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The Catalogue of Early German Printed Music (*vdm.sbg.ac.at*) –
Experiences and perspectives on the construction of a multi-faceted database as a research tool*

The invention of music printing in the early 1470s was a cultural achievement that changed the musical landscape of Central Europe. This new medium altered the sociology of music by making art music available to social classes that previously had only limited access to such music. Notated music became a commodity that could be disseminated through traditional mercantile channels far from the geographical origin of the repertoire. The desire to investigate the dynamics of these phenomena prompted the research project »Music printing in German-speaking Lands«, funded by the Austrian Research Council from 2012 until 2019.[1] In this project we treat all music published north of the Alps from the advent of music printing (c. 1470) until the middle of the sixteenth century. At the centre of our research interests stands both the technical challenge of printing notes and staff lines on paper, the development of repertoire and building of musical networks. Unlike studies that focus on a specific musical genre or printing centre, this project examines all kinds of printed sources containing musical notation. This broad perspective provides a comprehensive insight into the varieties of musical production during the late fifteenth and first half of the sixteenth centuries, and deepens our understanding of the influence and role of music printing in cultural history.[2]

One of the central pillars of the project is a database that records all know editions containing printed musical notation up to 1550. This database currently includes 1,187 editions and almost 8,000 copies.[3] Alluding to the »Verzeichnis deutscher Drucke des 16. Jahrhunderts« (VD16), a pivotal project for recording German books of the sixteenth century, we have called our database »Verzeichnis deutscher Musikfrühdrucke / Catalogue of early German printed

music« (*vdm*). The database *vdm* (http://vdm.sbg.ac.at/development/music_prints.php?content=database&menu=1) has been open access from the very beginning of the project and is still a work in progress.

The structure of the database *vdm*

The main problem in establishing such a database is the complex structure of early printed material. An edition of a *modern* book is the sum of all identical copies of a given title, so that the notions of ›book‹ and ›copy‹ are often treated as synonyms. For instance, if I say that my friend and I have read the same book, this is imprecise: in fact we read different copies of the same edition, sometimes even copies of different editions. Moreover, nobody would be interested in the notes I have written in my copy. Most contemporary readers are uninteresting subjects for contemporary research – at least for now – because they are not outstanding personalities and in any case too numerous. Furthermore, the reaction of present-day readers is perhaps too similar to ours to make them sufficiently interesting or illuminating.

On the contrary, the *early* book is much less uniform. In most cases, the copies of the same edition have individual bindings as well as inconsistencies of content, such as loss of pages, a different order of the gatherings, inscriptions that provide evidence of early owners, as well as differences on the printed page caused by a non-standardized production process. Each copy of an early edition is thus individual, with its own history. The interest of each copy is heightened by the small number that survive. As a consequence, our database does not merely list the known copies under each respective edition (both extant and known-but-lost), as in most bibliographies, but treats individual copies on a level on their own. This is reflected in the structure of the database, which distinguishes an edition level and a copy level. Both are closely related to each other. Further relations between editions and copies are represented: earlier and later editions are linked, as well as copies bound with copies of other editions, often arranged by early owners (see Figure 1).[4]

This concept results in a complex network of datas on different levels. I shall not go deeper into these technical issues, but wish to stress that when creating such a research tool, it is necessary to have a clear idea in advance of how the recorded data are going to be used, and to have a person at hand who is experienced in databases to realise the ideas appropriately.

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4 For more on this problem, see Andrea Lindmayr-Brandl, »Early Music Prints and New Technology: Variants and Variant Editions,« *Fontes artis musicae* 64 (2017), pp. 244–60.
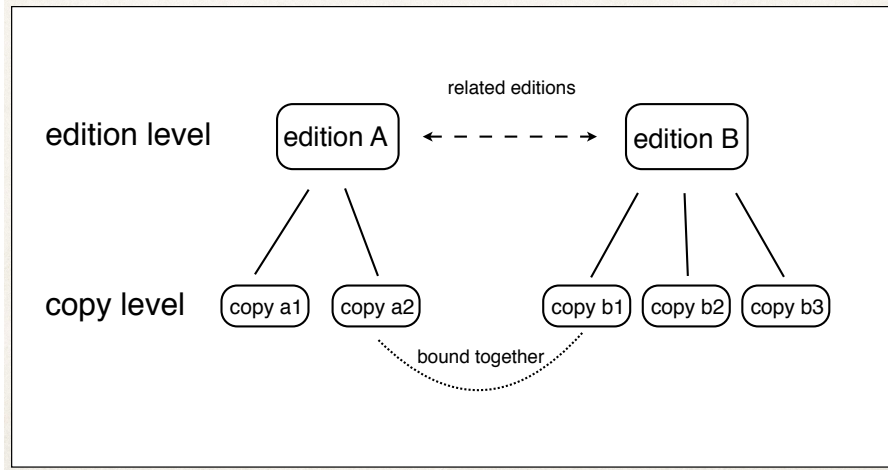
Figure 1. Structure of the database: edition level, copy level and relations.

