

# Visual Interpretation of the ISTC

## The Atlas of Early Printing and the Material History of Data

Gregory Prickman

Folger Shakespeare Library, Washington, DC, US

**Abstract** The Atlas of Early Printing is an online resource built with GIS tools to depict the spread and development of printing during the incunable period in Europe. It has been online since 2008 and continues to be developed. The site uses data from the *Incunabula Short Title Catalog* (ISTC) and other sources, providing a visualisation of the databases from which the data is retrieved. The data being visualised is the result of many decades of cataloguing, arranging, publishing, and migrating; the work that followed was informed by material constraints and has left material traces. For the ISTC, an important period in the development of data formats was the work Margaret Bingham Stillwell undertook from 1924 to 1940 for the bibliography *Incunabula in American Libraries, a Second Census*. The data she gathered were meticulously coordinated through mailing campaigns and organised on cards, and then translated into print according to the publisher's requirements. The decisions underlying Stillwell's descriptions were migrated to Frederick Goff's *Third Census* and eventually directly into the first version of the ISTC. The structures she developed serve as the foundation for modern efforts to expand beyond the limitations of the short-title format, and to provide the data for geographic and other visualisations.

**Keywords** Incunabula. ISTC. Data visualisation. GIS. Book history. Short title. History of data. Data provenance. Data archaeology. 15th century booktrade. Margaret Bingham Stillwell. Frederick Goff. Second census. Third census.



In January 1940, a young Frederick R. Goff was working as the assistant to Margaret Bingham Stillwell as she compiled the massive bibliography *Incunabula in American Libraries, a Second Census*, which was then just on the verge of publication. One of his responsibilities was to assist with the steady flow of correspondence that arrived at the Annemary Brown Memorial in Providence, Rhode Island, where Stillwell was librarian and where her work coordinating the Census was centred. Many of the letters and postcards contained copy-specific information on individual incunables or general descriptions of how many incunables a collector or institution held. But there were also questions – about books, about editions, and about collections. Goff answered these as best as he could with what time he had. This particular January, he responded to a question from Milton Anastos, a professor of Byzantine, Greek, and History at the University of California, Los Angeles, regarding book distribution. Goff wrote: “if, on the other hand, you mean distribution in the fifteenth century, I am unable to help you. Little is known about the book trade during the century, and to attempt a generalization is hazardous”.<sup>1</sup>

While many hazards remain, much more is known today about the book trade in the fifteenth century. The contributions of Stillwell and Goff are an important factor in how this knowledge has been formed – by the meticulous recording of editions begun with their Census work, alongside the cataloguing of the *Gesamtkatalog der Wiegendrucke* (GW) in Berlin, extended through to the online accessibility of records from the Incunabula Short Title Catalogue (ISTC), and expanding today through the globally-distributed work of Material Evidence in Incunabula (MEI).<sup>2</sup> Our knowledge is developing in dynamic new ways, aided by the availability of new tools and methods. Many of these are based upon data, as in the case of the Atlas of Early Printing, which visualises incunabula data via online mapping.<sup>3</sup> But what is the data, and where is it from? Derived from the ISTC, it is data that has existed in other formats, that was created for other uses, and that has been migrated through the development of new database tools. The provenance of this data informs its current state, and the material history of its development illuminates the constraints that define its creation. The line from a contemporary online mapping tool to the work of Margaret Bingham Stillwell illustrates the historical legacies that inform today’s approaches.

The Atlas of Early Printing first came to life in 2006 as an attempt to bring traditional mapping of fifteenth century printing, most com-

---

1 Stillwell papers, Goff to Anastos, 19 January, 1940.

2 URL <https://www.gesamtkatalogderwiegendrucke.de/>; [https://data.cerl.org/istc/\\_search](https://data.cerl.org/istc/_search); [https://data.cerl.org/mei/\\_search](https://data.cerl.org/mei/_search).

3 URL <http://atlas.lib.uiowa.edu>.

monly represented by the maps in Febvre and Martin's 1958 work *The Coming of the Book*, into a digital format.<sup>4</sup> The spread of printing is the most frequently depicted aspect of the era to be shown with maps, and the Atlas was designed to animate mapping that had previously been static. The first version of the Atlas went online in 2008 and fulfilled its purpose to introduce the basic concepts underlying the early development of printing to a non-scholarly audience.

