Spatial Planning and its Need for National and Regional Bibliographies of Grey Literature

Christian Erlinger
Vienna Public Libraries Vienna, Austria

ABSTRACT
National bibliographies provide interesting opportunities to search for new publications in specific scientific disciplines. This article gives an overview about the bibliographic potential of National Bibliographies in the German-speaking countries for spatial planning both in research and practice. Because grey literature plays an important role in technical disciplines, a national bibliography is a worthwhile source for information retrieval. Furthermore, this article includes a lightweight python-script to parse the bibliographic information from literature relevant to spatial planning and to measure the importance of grey literature using the SRU-API of the German National Library.

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Introduction

Academic research in spatial planning uses a wide range of different methods. The research focused on practical planning is often based on field research, but needs to be underlaid with literature about thoughts and meanings as it is scientifically common. Furthermore, the planning practice is legally bound to create previously a so-called “basic research.” Such research assumes primarily the ideas and targets of earlier planning concepts in the specific spatial area. Both academic research and practice depend on appropriate literature to support their work. Grey literature plays an especially important role. Studies, manifestos, concepts, plans, and other types of documents from public authorities are widely used in the spatial disciplines. Structured bibliographies with detailed geographically enriched metadata could become a useful data source for spatial researchers on the one hand, to get an overview of the latest publications in the whole discipline or in a specific geographic or thematic context and, on the other hand, as a very sophisticated tool for scientific information retrieval.

This article will discuss the current situation of documents that are relevant to spatial planning that are covered through national bibliographies in the German speaking countries. The three national libraries of Germany, Austria,
and Switzerland have implemented different strategies to archive and describe the collected documents. An important focus of this article is on the cataloging of grey literature, especially grey literature which is only available online. That means that library strategies for web-harvesting and methods to create structured metadata about the geographical or thematic coverage will become more and more important for subject-based research. This article discusses fast and lightweight possibilities for harvesting metadata from national bibliographies in an automatic way for presentation or analysis. Therefore, technical availability plays an important role. National bibliographies can no longer be just a printed list of the latest publications received by a national library; the bibliographic metadata have to be searchable in all its details and accessible as easily as possible by both humans and machines.

**Information usage and production in spatial planning research**

The aim of spatial planning is to manage and influence the human use of the landscape. Research on spatial planning is responsible for creating and reflecting theories and methods for developing new systems of planning the development of space used by humans. In whatever way a landscape will be used by humans, e.g., for traffic, industry, housing, recreation, agriculture, or even as a rural body, spatial planning is very important for creating a sustainable ecosystem that respects all the existing different and contradictory interests.

“It can be more or less associated with government, with local governance, with scientific expertise, with planners and plans. It can be procedural or content-driven and dominated by political, economic, or legal actors in various combinations. In addition, it can codify a future spatial organization to different degrees and by different means.”

Spatial planning research and practice are both about designing plans and interacting with communities. Before spatial plans are implemented in the real world, all the plans, their ideas, and meanings first exist as documents. Such “documents” produced through spatial science or practice are based on text and illustrated through maps, charts, and images and each display a spatial “meaning” and shall be part of a spatial and social discourse. Furthermore, documents relevant to spatial planning have some dialectic between legally bound documents (so-called “formal” documents) and not legally bound (“informal”).

- Legally bound documents are based on structured processes and actions defined by law. To this document group we can count the land-use plan or the development plan, if there exists a local law which describes the process of creation and its effect.
Not legally bound documents could be described as the rest of all existing planning documents without any legal obligation. The spatial planners of the future are increasingly obligated “to prepare guidance documents which can be used in negotiating the convergence between interested parties.” Therefore, the number of informal documents is not only “the rest” of the planning documents, it is—especially for the planning research—the base of all developments. These planning documents are flexible in content and design and allow the planners to react immediately upon consideration of the different interests and perspectives in the given situations. Nowadays there is no spatially relevant project without some type of master-plan, strategic analysis, or conceptual study.

All the documents relevant to planning, both formal and informal (legally and not legally bound), are often funded by governmental authorities and created by planners, researchers, or public servants. A great number of the created documents will be published online. Based on national laws, legally obligated documents funded or edited by public authorities have to be published or accessible in a public or open way. Not legally bound planning documents which were only published online are missing bibliographic sustainability. Online publications from public authorities or planning agencies are missing stable links and will often not be archived by any institution, whether in libraries or in an institutional archive. Not legally bound documents could be grey literature or published over traditional channels, nonetheless these documents build the pool of ideas and strategies to create new spatial developments or to do critical research on it.

