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Czech Book History up to 1800 Online[1]

Abstract. This article describes the Knihověda.cz portal, which represents an essential infrastructure for researching Czech book history until 1800. The portal includes three parts: its core consists of a database comprised of five partial bibliographic databases. This interface contains complete data on printed Bohemica and manuscripts created before 1800 and a modern bibliography for research into Czech book history. The second element of the portal is *Map of Printed Production in Bohemia and Moravia up to 1800*, which provides interactive access to known printed editions dating back to the Middle Ages and Early Modern Period in the territory of today's Czech Republic; it also allows for their visualisation according to various criteria. The third element created within the project is the online *Encyclopaedia of Books in the Czech Middle Ages and Early Modern Period*; its explanation of book history can serve educational purposes at both high schools and universities. A use case study of the history of books from the Rudolfinian period in the Czech lands (1576–1612) supplements the information provided about the portal.

Keywords: book history, Database of Bibliographic Sources, manuscripts, *Encyclopaedia of Books in the Czech Middle Ages and Early Modern Period*, infrastructure for book history, *Map of Printed Production in Bohemia and Moravia up to 1800*, printed books, digital humanities, digital data.

Research on book history relies on extensive and diverse data on manuscript and printed production. These data are currently available digitally from within a broad research infrastructure and related research tools. However, until recently, this infrastructure has lacked historical

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records concerning printed Bohemica. Since its establishment, the Czech national retrospective bibliography has been divided into two projects according to language. While prints in Czech were processed by the National Library of the Czech Republic, printed Bohemica in foreign languages was the pursuit of the Library of the Czech Academy of Sciences (CAS)[2]. As employees of these institutions, we launched an extensive project in 2015 to create a modern infrastructure that would make both existing and new electronic resources available covering Czech book history up to 1800[3]. We sought to create a user-friendly, subject-specific portal that would provide a complete record of Czech printed (and partly manuscript) items, supplemented by explanatory texts. We conceived the portal as a virtual research environment that would support the development of the digital humanities in cultural history research. Furthermore, the portal was designed to reflect current trends in older Czech book history research, for instance, providing a unified view of manuscripts and printed books.

This resulted in the creation of the web portal Knihověda.cz, completed in 2020[4] (Fig. 1). It includes three parts: its core consists of a database comprised of five partial bibliographic databases. This interface contains complete data on printed Bohemica and manuscripts created before 1800 and a modern bibliography for research into Czech book history. The second element of the portal is *Map of Printed Production in Bohemia and Moravia up to 1800*, which provides interactive access to known printed editions dating back to the Middle Ages and Early Modern Period in the territory of today's Czech Republic; in addition, it offers visualisations according to various criteria. The third element created within the project was the online *Encyclopaedia of Books in the Czech Middle Ages and Early Modern Period*; its explanations of book history can serve educational purposes at high schools and universities. We conceived the individual parts of the Knihověda.cz portal as separate, but interconnected web

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[2] J. Andrle, *Česká národní retrospektivní bibliografie jako pomůcka a výzva pro literární historii*, "Česká literatura" 2012, 60, pp. 903–930.

[3] Project Knihověda.cz is the result of work by a research team of experts at the Library of CAS, v. v. i., National Library of the Czech Republic and the Masaryk Institute and Archives of CAS, v. v. i.; it was implemented with the support of the program for applied research and experimental development of national and cultural identity for the years 2016 to 2022 (NAKI II), project identification code DG16P02H015. The project also had other (especially printed) results, but in this article, we focus only on the resulting portal.

[4] Knihověda.cz: Portal dedicated to the Czech book history until 1800 is available at https://www.knihoveda.cz [accessed: 24.05.2021].

Figure 1. Knihověda.cz: Portal dedicated to the Czech book history until 1800 (main page), https://www.knihoveda.cz

applications. This article presents information about the portal supplied by a use case study of the history of books from the Rudolfinian period in the Czech lands (1576–1612).