A second version of the Atlas was released in 2013. This version added a layer depicting the development of printing using data extracted from the ISTC. This layer was named "Output by Location", which placed a circle on the map corresponding to the number of editions printed in that location in the year, or range of years, selected. By using the timeline slider and the mapped data points, the map became a mechanism to search the ISTC visually and geographically.

Version 3 of the Atlas debuted in 2019, and once again brought the opportunity to expand the site's content. New layers include ecclesiastical borders and the locations of Bishopsrics. Perhaps the most significant addition is a depiction of typography, drawn from data contributed by Oliver Duntze at the *Gesamtkatalog der Wiegendrucke*. Dr. Duntze has created a digital version of Konrad Haebler's *Typenrepertorium der Wiegendrucke* (TW), which, when mapped, depicts the spread of Gothic, Roman, and other 15th century typefaces.<sup>5</sup> Additional work will allow for individual M-types to be dynamically followed on the map as they change owners and locations of use.

A new map has been generated as an element in the 2018 *Printing Revolution 1450-1500: Fifty Years that Changed Europe* exhibition at the Museo Correr showing the present-day locations of incunables around the world. This will soon be available in the new Atlas, expanding once again the site's functionality as a visual search engine for ISTC data. As the Atlas enters its second decade of development it needs to become a more open, expandable, even experimental site, one that is responsive to user input, and capable of being modified to correct errors and add new information at a greatly increased rate. The potential exists for the site to interact more dynamically with the ISTC in real time, which suggests an aspect of the Atlas's construction that is fundamental to how it can be used and understood. As data is extracted from the ISTC or the TW or any other database, it is placed on a map that creates a visualisation of the topic. In fact, the visualisation is more specific: it is of the database itself. If the points on the map depict editions, it is only those surviving editions that have been described in the ISTC, a nuance that is often lost in the presentation of the design.

---

<sup>4</sup> Febvre, Martin, *L'Apparition du livre*.

<sup>5</sup> URL <https://tw.staatsbibliothek-berlin.de/>.

The ISTC itself is a dynamic set of data and, despite the high degree of comprehensiveness it can claim today, the database is an assembly of descriptions that are both newly created as well as migrated from previous versions and formats. The provenance of this data is of increasing interest. It is well-documented that the first version of the ISTC was a direct input of entries in Goff's *Incunabula in American Libraries, a Third Census*.<sup>6</sup> The short title format was particularly amenable to the database structures of the early eighties. Thus, the ISTC depends not just on Goff, but more specifically on the structures devised by Margaret Bingham Stillwell for *Incunabula in American Libraries, a Second Census*, published in 1940. Stillwell created the descriptive format that was perpetuated by Goff.

As noted in the Introduction to a recent volume of the History of Science journal *Osiris* on Historicizing Big Data, "data practices involving computers were strongly conditioned and constrained by practices developed around earlier technologies, such as punched-card tabulators, printed tables, index cards, and even simple lists".<sup>7</sup> The editors elaborate: "contingent decisions – the adoption of particular tools or techniques at one point in time – have often strongly constrained subsequent developments".<sup>8</sup> There is a history to these decisions, material traces of the tools and techniques that provide a glimpse at the constraints that informed the final product. For Stillwell, some of those traces have survived in her personal papers, held today at Brown University in Providence, Rhode Island. Stillwell lived and worked in Providence for her entire professional career as the Librarian for the Annmary Brown Memorial, which began as a private library founded by General Rush C. Hawkins. It had as one of its central features copies of the first books issued from the first presses, documenting the geographic spread of printing in the form of a collection.<sup>9</sup>

Stillwell's work was done in an environment of limited support, inadequate funding, and the pressures of being a woman in a field dominated by men. These factors represent a few of the constraints that informed the contingent decisions underlying the Second Census, along with the constraints placed upon her work by her colleagues at the Bibliographical Society of America, the organisation that sponsored the census project. Stillwell's correspondence reveals how early decisions regarding entries for the Census were informed by two separate influences. One was in the form of an editor of the first census, George Parker Winship. The second was the work of the *Gesamtkatalog der Wiegendrucke*, which had just established itself as the leading

6 Needham, "ISTC and the Census of Incunabula in American Libraries".

7 Aronova, von Oertzen, Sepkoski, *Historicizing Big Data*, 16.

8 Aronova, von Oertzen, Sepkoski, *Historicizing Big Data*, 16.

9 Hawkins, Pollard, *Catalogue of Books*.

international project to describe the printed output of the 15th century. The constraints of her time influenced these decisions as well, as the world transformed around her during the sixteen years she was actively engaged with the project. At the beginning, American-German cooperation on describing and identifying incunabula held the promise of a rapid transformation of knowledge. By the end, in 1940, the world was at war.