Problems in recording printed objects

From the problems we encountered while establishing the database, three might be of broader interest.

The first problem is the diversity of the material. One of the qualities of the research project – the fact that we do not only study polyphonic music but all editions containing music notation – is also a challenge. We divided the editions into eight source types, each with different function, repertoire and material characteristics (see Figure 2): liturgical books of all confessions (A), polyphonic music books in several formats (B), tablature books in specific notation (C), theory and pedagogical books with music examples (D), humanist books with ode-setting or choruses as part of a drama (E), hymn books with sacred German songs (F), broadsheets and pamphlets, sometimes in an unusual layout (G), and ›other‹ books that do not fit into one of the categories, which might for example have only a snippet of musical notation on the title page (H). Each source type has to be appropriately represented in the database.

The variety of descriptors leads to a great number of data fields. Currently there are seventy fields only on the edition level and seventeen on the copy level. Several only apply to specific source types or very few editions. For instance, the fields »confessional identity« are relevant only for liturgical books and hymn books; the printing technique »empty staff lines« or »individual notes printed from type« apply mostly to the earlier editions; and »named composers« mainly for books containing polyphonic music. We record five different printing tech-

Figure 2. Source types.

niques (woodcut, single impression, multiple impression, individual notes printed from type, empty staff lines), seven notation types (Hufnagel, square and mensural notation, cantus fractus, tablature notation for viols, lutes and organs) and eighteen categories for the genre of music. To identify the items in already existing bibliographies we had recourse to twelve catalogues that apply for different source types and repertoires: five volumes of RISM (http://www.rism.info/publications.html) (A/1, B/1,6,8) including the Böker-Heil Tenorlied catalogue for polyphonic music and music theory, VD16 for printed books (https://opacplus.bib-bvb.de/TouchPoint_touchpoint/start.do?SearchProfile=Altbestand&SearchType=2), the »Gesamtkatalog der Wiegendrucke« (GW) for incunabla (https://www.gesamtkatalogderwiegendrucke.de/), the short title catalogues ISTC (https://data.cerl.org/istc/_search) and USTC (https://ustc.ac.uk/), the database of Renaissance Liturgical Imprints, RELICS (https://quod.lib.umich.edu/r/relics/), as well as Howard Mayer Brown's comprehensive catalogue for instrumental music and Schanze's catalogue of broadsheets with music.[5]

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5 Howard Mayer Brown, Instrumental Music Printed Before 1600: A Bibliography (Cambridge, MA, 1979); Frieder Schanze, »Gestalt und Geschichte früher deutscher Lied-Einblattdrucke«,

A second problem is caused by the already mentioned complex concept of an early printed book. Since an edition is not a physical entity but a kind of Platonic Idea derived from the individual copies, we work with the concept of an ›ideal copy‹. Following the definition in the *Oxford Companion to the Book*, an ideal copy is »the most perfect state of the book as the printer or publisher finally intended to issue it […]. Descriptive bibliographers generalize from the evidence present in surviving copies to reconstruct the intended form of that specific […] edition at the moment of publication. Because such evidence may be inconclusive or incomplete, the ideal copy is often conjectural, and it is possible, especially when few copies survive, that no one copy matches the projected ideal copy.«[6]

Our description of an ›ideal copy‹ is based on an ›autopsy copy‹, another technical term used in book research. The autopsy copy of an edition entry in our database is the exemplar that was inspected by a member of the project team in person.[7] The scrutiny of the copy resembles a surgical autopsy, determining structural elements such as the gatherings, and painstakingly recording general and individual characteristics of the object. All data from a given edition are taken from this one copy – generally from the most complete copy that can be located – so that it is clear from where the data have come from. Conjectural data are designated as such, and the source of any additional information is indicated.

A third problem is the standardisation of search data. I will concentrate here on the main parameter of a print: the title. The title page (and with it a title) is a relatively recent element of the book. It developed with the early printed book and took several decades to be standardized in a certain way.[8] The first liturgical books had no title page. In these cases we take either the first words on the first printed page or a significant passage that characterizes the book. A missal for Salzburg, printed by Johann Winterburger in 1506 (vdm 678) might serve as an example. This – the fourth – edition of the missal has a title page, a full-page

NiveauNischeNimbus. Die Anfänge des Musikdrucks nördlich der Alpen, ed. Birgit Lodes (Tutzing, 2010), pp. 369–410.

