The Magnifying Glass and the Kaleidoscope. Analysing Scale in Digital History and Historiography

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Introduction

What is the meaning of scale in historical writings and migration narratives? Can digital tools and methods assist the detection of scale-related patterns in these categories of documents? May this enquiry be formalised into a system for scale analysis in texts? To address these questions, the paper combines theoretical background from historical, historiographical, linguistic and literary studies with digital tools and methods for text analysis and visualisation. The project is in an early phase; theoretical hypotheses and preliminary experiments are presented.

Methodology

Two types of corpora were considered: (1) historiographical - history writings mingling micro and global perspectives; (2) historical - migration narratives (autobiography). The first, in which variations of scale are clearly present, will serve to develop a prototype. The second, where representations of scale are more difficult to assess, will be used to test the approach.

Corpora

Although recent research in "global microhistory" (Trivellato, 2011) draws attention to the variable scale representation in history, the question of how this phenomenon is expressed through language in historians' discourse is less studied. Research enquiries may be related to: topics distribution pertaining to scale (local to global, micro to macro); "story" versus "study" distinctions (Kracauer, 2014: 122); epistemological explorations (Boudon, 1991). Corpus (1) samples: Brook (2009), Rothschild (2013), Wills (2001).

Corpus (2) is intended to East-West migration narratives, e.g. Kaminer (2011), Kassabova (2009), Verboczy (2017). Potential queries: representation of space and its scale-related particularities, e.g. the intimate, symbolic meaning, inspired by Bachelard (1957), of the old and new "home" (interior objects, house, street, city, country, continent) and its connections to geo-historical or cultural spaces, and a certain sense of belonging. Other elements could be considered: relations, names, events, time references.

Approach

The aim is to bridge "distant" and "close" reading, using zooming metaphor as an interpretative tool (Armaselu and Heuvel, 2017). Thus, a corpus/text can be explored via the hypothetical schema:

Level1: topic_X (obj_1, obj_2, …, obj_n)

Level2: topic_X.1 (obj_1.1, obj_1.2, …), topic X.2 (obj_2.1, obj_2.2, …), …

Level3: topic_X.1.1 (obj_1.1.1, obj_1.1.2, …), topic_X1.2, …, topic_X2.1, etc.

Where, 'obj_topic[.subtopic]' represents a whole/section/fragment of a document associated to a topic and a scale-related logic. The system will allow zooming-in/out the different topics, traversing the conceptual space, e.g. from general to specific, and accessing the corresponding objects. One of the challenges is that the levels hierarchy and the degree of granularity may not be unique but depend on different "perspectives". Corpus (1) can imply different viewpoints and objects grouped by topics on levels 1, 2: (a) world history – 17th, 18th century; (b) world history – trade routes, slavery; (c) world history – Europe, Asia, America. Some fragments generalise on world history, others discuss world trade routes between Europe, America and Asia, others narrow down to family history or paintings description. Like in a kaleidoscope, by rotating the device (changing the "magnifying-glass"), new patterns can emerge.

Proof of Concept (PoC)

