УДК 811.111'04'373.421-132

SYNONYMOUS STRINGING AS A DIACHRONIC RECONSTRUCTION: THE *OED* MIDDLE ENGLISH EVIDENCE FOR VERBS AND DEVERBAL COINAGES

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Diachronic sets of synonymous lexemes are argued to be forgeable on the basis of the chronology of their constituents' *textual* prototypes available in the Oxford English Dictionary. Suggested in the paper is a framework for reconstructing the Middle English formal-semantic counterparts of present-day synonymous strings of verbs and their shared-root coinages. A synonymous string as a unit of electronic lexicography amounts to the sum total of the weight factor values. Each of such values determines the distance of a constituent to the headword. The alternative computations of the difference in the length of vectors of the present-day synonymous string and its historical reconstruction reaching Middle English (*permutation* factor) proceed from the *absolute dating* of constituents or their *relative chronological placement.* The framework is capable of taking into account coincident adjacent dating and suffix rivalry of string's constituents.

Key words: series of synonyms, verbs and their shared-root coinages, ME textual prototypes, constituent's weight, vector lengths differential, distribution of permutation factor values.

1. Introductory remarks

The positioning of lexemes within *synonymous strings* according to the gradual loss of proximity of each subsequent constituent to the *headword* (*string's dominant*) constitutes a construing principle of the onomasiological dictionary. Such a dictionary is also known as a thesaurus.

A unit of a thesaurus is a *string*, otherwise referred to as a *series* or *set*, of synonymous words. They are placed within the string in a given non-alphabetical sequence. For the starting point of our analysis we take the synonymous strings of English verbs given in *Webster's Dictionary of Synonyms* [4].

We separate the dominant from the remaining composition of the string by the sign' ⊂ ' The verbs treated in the thesaurus as those with a single meaning initiate just one string of synonyms: e.g. ***lower*** *⊂ demote, de-escalate, ground, depress;* ***disband*** *⊂ scatter, disperse, demobilize, disarm, dismiss, disorganize;* ***revere*** *⊂ venerate, regard, respect*. In such a case the dominant does not require any disambiguation, but individual string members may be accompanied by it: e.g. ***loot*** *⊂ plunder (rob), thieve, rifle (plunder);* ***lounge*** *⊂ idle, repose (rest oneself).*

Polysemic verbs initiate as many strings as they have meanings recognized in the thesaurus. The respective dominant attains its disambiguation (given in square brackets) before the constituents of the string: e.g. ***lade*** *⊂ [To fill] replenish, stuff, pack;* ***lade*** *⊂ [To dip] scoop, bail, spoon.*

Word meanings of polysemic dominants, similarly to dominants with a single string, concatenate an arbitrary number of synonyms: e.g. ***lay*** ⊂ *[To knock down] trounce, defeat, club;* ***lay*** ⊂ *[To place] put, deposit, set;* ***lay*** ⊂ *[To put in order] arrange, organize, systematize;* ***lay*** ⊂ *[To bring forth] generate, deposit, yield;* ***lay*** ⊂ *[To smooth out] steam;* ***lay*** ⊂ *[To bet] game, wager;* ***lay*** ⊂ *[To work out] devise, concoct, design.*

Homonymous verbs that give rise to a single string of synonyms are provided with disambiguation just as are their polysemic counterparts: e.g. ***ring*** *[To make a circle]* ⊂ *circle, rim (furnish with a rim, border), surround, encompass, girdle, enclose, inclose, loop (form a loop), gird (surround, encircle), belt, confine* vs. ***ring*** *[To cause to sound] clap, clang, bang, beat, toll (cause the bell to sound), strike, pull, punch, buzz, play;* ***ring*** *[To give off sound by ringing]* ⊂ *resound, reverberate, peal (sound forth, resound), chime (resound), tinkle, jingle, jangle, vibrate, clang, tintinnabulate;* ***ring*** *[To call by ring]* ⊂ *summon.* The number of constituents within the string characterizes synonymous complexity of the headword in a thesaurus that is being or has been formed over time.

2. Rearranging synonymous strings for their Middle English counterparts

2.1 Chronicling the strings according to the OED evidence

The stratification of the present-day thesaurus according to the age of its constituents as well as the recovery of the composition of contemporary strings of synonyms by specific (period determined or/and arbitrary) moments in their evolution seem to be of relevance for the study of diachronic onomasiology. Such an approach may be conducive to reconstructing the lexical inventory of language as well as the mental lexicon of its speakers in history.

The extrapolation of the present-day synonymous words into their historical reflexes brings forth a kind of relationship between them which, despite the apparent time-induced mismatches owing to meaning change (epidigmatic evolution), retains the existent synonymy or transforms it into a similar relationship on the principle of compositional sameness.

Such a reconstruction is conceivable at the crossroads of lexicographical and textual evidence. As the dated OED quotations of lexemes are, to use the definition suggested in [6, p. 37] 'chronologically held texts', they constitute a diachronic textual corpus [7, p. 12; 5, p. 179]. Our study incorporates the entire first quotation evidence from the 3rd version of the 2nd CD- ROM edition of the OED [8].

We will take the earliest attested usage of a lexeme within this corpus for its diachronic textual prototype. The latter is preceded by the deemed date of its occurrence in the texts chronicled on the principles set by the OED compilers.

When juxtaposed with its present-day make-up the textual prototypes of a string's constituents are capable of illustrating its growth (formation) over time. A somewhat similar view on an evolutionary reconstruction of the synonymous relatedness of words on the basis of the OED textual prototypes and the present-day semantic fields from *Roget's Thesaurus* is inherent in the *Historical Thesaurus of English* (Kay and Wotherspoon 2002).

As we are interested in the problem of lexical growth we seem justified in introducing a simplification. We regard the word's entry into the lexicon as a single event. Should a verb initiate several strings in the thesaurus it is chronicled by the earliest OED quotation. This seems to be in line with the practice of compiling chronological dictionaries. Although such a solution is objectionable to critics it cannot be helped that different meanings of a lexeme given in a thesaurus are difficult to match with those singled out in the OED.

In the history of lexicon a string of synonyms was being formed gradually. Schematically, at the beginning of the string's evolution the semantic bond between the

first pair of constituents was established. Then, save for the situation when the headword failed to concatenate further synonyms, such a pair was complemented by at least one or possibly more words. In this process of complementation the entire composition of the string ultimately came to be attested.

The initial database for this study numbered 6,015 strings of synonymous verbs. They all were put into the electronic lattice together with the OED textual prototypes of the string dominant and its constituents. The lattice was supplied with the search engine for the synonymous string(s) of an arbitrary present-day dominant.

While digitizing the dating of the OED textual prototypes we had to adopt several conventions. The approximations *circa* and *about* as well as occasional question marks put before the respective quotation date were omitted. In the case of a period dating of the prototype, e.g. *implore (1500-20)*, the earlier date was accepted. Approximate century dating was shifted to the next quotation or, failing that as in e.g. *gloom 13.. ,* to the last year of the century, i.e. *gloom 1399*. An undated quotation, e.g. from Beowulf, had to be omitted and the next one was taken into account as in the case of the verb *glide*: *Beowulf* (Z) 515 ȝit..glidon ofer garsecg. *a*1000 *Andreas* 498 (Gr.) Þes bat..glideð on ȝeofone. The date of the textual prototype of the verb is equaled to an earlier date of its participle only in cases of explicit reference to this effect in the OED, as in e.g. ***c*1386** [see frowning *ppl. a.*] ***c*1430** Lydg. *Min. Poems* 17 Wiche ought of resone the devise to excuse To alle tho that wold ageyn it ffroune or musee.

Words are the building blocks of the thesaurus. An historical reconstruction of the latter within a temporal stretch inside the overall evolution consists of textual prototypes of these words chronologically arranged. Such an arrangement should not surpass the upper boundary of the respective period. For ME it is set at the textual prototypes of the late 15th c., or in terms of precise OED dating at the year 1500. In view of the continuity of the lexical inventory the words that appeared prior to the start of the ME period (tentatively before 1150) and had remained in the reconstructed strings till its end are constituting elements of the ME thesaurus as well. In more technical terms, the source of the ME thesaurus reconstruction lies in the aggregate OE/ME partition of the lexical inventory from the entire OED set.

2.2 A calculus of the chronological variants of ME strings of verbs

The synonymous string's minimal length amounts to two members, *i.e.* the headword and a single constituent. It follows that the historical reconstruction of the present-day string is relevant for Middle English when at least two of its constituents were attested before the year 1500.