6 Michael F. Suarez and H. R. Woudhuysen, eds., *The Oxford Companion to the Book*. 2 vols. (Oxford, 2010), p. 644.

7 We aim to inspect at least one copy of each edition in original. If this is not possible we have to draw on a digitised copy.

8 For more on this topic, see for instance Garold Cole, »The Historical Development of the Title Page,« *The Journal of Library History* 6 (1971), pp. 303–16; Margaret M. Smith, *The Title-Page. Its Early Development 1460–1510* (London & New Castle, 2000); Ursula Rautenberg, *Das Titelblatt – Die Entstehung eines typographischen Dispositivs im frühen Buchdruck*. Alles Buch. Studien der Erlanger Buchwissenschaft X (Erlangen-Nürnberg, 2004); Ursula Rautenberg, »Die Entstehung und Entwicklung des Buchtitelblatts in der Inkunabelzeit in Deutschland, den Niederlanden und Venedig – Quantitative und qualitative Studien,« *Archiv für Geschichte des Buchwesens* 62 (2008), pp. 1–105.

woodcut of the arma Christi, surmounted by SS Rupertus and Virgil, but lacks any words. It opens with a calendar, followed by several pages with instructions for the priest and a register. The main corpus of the book starts more than twenty pages later, where it reads (in translation): »Here begins the book of missals adapted for the church of Salzburg with all necessary details.« This beginning serves as a substitute for a title and is recorded in the database in the field »Diplomatic title page«. In this field we try to render the title page (or equivalent) as accurately as possible, indicating line breaks and reproducing abbreviations and ligatures. To do so, we use the font Brill, commissioned by the Leiden publishing house, which offers many of the special signs used by Early Modern printers (see Table 1.a). When the words given in this field do not stem from a title page, we indicate the folio number from where they are (e.g. fol. a1 recto).

Table 1: The entry of Titles in *vdm*

a. Titel entry of a missal without a title (vdm 678)

Diplomatic title page:

Incipit liber missalis fm || rubrica ecclesie Saltzeburge || sis cu oibus requisitis. (a1r)

Standardised title:

[Missale Salisburgense]

Alternative spelling:

missal, secundum, rubricam Saltzeburgensis

b. Titel entry of a set of partbook with voice designation only (vdm 13)

Diplomatic title page:

TENOR ||
DISCANTᵘ ||
ALTVS ||
BASSVS ||

Standardised title:

[Songs for 3-4 voices]

Alternative spelling:

Lieder Stimmen erstes Liederbuch first songbook

A different challenge are books with titles that give considerably more information than we are used to seeing on the title page of a modern book. An extreme case for such a situation is an ode collection by Erhard Oeglin, printed at Augsburg in 1507 (*Melopoiae sive harmoniae tetracenticae*, vdm 55). Here the nicely shaped title gives a very detailed description of the content and also contains poems flanking the text:
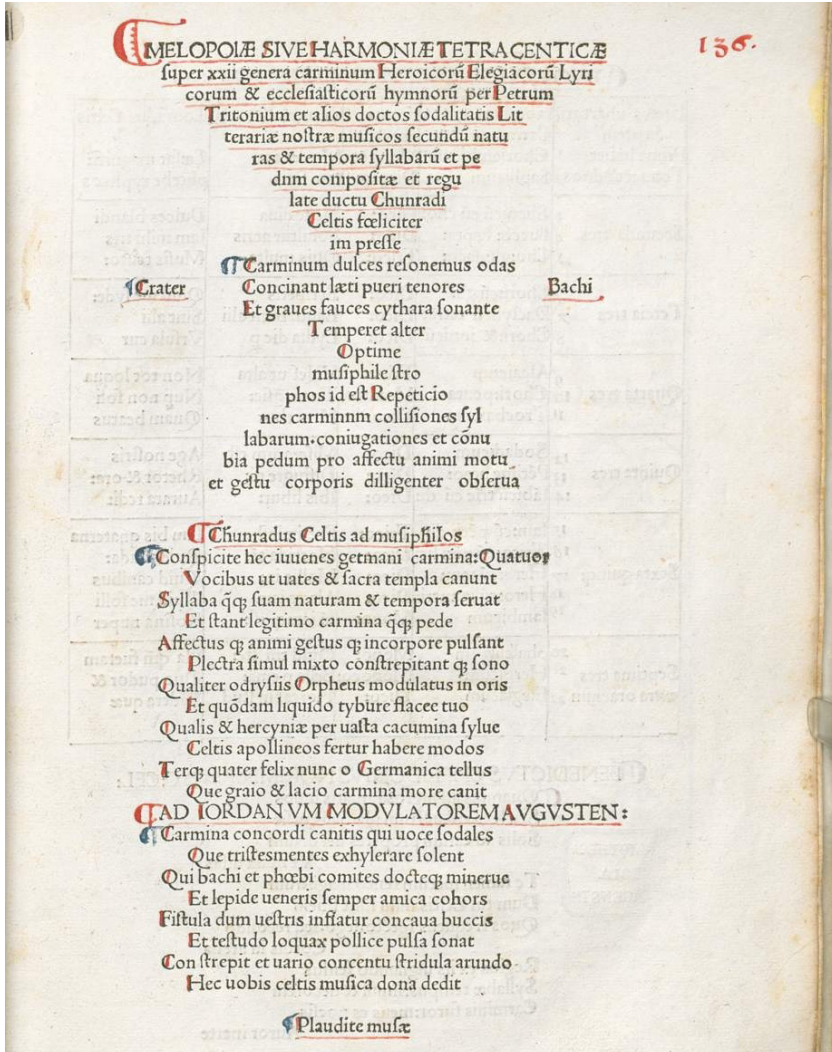