The PoC phase (in progress) will test these hypotheses on corpus (1). Two experiments on Brook (2009) are presented below.
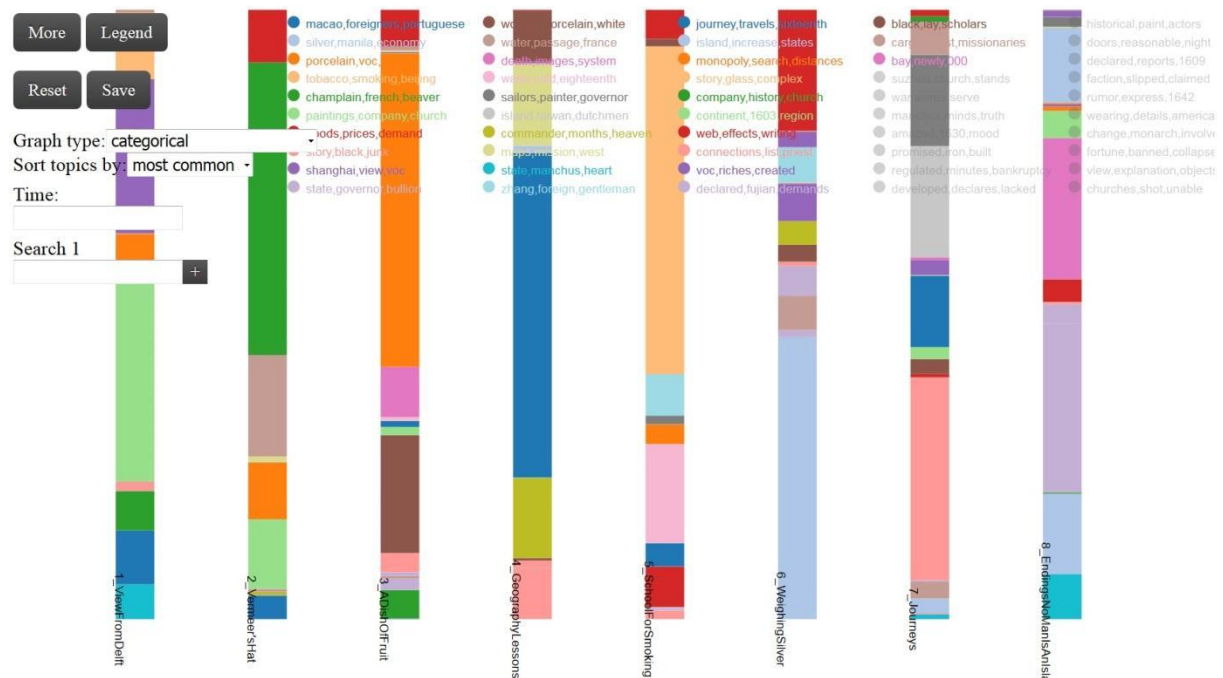

Fig. 1. *Vermeer's Hat*. Zotero - Paper Machines (topic modelling by subcollection/chapters)

Figure 1 illustrates Paper Machines topics for each chapter. It is assumed that by combining these groupings with an analysis of the contexts where the corresponding words appear, e.g.

co-occurrences, lexical chains, paths in a lexical-semantic hierarchy, a scale-related model of the text can be derived. Its levels may reflect how knowledge is organised, from synthesising, manipulating abstractions, through intermediate descriptions, to in-detail accounts referring to particular facts, persons, objects or quotations of sources.