Unsuitable for the period chronological requirements are about two hundred strings all the constituents of which were attested after 1500: e.g. ***annihilate*** ⊂ *demolish, exterminate, obliterate;* ***picket*** ⊂ *[To strike] blockade, boycott;* ***lampoon*** ⊂ *satirize, caricature, parody*. Also, 884 other strings reveal a single lexeme registered before 1500: e.g. ***stylize*** ⊂ *conventionalize, formalize, accord (1123);* ***dishearten*** ⊂ *dampen, dismay (1297);* ***bustle*** *(1362)* ⊂ *hasten, hustle;* ***embitter*** ⊂ *acidulate, sour (1340);* ***quibble*** ⊂ *dodge, avoid (1300);* ***sidle*** ⊂ *veer, tilt (1399);* ***hypnotize*** ⊂ *mesmerize, entrance, stupefy, drug, narcotize, soothe* (950), *psychologize, anaesthetize.* Other constituents of such strings were attested after ME.

In the remaining *4,902* strings from the general set there are two or more constituents with the textual prototypes attested before 1500. The chronological frame of the string is determined by the OED dating of its flank (earliest and latest) constituents. In the developed electronic queries both can be set arbitrarily as a point or/and period in the

textual prototypes chronology. The length sorter of the strings is responsive to precise as well as interval setting as regards the number of constituents

The access to the historical strings in the compiled corpus is secured through the present-day dominant. Alongside the entire historically rearranged thesaurus the framework produces complete downloadable length (un)specified lists of actual strings where the contemporary dominant takes up the first or any other ordinal position as well as their arbitrary exemplification.

The reflection of the present-day strings in the ME thesaurus yields two possibilities. Either there are no constituents of later chronology within the present-day string. Thus the composition of the string from the entire historical thesaurus is the same as in its ME partition.

Or some constituent(s) in the string from the general set are dated after 1500 whereas at least two or more of its constituents are attested before 1500 making up the ME *sub-string*. There are 1,198 strings in the general set whose composition coincides with the ME reconstruction. Almost one third of them (422 strings) retain the same lexeme in the position of the present-day dominant and the string's earliest constituent. To reflect this characteristic we place the asterisked, *i.e.* historically reconstructed, and bracketed, *i.e.* conditional present-day, headword symbols *⊂ [⊂] after the string's dominant. Thus the dominant in both versions of the string being the same it is taken for historically *intact*. In the remaining 776 strings the present-day dominant finds itself in an arbitrary ordinal position of the historical sequence of the constituents. Hence in the historical sense it is a *floating* dominant. The above symbols are placed correspondingly.

In both types of strings with the historically *intact* and *floating* dominants their constituents correlate with ME (163 and 308 strings as in e.g. (1) and (2)), only OE (just 15 and 17 strings as in e.g. (3) and (4)) or both OE and ME (229 and 466 strings as in e.g. (5) and (6)) OED textual prototypes:

(1) ME strings of verbs containing ME textual prototypes with the diachronically intact dominant, e.g. ***conjure*** *(1290) *⊂ [⊂] [To appeal to] entreat (1340), adjure (1382), implore (1500)*

***c*1290** *S. Eng. Leg.* I. 172/2291 And is Abbod cam to him bi-fore is ende-dai And coniurede him þat he scholde after is deþe þere to him comen.

***c*1340** *Cursor M.* 24795 (Fairf.) To entrete of þe pais betwix him & þa danais.

1382 Wyclif *1 Kings* xviii. 10 He hath adjurid (Vulg. *adjuravit*) alle rewmes and folkis, for thi that thou art not foundun.

1500–20 Dunbar *Poems* lxxxv. 55 Implore, adore, thow indeflore, To mak our oddis evyne.

(2) ME strings of verbs containing ME textual prototypes with the diachronically floating dominat, e.g. ***amend*** *(1220) *⊂ redress (1325), reform (1340), rectify[⊂] (1400)*

***c*1220** *Prov. Alfred* in *Rel. Ant.* I. 188 Þuru þis lore & genteleri, he amendit huge companie.

***c*1325** *Know Thyself* 56 in *E.E.P.* (1862) 131 Who-so greueþ hym is worþi to go To helle fuyr but he hit redres.

***c*1340** Hampole *Prose Tr.* 3 This name Ihesu…wastys discorde, reformes pese.

***c*1400** *Lanfranc's Cirurg.* 51 Wiþ propre eir [*v.r.* cure] to rectifien þe corrupcioun of þilke lyme.

(3) ME strings of verbs containing OE textual prototypes with the diachronically intact dominant, e.g. ***spare*** (825) *⊂ [⊂] *forbear (888), forgive (900)*

***c*825** *Vesp. Psalter* lxxi. 13 God…spearað dearfan & weðlan.

***c*888** K. Ælfred *Boeth.* xxxvi. §1 Hwa mæȝ forbæran þæt he þæt ne siofiȝe.

***c*900** tr. *Bæda's Hist.* i. xvi. [xxvii.] (1890) 84 Forþon ne bið þæt forȝifen þætte alefed bið, ac þæt bið riht.

(4) ME strings of verbs containing OE textual prototypes with the diachronically floating dominant, e.g. ***arise*** *(825) *⊂ stir (888), awake[⊂] (1000)*
***c*825** *Vesp. Ps.* iii. 7 Aris dryhten, halne me doa.
***c*888** Ælfred *Boeth.* xxxv. §7 Þa stanas hi styredon for þy sweȝe.
***c*1000** Ælfric *Gen.* ix. 24 He awóc of þam slǽpe.

(5) ME strings of verbs containing OE and ME textual prototypes with the diachronically intact dominant, e.g. ***sail*** *(893) *⊂[⊂] [To fly] glide (1000), float (1100), soar (1374), skim (1420)*
***c*893** K. Ælfred *Oros.* i. i. §14 He..siȝlde ða east be lande. *Ibid.* iv. x. §10 Þa he hamweard seȝlde ***a*1000** *Andreas* 498 (Gr.) Þes bat..glideð on ȝeofone.
***a*1100** *O.E. Chron.* an. 1031 (Parker MS.) Beo an scip flotiȝende swa neh þan lande swa hit nyxt mæȝe.
***c*1374** Chaucer *Troylus* i. 670, I have no cause, I wote wele, to sore, As doth an hawk.
***c*1420** *Liber Cocorum* (1862) 50 Þou shalt hit frye, In buttur wele skymmet wyturly.

(6) ME strings of verbs containing OE and ME textual prototypes with the diachronically floating dominant, e.g. ***arise*** *(825) *⊂ uprise (1300), mount[⊂] (1362), ascend (1382)*
***c*825** *Vesp. Ps.* iii. 7 Aris dryhten, halne me doa.
***a*1300** *Cursor M.* 2733 Quen þai war rest wel vp-ras þai.
1362 Langl. *P. Pl.* A. Prol. 64 But holychirche bi-ginne holde bet to-gedere, Þe moste Mischeef on molde mounteþ vp faste.
1382 Wyclif *1 Sam.* i. 22 Helchana stiede up..for to offre to the Lord..his vowe. And Anna assendide not.

Most cases of the stringing of verbs by the end of the ME period, however, fall on the synonymous series from the general set in which some constituent(s) are dated after 1500. In this lot, 2,339 strings were initiated by the constituents attested in OE. In 2,495 strings the oldest constituent's textual prototype falls on ME.

For either case the quota with the diachronically intact head-verb is held by barely 20 per cent of the corpus as in e.g. (7/7.1) and (8) standing for 498 and 566 cases, respectively. Consequently in ME *sub-strings*, the diachronically floating head-verb as in e.g. (9/9.1) and (10) is more common in comparison with ME strings. The sub-strings containing constituents with the OE textual prototypes typically encompassed those with ME earliest quotations (cf. examples under (7.1) and (9.1) rather that just post-ME complementation as in e.g. (7) and (9)):

(7) ME sub-strings of verbs containing <u>OE</u> (and eventually post-ME) textual prototypes with the diachronically intact dominant, e.g. ***grow*** *(725) *⊂ [⊂] [To begin] arise (825), start (1000), originate (1653)*:
***c*725** *Corpus Gloss.* 2138 *Viresceret*, greouue.
***c*825** *Vesp. Ps.* iii. 7 Aris dryhten, halne me doa.
***a*1000** *Rit. Dunelm.* 57/27 *Exiliens claudus stetit* stvrtende se halta ȝistod.

