Abstract

This paper documents the methodology used to digitally map early modern quiring patterns through the analysis of a corpus of bibliographic metadata about hand press books from the period 1471-1861. It describes the application of an algorithm that registers the presence of a certain quiring and the ensuing results, mainly relating quiring to chronological (century) and bibliographic factors (format). In conclusion, the interpretation and future analysis of these results for the study of book history is discussed.

1. Definition

As a preliminary note, it will be useful to rehearse how Gaskell’s manual on bibliography defines quiring as part of handpress book production:

It was normal in the early days of printing to impose [sc. sheets] for gatherings of several sheets tucked, or quired, inside each other. Thus a folio gathering might consist of three folio sheets [i.e. three sheets folded once], the outermost of which contained pages 1 and 12 (printed from the outer forme) and pages 2 and 11 (from the inner forme); the middle sheet had pages 3 and 10, 4 and 9; and the innermost sheet had pages 5 and 8, 6 and 7. All three sheets were signed with the same letter (A1 on page 1, A2 on page 3, and A3 on page 5), and the folding is designated ‘2° in 6s’ (GASKELL 2012: 82)

2. Methodology

The starting point for this research was an XML export (31 May 2017) through Brocade (version 4.20) of the Anet1 database of catalographic descriptions of book editions. Only handpress book editions were exported from the database, i.e. all records that have RECORD/BSECTION/LM/@lm=“od”. These catalographic descriptions employ a specific XML-scheme, of which the following record is an example:

---

1 Anet is a library network in Belgium hosted by the University of Antwerp. Brocade Library Services is a fully integrated web-based Library Information Management System, developed by the University of Antwerp in 1998. Cf. https://en.wikipedia.org/wiki/Brocade_Library_Services and www.anet.be.
Verdediginghe van de thien redenen der bekeeringe L.C.B. teghens de ontdekkinghe der waenwyset van Petrus Cabeljau, dienaer des Woordts tot Leyden ... vertoonende de ongefondeert heyt der vermeyde Reformatie ... Tot naerdere verantwoordinghe ... d'aenneminge des catholycken geloofs, door den selven L.C.B. 

by Joannem Kinckium

STCN 088437736

Vermoedelijk gedrukt in Amsterdam (STCN)
Subsequently, the ensuing file `od_20170531.xml` was manipulated with BaseX GUI (version 8.6.4) in order to select from the catalogographic descriptions the following data:

1. unique identifier for editions
2. bibliographic format
3. collation
4. place of issue (text)
5. place of issue (authority code)
6. printer (text)
7. printer (authority code)
8. year(s) of issue

For this, the following XQUERY-script was used through BaseX GUI:

```xml
let $records := doc("od_20170531.xml")/CATFILE/RECORD for $search in $records return <li>{data($search//@cloi)} £
{data($search//@fm)} £
{data($search//@ka)} £
{data($search//BSECTION/IM/PL/DATA/text())} £
{data($search//@pc)} £
{data($search//BSECTION/IM/UG/DATA/text())} £
{data($search//@uc)} £
{data($search//@ju1sv)} £
{data($search//@ju2sv)}
</li>
```
Next, the resulting XML-file was imported into Excel (MS Office Professional Plus 2013), resulting in 8 columns and 42,601 rows (i.e. 42,601 catalographic records) of data. For the research into Early Modern quiring practices, the collation field was used. Hence, all records with an empty collation field were filtered out from the dataset, resulting in 17,179 records. So effectively, this research is about 17,179 editions of handpress books, spanning the period 1471-1861.

After the raw XML-import, the collation field looked like this (example from the aforementioned XML-record):

\[ \text{*<sup>6</sup> A-2G<sup>8</sup> 2H<sup>2</sup>} \]

which represents the collation

\[ \text{*6 A-2G^8 2H^2} \]

In order to get an accurate count of the quiring patterns present, some data cleansing had to be performed.

1. All Arabic numbers in the \(<sup></sup></sup>\) strings were replaced with their written-out counterparts, e.g. replace all \(<sup>1</sup></sup> with \(<sup>one</sup></sup>, in order to avoid confusion in the count algorithm between \(<sup>1</sup></sup> and \(<sup>12</sup></sup> and to differentiate between amounts of sheets in gatherings and numbers used to sign gatherings.

2. Quires consisting of a single sheet (which do not use superscript mark-up in the collation formula), i.e. recorded as \(A1, a1, *1, +1, \langle03C0\rangle 1 (= \pi1)\) or \(\langle03C7\rangle 1 (= \chi1)^2\), were also transformed into the form \(A<sup>one</sup></sup> etc.