Bibliographic databases

In the databases[5], we integrated two bibliographies: the *Knihopis of Czech and Slovak Early Printed Books from the Earliest Period until the End of the 18th Century*, processed in the National Library of the Czech Republic, and the *Bibliography of Foreign-Language Printed Bohemica up to 1800*, prepared in the Library of the CAS[6]. These two databases contain records of thousands of prints published in printing offices in the Czech lands, works written by Czech authors, and foreign editions related to Bohemica in terms of content. Their aggregation in a virtual environment

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[5] https://knihoveda.lib.cas.cz [accessed: 24.05.2021].

[6] http://www.knihopis.cz; https://kvo.lib.cas.cz/cizojazycna-bohemika/databaze-bcbt/ [accessed: 24.05.2021].

represented an essential milestone in the Czech national bibliographic history. It overcame an artificially created division between the *Knihopis*, containing only Czech-language prints, and the *Bibliography of Foreign-Language Printed Bohemica*, making the database considerably more convenient for users. We also included two supporting databases in the portal: 1) the *Database of Manuscripts and Codicological Literature* prepared at the Masaryk Institute and Archives of the CAS, and 2) the *Bibliological Bibliography*, produced by the Library of the CAS[7].

The publicly accessible bibliographic databases, which operate internally with the MARC 21 format in various library systems (Aleph, Clavius), were linked through the VuFind open-source system. The user interface of this system was customised to allow for both simple searches and a combination of different search criteria. We supplemented and unified the records in the bibliographic databases to the maximum extent possible, especially primary data: the author's name, title, place and year of publication, the name of the printer, publisher or bookseller, and the text language. We also linked publication places and printers' names in the database with the *Encyclopaedia of Books*. The records in the databases were further completed by unifying the genres and thematic entries with the help of a pre-created glossary and adding links to digital copies in Czech and foreign digital libraries. At present, the Knihověda.cz portal includes 68,000 bibliographic records.

Map of Printed Production in Bohemia and Moravia up to 1800

Map of Printed Production in Bohemia and Moravia up to 1800, designed to serve both popularisation roles and research purposes, is exceptional compared with similar European projects. Integrated search tools allow one to obtain relatively accurate and concise data on the structure and content of prints published in the Czech lands, both as a whole and for specific historical periods. The Map draws on databases of printed production integrated with the portal that currently contain more than 30,000 publications from 45 Czech and Moravian locations.

The Map is accessed through an application consisting of three parts: the map itself, a timeline and a search bar. These are mutually interactive – after a search term is entered, the search results are automatically reflected in all respective parts of the application. The Map was primarily

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[7] https://tinyurl.com/yaebps89 [accessed: 24.05.2021].

conceived as a digital humanities tool for working with linked data, enabling users to analyse and visualise printed production from various perspectives. The Map integrates various data sets, allowing for comparisons and providing information about phenomena or developmental trends that would be otherwise difficult to identify. For example, users can compare the production of individual cities or specific printers, monitor changes in the language composition of books published in different locations, or trace the development of a phenomenon (such as journalism) over time. The visual presentation of the collected data also helps users formulate new research questions. The Map is linked to other parts of the Knihověda.cz portal, e.g. to individual entries in the *Encyclopaedia of Books*, allowing users to explore the history of book printing.

The map application was designed as modular software consisting of components based on source code available under free licenses[8]. It obtains data from integrated bibliographic databases via the Apache Solr[9] text search platform, while the map base for displaying this data comes from freely available data taken from the OpenStreetMap project[10].

Encyclopaedia of Books in the Czech Middle Ages and Early Modern Period

The *Encyclopaedia of Books* covers the period from the beginnings of Czech book history in the Middle Ages to the disappearance of the hand press book in the early 19th century. It offers contextual interpretations of Czech book history to both experts and the general public. The encyclopaedia contains some 2,800 entries in total. These include both entries related to codicology and bibliology and entries about the history of the book in the Czech lands as well as about individual books. Approximately 2,400 entries were taken from Petr Voit's encyclopaedia[11], while the remaining newly-created entries relate mainly to manuscript books, focusing on the form of such books and their contents. Particular attention was devoted to medieval manuscript libraries, both institutional and private; the decoration of manuscript books (illuminations); book provenance and

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[8] See the repository of the source code: https://github.com/VaclavC/Knihoveda-mapa [accessed: 24.05.2021].