For a new research or planning activity it is necessary to get an overview of existing spatial ideas, according to the planning area or as references to proposed implementation.

“It is not possible to get an exact overview of the number, the form, the validity, or the accessibility of information relevant for spatial planning. It is the question, which spatial relevant information are accessible at all?”

Planning practice and research are aware of this problem about information access as mentioned in the thesis cited earlier. Information specialists or librarians should be able to handle this information gap to give attention to the following aspects or needs.

- Create and store bibliographic metadata necessary both for research and practice in a standardized and known way, for easy and stable reuse and discovery.
- Design possibilities for special information retrieval or information needs in the served discipline, e.g., spatial research, needs high-quality geographic information in the metadata. The usage of controlled
geographic authority files makes it possible to create a spatial index and to build a map-based discovery tool.

**The importance of grey literature in spatial planning**

One of the most common and well-known definition of grey literature is the so-called *Luxemburg definition*, which was approved at the Third International Conference on Grey Literature in 1997:

“[Grey Literature] is produced on all levels of government, academics, business and industry in print and electronic formats, but which is not controlled by commercial publishers.”

In 2011, new attributes were added to the definition which was subsequently proposed as the *Prague definition*:

“Grey literature stands for manifold document types produced on all levels of government, academics, business and industry in print and electronic formats that are protected by intellectual property rights, of sufficient quality to be collected and preserved by library holdings or institutional repositories, but not controlled by commercial publishers, i.e., where publishing is not the primary activity of the producing body.”

An interesting further attribute of grey literature which could be added is “that many forms of grey literature, such as government documents and working papers, have a history of being openly available, even long before the current open access movement.”

The importance of grey literature in distributing scientific, technical, or general information was mentioned in detail as it is given in academic publication types like theses, working papers, or conference proceedings and because publishing information outside commercial publishing routines is quite a bit faster. But the most important fact about grey literature is that the information is simply “not published elsewhere.”

Documents relevant to Spatial Planning are rarely published through the commercial publishing and distribution channels. Planning documents are created by public authorities, researchers, or planners and often funded through governmental institutions or activities. Also, the free and open online accessibility of planning documents meets the definition of grey literature.

In the following sections of this article and its analysis we shall attempt to discuss the relative occurrence of spatial planning relevant literature covered in national bibliographies.

**Spatial planning relevant content covered in national bibliographies**

The lack of a centralized archive of bibliographic information of grey literature in spatial planning in the form of a commercial specialized database leads to the idea of building an institutional or disciplinary repository that
includes a focus on the spatial disciplines. But it is also interesting to know in what ways existing national bibliographies are able to cover the need for such specific information or to become an essential data-hub for building a specialized repository.

“A current national bibliography is a mirror that reflects the culture of a country. […] The emphasis on agriculture and technology, the make-up of its society through its various language publications […] are all discernible. A current national bibliography should reflect the interests and unique characteristics of a country much as a mirror reflects the uniqueness of an individual.”

According to Barbara L. Bell’s point of view cited above, a national bibliography could be established as a central hub for well cataloged metadata of different types of publications with impact on spatial planning research and practice, and even this output has the appropriate geographical coverage or national importance. The three main objectives of a national bibliography are:

- assistance for cataloging in libraries,
- assistance in selection and acquisition, and
- base for further information searching, retrieval, and document supply.

Creating a national bibliography as a central and sophisticated information resource has to be seen as a base for different searching tools and has to be accessible from many points and in different ways. The linking to local catalogs in libraries and similar institutions and vice versa is also necessary to increase the importance of a national bibliography as the enabling or at least documenting full-text access to different publications.

**National bibliographies and grey literature**

National bibliographies cover the literature produced in, or about, a defined geographical area. In the German-speaking countries there are the “Deutsche Nationabibliografie” for Germany, the “Österreichische Bibliografie” for Austria, and “Das Schweizer Buch” for Switzerland. Grey literature is documented separately in the German national bibliography in the so-called “Reihe B” (publications outside publishing and book-trade market). The German national bibliography generally has different parts. Relevant for this article are the “Reihe A,” which describes the new publications from traditional publishing and distribution channels, “Reihe B” covering grey literature, “Reihe H” dissertations, and “Reihe O” online publications. The Austrian and Swiss national bibliographies have no separate bibliography for grey literature or theses and dissertations.

