Normalising the *Corpus of English Dialogues (1560-1760)* using VARD2: Decisions and Justifications

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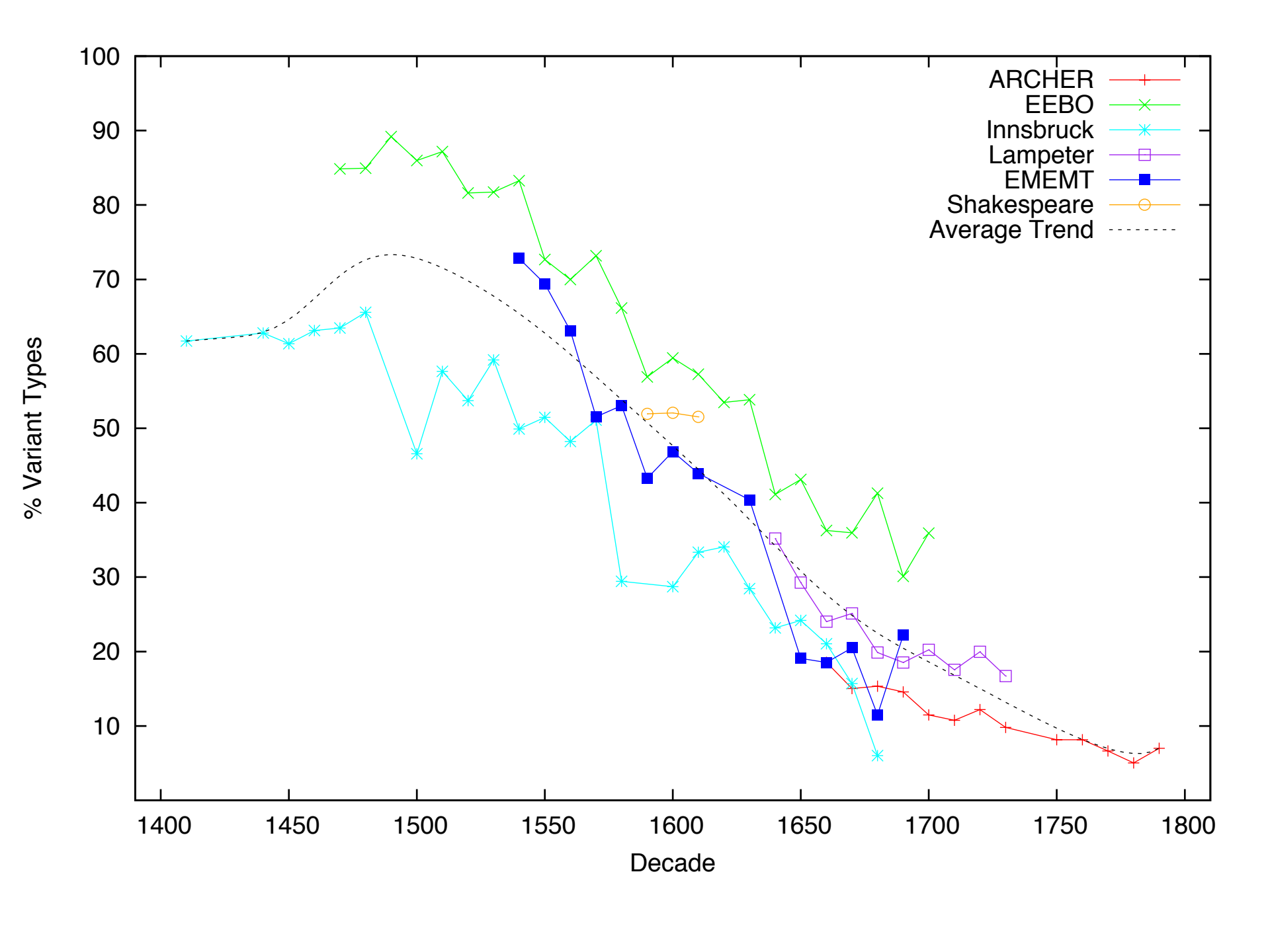
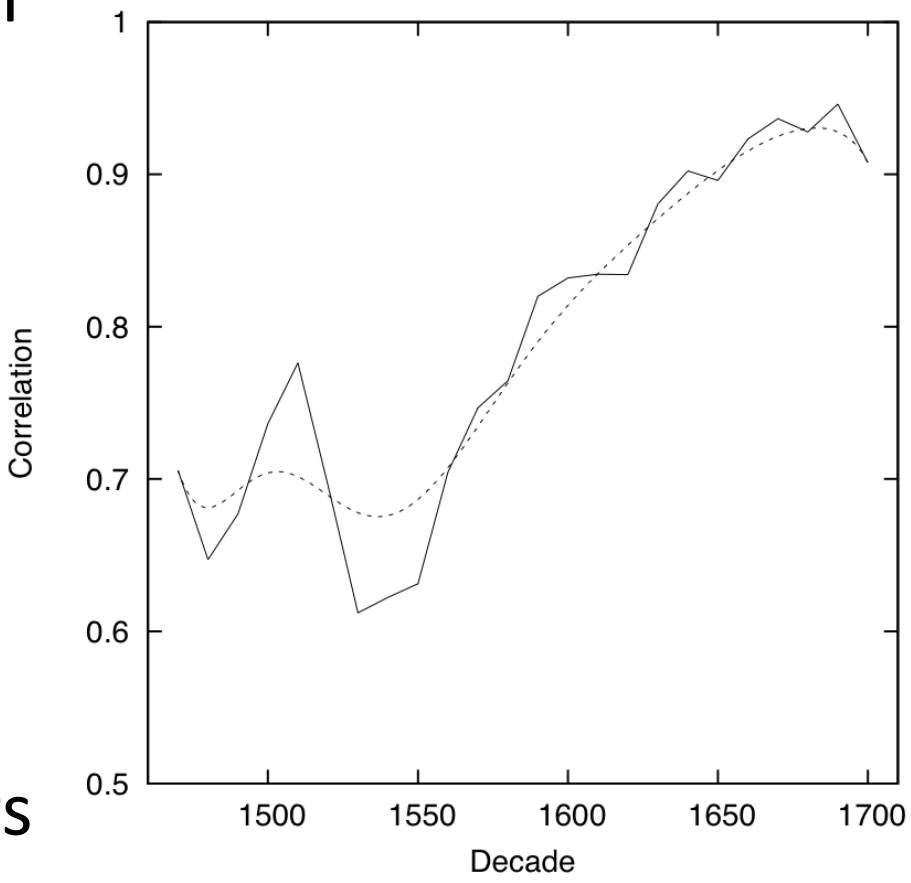
The extent of spelling variation in EmodE corpora