[9] https://solr.apache.org [accessed: 24.05.2021].

[10] https://www.openstreetmap.org [accessed: 24.05.2021].

[11] P. Voit, *Encyklopedie knihy: starší knihtisk a příbuzné obory mezi polovinou 15. a počátkem 19. století*, Praha 2006.

binding; and music manuscripts, among other things. The entries for the printed book focus on the book's physical form, decoration and binding, as well as common literary genres. Among other information, they include explanations of the history of book printing at individual locations, and the names of authors, printers, and other participants involved in decorating or bookbinding.

Most of the entries are complemented with often unique illustrative material. Reference is made to digital copies in digital libraries in some cases, but most of the illustrations were made specifically for the *Encyclopaedia*. These are reproductions taken from more than a hundred memory and research institutions. The *Encyclopaedia* uses mediaWiki software developed by the Wikimedia Foundation, which runs the well-known Wikipedia web encyclopaedia[12]. This software has proven to be highly suitable for creating and presenting content for web encyclopaedias. Although entries for book printing were imported automatically, they were then edited manually: in particular, links to other entries and illustrative material were added. To create new entries and edit imported ones, we used Visual Editor, which significantly increases comfort when editing entries in the content creators' view[13].

Use Case: Book history of the Rudolfinian Period

As an example of how the portal can be used, we chose to explore Czech book history during the reign of the Holy Roman Emperor and Czech king Rudolf II (1576–1612). Compared to earlier decades in the Czech lands, book production under Rudolf II multiplied, expanding its genre spectrum. This process was mainly a consequence of the increasing level of education and erudition among the nobility and clerks, but the relocation of the imperial court from Vienna to Prague provided an additional stimulus. The portal contains extended and enriched research data that is useful in formulating research questions and more precise searches. Below are several specific examples of the portal's potential use in research and visualisation, illustrating how it can help expand the hitherto neglected research on the history of Rudolfinian book printing[14].

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[12] https://www.mediawiki.org [accessed: 24.05.2021].

[13] https://www.mediawiki.org/wiki/Extension:VisualEditor [accessed: 24.05.2021].

[14] To the history of Rudolfinian printing cf. A. Baďurová, *Rudolfinský knihtisk v Bibliografii cizojazyčných bohemikálních tisků z let 1501–1800*, "Knihy a dějiny" 1997, 4/1, pp. 21–39.

After entering the years of Rudolf's rule in The Map's search bar, a curve showing the number of editions (3590) will appear in the timeline. At the same time, the map will show 12 localities in which printers operated at that time and summary data on this period of printed production in both the search bar and the timeline. It is evident from The Map that book printing in the Czech lands was concentrated in Prague, while several smaller printing centres operated in Moravia. The research panel provides users with detailed information on the structure of production and publishing in the time of Rudolf II, such as the number and names of locations and printers, the total spectrum of topics addressed, and the genres and languages used in the books published at the time[15].

The Map also allows users to follow development trends in the composition of Rudolfinian book printing with the help of colour-coded search sets. For example, when querying the representation of languages, we find that in the Rudolfinian period, most books were printed in Latin (2137 editions), and more than half of them were occasional and poetic texts. Books in Czech follow (1293), most of which are dedicated to the topics of religion and journalism. Journalism was predominant in German texts, but overall there are fewer positions (294). The graph shows that the number of Czech and Latin printed books was relatively balanced until 1600, and only then did the lead of Czech increase significantly, while German played only a complementary role. Users can also compare the quantity and composition of individual printers' production. The map clearly shows that, for example, occasional poetry played an essential role in the production of the two significant printers in Rudolfinian Prague – Jiří Černý of Černý Most and Pavel Sessius. In contrast, in other genres, their publishing profile differed significantly.

