

Griesbaum, Joachim; Lewandowski, Dirk; Peters, Isabella

## Article

# Information Science in German-speaking countries

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## Kontakt/Contact

ZBW – Leibniz-Informationszentrum Wirtschaft/Leibniz Information Centre for Economics  
Düsternbrooker Weg 120  
24105 Kiel (Germany)  
E-Mail: [info@zbw.eu](mailto:info@zbw.eu)  
<http://zbw.eu/de/ueber-uns/profil/veroeffentlichungen-zbw/>

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## **Guest Editorial: Information Science in German-speaking countries**

This special issue of *ASLIB Journal of Information Management* serves as a forum for an international discussion of showcases from Information Science research stemming from German-speaking countries, i.e., Austria, Germany and Switzerland – also often abbreviated as DACH. Along with that, the Special Issue aims at bringing such research to broader attention by particularly highlighting the specialities that the various local Information Science research centres expose, e.g., in terms of methodology. We were able to collect seven papers from authors from Germany and Austria. In this way, the Special Issue provides a glimpse into Information Science research in DACH.

To better understand the motivation underlying the publication of this Special Issue, a brief description of the information science landscape seems necessary. In German-speaking countries, Information Science is a rather small scientific discipline – which is also why IS's exotic status is often emphasised among the more well-known and, presumably, more popular subjects, such as Medicine or Management. Information Science is established in only a few institutes at universities: the Humboldt-Universität zu Berlin, the Heinrich-Heine-Universität Düsseldorf, the Karl-Franzens-Universität Graz, the Universität Hildesheim, the University of Konstanz, the Universität Regensburg and Donau-Universität Krems. In addition to that, Information Science is more widely spread in technical colleges or universities of applied sciences: Fachhochschule Potsdam, Hamburg University of Applied Sciences (HAW), Hochschule Darmstadt, Hochschule der Medien Stuttgart, Hochschule für den öffentlichen Dienst (HföD) München, Hochschule Hannover, HTWK Leipzig, SBZ Kyffhäuserkreis Sondershausen, TH Köln Technology Arts Sciences, Wildau Institute of Technology and HTW Chur. Students encounter topics that relate to Information Science in a wide variety of study programs. Such study programs are often rather interdisciplinary, bringing together diverse disciplines such as Media Studies, Intercultural Communication (Computer) Linguistics, Computer Science and Library Science. As a result, study programs are often entitled Information Management (e.g., Hochschule Hannover), International Information Management (e.g., Universität Hildesheim), Information Science and Language Technology (Heinrich-Heine-Universität Düsseldorf) and similar designations. Although many study programs qualify students for occupations in libraries, typically the diversity of information science related curricula prepare students for a wide variety of jobs in research and industry.

The Information Science community organises primarily within two associations. The Conference of Information and Library Science Education and Study Programs (in German: Konferenz der informations- und bibliothekswissenschaftlichen Ausbildungs- und Studiengänge, short KIBA) and the Higher Education Association for Information Science (in German: Hochschulverband Informationswissenschaft, short HI). The KIBA serves as a forum that connects fourteen educational institutes and study programs in German-speaking countries. The KIBA represents its institutions in other professional associations and towards politics and professional practice. In a yearly conference, education-related topics, e.g., the development of study programs, or further education are discussed. The HI has a more research-oriented focus. It organises the International Symposium of Information Science (ISI), which is a conference series that started in 1990 in Konstanz. In 2017, the 15th ISI conference was held at the Humboldt University in Berlin. For a long time, the ISI conference was seen as the most important exchange forum of the research community in Austria, Germany and

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Switzerland. Hence, many publications were written in the German language at that time. Starting with the last conferences, especially the ISI 2015 in Zadar, Croatia, an effort towards greater internationalisation took place. Since then, the conference language and contributions are mainly in English, and they do now resemble a broader, more European community.