Figure 3. Title of *Melopoiae sive harmoniae tetracenticae* (vdm 55). Bayerische Staatsbibliothek München, Rar. 291.

Problematic in other respects are polyphonic music books comprising partbooks whose titles constitute only a voice designation. This is the case at several early song books, one of them by Peter Schöffer the Younger, published in 1513 (vdm 13, see Table 1.b). It is obvious that the words TENOR, DISCANTUS, ALTUS, BASSUS do not constitute a title. Nevertheless, they have to be given as a transcription of the title page for each partbook. A working or descriptive title has to be invented.

An appropriate title for a book is a fundamental feature. A printed object needs a name we can use to refer to it, and which we can search in the database. To accommodate this need we introduced the field »standardised title«. To create a standardised title, we trim long titles to the most salient words. If a book does not have a proper title, we create one and put it in square brackets. Such invented titles either denote the general typology of the edition (e.g. »Missale Salisburgense«) or describe its content (e.g. »Songs for 3–4 voices«). Moreover, we standardise the orthography to facilitate searching. Standardisation is necessary because orthography at this time was remarkably various and can constitute an obstacle to catalogue searches. We discovered how frustrating it can be to enter all possible variants into the search field of a database or OPAC without any idea how the object is recorded there. For example, in some OPACs, a search for the word »Liederbuch« will fail to turn up an edition whose title contains the word »Lieder-||buch«. To prevent such a situation we have added another field called »alternative spellings« where we enter by hand variants of a single word (Saltzeburgense/ Salzeburgense/ Salzburg) but also established names of the source (such as the so-called »Achtliederbuch«), words interrupted by line breaks or words containing abbreviations. This field is active in searches but invisible to the end user. The title search in the database *vdm* is related to all three fields: diplomatic title page, standardised title and alternative spellings.[9]

Search and search results

A detailed search mask permits a multi-faceted analysis of the recorded data and has already brought several new insights into the world of early music printing. The fields on the top are the obvious categories for printed music (see Figure 4): title, author/editor, printer/publisher, place of printing and year (or period) of printing. The next group goes more into detail and relates closely to music material studies: type of source, format, printing technique, musical genre, notation type, musical layout and confessional identity. These categories are closely related

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9 See also the description of the database on our homepage: http://vdm.sbg.ac.at/development/ music_prints.php?content=db_description&menu=1.

Simple Search:				
Title:				
Author/Editor:				
Printer/Publisher:				
Place of printing:				
Year:	From:	To:		
Type of Source:	-- please select --			
Format:	-- please select --			
Printing Technique:	-- please select --			
Musical Genre:	-- please select --			
Notation Type:	-- please select --			
Musical Layout:	-- please select --			
Confessional Identity:	-- please select --			
Location of copies:	Filter:	-- please select --		
vdm number:	RISM:	VD16:	ISTC:	
with	privilege printer's mark paratext music in illustration scan			
Sort by:	year	title		

Figure 4. Search mask of the database *vdm*.

to the research questions that drive the project forward and have been its focus from the beginning.