The idea for Stillwell to take over the revisions of the First Census came from Harry Lydenburg of the New York Public Library.<sup>10</sup> Winship agreed and wrote to Stillwell in December, 1924 with support and suggestions. He refers to “the bulk of the material, the boxes of cards from which the manuscript for printing was compiled”. He handed these over to Stillwell, and recommends she start “a new file, on cards or slips to be kept in covers, for all data that comes to you”.<sup>11</sup> Stillwell records her understanding of the project in a letter back to Lydenburg: “I have since accumulated a quantity of new data, and I have been in constant communication with the secretary of the commission which is preparing the forthcoming *Gesamtkatalog der Wiegendrucke*”.<sup>12</sup>

As plans progressed, Winship continued to consider the decisions Stillwell would face: “the immediate Census question I think is detailed form of entry – the most information that is not to be had elsewhere, in the most compact form”.<sup>13</sup> Stillwell considers these questions in the context of the biggest decision yet to be made, the choice of printer and publisher. There was significant consideration of the costs to print such a large book, which affected the choices made for entries. The Hain number was relegated to second place, following the GW number, which had become authoritative.

From the beginning of work on the Second Census, the *Gesamtkatalog* was a presence informing activities. Stillwell reflected years later: “I went twice to Berlin and worked there for a period on each occasion, in order to co-ordinate the Census entries with those being developed for the international *Gesamtkatalog der Wiegendrucke*”.<sup>14</sup> The early output of the GW provided guidance, and also caused Stillwell and Winship to differentiate their project in the eyes of their colleagues, who often saw two large-scale bibliographic undertakings proceeding on parallel lines. In 1926, over a year after beginning the project, Stillwell wrote to Winship with her rationale for why the Second Census would not threaten to make the GW in-

<sup>10</sup> Stillwell papers, Stillwell to Lydenburg, 29 May, 1925.

<sup>11</sup> Stillwell papers, Winship to Stillwell, 6 December, 1924.

<sup>12</sup> Stillwell papers, Stillwell to Lydenburg 29 May, 1925.

<sup>13</sup> Stillwell papers, Winship to Stillwell, n.d. [1925?].

<sup>14</sup> Stillwell papers, *The First Through the Third Census of Incunabula*.

complete, with her primary reason being, “the GW is a catalogue of books, not a census of copies”.<sup>15</sup> The goals of the projects were completely distinct, but the questions about potential overlap informed Stillwell’s decision-making in the planning stages.

Stillwell already had a significant relationship via correspondence with the editors of the GW. She served as an American contact for providing the Kommission with data on American copies, and this work continued as she became more deeply involved with the Census. Stillwell’s diary from July 7, 1931 records, “the last of the B’s from Census files copied and forwarded to the *Gesamtkatalog* for the forthcoming vol. V”.<sup>16</sup> She was particularly concerned to follow the GW’s lead in terms of data formatting, to ensure compatibility. In 1932 she made one of her two trips to Germany to visit the headquarters of the GW at the State Library in Berlin. Her journal records her aims, and her fears: “I hope the seizure of the government, threatened by the Hitler party, may not take place before I have had opportunity to secure in Berlin the 15th century author-entry forms from *Gesamtkatalog* headquarters”.<sup>17</sup> She was able to complete the trip, in the company of her mother, and obtain what she needed. In only a few more years, however, correspondence with the GW ceases, and the Second Census was moved forward into publication, in part to compensate for the halt in progress from the GW. While the Second Census was conceived as a separate project with distinct goals, in the end its publication may have served in some measure to fill the space left by the difficulties faced by the GW.