The coverage of the national bibliographies is often restricted to forms and (media) types of the different publications. Although the IFLA
recommendations on national bibliographies (1998) mention, that “all documents published in a country regardless of publication form—they could be printed, audiovisual or electronic documents—should be covered by the national bibliographic registration.”

grey literature that is published online is rarely cataloged in national bibliographies.

National bibliographies and online publications

A further aspect of spatial relevant information is the fact that an increasingly high number of this literature is accessible exclusively online.

“Electronic resources are just one of many formats that a national bibliographic agency collects in support of providing its users with a full range of content that emanates from the home country.”

The German National bibliography has an independent bibliography for publications published online in its “Reihe O.” All registered documents are in a form orientated to classical print-publications. This means that records in the “Reihe O” bibliography are more about PDF files, which are strictly oriented to traditional printed documents, and less about web-oriented publications. Literature cataloged in “Reihe O” is mainly delivered from the publishers themselves due to their legal obligation for delivering publications to the National Library.

Unfortunately, it has to be assumed that a significant number of relevant documents for spatial planning will not be delivered to a national or regional library by their creators or publishers. Project-based or institutional websites offer different types of documents and media which could become important for future spatial development or research. That is one of the common reasons why web-archiving became an interesting field of activity for libraries. The Web “has increasingly evolved into a storehouse of valuable scientific, cultural, and historical information.”

The German National Library started their initiative for web-archiving in 2013. About 700 websites from public authorities or cultural institutions had been archived initially. Uncertainties about copyright-law prevent the National Library from starting a wider web-crawl or from making this web-archive public accessible.

The Austrian National Library is also running a web-archive to harvest websites with a .at top-level domain or websites with social, cultural, or economic importance for Austria. Access to the archive is, due to copyright law, also limited to terminals in the Austrian National Library. The Austrian National Library is also obligated to collect online publications like e-books, electronic theses, etc., as they are collected and cataloged in the German “Reihe O.” The Austrian national bibliography certainly has no separate part for online publications.
The Swiss National Library runs with e-Helvetica, a national initiative to collect online publications and websites from Switzerland or with an appropriate importance for the Swiss cultural and social heritage.  

**Information retrieval in national bibliographies**

Information retrieval in national bibliographies is essential for national bibliographies to have an importance for research or practice.

“[The] national bibliography is an important information resource for various user groups in different contexts […]. The interface should, as much as possible, enable all the functionality needed by these user groups. […] Therefore, the interface has to be simple, clear, and tolerant to mistakes.”

Different user groups have different needs and requirements for searching information based on national bibliographies. For users related to spatial sciences the following criteria according to Zumer should be achieved through the bibliography:

- **Metadata Criteria**—stored, searchable, and displayed:
  - Title, author, editor
  - Publication year
  - Geographical coverage
  - Legal validity concerning its geographically or chronologically impact
  - Subject headings, classification, and keywords, especially based on professional thesauri or authority data commonly used in planning practice (e.g., regional identifier for geographical or administrative entities)

- **For the re-use of records**
  - Common identifier for the metadata-record
  - Permanent identifier for stable referencing
  - Legal information about the accessibility and copyright
  - Technical possibility to search or collect data via standardized interfaces like SRU, OAI-PMH, or Z39.50

In the German-speaking countries the most common form of presentation of the national bibliography seems to be a PDF file, a digitized printable or printed list of publications. These documents are structured in chronological order within a publication interval of one (Germany) or two weeks (Austria, Switzerland). The cataloged publications are classified in all three national bibliographies by a subset of about 100 top-level classes of the Dewey Decimal Classification (DDC). This form of presentation could be classified as simple but it is missing any type of interactive user-interface. Only the German National Library allows to parse the national
bibliography through the standardized protocols OAI-PMH and SRU. This allows a deeper, better focused and individual, subject-based research as well as providing the ability to re-use the data in a new context. To search for publications relevant to spatial planning there exist different possibilities; in this article the following two methods have been chosen.

- Spatial planning is classified in DDC in 710.
- Search for different specialized keywords like Stadt*, Raum*, Region*

**Spatial planning documents retrieved by DDC in the German national bibliography**

To get an overview of the number of cataloged records relevant to spatial planning, we have developed a lightweight Python script, which uses the SRU-Protocol at the German National Library. The script produces a list with the number of records and creates a bar chart to visualize the development of the number of documents in a specific time period. It is freely available for re-use and validation on GitHub as a Jupyter Notebook with further information and comments.