3. Strings like \(<sup>two</sup></sup>A, representing double numbered quires (e.g. \(A-Z^8 2A^2\)), were replaced with terms like double, triple, ... in order to avoid counting these as numbers of sheets. This was done for all combinations of numbers two to seven and marks A-D (not case-sensitive, thus including a, b, etc.) and * and +, like so:

| collation | A   |
|-----------|-----|
| double    | A   |
| triple    | A   |
| quadruple | A   |
| quintuple | A   |
| sextuple  | A   |
| septuple  | A   |

4. The collation field of multivolume editions, like \(v.1 : *<sup>four</sup></sup> \(2*3<sup>four</sup></sup> \(A-5G<sup>four</sup></sup> \(v.2 : A-4S<sup>four</sup></sup> \(2A-R<sup>four</sup></sup> for record c:lvd:129989 were left as they were. We believe that for the study of quiring practices it does not matter whether an edition is published as a single volume or as a multivolume copy. Only the number of sheets per gathering is of interest here.

\[ ^2 \text{We realize that this list is probably incomplete, but the issue was not further pursued for this preliminary research.} \]
Next, the different quiring practices per edition were measured in a binary way with the Excel COUNTIF-formula, like so:

| Cell   | Formula                        | Value |
|--------|--------------------------------|-------|
| A1     | *<sup>6</sup>A-2G<sup>8</sup>2H<sup>2</sup> |       |
| A2     | =COUNTIF(A1;"*<sup>one</sup>*") | 0     |
| A3     | =COUNTIF(A1;"*<sup>two</sup>*") | 1     |
| etcetera |                               |       |

This resulted in a table with the following possible data points, including both the count of number of sheets per gathering and of double, triple, etc. gatherings:

\[1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 4/2, 4/6, 4/8, 6/8, 8/4, 8/6, \text{double, triple, quadruple, quintuple, sextuple, seventuple}\]

Subsequently, separate Excel-sheets were produced grouping counts of various subsets of the data, namely the quiring counts per bibliographic format:

\[1°, 2°, 4°, 8°, 12°, 16°, 18°, 24°, 32°, 64°\]

and the quiring counts per century:

\[15\text{th}, 16\text{th}, 17\text{th}\]

First, the results of these counts were stated nominally, e.g. in the 15th century there are 5 instances of folio editions that contain a single sheet gathering, or, in the 15th century there are 8 editions in total (5 folio, 2 quarto, 1 octavo) that contain a single sheet gathering.

Next, the results were stated as percentages, e.g. out of the total of 67 folio editions in the 15th century there are 5 that use a single sheet gathering, which equals 7,5%, or, in the 15th-century there are 8 instances of editions using a single sheet out of a total of 362 different usages of quiring (single sheets, two, three, etc.), which equals 2,21%. Otherwise stated, this percentage represents how often a certain quiring is present in the total corpus of editions relative to all different instances of quiring practices.

Several graphs were also produced, of which the following page offers a few examples:
3. Dataset and Results

The spreadsheet containing the aforementioned datasets, quiring counts and graphs can be obtained through a simple request sent to the author (Tom.Deneire@uantwerpen.be).

This data is made available under the Open Database License: http://opendatacommons.org/licenses/odbl/1.0/. Any rights in individual contents of the database are licensed under the Database Contents License: http://opendatacommons.org/licenses/dbcl/1.0/
For a summary of the license, see https://opendatacommons.org/licenses/odbl/summary/

4. Interpretation

The detailed interpretation of these results is beyond the limited scope of this paper. However, it is clear that the dataset can provide a good start to interpret Early Modern quiring. For instance, Gaskell states the following on the subject:

In the fifteenth century folio gatherings consisted of up to five sheets; quarto (and occasionally octavo) gatherings might consist of two sheets. Patterns of quiring changed in later periods. Folios were generally gathered in 6s during the sixteenth and seventeenth centuries, but most eighteenth-century folios were gathered by single sheets (i.e. in 2s) despite the extra sewing this entailed. Quarto in 8s remained common in English printing until the seventeenth-century, and was continued in Bible printing until 1800. Octavo gatherings were rarely quired after the fifteenth century. (GASKELL 2012: 82-83)

From our research, we see that incunable folios in fact mostly have more than five sheets, i.e. 6 (70,1%), 8 (88,1%) or even 10 (47,8%). The second assertion, that quartos might consist of two sheets, also seems incomplete. This does happen – 2,4% of quartos have a gathering in 2 –, yet folios have a much higher percent of such gatherings, i.e. 10,4%. It is true that 16th- and 17th-century folios mostly have gatherings in 6s, however 4s are also very frequent (57,6% and 59,8%), as are 8s in the 16th century (40,9%).

Furthermore, in this preliminary research we have only looked at the relation between the collation field, bibliographic format and date of publication, yet the other metadata available for the corpus, such as printer, publishing place, subject matter, etcetera, offer a plethora of additional possibilities for interpreting quiring patterns.

Finally, it is important to note that our algorithm only records whether an edition contains a certain quiring or not, whereas it does not count the amount of gatherings that use a certain quiring. In other words, in the abovementioned example

\[ *^6 \ A-2G^8 \ 2H^2 \]

it records gatherings in 2, 6 and 8, while does not specify that the collation has 1 gathering in 6, 30 gatherings in 8 and 1 in 2. However, it should not be too difficult to write an algorithm that is able to do this, which would obviously yield even more promise for the research of Early Modern quiring specifically and book production in general.
5. Literature

GASKELL 2012 = Philip Gaskell, *A New Introduction to Bibliography. The Classic Manual of Bibliography* (Oxford: OUP, 2012: first ed. 1972, second ed. 1995)