(7.1) ME sub-strings of verbs containing <u>OE, ME</u> (and eventually post-ME) textual prototypes with the diachronically intact dominant, e.g. ***bow*** *(893) *⊂ [⊂][To submit] bend (1000), surrender (1466), capitulate (1580), acquiesce (1620)*

***c*893** K. Ælfred *Oros.* i. i. §9 Nilus seo ea..west irnende..and þonan norþ buȝende ut on þone Wendelsæ.
***c*1000** *Ags. Ps.* vii. 13 He bende his boȝan, se is nu ȝearo to sceotanne
1466 *Mann. & Household. Exp.* (Roxb.) 348 Thomas Edmunde of Douercorte sorendryd into Iohn Sparre..alle the londe..that he hathe.

(8) ME sub-strings of verbs containing ME (and eventually post-ME) textual prototypes with the diachronically intact dominant, e.g. ***approach*** *(1305) *⊂ [⊂] [To approach personally] propose (1340), address (1374), corner (1387), request (1533), accost (1578), button-hole (1828)*
***c*1305** *St. Lucy* 118 in *E.E.P.* (1862) 104 Þat a þousend men scholde in mi side falle..and me aprochi noȝt.
1340 *Ayenb.* 180 Nou [h]y leueþ, nou hi misleueþ, nou hi wylleþ, nou hi ne wylleþ, nou hi proposent, nou hit is betere. Þeruore hi byeþ ase þe wedercoc þet is ope þe steple, þet him went mid eche wynde.
***c*1374** Chaucer *Boeth.* v. (1560) 224 b/1 As men seene the Carter worching in the tourning, and in the attempring or adressing of his carts or chariots.
1387 Trevisa *Higden* (Rolls) I. 179 Þe citee..is cornered wiþynne þe clippynge of þe walles faste by þe see side.

(9) ME sub-strings of verbs containing OE (and eventually post-ME) textual prototypes with the diachronically floating dominant, e.g. ***wet*** *(825) *⊂ overflow [⊂] (893), water (897), inundate (1623)*
***c*825** *Vesp. Psalter* vi. 7 Mid tearum strene mine ic wetu.
***c*893** K. Ælfred *Oros.* i. iii. §1 Seo ea ælce ȝeare þæt land middeweard oferfleow mid fotes þicce flode.
***c*897** Ælfred *Gregory's Past. C.* xl. 293 Sumu treowu he watrode [*Cotton* watrade], to ðæm ðæt hie ðy suiður sceolden weaxan.

(9.1) ME sub-strings of verbs containing OE, ME (and eventually post-ME) textual prototypes with the diachronically floating dominant, e.g. ***crave*** *(1000) *⊂ want [⊂] (1200), covet (1225), require (1375), aspire (1460), fancy (1545)*
***c*1000** *Sax. Leechd.* III. 288 Ðæt man..crafode hine on hundrede.
***c*1200** Ormin 13380 All þatt wannteþþ Cristess hald All sinnkeþþ inntill helle.
***a*1225** *Ancr. R.* 60 Cuueiten mon, oðer haben wille uorte beon iwilned of mon: bo beoð heaued sunne
***c*1375** *Sc. Leg. Saints* iii. (*Andrew*) 972 Þane sad scho: 'lord, lat be! of sic thinge requere nocht me!'
***c*1460** Fortescue *Abs. & Lim. Mon.* (1714) 59 Mannys Corage is so noble that naturally he aspyreth to hye thyngs and to be exaltyd

(10) ME sub-strings of verbs containing ME (and eventually post-ME) textual prototypes with the diachronically floating dominant, e.g. ***glare*** *(1250) *⊂ pout (1325), scowl (1340), frown [⊂] (1386), gloom (1399), glower (1500, lower (1606), grimace (1762), sulk (1781)*
***c*1250** *Kent. Serm.* in *O.E. Misc.* 27 Þet Gold þet is bricht and glareth ine þo brichtnesse of þo sunne [etc.].
?*c*1325 *Old Age* vii. in *E.E.P.* (1862) 149 Now i pirtle, i pofte [? poffe], i poute, I snurpe, i snobbe, i sneipe on snovte, þroȝ kund i comble an kelde.
1340 Hampole *Pr. Consc.* 2225 Devels sal..raumpe on hym, and skoul, and stare.

***c*1386** [see frowning *ppl. a.* ***c*1386** Chaucer *Clerk's T.* 300 And eke whan I say ya, ye say not nay, Neither by word ne frouning countenance: Swere this, and here I swere our alliance.]
α **13..** *E.E. Allit. P.* C. 94 'Our syre syttes', he [Jonah] says, 'on sege so hyȝe..& gloumbes ful lyttel, þaȝ I be nummen in Niniuie & naked dispoyled.
1500–20 Dunbar *Poems* xlix. 24 On gallow treis ȝitt dois he glowir. *Ibid.* lxxv. 19 As ane gaist I glour and grane, I trymble sa, ȝe will not trow.

Post-ME complementation of a ME sub-string fell on varied lengths: e.g., ***swing*** *(725) *⊂ [⊂] wield (825), wave (1000), whirl (1290), flourish (1300), brandish (1325), twirl (1598) vs. cackle (1225) *⊂ [⊂] cluck (1481), giggle (1509), gabble (1577), chuckle (1598), quack (1617), titter (1619), snicker (1694), snigger (1706).*

Understandably, a single string constituent with the ME textual prototype could be complemented with post-ME constituent(s). This situation pertains to cases with the historically intact or floating present-day dominant: e.g., ***bury*** *(1000) *⊂ [⊂] entomb (1576), enshrine (1583), inhume (1616), mummify (1628);* ***shun*** *(950) *⊂[⊂] evade (1513), neglect (1529), dodge (1568), ignore (1611)* vs. ***shout*** *(1374) *⊂ exclaim[⊂] (1570), blurt (1573), ejaculate (1578), assert (1604), vociferate (1623), emit (1626);* ***blast*** (1300) *⊂ *shell (1562), bombard (1598), bomb [⊂] (1688), torpedo (1771), raid (1865), napalm (1950).*

The lexeme that is the present-day dominant in a string could have been attested after 1500 with a sub-string or eventually a single constituent aged before 1500: e.g., ***exchange*** *(1300) *⊂ interchange (1374), relieve (1374), substitute (1532), alternate [⊂] (1595)* vs. ***copy*** *(1387) *⊂ illustrate (1526), film (1602), reproduce (1611), photograph [⊂] (1839), snap-shot (1894), microfilm (1940).*

In the historical rearrangement of string's constituents, the present-day dominant is replaced by the counterpart with the oldest textual prototype. The same lexeme could be the dominant of (an)other string(s) with no other constituents predating its own textual prototype. In this way clusters of strings in an historical thesaurus started by their earliest constituent are obtained: e.g., ***glare*** *(1250) *⊂ [⊂] pierce (1297), menace (1303), scowl (1340), goggle (1380), gaze (1386), fix (1489), glower (1500)* vs. ***glare*** *(1250) *⊂ glitter (1399), beam [⊂] (1430);* ***glare*** *(1250) *⊂ pout (1325), scowl (1340), frown [⊂] (1386), gloom (1399), glower (1500);* ***glare*** *(1250) *⊂ scowl (1340), glower [⊂] (1500).*

3. Comparing present-day sequences of synonyms with their Middle English reflexes

Permutation is a positional interchange of constituents within a larger set. By definition it seems quite applicable to the study of synonymy over time.

The logic of building up an historical sequence out of the present-day synonymous string constituents holds when the datings of the respective textual prototypes differ at least by one year. This condition, however, is not met in 1,002 of 4,902 ME (sub-)strings where two or more textual prototypes of verbs are dated by the same year: e.g., ***shimmer*** *(1100) *⊂ sparkle (1200), blink [⊂] (1300), glimmer (1399), glitter (1399);* ***lean*** *(950) *⊂ dip (975), shift (1000), turn (1000), sway (1399), tilt [⊂](1399), tip (1399).* Identically dated textual prototypes may fall on the oldest string constituents, which are then placed alphabetically: e.g. ***handle*** *(1000) *⊂ settle (1000), receive (1300), manage (1561), collect [⊂](1573);* ***ferry*** *(1000) *⊂ pull (1000), tow [⊂] (*1000*), tug (1225), lug (1375), drag (1440).* The likelihood of the dating overlap in textual prototypes tends to increase with the growth of the strings' length.

We suggest calculating the permutation effect in the historical rearrangement of the string on the basis of the value of each constituent's weight in the string's present-day and historical dominants.

