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TRANSCRIBING AND EDITING DIGITIZED SOURCES ON WORK IN THE TEXTILE INDUSTRIES

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TIME-US. Remuneration and Time Use in the Textile Industries in France in the Longue Durée

1. Between tradition and modernity
2. From data to corpora
3. Information extraction
4. Paving the way for future projects

1. BETWEEN TRADITION AND MODERNITY

1.2 A WORK IN LINE WITH QUANTITATIVE HISTORY

Computer long used by historians (Lemerancier and Zalc 2019)

A few milestones :

- 1959 : 'mechanographic' (computer) methods for reading notarial archives (Daumard and Furet 1959)
- 1960s : emergence of historians making intensive use of computers (Corvisier 1964, Le Roy Ladurie 1966)
- 1968 : Emmanuel Le Roy Ladurie, « La fin des érudits » in Le Nouvel Observateur : "The historian of tomorrow will be a programmer or he will not be¹."
- 1971 : contribution of computers to the reconstruction of demographic and economic data series (Furet 1971)

Studying words extracted from historical sources : an activity that has interested historians **since the 1970s** in the context of discourse analysis. Pioneering work by Régine Robin (Robin 1973)

1. Translation from : Rabb, Theodore K. and Rotberg Robert I. (2017) The New History : The 1980s and Beyond. Princeton University Press

1.3 AN ETERNAL RETURN (1)

Renewed interest in quantitative history after some disaffection
(Ruggles 2021)

Explosion of the Web at the end of the 1990s

- New way of communicating results with colleagues and consumers of history : birth of the concept of "digital history" in the Anglo-Saxon world (Mintz 2008)
- Access to a reservoir of historical data : digitization of Cultural Heritage (Google Books, Gallica, etc.) + "born-digital archives" which require new ways of reading sources (Clavert 2014 and 2016)

Revived interest in methods for exploring these large corpora of data

- Early 2000s : "distant reading" advocated by Franco Moretti in the context of literary history (Moretti 2013 and 2005)
- "Culturomics" project supported by Google (Michel et al. 2011) : birth of Ngram Viewer
- Debate sparked (Annales 2015/2) by Jo Guldi and Armitage's The History Manifesto (2014)

1.4 AN ETERNAL RETURN (2)

Renewed interest in quantitative history after some disaffection (Ruggles 2021)

Advances in computing

- Microcomputing
- Easy-to-use softwares (TXM, Gephi...)
- Promising new methods. For example : LDA algorithm (Blei, Ng, Jordan 2003) which gives rise to topic modelling, AI (neural network) and its applications in computer vision (**OCR = Optical Character Recognition** and **HTR = Handwritten Text Recognition**)

Construction and organization of the digital humanities community in the Anglo-Saxon world (Schreibmann, Unsworth, Siemens 2004) and then in France (Mounier 2010)

- Increasing visibility of digital methods in the human and social sciences
- Growth of resources for training (Web + growth of academic training such as masters in digital humanities)

2. FROM DATA TO CORPORA

– Monographies des Ouvriers des deux mondes (1857-1913, 1930) :

- + 124 sociological surveys published by F. Le Play (†1882) and the International Society of socio-economic practical studies;
- + same organization all along + cross reference system.

– Minutes des prud'hommes parisiens (1847-1848, 1858, 1878) :

- + Legal records, written by the court clerks;
- + Study per decade of audiences : Structure following the course of the hearing.

Goal : Starting from the digitized images, reproduce the logical structure of the monographies to create interactive tables of contents

1. Collecting the digitizations ;
2. Semi-automatic pre-processing of series and images ;
3. Collecting clues allowing to detect the logical structure ;
4. Automatic analysis of the layout ;
5. Automatic transcription ;
6. Generating standardized files (TEI XML) fully structured ;

2.3 LOGICAL STRUCTURE EXTRACTION 2

We want to find a **balance between the benefits** of automation (saving time) **and its drawback** (more noise, risk to lose information).

- The resulting files must be controlled and manually corrected;
- Each automated step increases the risk of errors or loss;
- Keeping links between images and text ease controls;
- We don't have to automate tasks that are too difficult (e.g. : processing tables);

Then, we can add in the files metadata collected by researchers

2.4 PRUD'HOMMES' STRUCTURE 1

Objective : Make the **internal structure** of the minutes **visualizable and searchable** in order to identify each day, each hearing, each trial and the parties to the trial.

The automatic identification of these parties enables researchers to **easily compare the same type of data**.

As **the procedure of the hearing is always the same**, the structure of the minutes is perfectly homogeneous :

- identification of parties;
- point de fait;
- point de droit;
- judgement.

2.6 PRUD'HOMMES' STRUCTURE 3

```
<div n="1" type="courtHearing">
  <opener>Audience Du Vendredi huit Janvier mil huit en cinquante huit
    Siégeaient : Messieurs Larouette, vice président du Conseil de Prud'hommes
    du Département de la Seine, Président d'audience en remplacement de Monsieur
    Biétry, président du dit conseil, empêché pour cause légitime Adolphe
    Michel, Marienval, Dubosc et Ancelin prud'hommes assistés de Monsieur
    Lecusq, secrétaire du dit conseil. </opener>
  <div n="1" type="case">
    <div type="identificationParties">
      <p>Entre Monsieur Frédéric Auguste Albarède, demeurant à paris, rue
        notre dame de Nazareth, numéro trente cinq, agissant au nom et comme
        chargé de l'administration de la personne et des biens de sa fille
        mineure Hélène Albarède, ouvrière modiste ; Demandeur ; Comparant ;
        D'une part ; et Mademoiselle Desgranges, maitresse modiste,
        demeurant et domiciliée à Paris, rue Montorgueil, numéro quarante
        sept ; Défenderesse, défaillant. D'autre part ; </p>
    </div>
    <div type="pointDeFait">
      <p>Point de fait - Par lettres du secrétaire du Conseil de Prud'homme
        pour l'industrie du tissus, établi à Paris pour le Département de la
```