- And its effect on corpus methods such as keywords
  - Baron, A., Rayson, P. and Archer, D. (2009). Word frequency and key word statistics in historical corpus linguistics. In Anglistik: International Journal of English Studies, 20 (1), pp. 41-67.

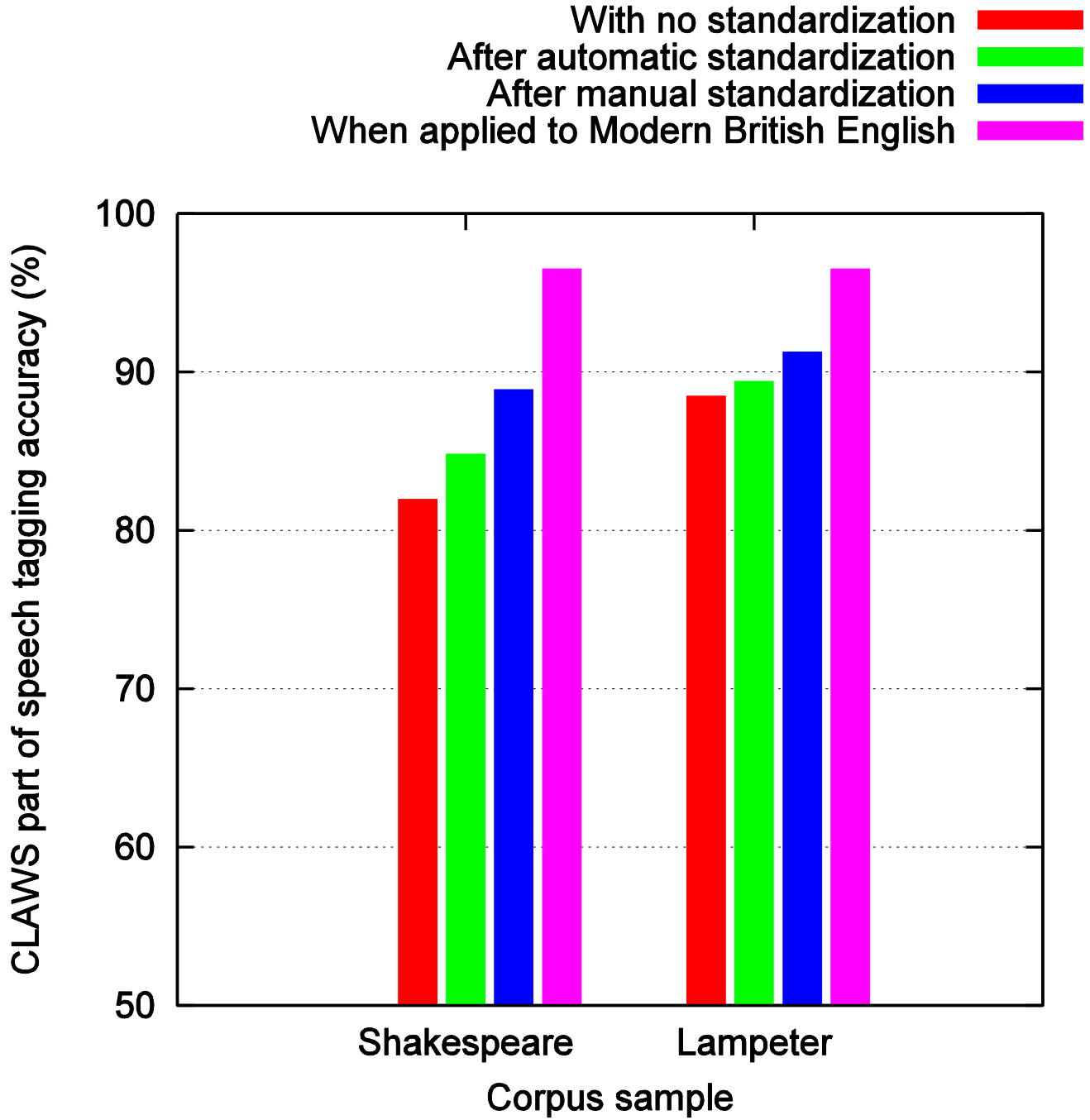

% Variant Types
Decade
100
90
80
70
60
50
40
30
20
10
1400
1450
1500
1550
1600
1650
1700
1750
1800
ARCHER
EEBO
Innsbruck
Lampeter
EMEMT
Shakespeare
Average Trend

- Searching for words can be problematic: *would, wolde, woolde, wuld, wulde, wud, wald, vvould, vvold*, etc.
- Frequencies split by multiple spellings.
- Knock-on effect on key words (Baron *et al.*, 2009), key word clusters (Palander-Collin & Hakala, 2011) and collocates.



The need for normalisation …

- Automatic semantic analysis of EmodE corpora
  - Archer, D., McEnery, T., Rayson, P., Hardie, A. (2003). Developing an automated semantic analysis system for Early Modern English. In Proceedings of the Corpus Linguistics 2003 conference. UCREL technical paper number 16. UCREL, Lancaster University, pp. 22 - 31.
- Automatic POS tagging of historical corpora
  - Rayson, P., Archer, D., Baron, A., Culpeper, J. and Smith, N. (2007). Tagging the Bard: Evaluating the accuracy of a modern POS tagger on Early Modern English corpora. In proceedings of Corpus Linguistics 2007, July 27-30, University of Birmingham, UK.