The weight (w_i) of an arbitrary constituent in the string's present-day dominant is dependent upon its ordinal number (i) and string's length (n) [1, p.40]. and set by the formalism

$$w_i = \frac{n - i + 1}{n} \tag{1}$$

A synonymous string can be visualized as a vector $\{i\}_{i=1}^{n}$ whose length is the aggregate value of the weight factor of all the constituents $\{w_i\}_{i=1}^{n}$.

In the historical thesaurus we have a sequence of the dated first *OED* citations of the constituents within the string $\{j_i\}_{i=1}^{n}$ or their ordinal positions within the historical string $\{y_i\}_{i=1}^{n}$, including one shared position for adjacent constituents dated identically.

The weight formalism for the relative chronological scale is

$$\left\{\overline{w}_j = \frac{n - j_i + 1}{n}\right\}_{i=1}^{n} \tag{2}$$

whereas that for the absolute one is

$$w_i^{(y)} = \frac{y_i - y_{\min}}{y_{\max} - y_{\min}}\left(\frac{1}{n+1} - 1\right) + 1 \tag{3}$$

Then both present-day and historical versions of the string can be presented in terms of lengths of the respective vectors. The difference between the two vectors is to be taken as *a measure (factor) of permutation* of the present-day string's constituents over time

$$\left\|\overrightarrow{w} - \overrightarrow{w^{(y)}}\right\|^2 = \sum_{i=1}^{n}\left(w_i - w_i^{(y)}\right)^2 \quad . \tag{4}$$

Under the conditions of identical ordinal placement of constituents within historical and contemporary strings the contemporary weight factor values and the relative historical weight factor values coincide. To meet this condition for the absolute historical weight factor values the age differential should be the same for each subsequent pair of the string's constituents. This, however, does not hold true .

In both (2) and (3) the oldest lexeme v_{j_n} will have the historical weight $w_{j_n}^{(y)}$=1. The words that have this characteristic close to the oldest word will have the weight value nearing 1.Younger words will have this value closer to 0. Formalism (3) should give more precise values in an uneven distribution than formalism (2) .

These formalisms suggested by us earlier [2] in the context of general (distant)

diachrony seem applicable to period reconstruction as well. They are capable of producing vast amounts of 'real numbers' quantitative data behind some part of which there could have been certain events or historical inferences contributing to its interpretability in the future.

4. Discussion

4.1. Applying the permutation factor formalisms to short strings of verbs

The simplest permutation occurs in the string of two synonyms. When the sequence is unchanged (756 pairs of lexemes) the sought differential of vectors amounts to zero. If it is changed (730 pairs of verbs), its value is 0.71 as in e.g. (1). The corpus incorporates evidence of both ME strings and sub-strings. Here and further on the number before the verb originates from the internal tagging attributed to examples during multiple partitions of the corpus in our queries.

Example (1)

```
3. ABUT , abut, [2] Different: 0,0000
ABUT                          1  1,00 ( 1230 )    1  1,00
ADJOIN                        2  0,50 ( 1325 )    2  0,50

7. ACCEDE , accede, [2] Different: 0,7100
ACCEDE                        1  1,00 ( 1432 )    2  0,50
CONSENT                       2  0,50 ( 1225 )    1  1,00
```

Two consecutive members of the present-day string can be dated identically as regards their textual prototypes (42 pairs of verbs). At relative chronology their historical weight values are approximated to 0.75. Absolute chronology admits of coincident placement of constituents. Thus they both retain their ordinal historical weight value of 1.00. The respective vectors' differential (permutation factor) amounts to 0.5. At relative chronology permutation factor yields the value of 0.35 (cf. e.g. (2)):

Example (2)

```
824. LOCK , lock, [2] Different: 0,3500
LOCK                          1  1,00 ( 1300 )    1  0,75
BAR                           2  0,50 ( 1300 )    1  0,75
 27. LOCK , lock, [2] Different: 0,5000
 LOCK                          1  1,00 ( 1300 )    1  1,00
 BAR                           2  0,50 ( 1300 )    1  1,00
```

In three-member strings there could be an overlap in the ordinal placement of constituents in the present-day thesaurus and its diachronic reconstruction. At the relative chronological placement of textual prototypes there is a zero difference in the respective present-day and diachronic vectors' lengths. This is not the case when the calculus is based on the absolute dating of textual prototypes as the lapses of time between the appearance of lexemes are not identical (cf. pairs of upper and bottom samples in e.g. 3):

Example (3)

```
3. ABIDE , to remain, [3] Different: 0,0000
ABIDE                          1  1,00 ( 1000 )    1  1,00
CONTINUE                       2  0,67 ( 1340 )    2  0,67
PERSEVERE                      3  0,33 ( 1374 )    3  0,33
11. ACHE , ache, [3] Different: 0,0000
ACHE                           1  1,00 ( 1000 )    1  1,00
PAIN                           2  0,67 ( 1300 )    2  0,67
THROB                          3  0,33 ( 1362 )    3  0,33
3. ABIDE , to remain, [3] Different: 0,2800
ABIDE                          1  1,00 ( 1000 )    1  1,00
CONTINUE                       2  0,67 ( 1340 )    2  0,39
PERSEVERE                      3  0,33 ( 1374 )    3  0,33
11. ACHE , ache, [3] Different: 0,2200
ACHE                           1  1,00 ( 1000 )    1  1,00
PAIN                           2  0,67 ( 1300 )    2  0,45
THROB                          3  0,33 ( 1362 )    3  0,33
```

Here and below a Middle English reflex in some synonymous strings contains elements of prior chronology as the reconstructed Middle English historical thesaurus goes beyond mere period innovations in it (see also examples of appropriate contextual strings in 2.2 above).

At the relative chronological placement of constituents in three-member strings the distribution of the corpus gives ten permutations. However, these produce only three values of differential of the respective vectors length.

Constituents permutation in three-member strings falls on arbitrary differences in the dating of all or just two constituents.

The present-day and historical vectors' differential in three-member strings is small when its headword retains this position over time (1-3-2) or when it exchanges its placement with the second consecutive string constituent (2-1-3) as in e.g. (4) :

Example (4)

```
101. HAIL , to praise, [3] Different: 0,4800
HAIL                           1  1,00 ( 1200 )    1  1,00
RECOGNIZE                      2  0,67 ( 1456 )    3  0,33
ACCLAIM                        3  0,33 ( 1320 )    2  0,67
137. PLY , to supply, [3] Different: 0,4700
PLY                            1  1,00 ( 1374 )    2  0,67
REPLENISH                      2  0,67 ( 1340 )    1  1,00
FURNISH                        3  0,33 ( 1477 )    3  0,33
```

When the contemporary headword falls on the penultimate position in the string and the final present-day constituent does on the historical dominant (3-1-2) or when the present-day headword occupies the ultimate sequential position diachronically (2-3-1) the distance between the present-day and historical strings is farther than in the previous case and amounts to 0.82 as in e.g. (5):

Example (5)

15. AWARD , award, [3] Different: 0,8200					
AWARD	1	1,00 (1386)		3	0,33
GRANT	2	0,67 (1225)		1	1,00
BESTOW	3	0,33 (1315)		2	0,67
35. CHAIN , to bind, [3] Different: 0,8200					
CHAIN	1	1,00 (1377)		2	0,67
SHACKLE	2	0,67 (1440)		3	0,33
FETTER	3	0,33 (1300)		1	1,00

No examples in ME three-member strings were found for the reversal of the present-day constituents sequence (3-2-1). It arose when ME pairs of synonymous verbs were complemented by a post-ME counterpart as in e.g. (6):

Example (6)

1. ABDICATE , abdicate, [3] Different: 0,9500					
ABDICATE	1	1,00 (1541)		3	0,33
RELINQUISH	2	0,67 (1472)		2	0,67
WITHDRAW	3	0,33 (1225)		1	1,00

Of the entire corpus of strings there is a single example where the constituents of a three-member series are dated identically. Then the computed permutation factor at absolute chronological placement of constituents exceeds that which is computed proceeding from their relative chronology (cf. e.g. (7):

Example (7)

986. POUR , to flow, [3] Different: 0,4700					
POUR	1	1,00 (1330)		2	0,67
DISCHARGE	2	0,67 (1330)		2	0,67
ISSUE	3	0,33 (1330)		2	0,67
986. POUR , to flow, [3] Different: 0,7500					
POUR	1	1,00 (1330)		2	1,00
DISCHARGE	2	0,67 (1330)		2	1,00
ISSUE	3	0,33 (1330)		2	1,00

Longer ME (sub-)strings do not provide identical dating of all textual prototypes which discards the problem of approximating their positions in relative chronology.