FIGURE : Extract from the automatically annotated file

A website was designed thanks to a searchable XSLT transformation :
[http://timeusage.paris.inria.fr/
prudhommes-paris-19e/home.html](http://timeusage.paris.inria.fr/prudhommes-paris-19e/home.html)

3. INFORMATION EXTRACTION

§6 « Propriétés » (Properties);

- « Immeubles » (estate);
- « Argent » (money);
- « Animaux » (animals);
- « Matériel spécial des travaux et industries » (specific equipment for works and industries).

§10 « Habitation, mobilier et vêtements » (Housing, furniture, clothing).

- « Meubles » (furniture);
- « Linge » (laundry);
- « Ustensiles » (utensils);
- « Vêtements » (clothing).

VÊTEMENTS DE LA FEMME (447^l 50) : ceux portés par la classe ouvrière aisée.

1^o *Vêtements du dimanche*. — 20 chemises en toile, 70^f; — 1 robe en laine brochée, 25^f; — 1 robe en mérinos, 20^f; — 1 robe en reps gris, 15^f; — 1 robe en flanelle à pois, 18^f; — 1 robe en indienne, 16^f; — 1 tablier en soie noire, 6^f; — 1 jupon en mérinos ouaté, 7^f; — 1 tablier en mérinos noir, 4^f; — 1 jupon de molleton marron, 10^f; — 1 jupon de flanelle verte, 6^f; — 1 jupon en indienne, 3^f; — 1 jupon en reps gris, 4^f; — 1 jupon en calicot blanc, 6^f; — 2 cols brodés, 3^f; — 4 cols unis, 3^f; — 1 bonnet à rubans blancs, 12^f; — 1 bonnet à rubans bleus, 6^f; — 4 bonnets unis, 8^f; — 1 foulard en soie, 6^f; — 1 châle en mérinos noir, 8^f; — 1 châle en mousseline fantaisie, 10^f; — 1 châle en laine à fleurs, 10^f; — 1 caraco en mérinos ouaté, 15^f; — 1 caraco en orléans, 6^f; — 3 paires de bas noirs en laine, 6^f; — 3 paires de bas blancs en coton, 6^f; — 1 paire de souliers en drap, 6^f; — 1 paire de souliers en cuir, 8^f; — Sabots, chaussons, etc., 6^f. — Total, 329^f.

FIGURE : « L'Ouvrier éventailiste de Sainte-Geneviève (Oise - France) », Les Ouvriers des deux mondes, n°40, 1875 [1885], p. 124.

- Initial situation : §6 and §10 only are identified in the XML.
- **Goal : identify sections' divisions and made up a database.**
- Tools : Python & SQL.

3.4 PROCESS

1. Add `<div>` with a specific `@type` for each inventory;
→ MANUAL TASK (HUMAN)
2. Get the text of the `<div>` and inject it into a database;
→ AUTOMATIC TASK (PYTHON & PYTHON SQL ALCHEMY)
3. Make an SQL query to display the desired text;
→ AUTOMATIC TASK (PYTHON SQL ALCHEMY)
4. Display : website.
→ AUTOMATIC TASK (PYTHON FLASK / HTML)

4. PAVING THE WAY FOR FUTURE PROJECTS

Accept and use trial and error

Difficulties inherent in this type of project that should not be hidden

- Data vs capta (Drucker 2011) : data is never "given" but "taken"
- A lot of work, time and money to get textual data that can be used by a computer
- A big challenge to appreciate and deal with these difficulties

Digital humanities context allows for more artisanal approaches

- Field still under construction that encourages experimentation
- DH = "lieu de bricolage" (Clavert and Schafer 2019)

Design acquisition and processing chains for historical sources

Share them

Facilitate their appropriation by historians themselves, to allow their evaluation and calibration (Lamassé and Rygiel 2013) by :

- Giving access to the algorithms and code
- Allowing fine-tuning of these instruments
- Enabling users to transform and modify these tools according to their needs

Work as a team

Central role of the historian in this type of project (Lamassé and Rygiel 2013, Grandi and Ruiz 2012).

- Constitution of corpora
- Information extraction (what questions can the data answer?)
- Structuring of historical information

Impossible to work alone : necessary to rethink the "graph of one's professional relations" (Lamassé and Rygiel 2013)

- Usual collaboration with librarians and archivists
- Necessary **collaboration with computer scientists** : initiate a dialogue aimed at understanding the specificities of the historical material, and those of the computer tool (Grandi and Ruiz 2012)
- New collaboration with physicists (signal acquisition) and mathematicians (Lamassé and Rygiel 2013)

Experimental aim of TIME US : new questions arise from collaboration

Train yourself and others

To be able to fulfil the above objectives, it is absolutely necessary to train historians (Heimbürger and Ruiz 2011) in order to :

- Make informed choices
- Facilitate the appropriation of these new tools
- Understand the limitations of these methods

An appropriate training to be widely disseminated in order to :

- Develop a digital literacy common to all historians
- Abolish the frontier between "digital history" and history as such. (Grandi and Ruiz 2012)

Developing a common digital culture between historians, engineers and computer scientists

Thank you for your attention!



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