One of my favourite search fields is the location of copies. With this search you can list all items that are preserved in a specific library. In practical work, such a tool has been a desideratum for a long time. Now it is possible to find out easily which early books with printed music can be inspected in a place without having to second-guess the local OPAC.

Users of the database can also search a source by its reference in other standard bibliographies (VD16, RISM, USTC, GW, ISTC and so on), or search for features of a given edition such as privileges, printer's marks, paratext or music in illustrations. The latter fields were developed during our work in the libraries when we recognized this as an interesting aspect of the printed material. Where a digitised copy is available online – currently over half of our titles – we also give a link and the possibility to select only these items.

A search in the database produces a list of editions matching the search criteria; from there it is easy to identify the extant copies. For many research questions such a result is satisfying, for instance if you are investigating printed missals from

a given diocese, if you want to study one edition in detail, or if you are interested in the output of a specific printer or city.

Moreover, the large number of entries allows us to interpret the search results statistically, employing techniques associated with the notion of »distant reading«.[10] With this approach, a group of numerous elements is viewed from a greater distance so that developments of specific research questions become visible. I will give some examples for this approach:

1. Overview of all editions (Figure 5)
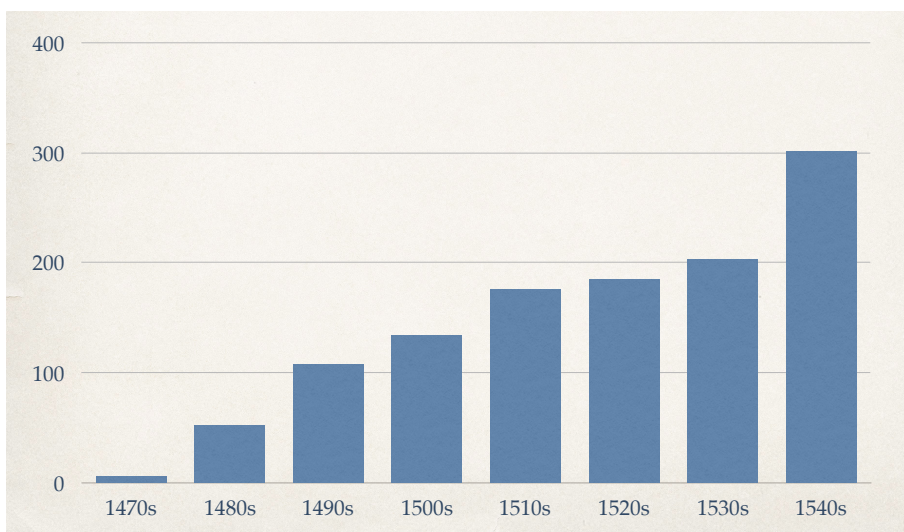
**Figure 5.** Overview of all prints (in decades).

The development of music printing can best be conceived in a bar chart that presents the outcome in units of decades. It is interesting to see that production increases continually in the first time periods until the 1510s. In the next decades it slows to an halt, then rises again remarkably in the 1540s, with a fifty per cent increase over the previous decade. The reason for this strange development is threefold. One parameter was the turmoil of the Reformation, when the music production was cut back because all printing presses were used primarily for religious texts and propaganda against the old church.[11] The other parameter was

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10 Cf. Franco Moretti, *Distant Reading* (London, 2013).

11 Andrew Pettegree and Matthew Hall, »The Reformation and the Book: A Reconsideration«, *The Historical Journal* 47 (2004), pp. 785–808; Andrew Pettegree, *Reformation and the Culture of Persuasion* (Cambridge, 2007).

uncertainty about the kind of music the new church would accept, if any. Finally, a new technique of music printing introduced in the second half of the 1530s – single-impression fonts for mensural notation – made printing such music much easier and cheaper and turned the polyphonic music book into a mass product.