When the datings of the last two constituents in a three-member historical string coincide by the year of their OED attestation they are attributed the value of the second counterpart. This situation though may repeat itself variedly in the process of constituents' permutation with respect to the contemporary string. The older dating of the textual prototype belongs to the string's present-day dominant or its second constituent as in e.g. (8). However, the corpus reveals no cases when two identically dated synonyms are of a younger age than the third one which is the headword of a contemporary string (*2-2-1):

Example (8)

```
20. UPHOLD , to maintain, [3] Different: 0,2400
UPHOLD                          1  1,00 ( 1225 )    1  1,00
CONFIRM                         2  0,67 ( 1290 )    2  0,50
SUSTAIN                         3  0,33 ( 1290 )    2  0,50
10. HARROW , to torment, [3] Different: 0,6200
HARROW                          1  1,00 ( 1300 )    2  0,50
TORMENT                         2  0,67 ( 1290 )    1  1,00
TRY                             3  0,33 ( 1300 )    2  0,50
```

In a three-member string there may also be two constituents with identical early dating and a third one which follows it. The former two constituents are attributed the weight value of 0.83 each which is averaged between that of the dominant (1.00) and the second constituent (0.67). The latter counterpart attains the weight value of 0.33. This younger textual prototype fills in up an arbitrary ordinal position of the present-day string consistently raising the respective permutation values when it fell on the penultimate and dominant position of the present-day string (cf. e.g. (9)):

Example (9)

```
17. POUND , pound, [3] Different: 0,2300
POUND                           1  1,00 ( 1000 )    1  0,83
STRIKE                          2  0,67 ( 1000 )    1  0,83
CRUSH                           3  0,33 ( 1398 )    3  0,33
12. CRINGE , cringe, [3] Different: 0,6300
CRINGE                          1  1,00 ( 1225 )    1  0,83
QUAIL                           2  0,67 ( 1440 )    3  0,33
RECOIL                          3  0,33 ( 1225 )    1  0,83
24. SUBMIT , to offer, [3] Different: 0,8500
SUBMIT                          1  1,00 ( 1374 )    3  0,33
PROFFER                         2  0,67 ( 1290 )    1  0,83
PRESENT                         3  0,33 ( 1290 )    1  0,83
```

Three-member strings with two identically dated textual prototypes were quite uncommon in the reconstructed thesaurus (see points 3, 4 and 7 on the upper curve on Figure 1 standing for 21, 11 and 41 ME (sub-)strings, respectively. The two suggested solutions to attributing the relative sequential weight value to identically dated textual prototypes will be extended over identically dated penultimate and previous consecutive positions within longer strings. The value of permutation is determined by the extent of constituents reshuffling as well as their age density. That is why at the same length of the string there is a smoother distribution of the permutation factor at absolute chronology of textual prototypes as compared with their relative chronological placement (cf. the curves on Figure 1).

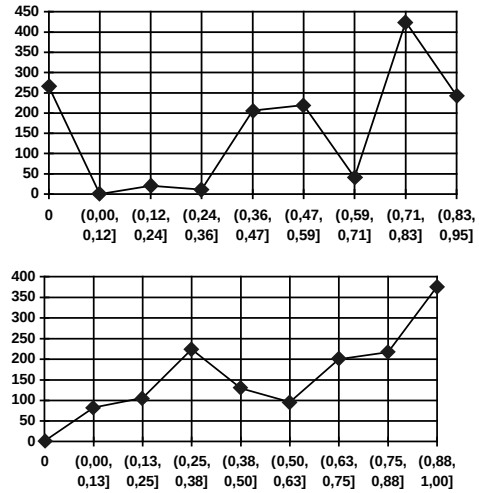


Figure 1. Constituents' permutation in three-member stringing of verbs: axis *x* – computed values as a differential in the lengths of respective vectors: axis *y* – number of strings (to be repeated in subsequent graphs)

In three-member strings it is possible to distinguish between close and distant synonyms to the dominant. Four member strings differentiate between three degrees of proximity. The ratio between three- and four-member ME counterparts of strings of verbal synonyms (1432 and 756 sets, respectively) complies with the Pappian two-fold drop in productivity with a one-step rise in complexity. The remaining 1196 ME (sub-)strings fall rather evenly (648 and 538 series, respectively) between those that contain from 5 to 9 synonyms and strings numbering over 9 synonyms.

The diachronic rearrangement of four-member strings admits of twenty-four permutations which include the case of identical positioning of constituents within the present-day and historical sequence.

The filling of the position of the diachronic dominant by an arbitrary string constituent determines the number of recurrent permutation values and eventually the extent of present-day and diachronic string similarity. When the present-day dominant retains its placement at the string's diachronic rearrangement there are four gauges of the distance including that of zero between contemporary and historical weight vectors of the string. Two of these repeat themselves (cf. e.g. (10)):

When, however, the second or third ordinal constituent proves to be the oldest in the string there are five such measurements in each case with tighter weight factor values at the penultimate constituent in the position of the historical dominant (cf. e.g. (11) and (12)):

Example (10)

```
25. UPHOLD , to hold up, [4] Different: 0,0000
UPHOLD                          1  1,00 ( 1225 )    1  1,00
BRACE                           2  0,75 ( 1325 )    2  0,75
BUTTRESS                        3  0,50 ( 1377 )    3  0,50
PROP                            4  0.25 ( 1456 )    4  0.25
3. ADORE , to love, [4] Different: 0,3500
ADORE                           1  1,00 ( 1305 )    1  1,00
CHERISH                         2  0,75 ( 1320 )    2  0,75
TREASURE                        3  0,50 ( 1382 )    4  0,25
PRIZE                           4  0,25 ( 1375 )    3  0,50
26. DISBAND , disband, [4] Different: 0,3500
SCATTER                         1  1,00 ( 1154 )    1  1,00
DISPERSE                        2  0,75 ( 1450 )    3  0,50
DISARM                          3  0,50 ( 1374 )    2  0,75
DISMISS                         4  0.25 ( 1477 )    4  0.25
87. STAMMER , stammer, [4] Different: 0,6100
STAMMER                         1  1,00 ( 1000 )    1  1,00
FALTER                          2  0,75 ( 1340 )    4  0,25
STOP                            3  0,50 ( 1225 )    2  0,75
STUMBLE                         4  0,25 ( 1303 )    3  0,50
52. MULTIPLY , to increase, [4] Different: 0,6100
MULTIPLY                        1  1,00 ( 1275 )    1  1,00
ADD                             2  0,75 ( 1374 )    3  0,50
AUGMENT                         3  0,50 ( 1400 )    4  0,25
DOUBLE                          4  0,25 ( 1290 )    2  0,75
7. BLOW , to move rapidly (said of air), [4] Different: 0,7100
BLOW                            1  1,00 ( 1000 )    1  1,00
RUSH                            2  0,75 ( 1375 )    4  0,25
WHIRL                           3  0,50 ( 1290 )    3  0,50
STREAM                          4  0,25 ( 1225 )    2  0,75
```

Example (11)

```
14. CLACK , to talk heedlessly, [4] Different: 0,3500
CLACK                          1  1,00 ( 1250 )    2  0,75
CLATTER                        2  0,75 ( 1225 )    1  1,00
RATTLE                         3  0,50 ( 1330 )    3  0,50
PRATE                          4  0,25 ( 1420 )    4  0,25

36. STRAIN , to exert, [4] Different: 0,5000
STRAIN                         1  1,00 ( 1300 )    2  0,75
STRIVE                         2  0,75 ( 1225 )    1  1,00
ENDEAVOUR                      3  0,50 ( 1400 )    4  0,25
LABOUR                         4  0,25 ( 1362 )    3  0,50

45. HOBBLE , to restrict, [4] Different: 0,6100
HOBBLE                         1  1,00 ( 1362 )    2  0,75
CLOG                           2  0,75 ( 1398 )    3  0,50
FETTER                         3  0,50 ( 1300 )    1  1,00
SHACKLE                        4  0,25 ( 1440 )    4  0,25

 3. AIM , to direct one's effort, [4] Different: 0,7900
 AIM                           1  1,00 ( 1330 )    2  0,75
 ENDEAVOUR                     2  0,75 ( 1400 )    4  0,25
 STRIVE                        3  0,50 ( 1225 )    1  1,00
 PROPOSE                       4  0,25 ( 1340 )    3  0,50

 57. REPRESENT , to serve as an equivalent, [4] Different: 0,8700
 REPRESENT                     1  1,00 ( 1375 )    2  0,75
 COPY                          2  0,75 ( 1387 )    3  0,50
 EXEMPLIFY                     3  0,50 ( 1430 )    4  0,25
 SIGNIFY                       4  0,25 ( 1250 )    1  1,00

 78. REPEAT , to happen again, [4] Different: 0,9400
 REPEAT                        1  1,00 ( 1375 )    2  0,75
 RECUR                         2  0,75 ( 1468 )    4  0,25
 REVOLVE                       3  0,50 ( 1387 )    3  0,50
 RETURN                        4  0,25 ( 1366 )    1  1,00
```