Stillwell utilised a variety of material forms to collect her data. Following her correspondence with Winship on the information needed, and a request for him to share and update his address list of contacts, a form letter was circulated, alongside an accompanying campaign of notices placed in scholarly and literary publications [fig. 1]. Several variations appear throughout the life cycle of the project. A follow-up form with a set of questions gathered additional information where needed [fig. 2]. Oftentimes these exchanges developed into lengthy conversations through the mail, such as correspondence in 1936 with John Scheide that records his acquisition of Donatus fragments and the 1455 indulgence, which prompts Stillwell to annotate the letter with “important” in the margin.<sup>18</sup>

As reports accumulated, Stillwell’s methods diversified. The heart of the effort lay with index cards, which were developed according to a specific framework. It remains unclear at present how many of

15 Stillwell papers, Stillwell to Winship, 29 April, 1926.

16 Stillwell papers, Diary, 7 July, 1931.

17 Stillwell papers, Diary, 15 June, 1936.

18 Stillwell papers, Scheide to Stillwell, 15 January, 1936.

*ack*

**THE ANNMARY BROWN MEMORIAL**  
 LIBRARY OF INCUNABULA  
 PROVIDENCE, RHODE ISLAND, U. S. A.

ON MARCH 16, 1936  
 the records of the  
**SECOND CENSUS OF 15TH CENTURY BOOKS**  
 OWNED IN AMERICA  
 will be closed to further reports

If there are books printed before 1501 in your collection which have not yet been registered, in the interests of the forthcoming *Second Census*, will you kindly report such titles, on cards, following the form of the sample card reproduced below:

(Please leave this line blank)

<i>Hain no.</i>	<i>Author</i> <i>Brief title</i> <i>Place: Printer, date</i>
	<i>Bibliographical references other than Hain</i> <i>Provenance</i>
<i>Name of present owner</i> <i>Address</i>	

(3 x 5 inches)

And, if the titles which were credited to you in the *Census* of 1919 are not correct at the present time, will you kindly report such titles, for CANCELLATION or CORRECTION.

M. B. STILLWELL, *Editor*  
 (For the Bibliographical Society of America)

KRAUTH MEMORIAL LIBRARY  
 LUTHERAN THEOLOGICAL SEMINARY  
 MT. AIRY, PHILADELPHIA.

*W. V. Eisendyck*  
*asst. librarian*

*29 Jan. 1936*

*No books printed before 1501 have been added to our collection since the Census of 1919.*

**Figure 1** Data collection form for the Second Census. This form was used in the latter stages of data collection in the thirties

the index cards have survived. What is certain are the cards that crept into other portions of her papers and were saved. These do at least demonstrate the form that data collection took. The short title format emerges from the brief entries contained in the cards [fig. 3]. Stillwell also employed a variety of lists and charts to track the constant flow of information arriving in Providence [fig. 4].

The material history of the Second Census has an additional aspect, which has not survived but is recorded in Stillwell's journal,

PP-134 ✓

Ack

THE ANNMARY BROWN MEMORIAL  
LIBRARY OF INCUNABULA  
PROVIDENCE, RHODE ISLAND, U. S. A.

November 18, 1938

Dear Dr. Bühler:

In the interests of the SECOND CENSUS OF 15<sup>TH</sup> CENTURY BOOKS OWNED IN AMERICA, will you kindly report on the following data:

**FF-55** ✓ on re: 1) **FRANCO, Matteo**  
Sonetti di Matteo Franco e di Pulci  
[Florence: B. di Libri for] Pieno Pacini [c. 1495].  
I shall think not. PML copy is printed in 3 of Libri's types, viz. 1: 973 (text), 2: 114 (some signs) and 3: 1146 (title). Text has Qu together. Pn-6442 appears to be printed in a different - in any case smaller - type.

2) **PLUTARCHUS**  
De claris mulieribus  
[Italy: Unassigned, about 1475]. 80.  
Col: 102 R. 20 ff; 27 ll; [a-b<sup>o</sup>].  
Has GW sent you the assignment from photostats you submitted?

We sent photostats - but as we received no additional information, have let it stand as assigned by us. The type is, I think unquestionably, that of Proctor 7394 - BMC. VII, 1123/4 Italy, Adespota, 94. It measures here 102 mm. throughout and is therefore probably later than the Platea.