2. Output of 125 music printers (Figure 6)
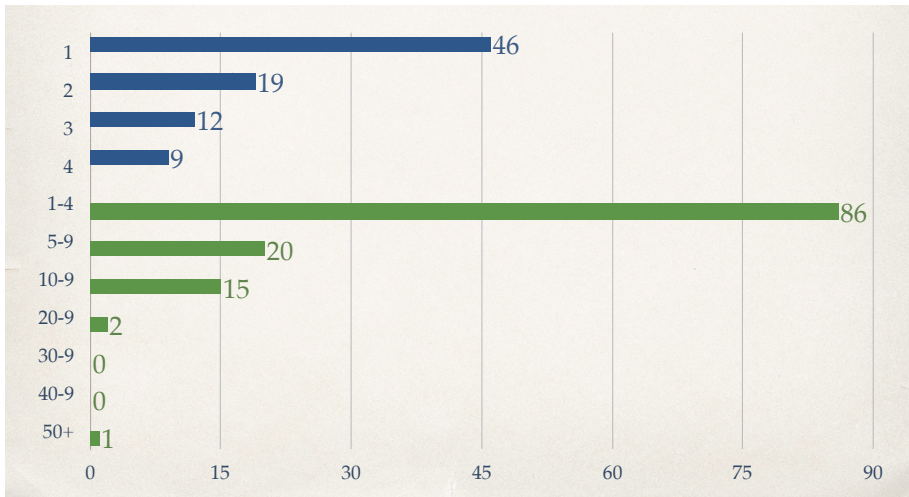
Figure 6. Output of 125 music printers.

Through this diagram it becomes clear that music printing was a niche product in the catalogue of early printers. Forty-six printers produced only a single book containing music; eighty-six produced between one and four such books; twenty produced between five and nine; fifteen printers produced between nine and nineteen. Only a single printer – Georg Rhau at Wittenberg – was responsible for more than fifty editions. But even this was less than ten per cent of his whole output.

3. Overview of source types (Figure 7)

One of the most stunning results of the project has been the discovery of how small a share of the total number of titles comprises polyphonic books. This pie chart indicates the percentage of each source type in the total production over the period of eighty years (1447–1550). The dominant source type is liturgical books, which represent about a third of all editions. Also theory books that include several editions of the same book are a relatively comprehensive group. With
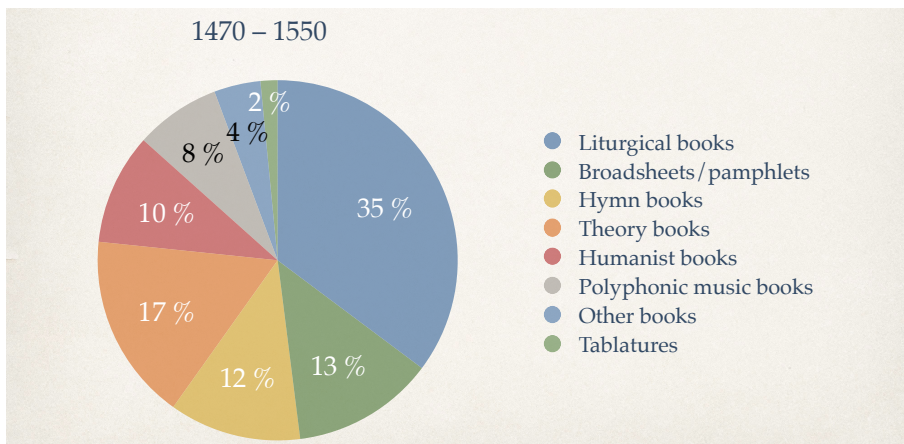
Figure 7. Overview of source types.

eight per cent, polyphonic music books are almost at the end of the scale. The reason and the consequences of this fact have been explored elsewhere.[12]

4. Overview of source types in decades (Film 1, see the attachment)

While a pie chart presents a stable relationship between the groups within a given time, an animated bar graph reveals that the accumulation of source types was not a consistent development but changed from decade to decade. Until the turn of the century (1470–1500) the number of liturgical books was overwhelming. In the first decade of the sixteenth century, theory books, humanist books and broadsheets (or pamphlets) begin to appear. Only a very few polyphonic music books appeared in the following decade. At this point liturgical books were still by far the most numerous printed music source. In the 1520s, during the early Reformation, evangelical hymn books emerged as a new source type; moreover, the number of broadsheets as a cheap and quick means for propaganda developed remarkably. In the next decade, the production of all source types proceeded in the same relation to each other, and in the years immediately before the middle of the century, polyphonic music books overtook liturgical books for the first time. While for polyphonic music books there seemed to be a promising market, the market for liturgical books was increasingly saturated.

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12 Andrea Lindmayr-Brandl, »Polyphonic Music in Early German Print: A Changing Perspective in Music Historiography«, *Early Music Printing in German-Speaking Lands*, ed. Andrea Lindmayr-Brandl, Elisabeth Giselbrecht and Grantley McDonald (London & New York, 2018), pp. 245–59.