Example (12)

```
68. PURSUE , to chase, [4] Different: 0,6100
PURSUE                          1  1,00 ( 1290 )    3  0,50
SEEK                            2  0,75 ( 825 )    1  1,00
SHADOW                          3  0,50 ( 1000 )    2  0,75
TRAIL                           4  0,25 ( 1303 )    4  0,25
43. SENTENCE , sentence, [4] Different: 0,7100
SENTENCE                        1  1,00 ( 1400 )    3  0,50
ADJUDGE                         2  0,75 ( 1374 )    2  0,75
JUDGE                           3  0,50 ( 1225 )    1  1,00
DOOM                            4  0,25 ( 1450 )    4  0,25
2. ABBREVIATE , abbreviate, [4] Different: 0,7900
ABBREVIATE                      1  1,00 ( 1450 )    3  0,50
CUT                             2  0,75 ( 1275 )    1  1,00
CONDENSE                        3  0,50 ( 1477 )    4  0,25
ABRIDGE                         4  0,25 ( 1303 )    2  0,75
2. APPRECIATE , to recognize worth, [4] Different: 0,9400
ESTEEM                          1  1,00 ( 1460 )    3  0,50
HONOUR                          2  0,75 ( 1290 )    2  0,75
EXTOL                           3  0,50 ( 1494 )    4  0,25
PRAISE                          4  0,25 ( 1225 )    1  1,00
23. MUTTER , to speak as if to oneself, [4] Different: 1,0000
MUTTER                          1  1,00 ( 1374 )    3  0,50
MURMUR                          2  0,75 ( 1386 )    4  0,25
GRUNT                           3  0,50 ( 725 )    1  1,00
WHISPER                         4  0.25 ( 950 )    2  0.75
1. ACCOUNT , account, [4] Different: 1,0600
ACCOUNT                         1  1,00 ( 1303 )    3  0,50
VALUE                           2  0,75 ( 1482 )    4  0,25
JUDGE                           3  0,50 ( 1225 )    2  0,75
RECKON                          4  0,25 ( 1000 )    1  1,00
```

At the reverse succession of constituents in the chronological rearrangement of the textual prototypes the permutation weight factor values are larger and at the same time tighter than in the case of the penultimate constituent filling in the place of the historical dominant. Two of the values repeat themselves as in the case of the identical present-day and historical positioning of the dominant (cf. e.g. (13)):

Example (13)

32. EXALT , to praise, [4] Different: 0,8700					
EXALT	1	1,00 (1400)	4	0,25	
COMMEND	2	0,75 (1325)	1	1,00	
GLORIFY	3	0,50 (1340)	2	0,75	
LAUD	4	0,25 (1377)	3	0,50	
36. ESPOUSE , to marry, [4] Different: 0,9400					
ESPOUSE	1	1,00 (1475)	4	0,25	
MARRY	2	0,75 (1297)	2	0,75	
WED	3	0,50 (1000)	1	1,00	
BETROTH	4	0,25 (1303)	3	0,50	
38. EXPIRE , to end, [4] Different: 0,9400					
EXPIRE	1	1,00 (1400)	4	0,25	
STOP	2	0,75 (1225)	1	1,00	
FINISH	3	0,50 (1350)	3	0,50	
QUIT	4	0,25 (1300)	2	0,75	
3. ADVOCATE , to promote, [4] Different: 1,0600					
BOLSTER	1	1,00 (1494)	4	0,25	
PUSH	2	0,75 (1300)	3	0,50	
FURTHER	3	0,50 (888)	1	1,00	
ADVANCE	4	0,25 (1230)	2	0,75	
5. ASPIRE , aspire, [4] Different: 1,0600					
ASPIRE	1	1,00 (1460)	4	0,25	
STRIVE	2	0,75 (1225)	2	0,75	
STRUGGLE	3	0,50 (1386)	3	0,50	
YEARN	4	0,25 (888)	1	1,00	
9. BENUMB , to stupefy, [4] Different: 1,1200					
BENUMB	1	1,00 (1485)	4	0,25	
DAZE	2	0,75 (1325)	3	0,50	
STUN	3	0,50 (1300)	2	0,75	
CONFOUND	4	0,25 (1290)	1	1,00	

The individual permutation factor values repeat themselves in the constituents succession patterns (cf. the difference in absolute numbers on the upper curve of Figure 2). The ranges of the permutation factor values as well as their representation in the corpus segments at relative and absolute chronology of textual prototypes of verbal synonyms prove divergent (cf. relevant points on the axes of Figure 2). Absolute chronology of textual prototypes yields more meaningful distribution and larger values of vectors' differential between present-day and historical strings in comparison with relative chronology.

The increase of the number of constituents in the strings naturally raises the amount of respective reshuffle effects at their historical rearrangement justifying a statistical rather than case-oriented description of permutation.

4.2. A statistical overview

The permutation factor as a difference in the length of the vectors of the present-day and historical sequences of synonyms is a quantification of the semantic medium of a string. This characteristic is attributable to each synonymous string that is subjected to a

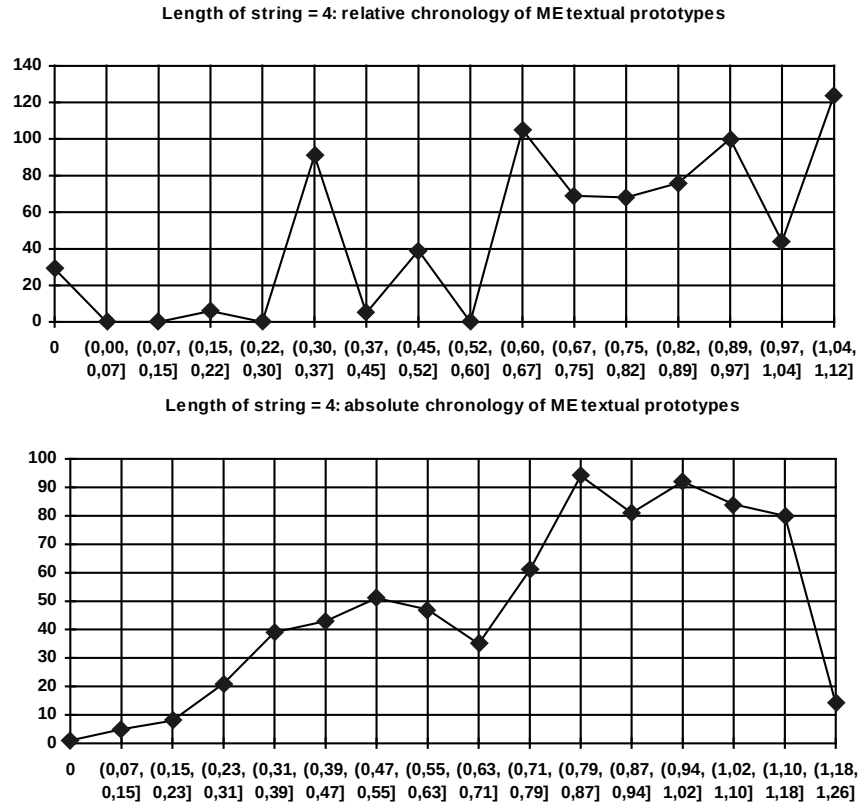


Figure 2. Constituents permutation in four-member (sub-)strings of verbs (axes notification same as on Figure 1)

diachronic reconstruction on the basis of the OED textual prototypes of its constituents. Conversely, strings tend to group on the strength of the value of the difference of their present-day and historical vectors lengths.

A string of synonyms is an object of lexical memory. Its nature as a stored group of words depends on the number of its constituents. Shorter strings are more likely to be stored as a sequence than longer ones.

The threshold between short and long strings may run at the numeric value of the so-called depth hypothesis that is also known as Ingwe's hypothesis. It rather loosely postulates the length of the optimally stored group at seven plus or minus two words. They form a border line between shorter and numerically predominant strings of two, three and

four lexemes and longer strings exceeding nine constituents. Understandably, shorter strings do not diminish optimality of the stored lengths.