An immediate reply is requested.

M. B. STILLWELL, Editor  
(For the Bibliographical Society of America)

PP-134 ✓

copy

Figure 2 Sample of the follow-up correspondence form. In this case, Stillwell is requesting detailed information from Curt Bühler



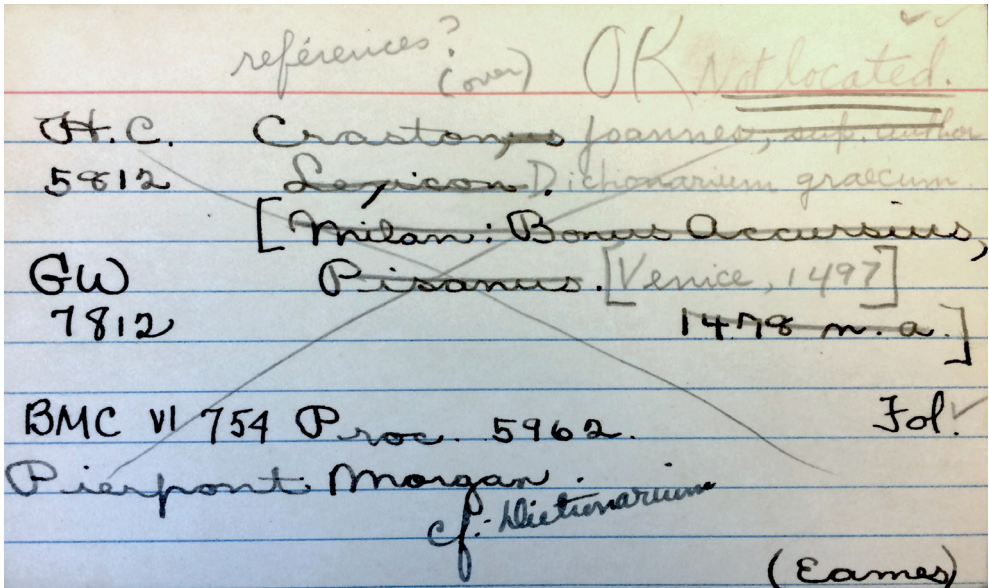


Figure 3 One of the index cards Margaret Bingham Stillwell used to gather data for the Second Census

and later in her memoir *Librarians Are Human*.<sup>19</sup> Stillwell referred to the *Catalogue of Books Printed in the XVth Century Now in the British Museum* (BMC) frequently, but she did not have a copy at the Memorial where she worked, and she could not afford to obtain one. She records in her journal how she finally arrived at the decision to “resort to the medieval method of borrowing the work and copying it. Volume I [...] has now been transcribed in card form and verified title by title”.<sup>20</sup> To support the data collection being done via index cards for the Second Census, a complete copy of the BMC was transcribed onto cards, providing another layer of migration to the collation of sources for the project. In a cruel twist, a copy of BMC was eventually donated to the Memorial by Lawrence Wroth in 1941, “the year after the publication of the Second Census [...] during the compilation of which it would have been extremely useful”.<sup>21</sup>

The Second Census was published in 1940 to widespread recognition of its significance, and it was not long after that efforts to con-

<sup>19</sup> Stillwell, *Librarians Are Human*, 199.

<sup>20</sup> Stillwell papers, Diary, 5 October, 1934.

<sup>21</sup> Stillwell papers, Stillwell to Wroth, 4 April, 1941.

One edition of each title, under the following authors to be checked for author-form.

