ChartEx: Discovering spatial descriptions and relationships in medieval charters
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University of York
Digging into Data Challenge

“As the world becomes increasingly digital, new techniques will be needed to search, analyze, and understand these everyday materials. Digging into Data challenges the research community to help create the new research infrastructure for 21st century scholarship”

UK: AHRC, ESRC, JISC
US: NEH, IMLS, NSF
CAN: SSHRC
Netherlands: Organisation for Scientific Research

www.diggingintodata.org
ChartEx Project Partners

University of York: History and Human Computer Interaction
University of Brighton: Natural Language Processing
University of Leiden: Data Mining
University of Washington: History, Web Services
University of Toronto: History and Digital Archives
Columbia University: History and Digital Libraries

Data Repositories: The National Archives (UK), Borthwick, DEEDS Project U of Toronto, Columbia Digital Humanities
ChartEx Team

History: Sarah Rees Jones, Bob Stacey, Adam Kosto, Michael Gervers, Robin Sutherland-Harris, Stefania Perring, Jon Crump, Bob Scott

NLP: Roger Evans, Lynne Cahill

Data Mining: Arno Knobbe, Marvin Meeng

HCI: Helen Petrie, Christopher Power, David Swallow


The Borthwick Institute, Yarburgh Muniments. Abridged English translations (online at A2A).

DEEDS, University of Toronto. Latin charters of English provenance.

Cluny. Latin charters of French provenance.
A charter from English Edition of Vicars Choral collection

408. Grant by Thomas son of Josce goldsmith and citizen of York to his younger son Jeremy of half his land lying in length from Petergate at the churchyard of St. Peter to houses of the prebend of Ampleford and in breadth from Steyngate to land which mag. Simon de Evesham inhabited; paying Thomas and his heirs 1d. or [a pair of] white gloves worth 1 d. at Christmas. Warranty. Seal.


January 1252 [1252/3].

SOURCE: VC 3/Vi 326 (161 mm. x 137 mm.)
Urban Historic Topography

York corner of Stonegate and Petergate opposite Minster Gates
detail of OS 1852
Chronological Sequencing and Spatial Sequencing

408. Grant by Thomas son of Josce goldsmith and citizen of York to his younger son Jeremy of half his land lying in length from Petergate at the churchyard of St. Peter to houses of the prebend of Ampleford and in breadth from Steyngate to land which mag. Simon de Evesham inhabited.

409. Grant by Mariot widow of Thomas son of Josce goldsmith of York and by Jeremy (Jeremias) son of Thomas and Mariot to mag. Simon de Evesham canon of York of land with buildings in Steyngate, granted to them by Thomas, lying in length between Petergate and land of the prebend of Ampleford, and in breadth between Steyngate and land once of Geoffrey de Norwyz precentor of York.
Conceptual plan of logical relationships

- **LAND and BUILDINGS** (prebend of Ampleford)
  - Land with buildings (Simon de Evesham archdeacon, previously of late Thomas son of Josce; half land was given to Jeremy, the shop and solar on the corner was of Mariot and Jeremy)
  - Property 3

- **LAND of the prebend of Barneby**
  - Land and houses (Simon de Evesham precentor, previously of Anketin de Hesingwald and Thomas Sotewain)
  - Property 2
  - Property 1

- **LAND and BUILDINGS** (prebend of Masham)
  - Property 1

VCC 403-411 Property 1, 2, 3 and their development by 1266
ChartEx Architecture

Charter Documents

Data Mining

Analysed integrated documents

Analysed individual documents

Language processing

Researchers workbench
Natural Language Processing (NLP)
NLP Charter Annotation: Entities and Relationships
Data Mining (DM)
Data Mining:
Matching Relational Information

Vicars Choral 408
Data Mining: Matching Relational Information

Vicars Choral 409
Data Mining: Site-matching

| 414          | Simon de Evesham |
| 413          | entire three parcels |
| 413          | Bubwyz           |
| 411          | Jeremy son of Thomas |
| 407          | third parcel     |
| 407          |                 |
| 412          | entire three parcels |
| 412          | partial lease    |
| 410/410      | ambiguous        |
| 406          | William Raven de Fenton |
| 409          | Thomas son of Josce |
| 408          | Mariot widow of Thomas |

corner Steyngate/Petergate
second on Petergate
third on Petergate
The ChartEx Virtual Workbench
The ChartEx Virtual Workbench

We want to create a system that does not only allow historians to look at the data
But actually work with it – do the detailed reasoning, annotating, sharing etc that they have been doing on paper
And do things that were difficult/impossible to do on paper
Contextual Inquiry around User Tasks

We needed to know more than just content of the documents
we needed to know what people did with them when doing research
A further problem emerged: historians are experts, what they do in research is tacit knowledge
It was often very hard for the historians to verbalize how they reason with the charters and related information
Contextual Inquiry around User Tasks

To deeply understand the tasks of historians, we conducted contextual inquiry - a form of ethnography.