The strings whose length exceeds nine constituents reveal only large values of dissimilarity in the present-day and historical sequencing of constituents. The difference in the distribution of the respective permutation weight factor values within such strings that was obtained proceeding from the absolute and relative chronology of the respective textual prototypes is rather negligible (cf. the curves and respective values on axis *x* on Figure 3).

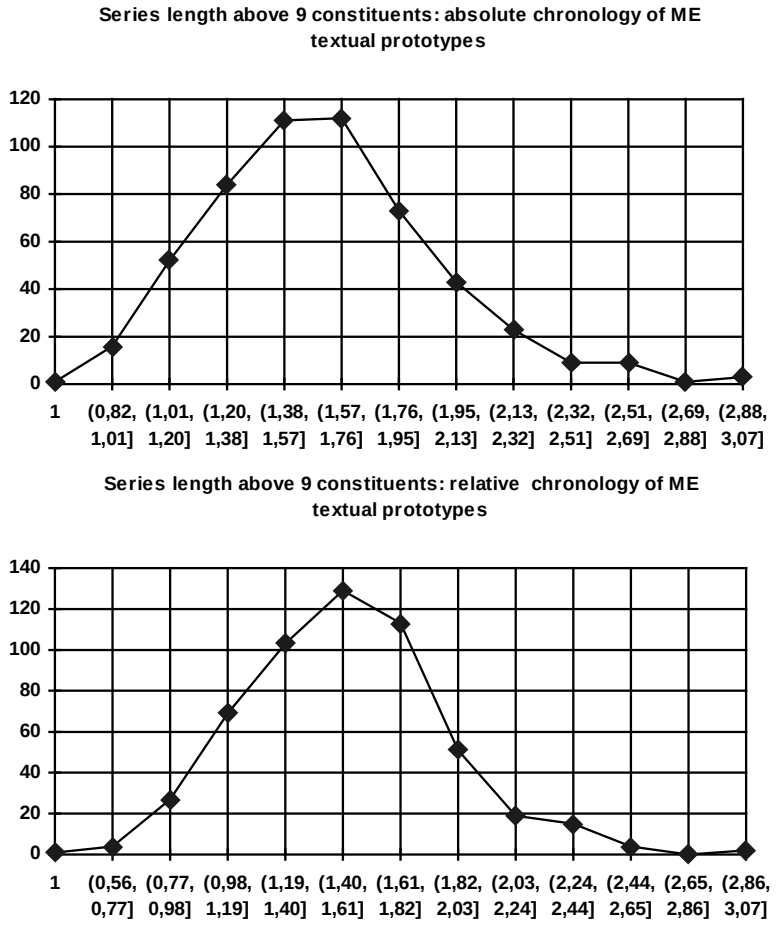


Figure 3. Distribution of the permutation factor values in synonymous (sub)-strings of verbs exceeding nine constituents (axes notification same as on Figure 1)

Conversely, in the synonymous strings of verbs containing nine and fewer constituents there are more apparent distribution differences in the permutation factor values especially in the left hand-side part (small inter-vector differentials) of the curves (Figure 4).

In the overall distribution of the permutation factor values medium-range ones understandably prevail over extreme values with some differences between shorter and longer strings that might serve as a starting point in a study of the reasons for synonyms' replacements within strings composition over time.

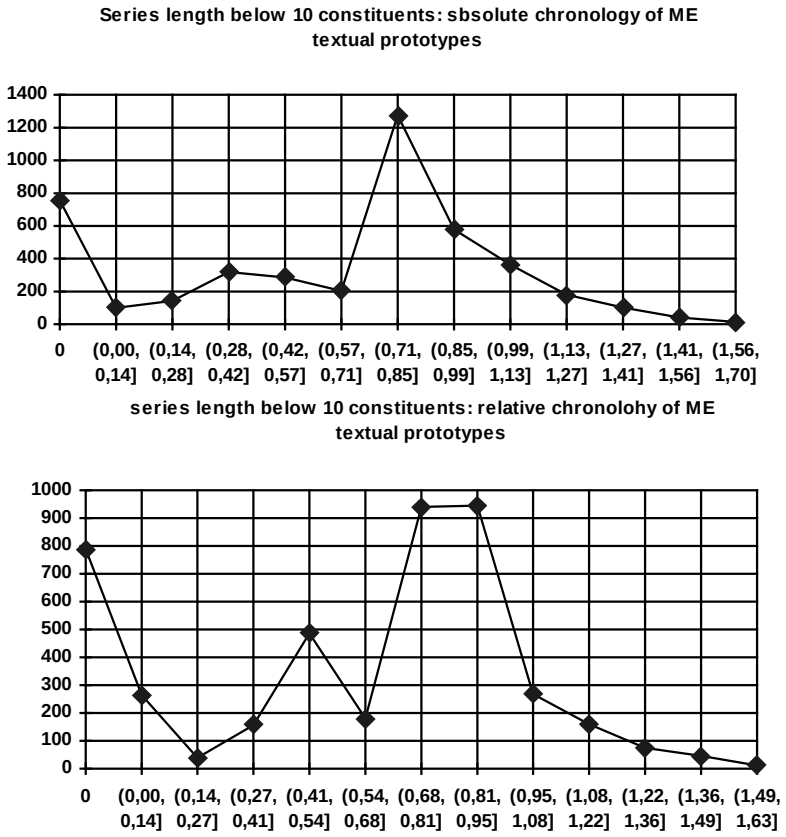


Figure 4. Distribution of the permutation factor values in shorter and medium (sub)-strings of verbs (axes notification same as on Figure 1)

4.3. Extending the framework over classes of ME deverbal coinages

The common-root coinages that were sufficiently well-represented in ME stopped at primary deverbal word-formation that falls under adjectival and substantive derivatives. They are lexicalized, *i.e.* registered as lexemes and not mere word-forms, present (mostly in *-ing, sporadically in -nt*) and past (in *-ed*) participles as well as adjectives (in *-ous, -ant/-ent, -ive, -y, -ful*) and modal adjectives (in *-able/-ible*). Coinages of substantive deverbal derivation in *-ing, -ment, -ance, -age, -ture* and *-tion* were action nouns with occasional (mostly one-word although not always documented in ME) factitive lexicalizations. There were also agent(/instrument) nouns in *-er, -or, -ant, -ard,* and *-ee*. Too few patient nouns could be found in the OED data to venture a thesaurus reconstruction.

As the existent dictionaries of synonyms provide us with strings of verbs but do not give their shared-root coinages the latter had to be modelled from the construed derivational family (nest) for each of the constituents of the respective verbal string. The stringing of verbs is accompanied by the stringing of their coinages on condition that no derivational constraint had affected a stem by a given moment of time.

Strings of deverbatives are varied categorial reflections of verbal synonymy in word-formation. They are characterized by some additional inherent features of their construing in comparison with verbal strings: empty slots in some sequential positions owing to the obliging derivational constraints as regards certain categorial or/and suffixal inventory (to be visualized in exemplification by the mark ' –') as well as shifts in the sequential placement of some stems owing to the divergence in the diachronic width of deverbal transpositional time. Hence, the chronological succession of constituents in the derived string is arbitrary, oftener than not failing to produce a replica of the parent string constituents succession. Even a coinage from the historical dominant in the verbal string can be preceded by its arbitrary counterpart.

Though some verbal strings get disintegrated when transposed to the derivational system failing to produce coinages altogether or giving rise to just one of them, if only temporarily, the number of derived strings makes up quite a considerable fragment of the historical thesaurus of deverbal word-forming families. Understandably, some verbal strings with OE and ME textual prototypes corresponded to deverbal strings with just ME dating of the earliest constituents' quotations.

