] |
|-----|--------------------|--|------|
|     | Operators for univ | versal, FCI, NPI interpretation:               | [i∀] |
| (7) | each/every N:      | $\lambda Q. \forall x [N(x) \rightarrow Q(x)]$ |      |

What can we say about the steps of semantic change that may lead from (6) to (7)? First, I take it that the limitation to strictly universal interpretations was instrumental, forcing a one-to-one relationship of ME pronoun and operator: when only ALL (3c) is  $[i\forall]$ , then the indeterminate pronoun occurs if and only if ALL occurs. Second, this permitted a semantic reanalysis: instead of taking the pronoun to introduce alternatives and postulating a covert quantifier, a speaker in the later ME period could attribute the quantification to the pronoun itself. In the talk, I discuss the possibility of an intermediate step of alternative semantic quantification over individuals. I also examine the potential role of further ME quantificational expressions (such as indefinite uses of interrogative pronouns like who and which).

In sum, substantial semantic changes occur during the ME period, which lead from the unusual quantificational system of OE towards the better known semantics of Modern English. References

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