Visualisation of search results

Although the tools for a statistical analysis are helpful and well developed, one central research question cannot be addressed with this kind of data inquiry: the dissemination of editions in time and space. For these purposes we have developed a mapping tool that is directly related to our database and enables us to visualize and thus understand developments within larger amounts of data, filtered by certain criteria of research interest and tracked in time. This tool is found on our homepage (http://vdm.sbg.ac.at/development/music_prints.php?content=mapping&menu=2). It offers five different maps, based on more or less complex search strategies and representational techniques (see Figure 8).

VDM Maps

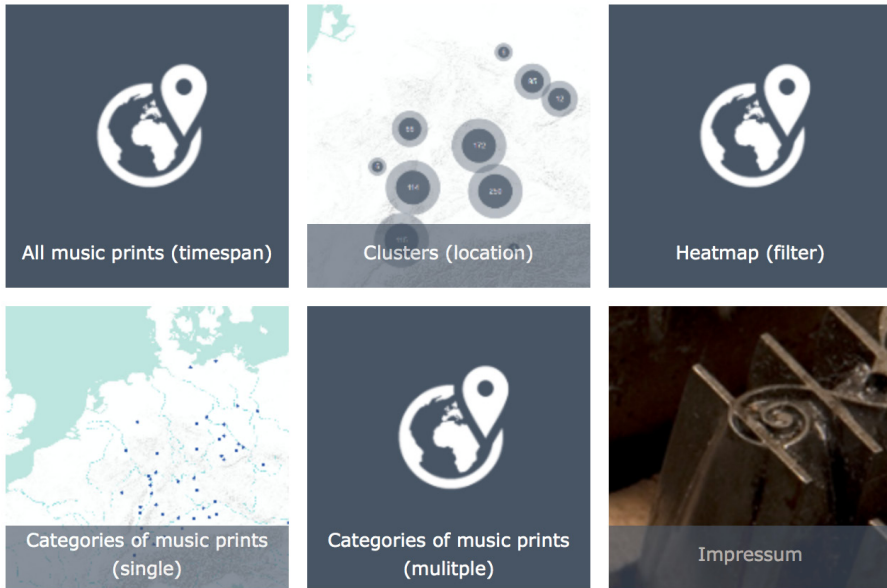VDM - Verzeichnis deutscher Musikfrühdrucke / Catalogue of early German printed music

Figure 8. Mapping tool.

The most simple one shows the development of production of all kind of musical editions over time (Film 2, see the attachment). Until 1475 music was printed in only three places: at Constance (a Gradual with about 300 pages of music, the first

printed musical edition, vdm 1107), Strasbourg and Cologne (a first and a second edition of a commentary on the Magnificat by Jean Gerson, with only one music example in six single black breves, vdm 1468 and 1469). By the turn of the century, the map looked quite different: several cities have popped up, with a concentration on the area between the Upper Rhine and the Upper Danube, forming a kind of triangle. Cologne and Vienna are outliers. The three cities of Magdeburg, Leipzig and Freiberg form a small centre in the north-east on their own.[13] Twenty-four years later, some of the cities in the triangle had established themselves as centres for music printing: Basel, Strasbourg, Nuremberg and Augsburg. In the area around Leipzig, several new printing cities, such as Wittenberg, Erfurt, Zwickau or Dresden, started to produce musical editions.[14] In the middle of the century, the output of the more productive cities became even greater. Nuremberg, coloured in dark red, stands out, but Augsburg, Strasbourg and Leipzig also developed their printed production remarkably. A specific case is Wittenberg. As far as we can establish, music was first printed there in 1511. In 1525, only four musical editions were published there. However, as Wittenberg established itself as the centre of the Reformation movement and hub for the printing of Lutheran theological and polemical works, the production of printed music for the Lutheran church also increased enormously in the next twenty-four years and rose to a total of 134 titles. With this high output Wittenberg could compete with Leipzig and the other music printing centres in the south-western area of Germany.

Although this relatively simple map already provides insights into the history of early music printing, research questions are often more detailed. In the other four maps of our tool you can specify your query and visualize the development of a specific source type, a printing technique or a notation type, or a combination of several parameters. Figure 9 illustrates such a selective search. It is based on a heat map with a query for polyphonic music books. The maps tool allows one to click on a city, and thus to receive basic information about each edition produced there. With another click on »Weitere Informationen/ Further information« you open the *vdm* entry of the relevant edition.

It is also possible – and sometimes more suggestive – to work with the cluster map. In Figure 10, the printed books of polyphony are displayed in areas. Depending on the scale of the map you chose, different areas of concentration are shown. In this case the numbers and circles are almost identical with the output

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13 Freiberg, however, does not really count because we have only one edition from there. The printer of this edition, Konrad Kachelofen, was based in Leipzig and escaped the plague in 1495, transferring his workshop temporarily to Freiberg. See Christoph Reske, *Die Buchdrucker des 16. und 17. Jahrhunderts im deutschen Sprachgebiet* (Wiesbaden, 2007), p. 515.