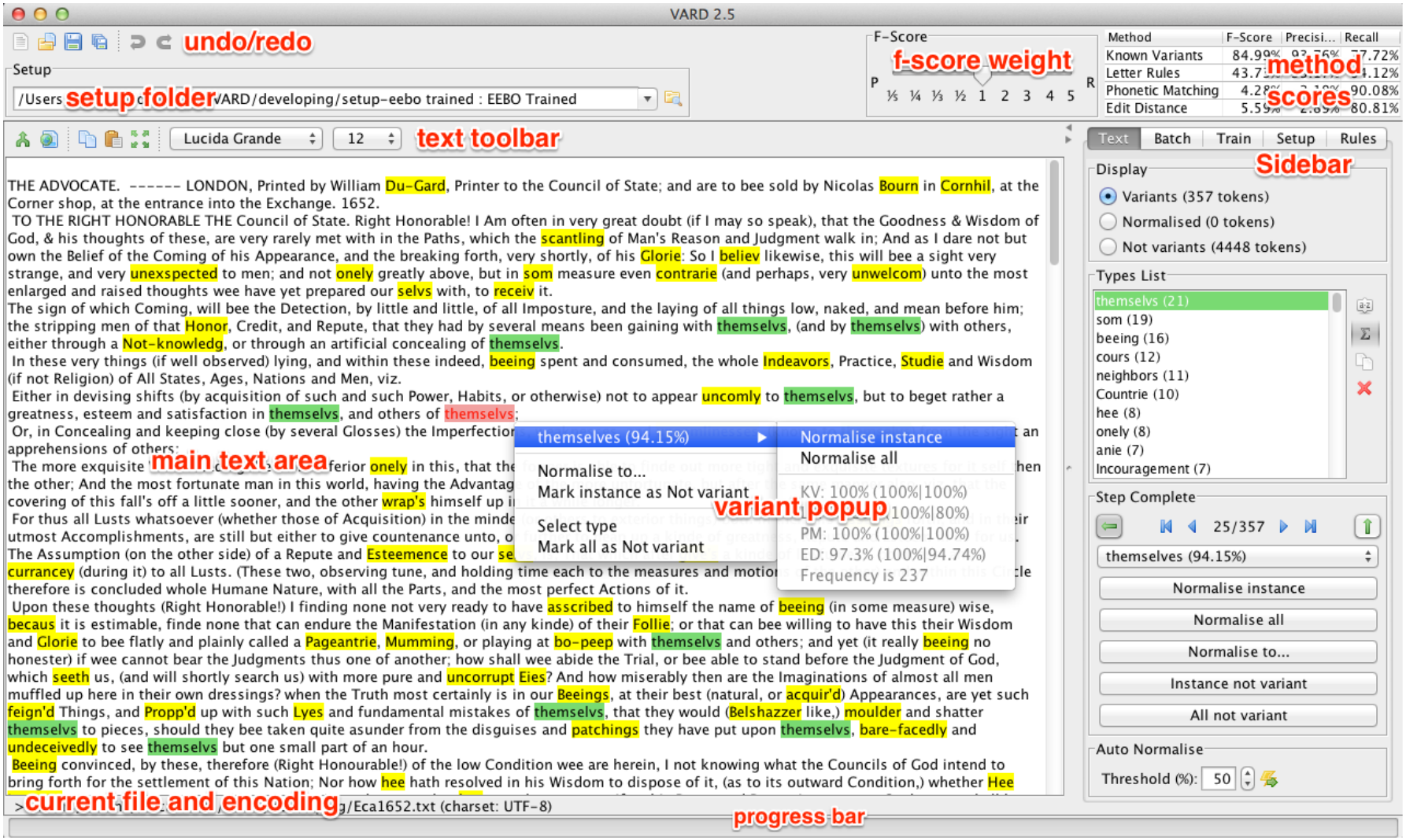

With no standardization
After automatic standardization
After manual standardization
When applied to Modern British English
CLAWS part of speech tagging accuracy (%)
100
90
80
70
60
50
Shakespeare
Lampeter
Corpus sample

Development of VARD …

- Use of existing spell checking techniques
  - Rayson, P., Archer, D., Smith, N., (2005), VARD versus WORD: A comparison of the UCREL variant detector and modern spellcheckers on English historical corpora. In Proceedings of Corpus Linguistics 2005, Birmingham University, July 14-17
- Hybrid methods
  - Baron, A. and Rayson, P. (2008). VARD2: A tool for dealing with spelling variation in historical corpora. In proceedings of the Postgraduate Conference in Corpus Linguistics, Aston University, Birmingham, 22nd May 2008.

VARD (VARiant Detector)

http://ucrel.lancs.ac.uk/vard/



- Freely available for academic use: http://ucrel.lancs.ac.uk/vard
- Designed to assist researchers in standardising spelling variation in historical corpora both manually and automatically.
- Uses methods from modern spellchecking to find spelling variants and offer/select appropriate modern equivalents.
- The original spelling is always retained in the text with an xml tag surrounding the replacement.
  - <normalised orig=”charitie">charity</normalised>
- Allows for the use of standard corpus linguistics tools without any modification.
- Used to normalise released historical (and other) corpora, e.g. EMEMT (Lehto *et al.*, 2010) and CEEC (Palander-Collin & Hakala, 2011).

Wider aim
(re spelling normalization)

- Determining the feasibility of developing normalisation guidelines that are generalisable to other historical corpora such as ARCHER (*A Representative Corpus of Historical English Registers*) and EEBO (*Early English Books Online*).