The script was used three times to parse three different parts of the German national bibliography. Additional to “Reihe B” (cataloging grey literature) and “Reihe O” (online publications) we also parsed the “Reihe H” (dissertations). The “Reihe H” lost its importance in the recent years, because an increasing number of theses were published online on institutional repositories, so publications formerly cataloged in “Reihe H” have moved to “Reihe O.” The time period was chosen to begin in 2010 with the establishment of the cataloging of “Reihe O.”

The numbers in Table 1 and Figure 1 show the importance of grey literature (“Reihe B”) and even more of online publications (“Reihe O”) in context of spatial planning compared to literature published through the traditional channels of distribution and publishing cataloged in “Reihe A.” We can also observe an increasing number of cataloged online publications, although in the first year of “Reihe O” in 2010 the number of more than 700 publications was not reached again until 2016. The decrease in the number of theses or dissertations listed in “Reihe H” since “Reihe O” was established is also shown in the data above.

| Table 1. Number of records in German national bibliography for DDC 710. |
|---------------------------------------------------------------|
|                  | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | Aver. |
| Reihe A          | 225  | 193  | 202  | 270  | 281  | 217  | 190  | 187  | 221   |
| Reihe B          | 172  | 117  | 115  | 77   | 135  | 176  | 109  | 121  | 128   |
| Reihe H          | 23   | 17   | 28   | 22   | 42   | 24   | 11   | 8    | 22    |
| Reihe O          | 727  | 367  | 425  | 493  | 509  | 607  | 872  | 528  | 566   |
| Sum(B + H)       | 195  | 134  | 143  | 99   | 177  | 200  | 120  | 129  | 150   |
| Rel. (B + H)/A   | 0,87 | 0,69 | 0,71 | 0,37 | 0,63 | 0,92 | 0,63 | 0,69 | 0,69  |
Spatial planning documents retrieved by keywords in the German national bibliography

The second simple method implemented to retrieve spatial planning relevant documents is to search for different keywords. For this analysis we searched for “Stadt, Region and Raum,” always using wildcards at the end of the keyword to also match different subforms of the keywords like Stadtplanung, Stadtentwicklung, Stadtforschung, Stadtgeschichte, and so forth.

The numbers in Table 2 show that we retrieved a greater number of records than by searching with the classification number. Nonetheless the number of online publications is lower than those retrieved by the DDC search. Maybe this circumstance is caused by a different way of subject classification. The number of records cataloged in “Reihe A” is more than 15 times higher that the one obtained in the first search, although the research excludes all documents described as fictional literature.

### Table 2. Number of records retrieved by keyword search in the German national bibliography.

|       | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | Aver. |
|-------|------|------|------|------|------|------|------|------|-------|
| Reihe A | 4210 | 4110 | 3873 | 3434 | 3645 | 3364 | 2951 | 2730 | 3540 |
| Reihe B | 358  | 305  | 251  | 208  | 197  | 204  | 145  | 412  | 260  |
| Reihe H | 382  | 367  | 313  | 322  | 381  | 334  | 311  | 278  | 336  |
| Reihe O | 379  | 635  | 956  | 901  | 1458 | 2200 | 2297 | 1938 | 1346 |
| Sum(B + H) | 740 | 672  | 564  | 530  | 578  | 538  | 456  | 690  | 596  |
| Rel. (B + H)/A | 0.18 | 0.16 | 0.15 | 0.15 | 0.16 | 0.16 | 0.15 | 0.25 | 0.17 |

Occurrence of grey literature in spatial planning measured in the national bibliography

The assumed occurrence of grey literature in spatial planning could be measured simply through the number of records in the national bibliography. Table 1 shows the ratio between traditionally published documents (“Reihe A”) and grey literature in the last row:
The average ratio between 2010 and 2017 for documents retrieved via DDC 710 is 1:0.69. For documents retrieved via keywords the ratio is only 1:0.17, but the keyword search matches a lot of documents handling subjects related to the terms of city, regions, or space but without any specific relationship to spatial sciences, such as historical studies or guides.