We asked historians to find a problem they had recently been working on and “walk and talk” us through the process.

We asked questions as needed and video-ed the sessions.
Contextual Inquiry around User Tasks

Eight medieval historians participated:

One historian identified a set of shops on a street in York
Another identified trends in witness lists in Wales
Another traced the holdings and influence of an Abbot in Catalonia
Contextual Inquiry

From these sessions:

• Distilled a set of basic requirements that grouped into three broad activities:
  – Searching for documents in collections
  – Interacting with individual documents to understand their contents
  – Relating information between documents

• A range of other requirements also emerged, for example
  – Provide information about the level of confidence in decisions by the system
Interaction Design and Co-Design workshops

- We began by dividing the interface into the three areas activities
- Started with the easy one: searching for documents in collections
- We evaluated initial ideas in a co-design workshop
- All the historians and the technical team discuss all aspects of the proposed design
- We made many changes based on the discussions
- Second prototype focused on exploring relationships within and between documents
- Again a co-design workshop
Prototype
### Search:

<table>
<thead>
<tr>
<th>Archives included in search:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Botwick</td>
<td>TNA</td>
<td>DEEDS</td>
</tr>
</tbody>
</table>

### Search Results

<table>
<thead>
<tr>
<th>Archive</th>
<th>Document ID</th>
<th>Document Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botwick</td>
<td>00..13</td>
<td>...eget pacem! Thomas massa sem...</td>
</tr>
<tr>
<td>Botwick</td>
<td>00..13</td>
<td>...Curabitur eurum Thomas multa nulla...</td>
</tr>
<tr>
<td>Botwick</td>
<td>00..32</td>
<td>...moestie vulgaris Tomas est moestie...</td>
</tr>
<tr>
<td>Botwick</td>
<td>00..41</td>
<td>...ill incipit Tomas dolor id...</td>
</tr>
<tr>
<td>Botwick</td>
<td>00..45</td>
<td>...Amenae aegeritas Thomas multa addexae...</td>
</tr>
<tr>
<td>DEEDS</td>
<td>11..27</td>
<td>...nunc. Sed Thomas uncuri...</td>
</tr>
<tr>
<td>DEEDS</td>
<td>11..26</td>
<td>...a eilefend. Tomas proin fugiat...</td>
</tr>
<tr>
<td>DEEDS</td>
<td>11..33</td>
<td>...sem d' Tomae tristique Nat...</td>
</tr>
<tr>
<td>TNA</td>
<td>22..54</td>
<td>...Donec vitae Thomas exue a...</td>
</tr>
<tr>
<td>TNA</td>
<td>22..55</td>
<td>...augue cornu. Thomas mori consequt...</td>
</tr>
<tr>
<td>TNA</td>
<td>22..56</td>
<td>...Etim massa Thomas turpe, tristique...</td>
</tr>
<tr>
<td>TNA</td>
<td>22..76</td>
<td>...Aeneas augue Thomas una, alque...</td>
</tr>
<tr>
<td>Vicars Choral</td>
<td>468</td>
<td>...non priemum Tomas non, iborbo...</td>
</tr>
<tr>
<td>Vicars Choral</td>
<td>469</td>
<td>...super. Mauro Tomas nec manus...</td>
</tr>
<tr>
<td>Vicars Choral</td>
<td>473</td>
<td>...priemum vulpulati. Thomas pura lectus...</td>
</tr>
</tbody>
</table>
Outcomes of initial evaluation of the prototype workbench

Overall, the historians liked what they saw
  – Very positive about being able to investigate relationships between the documents
  – Liked that they could keep their own copies and update those copies with their own knowledge (e.g. confidence)

One really interesting outcome
  – Some historians wanted to be able to go from a high level view and immediately see the relationships – then drive down to document level
  – This is something they couldn’t do previously, and shows how our elicitation methods capture some things, but we need the evaluation steps!
Next Steps

Next prototype of the workbench is under way with integration with data from the NLP and data mining
Evaluations with medieval historians

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Fall 2013 (sessions in New York, week of 4 – 8 November)
www.chartex.org
for more detailed information