Figure 2 shows a visualisation via Z-editor (Armaselu, 2010). The scalable layout in chapter 2 (created manually) is explored by zooming through the European hatters history in the fifteenth and sixteenth century, the opening of the beaver pelts Canadian supply and Champlain's fight with the Mohawks, the customs of wearing a hat and the rules of courtship in seventeenth century Netherlands, and, Vermeer's painting, *Officer and Laughing Girl,* illustrating these practices.
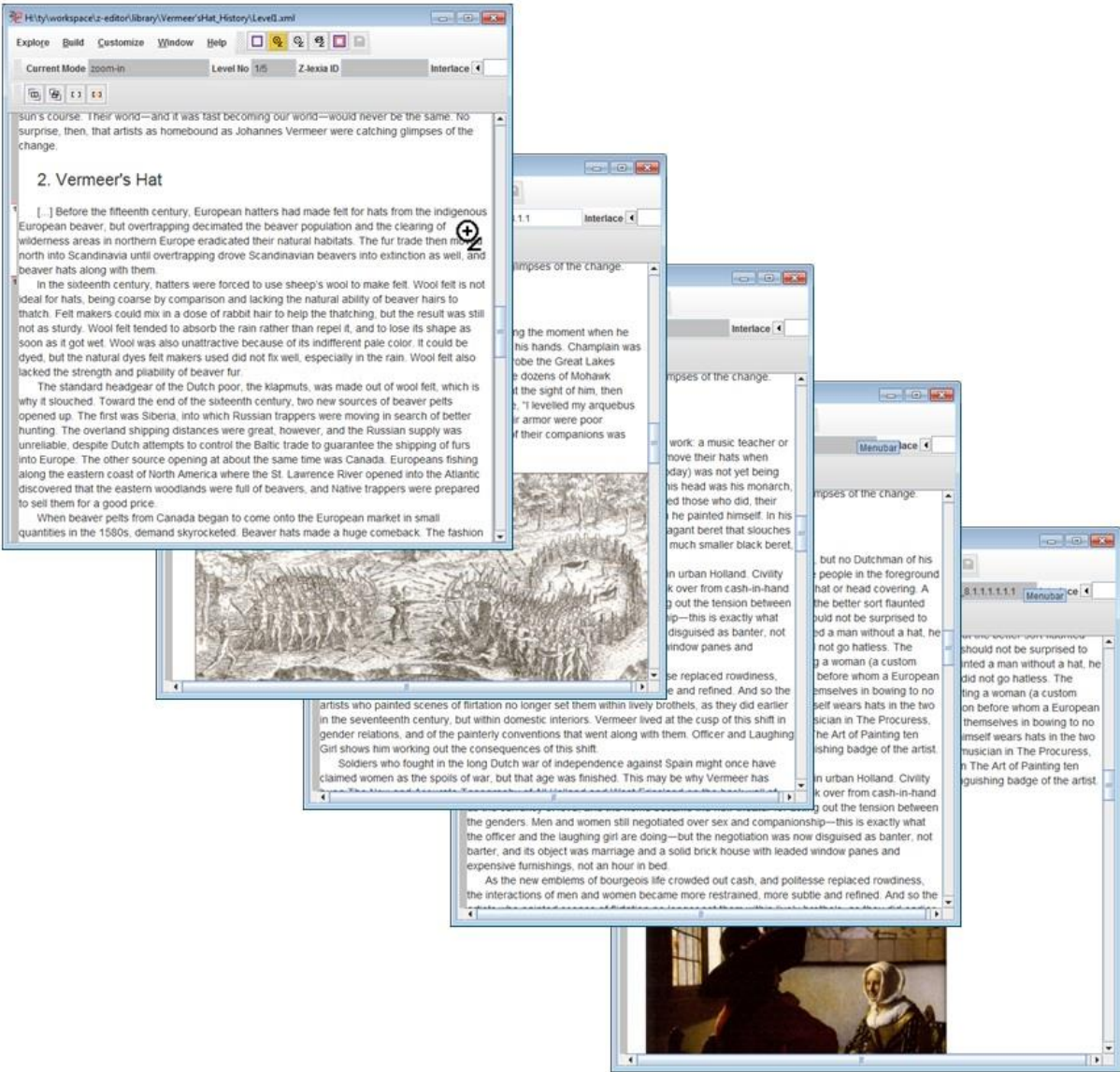

Fig. 2. *Vermeer's Hat*. Z-editor (zoomable text)

Tools/methods currently under testing: topic modelling (MALLET), textometry (TXM), lexical-semantic resources (WordNet), Named Entity Recognition (GATE), lexical chains and text structure (Morris and Hirst, 1991), visualisation (graphs, textual zooming). The PoC outcome will consist of insight into the advantages/limitations of these tools/methods in building a prototype for scale analysis.

Conclusion

The paper presents theoretical points and experiments for a system dedicated to scale analysis in historical/historiographical texts. By a combined approach, evoking the metaphors of the magnifying glass and the kaleidoscope, the system may allow both scale-related patterns detection and perspective change.

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Tools

GATE - General Architecture for Text Engineering, https://gate.ac.uk/.

MALLET - MAchine Learning for LanguagE Toolkit, http://mallet.cs.umass.edu/topics.php.

Paper Machines - http://papermachines.org/.

TXM – Textométrie project, http://textometrie.ens-lyon.fr/?lang=en.

Z-editor - http://www.zoomimagine.com.

WordNet - https://wordnet.princeton.edu/.