To get an idea what this number says about the importance of grey literature for a specific field we have to compare the numbers with other disciplines. Table 3 shows the number of records retrieved by a search for DDC 300 (Social Sciences). The measured average ratio between grey and traditionally published documents is 1:0.42, or about 30% less than seen in the spatial sciences. The ratio by comparing spatial science with engineering science in general (DDC 620) is 1:0.85, quite higher and even more stable than in the spatial sciences. Hypothetically, the great importance of grey literature is a phenomenon for technical disciplines.

### Conclusion

National bibliographies aim for a wide range of functions and objectives in the bibliographic universe. The catalog of a national library itself is quite similar to a national bibliography, and in most cases the library catalog and bibliography go hand-in-hand and depend on each other, but in a certain way the catalog is the greatest opponent of a national bibliography. This is best shown in the presentation and usage of national bibliographies in Austria, where for example the former part “Reihe B” for theses and dissertations and “Reihe C” for Austriaca were abandoned because these documents are searchable in the libraries’ discovery system. Catalogers lost
focus and attention on the differences between the two bibliographic instances or the several requirements in information retrieval.

The national bibliography should be more than a static list of bibliographic entries in chronological order, although in this context the timestamp of cataloging a specific record to the national libraries catalog or bibliography is one of the most important metadata fields. The timestamp given through a national bibliography is something totally different than other date/time information in a bibliographic record. The date of cataloging itself gives no information about the novelty of the cataloged publication, also the publication date of the document itself often differs from the—let’s call it—release date of the document. The chronological information from a national bibliography means that indeed a specific record represents a new publication. This information is the main advantage for libraries using national bibliographies, especially to curate their own inventories. For end-users like researchers the time information seems not to be the most important fact in such a bibliography, except in that it is necessary to get an ongoing overview about new publications on a specific research field or topic. In such use cases it must be present for discovery tools to have the appropriate facets or filters to reduce a result list. On the one hand the publication date is a well-known fact in literature research, on the other hand for getting a current overview about the literature a date, which examines that something is new to the library, could be very useful. In this case a national bibliography and its timestamp plays an important and useful role.

Spatial sciences have their own special requirements in information research, some of this could be served well through a national or regional bibliography.

- In spatial planning, as it is shown in this article, grey literature has an important role. National bibliographies like the German national bibliography which categorizes publications by their published form, bring the necessary potential for making information search specified on this category.
- Spatial planning both in research and practice is always close to public authorities. Publications made through these institutions could potentially be an interesting objective to develop new methods of getting metadata or even full-text access to documents over national bibliographies.
- National libraries are often responsible for supporting and curating local authority files. Geographical authority files are necessary for a high-quality cataloging of publications with regional coverage.
- To get information about new publications, researches have their own ways to become informed, such as social media, peer groups, mailing lists, and so on. A national bibliography could be a worthwhile additional channel.
To increase the amount of relevant spatial planning literature covered by national bibliographies and also its level of use by the planning community is not only a task for the national libraries but also for the scientific community itself. It will be a continuous process to encourage both parties to deliver documents as well as to extend the bibliographic infrastructure.

- (National) Libraries shall provide discovery tools with geographic functionality, e.g., maps for visualization of items or maps to query the geographic authority file through coordinates.
- The spatial planning community has broad knowledge about geographic information system (GIS), e.g., they could deliver simple or automatically detailed information about the spatial coverage of a specific document. They could also deliver or link GIS data to existing geographic authority file data.
- Curating national bibliographies is often based on legal obligations, which does not seem to be effective in every way. Literature relevant to spatial planning is often produced or released in cooperation with public institutions. To increase the publicity and show the usefulness of national bibliographies, the libraries could start a cooperation with public institutions to deliver literature relevant to spatial planning with detailed (geographic) information.
- If the spatial planning community got knowledge about new features for researching relevant literature based on a national or regional bibliography it would be motivating for other institutions or persons to start delivering their own documents.
- Due to the fact that most of the documents are published only in a digital way, libraries are obligated to build easy-to-use interfaces for uploading, delivering, or linking new publications.

If national bibliographies are to be used by a wide range of users and not only by librarians, the functionality of the bibliographies has to be improved permanently based on the requirements of specific user-groups. A lot of fields of activities for national libraries, like support of authority files, implementation of standardized web-based protocols for data exchange, the development of technical methods for active notification of relevant new publications totally independent from the traditional fulfillment of a legal deposit are all relevant to build a modern, stable, and user-friendly national bibliography.

**ORCID**

Christian Erlinger [http://orcid.org/0000-0001-7872-9617](http://orcid.org/0000-0001-7872-9617)
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