The map's visual search results can be further filtered according to various criteria or displayed as a list of titles, linked to a timeline and locations on the map. Relevant entries on Rudolfinian book history are in the *Encyclopaedia of Books*, e.g., the history of book printing in individual places, the activities of printers and bookbinders, the typology of bookbinding, and selected period genres.

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[15] See: Representation of languages in Rudolfinian printing production displayed in the Map of the Printed Production, https://mapa.knihoveda.cz [accessed: 24.05.2021].

Conclusion

Today, digital research data and their storage, accessibility, and visualisation are of increasingly crucial importance. In this regard, the humanities, including cultural history and book history research, needs to keep pace with the digitalisation of society. The Knihověda.cz portal responds to the demand of researchers from the field of older Czech book history, who have been plagued with digital sources and tools that were either lacking or incomplete. According to Google Analytics, the Knihověda.cz portal, especially the *Encyclopaedia of Books*, has many visitors – between 9000 and 10,000 users per month. Almost all of these visitors are directed to the *Encyclopaedia* by search engines. The minority of specialised scholars also uses other parts of the portal. Since the *Encyclopaedia* is exclusively in Czech, most visitors are from the Czech Republic and Slovakia, with significantly fewer coming from other countries. Fourteen per cent of the total number of visitors return to the portal regularly.

While working on the project, we had to solve common issues associated with creating electronic resources financed with grant funds. One of the most pressing was the need to ensure the sites' duration and further development, in particular, data updates, after the funding ends. In our experience, the absence of experts in the visualisation and graphic presentation of data have negatively impacted the project; therefore, appropriate staffing needs to be a consideration in the future.

In our view, one area for further potential development of the Knihověda.cz portal lies in the possible integration of additional information sources or newly developed research tools, both in terms of older book history and for more recent periods. One such example, a project that will use integrated data available through the portal, has recently been launched by the Library of the CAS to make use of tools for managing data and metadata related to the illustrations in Bohemian early printed books. It extends the time frame of available data and visualisations related to Czech book history of the 19th century, which is naturally a task for experts dedicated to this historical period.

References

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LENKA VESELÁ, JINDŘICH MAREK

Historia książki w Czechach do roku 1800 online

Streszczenie. Artykuł przedstawia portal Knihověda.cz, który oferuje podstawową infrastrukturę cyfrowej przestrzeni pracy potrzebną do poszukiwań zagadnień z zakresu historii książki w Czechach do roku 1800. Portal podzielony jest na trzy części: pierwsza obejmuje bazę danych składającą się z pięciu częściowych bibliograficznych baz danych. Interfejs pozwala dotrzeć do kompletnych danych o drukowanych bohemikach i rękopisach sprzed 1800 roku oraz współczesnej bibliografii do badań bohemistycznych nad historią książki. Drugą częścią portalu jest mapa druków Czech i Moraw do roku 1800, która pozwala dotrzeć do drukowanych edycji książek na terytorium dzisiejszej Republiki Czeskiej od czasów średniowiecznych i wczesnego okresu historii nowożytnej, a dodatkowo umożliwia ich wizualizację według różnych dostępnych kryteriów. Trzecim elementem stworzonym w ramach projektu jest dostępna online encyklopedia książek powstałych na terenie Czech w średniowieczu i we wczesnym okresie czasów nowożytnych; zamieszczone tu hasła dotyczące historii książki mogą służyć celom edukacyjnym w szkołach średnich i wyższych. Opisana w artykule historia książki z okresu manieryzmu rudolfińskiego na ziemiach czeskich (1576–1612) uzupełnia informacje o portalu.

Słowa kluczowe: historia książki, baza danych źródeł bibliograficznych, rękopisy, encyklopedia książki w Czechach w wiekach średnich i we wczesnym okresie nowożytnym (*Encyclopaedia of Books in the Czech Middle Ages and Early Modern Period*), mapa publikacji drukowanych w Czechach i na Morawach do roku 1800 (*Map of Printed Production in Bohemia and Moravia up to 1800*), książki drukowane, humanistyka cyfrowa, dane cyfrowe.