For 4,902 ME (sub)strings of synonymous verbs there were twice as many (10,739) derivational counterparts of specific categorial nature and (non-)mixed suffixal inventory. In the adjectival step of deverbal derivation they are, respectively, adjectives (e.g., ***comfort*** *(1290) *⊂ [To console] sustain [⊂][To defend] (1290), favour (1340), support (1382)* → ***comfortive****(1377) *⊂ sustantive(1400), -, -)*, modal adjectives (e.g. ***seek*** *(825) *⊂ work (825), undertake (1200), strive (1225), try [⊂][To endeavour] (1300), propose (1340), labour (1362), wrangle (1377), tackle (1400), venture (1430), aspire (1460), essay (1483)* → ***seekable****(1483) *⊂ -, -, strivable*(1456), triable(1429), -, labourable*(1481),-, -, -, -, -)*, present participles (e.g. ***fall*** *(890) *⊂ [⊂] [To pass quickly downward] sink (975), drop (1000), ebb (1000). settle (1000), totter (1200), pitch (1205), abate (1270), descend (1300), droop (1300), slip (1300), tumble (1300), stumble (1303), decline (1325), plunge (1380), trip (1380), buckle (1386), diminish (1417), recede (1480)* → ***falling****(1300) *⊂ - , dropping(1400), -, -, -, -, -, -, drooping(1300), slipping(1440), tumbling(1374), stumbling(1425), -, -, -, -, -, -)* and past participles (e.g. ***clothe*** *(950) *⊂ [⊂] apparel (1250), array (1297), attire (1297), disguise (1325), coat (1362), robe (1377), guise (1400), mantle (1400), vest (1425), drape (1436), breech (1468), gown (1485)* → ***clothed*** *(1220) *⊂ apparelled (1483), arrayed(1386), attired(1325), disguised (1393), coated (1382), robed(1325), -, -, -, -, -, -)*. The substantive step of deverbal derivation falls under agent(/instrument) nouns, e.g. ***lead*** *(825) *⊂ [⊂] [To conduct] steer (888); drive (900); attend (1300); convey (1300); guide (1374); convoy (1375); precede (1375); squire (1386); accompany (1460); safeguard (1494); guard (1500)* → ***leader*** *(1300) *⊂ steerer(1398), driver(1450), attender(1461), - , guider(1400), convoyer(1470), - , -, -, -, - ,* as well as action and/or factitive nouns. In the developed queries, the latter can be presented as a joint string with the older derivative filling in the respective position of variant shared-stem coinages, e.g. ***sue*** *(1200) *⊂ beg (1225), plead (1250), pray (1290), accuse (1297), claim (1300), indict (1303), appeal (1330), entreat (1340), demand (1382), solicit (1429), prosecute (1432)* → ***suing*** *(1297) *⊂ begging(1380), pleading(1297), praying(1303), accusing(1300), -, indictment(1303), appealing(1440), - -, soliciting(1429), -)* or separately as action nouns proper (e.g. → - *begging(1380),-, raying(1303), accusing(1300), -,*

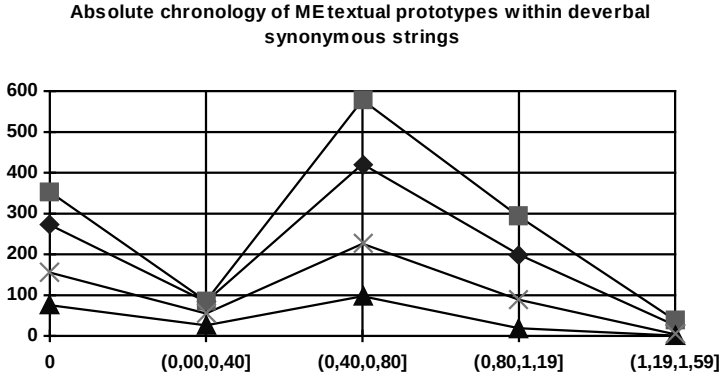
indictment(1303)/indicting(1440), appealing(1440), -, -, *soliciting(1429),* -), action nouns admitting factitive lexicalization (e.g. … → ***suing****(1297)* *⊂ -, *pleading(1297),* - , *accusement (1374),* -, -, -, -, -, -, -) and factitive nouns (e.g. …→ ***suing****(1393)* *⊂ -, *pleading(1377),* -, *accusement (1374),* -, -, -, -, -, -, -).

The part-of-speech affiliation of deverbal coinages formed natural distribution classes as regards the respective permutation factor values of the constituents of present-day strings in the reconstructed ME counterparts (cf. the upper and lower curves on Figure 5). In classes of deverbal nouns, most of the reconstructed ME (sub)-strings are more dissimilar to their present-day sequences than in adjectives (see the values of vectors' differential in the third range on axes *x* of Figure 5). In both classes of participle, strings that reveal large permutation factor values greatly outnumber those that were rather immune to sequential reshuffling of constituents over time. In classes of nouns, the opposite is true. Here strings that failed to reshuffle sequentially tended to outnumber those that did (cf. the absolute values of points 2 and 4 on axis *y* of Figure 5).

The mixed etymological make-up of ME deverbal derivation makes it expedient to repeat this reconstruction for strings modelled on the etymological homogeneity of the involved bases and/or suffixes.

5. Concluding remarks

The introduction of computerized frameworks into historical lexicology is capable of facilitating our understanding of vocabulary expansion over time. The conducted reconstruction was feasible owing to the self-compiled corpus attained from the specifically designed and implemented joint digitalization of the databases of the historical and onomasiological dictionaries. The developed framework is based on the application of appropriate mathematical formalisms to the factual richness of the monumental Oxford English Dictionary. It is extendable over multiple period and eventually complete diachronic dynamics of parent and derived (de)verbal lexicon of English.



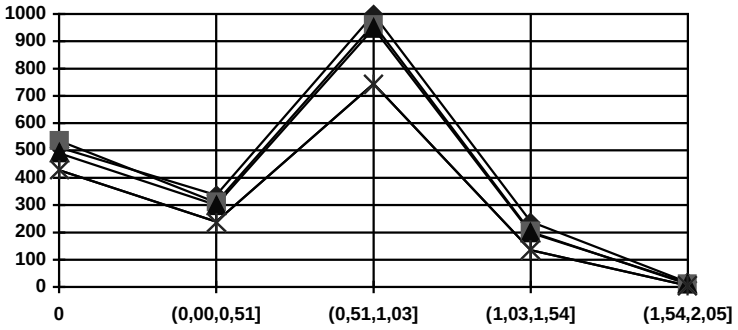


Figure 5. The distribution of permutation factor values in strings of participial/adjectival and substantive coinages. Upper curves conventional signs: rhombus – present participles; square – past participles; triangle – adjectives; cross – modal adjectives. Lower curves conventional signs: rhombus – action nouns proper; square – action nouns admitting factitive lexicalizations; triangle – agent/instrument nouns; cross – factitive nouns

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СИНОНІМІЧНЕ РЯДОТВОРЕННЯ ЯК ІСТОРИЧНА РЕКОНСТРУКЦІЯ

(на матеріалі (від)дієслівних відповідників у середньоанглійському періоді)

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Запропоновано оцінку незбігу у порядкових послідовностях дієслівних та віддієслівних лексем із сучасного тезауруса та із реконструйованого за текстовими прототипами історичного тезауруса словотвірних гнізд. З погляду електронної лексикографії синонімічний ряд є сумою значень вагових коефіцієнтів кожного консти-

туента в історичній чи сучасній домінанті. Варіанти обчислення різниці довжин векторів сучасного синонімічного ряду або його фрагмента та відповідної історичної реконструкції для середньоанглійського періоду виходять з абсолютного датування конституентів чи з їхнього відносного хронологічного розташування. Запропонована методика застосовна до випадків ідентичного датування текстових прототипів. При формантній варіантності реконструкція приймає до уваги прецедентний утвір або ж виходить із суфіксальної довільності, зокрема й однорідності, дериватів від синонімічних дієслів.

Ключові слова: синоніміка, дієслова та віддієслівні деривати, середньоанглійські текстові прототипи, ваговий коефіцієнт, вектор, розподіл значень коефіцієнта пермутації.

СИНОНИМИЧЕСКОЕ РЯДООБРАЗОВАНИЕ КАК ИСТОРИЧЕСКАЯ РЕКОНСТРУКЦИЯ

(на материале (от)глагольных соответствий в среднеанглийском периоде)

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Предложена оценка несоответствия в последовательностях глагольных и отглагольных лексем из современного тезауруса словообразовательных гнезд и из реконструированного на основании текстовых прототипов исторического тезауруса соответствующих лексем. В терминах электронной лексикографии синонимический ряд представляет собой сумму значений весовых коэффициентов каждого конституента в исторической или современной доминанте. Два способа исчисления разницы протяженности векторов современного синонимического ряда или его фрагмента и соответствующей исторической реконструкции для среднеанглийского периода исходят из абсолютной датировки конституентов либо из их относительной хронологии. Предложенная методика применима для случаев совпадающей датировки текстовых прототипов. При формантной вариативности реконструкция принимает во внимание прецедентное образование или же исходит из суффиксальной произвольности, в частности также и однородности, синонимических производных слов.

Ключевые слова: синонимика, глаголы и отглагольные дериваты, среднеанглийские текстовые прототипы, весовой коэффициент, вектор, распределение значений коэффициента пермутации.

Стаття надійшла до редколегії 16.07.2009 р.

Статтю прийнято до друку 15.09.2009 р.