--- Hence we will illustrate some comparisons with the normalisation decisions made in respect to *Early Modern English Medical Texts* (see Lehto et al. 2010).

Samuels project (wider context)

- SAMUELS: Semantic Annotation and Mark-Up for Enhancing Lexical Searches
  - funded by the Arts and Humanities Research Council in conjunction with the Economic and Social Research Council (grant reference AH/L010062/1)
  - January 2014 to April 2015
- Aim
  - deliver a system for automatically annotating words in texts with their precise meanings, disambiguating between possible meanings of the same word
  - will provide for each word in a text the Historical Thesaurus of English reference code for that concept.
- Project team:
  - University of Glasgow (lead institution), Lancaster University, University of Huddersfield, University of Central Lancashire, University of Strathclyde, Oxford University Press
  - international partners: Brigham Young University (Utah), Åbo Akademi University (Finland), and the University of Oulu (Finland).

http://www.gla.ac.uk/schools/critical/research/fundedresearchprojects/samuels/

Manual training process

... INVOLVES THE USER:

- Reading a given text, via the VARD interface.
- Distinguishing variants within the text – via the tool's recommended list of (ranked) candidate replacements – or personally – by highlighting variant forms manually.
- Choosing the most appropriate normalized form for each variant found – where relevant, being guided by the VARD's known variant list or f-score calculation (derived from , e.g., letter replacement rules, edit distance measures and/or phonetic matching algorithms).
- Replacing the variant with the normalised form – but in such a way that the original spelling is retained in an XML tag (Baron and Rayson, 2008).

Argument for – and against – normalisation (a summary)

Helps improve automated techniques (e.g., POS and keyword analysis), thereby allowing existing linguistic tools to be used unmodified
(see, e.g., Archer et al. 2003; Rayson et al. 2007a/b; Rayson et al. 2009; Hiltunen and Tyrkkö 2013).

POTENTIAL LOSS OF IMPORTANT MORPHOSYNTACTIC OR ORTHOGRAPHIC INFORMATION

We can still get to/retrieve original spellings [in the XML tag – see (iv)]

OPTION OF MAINTAINING SOME ORIGINAL SPELLINGS

= Normalisation process has to be handled sensitively ...

A Corpus of English Dialogues (1560-1760)

- Compiled by Merja Kytö and Jonathan Culpeper, in collaboration with Dawn Archer and Terry Walker
- Contains speech-related texts representative of five genres – trial proceedings, witness depositions, comedy dramas, prose fiction and handbooks – plus a miscellaneous category
- Published 2006; total of 1,157,720 words;

  870,240 words coded for direct speech
- Grants: Swedish Research Council, Arts and Humanities Research Board, British Academy

Training set

- CED: 1,157,720 words = 177 files
- A cross cut of CED: target 30,000 words
  - 25 files totalling 213,256 words
  - 25 x 1200 words = 30,213 words
  - = 5 files from each of the five 40-year subperiods
  - trials, depositions, drama comedy, fiction, handbooks (one of each per a subperiod)
- Cf. EMEMT: training data 36,000 words (2 mwd, 450 texts/samples, 1500-1700)

Decisions made in respect to:

Leave as is ... (with caveats)

... Names
... Archaisms/rare/obsolete terms
... Foreign terms
... Dialect terms
... Personal pronouns

Modify ... (to modern form)

... Genitive
... Auxiliaries
... Verbs
... Compounds
... Contractions
... Tilde (& other graphemes)

Decision = “leave as is” (with caveats)

- Names — e.g., Darbye, North Baiely
- Archaic/obsolete/rare terms – normalized to one variant form — e.g., **afore**, **cozen/ed**, **oft**, **morrow**
- Latinate/foreign terms/ dialect terms – standardized — e.g., birlady > **byr’lady**
- Personal pronouns – standardized (cf. modernized) — e.g., thyne > **thine**

Genitive

**** importance of distinguishing genitive from plural**

my sonne sonnes > **my son's son**

then may you well say, seeing my race is so profitably increased, that good fat oxe, and that same large eard asse are my sonne sonnes, that caulfe with a white face is his faire daughter, (D1CCHAPM)

my mistres eyes > **my mistress's eyes**

- [$ (^Lab.^) $] Talke not to me of creame, for such vaine meate I do despise as food, my stomack dies drowned in the cream boules of my mistres eyes.