14 Music was also printed in several other cities outside the detail of the map shown here.
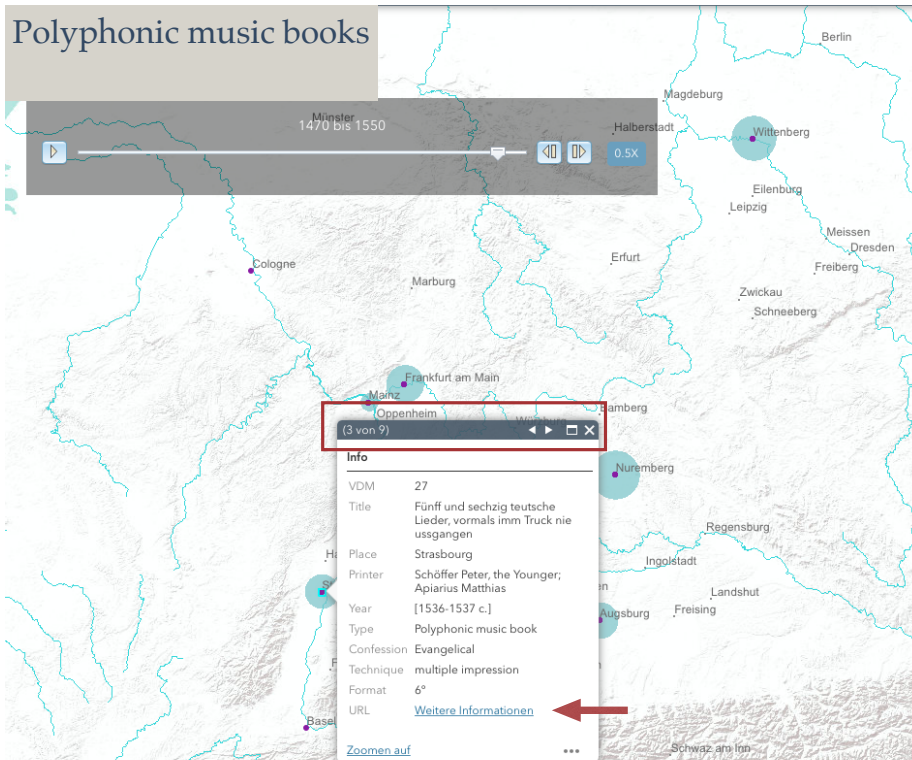
Figure 9. Heatmap app of music print locations

of one city. To the middle of the century, 23 books of polyphony were printed in Wittenberg, 1 in Cologne, 16 in Frankfurt am Main, 9 in Strasbourg and 1 in Basel. Only the number 47 relates to two cities that are geographically close: Nuremberg (with 37 editions) and Augsburg (with 10 editions). Detailed searches are also possible by selecting combinations of variables. One might ask how the technique of single impression used in polyphonic music books developed, or how the production of hymn books disseminated in the first decades of its introduction. In general, this tool is not only convenient in visualizing the printed production in German-speaking lands in space and time. It is also a playful instrument to generate ideas for new research questions with astonishing insights.

Figure 10. Cluster music prints per location and set filters.

Future developments and conclusion

At the current state of the project there is still a potential for further development of the database. In the near future we want to offer more search options in introducing a second search with free field selection and a combination with the Boolean operators AND/ OR/ AND NOT. There will also be more search parameters available, such as »named composer«, »language«, »provenance of copies«, etc. The web design will be improved and a new layout of the search results is planned. Conscious that an image of the title page of a book succinctly conveys an idea of the object, we will add images alongside the information provided in words. A title page will help to identify and memorize an edition, and a page with

music notation will illustrate the detailed technical data recorded in the database. Realizing this part of the plan is not a question of technique but one of copyright and cost. We have already begun negotiations with several large collections for copyright clearance of images, and aim to enlist further libraries in the near future.

Finally I want to emphasize that the database *vdm* is first of all a research tool for early music printing, and not a professional bibliography that stands on its own. Thus, it is not perfect in every detail, but it is much richer than most of the bibliographies I know. *Vdm* is a well-organized collection of material, still a work in progress, with an open online access from the very beginning. It is ready to be used by all who are interested in this area. As such, the database should help to pose interesting research questions and in many cases can also provide ready answers that will lead to further questions.

<div align="right">(Summer 2018)</div>