FROM:	TO:	NUMBER OF TITLES:	COMMENT:
Abbreviatura	T Trithelm, Johanes	2	2 BMC
Aegidius Monachus	A Aegidius Corboliensis	2	2 BMC + 2 SW
Ambrosius de Spira	S Spiera, Ambrosius	1	BMC
Analogia	B Benevolentia, Barthol.	1	BMC + SW
Anglicus, Johannes	D Dura Scotus CW 3088	1	SW (A = add.)
Anglicus, Johannes	B Baoc, Johannes SW 3150	2	2 SW (A = add. man)
Aragon, Marques de Villena	V Villena, Henricus de.	1	Man. SW II cat 520 (Munich Univ)
Arminensis	P Prologus Arminensis	1	SW II cat 670
Arthur	M Malory, Thomas	1	Duff, B.R.C.
Atanagio	O Ordine delle nozze	1	BMC
Bembus, Bonifacius	C Caesius Dio	1	SW + H.E.H.
Bewahrung dass die Juden irren	S Seelen-Wurzgarten	1	{ H.E.H. index + SW II cat Apparently same title.
Bonacursius Dominicus	M Montemagno, Bonaccursius de	2	{ SW IV cat 302 { SW II cat 304
Bont, Guillelmus	L Lignano, Johannes de	1	SW in title: Cont = add
Bont, Guillelmus	U Ubaldus, Baldus de.	1	Bont = add
Bonum universale	T Thomas Cantipratensis	2	at 6) SW, H.E.H. 2 BMC
Brebia, Gabriel	P Psalterium, Milan 1477	1	Brebia = Comm. title
Bromerde, Philippus de	J Johannes de Bromyard	2	a) SW + H.E.H. 6) BMC
Brucella, Johannes de	M Mauburnus, Johannes	2	SW II cat 303 BMC = 6
Brun, Urbanus Prebusinus de	P Prebusinus, Urbanus	1	BMC + SW II cat 303

Figure 4 Author chart for recording editions in the Second Census

tinue compiling locations of copies began. Stillwell revised the last Second Census request form to accommodate needs according to the published format of the Second Census. Following his move to Washington DC and the Rare Book Division of the Library of Congress, Frederick Goff undertook the responsibility for creating the Third Census, which was eventually published in 1964. The few changes made to Stillwell's system included a new numbering sequence, which became a standard reference and provided the model for numbering within the ISTC.

Goff and Stillwell enjoyed a warm correspondence through the years. He was always F. Richmond to her, and he would send postcards during his travels. One of these came from London in 1980 and reported on a new project Goff had witnessed: "it was interesting to see Census III as a computer printout (so far through "L"). It has pos-

sibilities for Census IV. Lotte Hellinga inquired after you”<sup>22</sup> Thus, two women are linked through Goff, one who created the structures of description that proved solid enough to serve as the model for the other, who began its transfer to electronic form.

A project such as the Atlas of Early Printing is designed to provide an easy-to-understand visual interpretation of a complex subject. But rather than existing as a site that presents a highly selected, curated view of a topic, it can evolve to accommodate a diversity of views from multiple sources of data. The ability to overlay and interact with these different data sets allows geography to be the unifying visual factor between disparate groups of data. A more robust exploration of the development of the *Gesamtkatalog's* structures, and how the Kommission and Stillwell collaborated, is still to come, and will illuminate the thought underlying the systems that continue to evolve today.

## Abbreviations

ISTC = *Incunabula Short Title Catalogue*

GW = *Gesamtkatalog der Wiegendrucke*

TW = *Typenrepertorium der Wiegendrucke*

BMC = *Catalogue of Books Printed in the XVth Century Now in the British Museum*

## Bibliography

- Aronova, Elena; von Oertzen, Christine; Sepkoski, David. “Introduction: Historicizing Big Data”. *Osiris*, 32(1), 2017, 1-17.
- Febvre, Lucien; Martin, Henri-Jean. *L'Apparition du Livre*. Paris: Les Éditions Albin Miche, 1958.
- Hawkins, Rush C.; Pollard, Alfred W. *Catalogue of Books Mostly from the Presses of the First Printers Showing the Progress of Printing with Movable Metal Types Through the Second Half of the Fifteenth Century*. Oxford, printed at the University press at the cost of R.C. Hawkins, 1910.
- Needham, Paul. “ISTC and the Census of Incunabula in American Libraries”. *The Papers of the Bibliographical Society of America*, 77(4), Fourth Quarter, 1983, 497-8.
- Stillwell, Margaret Bingham. *Personal Papers. MS-1UF-S3, Margaret Stillwell Papers, (1827-1984)*. John Hay Library. Providence: Brown University Library, 1827-1984.
- Stillwell, Margaret Bingham. *Librarians are Human; Memories In and Out of the Rare-Book World, 1907-1970*. Boston: [The Colonial Society of Massachusetts], 1973.

---

<sup>22</sup> Stillwell papers, Goff to Stillwell, 27 May, 1980.