  (D1CCHAPM)

Other uses of apostrophe

giue's > **give us**

Ille > **I'll**

Auxiliaries and verbs

- t > ed
- 'd > ed
- th > to change (except in case of doth/hath [as plural])
- st > - (e.g., wouldst, wouldest, would'st **> would**)

laught > laughed

at this the King laught,

> at this the King <normalised orig="laught" auto="false">laughed</normalised> (D2FARMIN)

CED examples (cont.)

Then she desired the following Witnesses
might be call'd in her Defence.
> Then she desired the following Witnesses
might be <normalised orig="call'd"
auto="false">called</normalised> in her Defence.
(D5WBLAND)

but thus you see the Duke
confesseth the receipt of the Letter
> but thus you see the Duke <normalised
orig="confesseth" auto="false">confesses</normalised>
the receipt of the Letter (D1TNORFO)

Auxiliaries and verbs (cont.)

- shew/s/ed > **show / shows / showed**
- didst > **did**
- dost > **do**

Compounds

**** split or divide as in PDE; but leave problematic cases**

my self > **myself**

any way > **anyway**

Pray don't trouble your self on my Account.

> Pray don't trouble <join original="your self">yourself</join> on my Account. (D5HGBEIL)

CED examples (cont.)

to morrow > tomorrow

And, if you please, to morrow we shall begin.

> And, if you please, <join original="to morrow">tomorrow<join> we shall begin.

(D4HEMIEG)

an other > another

It shalbe then for an other tyme.

> It <normalised orig="shalbe" auto="false">shall be</normalised> then for <join original="an other">another</join> <normalised orig="tyme" auto="false">time</normalised>. (D1HEBELL)

Contractions

**** normalise where we know the full form**

‘em	>	**them**
for’it	>	**for it**
igad	>	**i’gad**
on’t	>	**on it**
sblood	>	**s'blood**
sha’n’t	>	**shan’t**
tho	>	**though**
til	>	**till**

tis or 'tis	>	**it’s**
twas, t’was	>	**it was**
twill, t’will	>	**it'll**
qd	>	**quod**
weel(e)	>	**we’ll**
wy	>	**with you**
y’are	>	**you’re**
yfaith, yfayth, ifaith	>	**i'faith**

Tilde

- the~ > to full form (according to context)
- dispositio~ > **disposition** (etc.)

Let vs begin the~.

Let <normalised orig="vs" auto="false">us</normalised> begin <normalised orig="the~" auto="false">then</normalised>.

(D1HEBELL)

But you dealt all to the~.

But you dealt all to <normalised orig="the~" auto="false">them</normalised>. (D1HEBELL)

Importance of context when making decisions

Context list

- **bee/be**
- **doe/do**
- **the/thee**
- **then/than**
- **too/to**
- **y=t=/that**

CED examples (cont.)

bee > be

the more it is to bee feared?

> the more it is to <normalised orig="bee" auto="false">be</normalised> feared? (D2FARMIN)

doe > do

What to doe?

> What to <normalised orig="doe" auto="false">do</normalised>? (D1HEBELL)

CED examples (cont.)

the > thee

and make the spend all thie meanes.

> and make <normalised orig="the" auto="false">thee</normalised> spend <normalised orig="thie" auto="false">thy</normalised> whole estate" (D2WDIOCE)

CED examples (cont.)

then > than

Excuse me, Sir, I understand it more then I do high German.

> Excuse me, Sir, I understand it more <normalised orig="then" auto="false">than</normalised> I do high German." (D3HFFEST)

too > to

in good faith you are too blame

> in good faith you are <normalised orig="too" auto="false">to</normalised> blame [...]" (D1CHAPM)

CED examples (cont.)

y=t= > that
hir husbande said diuers times y=t=
he would cut it of,

> <normalised orig="hir" auto="false">her</normalised>
<normalised orig="husbande" auto="false">husband</
normalised> said <normalised orig="diuers"
auto="false">divers</normalised> times **<normalised
orig="y=t=" auto="false">that</normalised>**
he would cut it <normalised orig="of" auto="false">off</
normalised>,

To conclude

- Normalisation guidelines are a compromise … ☺
- Important to combine automatic processing and manual screening
- VARD2 to be applied to EEBO shortly (in the Samuels project)

- Acknowledgements
  - Samuels project; AHRC grant reference AH/L010062/1 http://www.gla.ac.uk/schools/critical/research/fundedresearchprojects/samuels/
  - University of Uppsala travel grant
  - Thanks to Terry Walker and Gerold Schneider for acting as VARDers on the CED in June 2013

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