Several endeavours have been undertaken to analyse and present the DACH-Information Science to a broader audience. Most of them were using bibliometric analyses and were, actually, joint work of German and Austrian colleagues. For example, two groups of Graz and Cologne students (pseudonym: Grazia Colonia) and Graz and Düsseldorf students (pseudonym: M.B. Friedländer) studied, on the one hand, the impact of information science journals in general (Colonia, 2002; see also: Schloegl and Stock, 2004), whereas on the other hand, Friedländer (2014) analysed citations and publications from German-speaking universities. Researchers from Graz and Düsseldorf collaborated again and compared the research topics from their colleagues (Dorsch et al., 2017).

This Special Issue continues in this vein and will present the latest research activity in DACH-Information Science. We will introduce the research papers starting with the north of DACH (i.e., Hamburg), moving to the east (i.e., Berlin), then to the south (i.e., Graz, Regensburg, Konstanz) and finally encountering the west (i.e., Düsseldorf).

This special issue starts with a contribution from Dirk Lewandowski and Sebastian Sünkler, HAW Hamburg, Germany. The authors ask "What does Google recommend when you want to compare insurance offerings?". The focus of the study is to detect a particular type of search engine bias, i.e., the prevalence of information, i.e., web pages, stemming from the same providers on the first positions in the search results list. The authors have developed a software system to automatically query search engines such as Google and to automatically extract the content of the returned search result pages. The extracted content, e.g., the imprint, is used in further analyses. By studying the search results for queries on comparisons of insurance companies the authors can show that at Google the top search results are occupied by web pages provided by only a handful of providers that operate several domains on the same topic. The authors assume that this result is due to increased search engine optimisation, especially in commercial areas of high competition. Hence, Lewandowski and Sünkler discuss the tension that appears between their findings, that is that a search engine bias exists, and that search engine users perceive search engine results pages as neutral representations of the web.

In an experimental eye-tracking study with 31 participants, Jacqueline Sachse from Humboldt-Universität Berlin, Germany, investigates "The influence of snippet length on user behaviour in mobile web search". For that end, users, each provided with ten informational and ten navigational search tasks, were confronted with search engine result snippets of different length (1, 3 and 5 lines). Findings indicate that variations of snippet length show a strong influence on users' scrolling behaviour and visual attention. For navigational queries, long snippets lead to the highest performance rates, for informational queries snippets of medium length seems to be best. Providing short snippets is not advisable as these can be connected to diminished performance.

Melanie Kilian, Markus Kattenbeck, Matthias Ferstl, Bernd Ludwig and Florian Alt from Universität Regensburg, Germany, explore "Task-sensitive assistance in public spaces". For that purpose, the authors first construct a workflow model based on expert interview data. In a second step, they

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implement a mobile application that proactively supports air travellers with flight-related information. Finally, based on a user survey, the application is evaluated. Results indicate that users were overall satisfied with the usability and the travel support of the application. The authors conclude that the number of features is not the most important means. Instead, it seems that basic task-tracking capabilities are adequate to provide assistance in public space workflows. Furthermore, the authors assess their study as worthwhile concerning methods used, proposing it may serve as a kind of blueprint on which similar studies may orient on.

In their contribution "Understanding credibility judgements for web search listings" Markus Kattenbeck and David Elswailer from Universität Regensburg, Germany, aim to understand the way users assess the credibility of web search snippets on search engine result pages. In a two-piece study, they first employ an online survey to measure users' judgement on search listings for three controversial topics. According to their results, users are uncertain in their judgements. Besides, users' assessments often differ from evaluations provided by experts who also have verified the sources. Also, in the second part of their investigation, Kattenbeck and Elswailer employed a qualitative setting to get insights into the kind of information users actually use for their credibility judgements. Transcripts from tests with nine users indicate that users apply a wide variety of credibility cues. Users often review visible data on the basis of their personal knowledge and beliefs. Thus, it is not that surprising that even when relying on the same kind of data provided users often categorise these differently.

Stefan Dreisiebner and Christian Schlögl from Karl-Franzens-Universität Graz, Austria, provide an article titled "Assessing Disciplinary Differences in Information Literacy Teaching Materials". They conducted an in-depth study of teaching material, i.e., eight issues of the German-language publication series *Erfolgreich recherchieren*, to reveal what aspects are subsumed under the concept "information literacy" when situated in different disciplinary concepts. Via a structured content analysis of the teaching material the authors aimed at showing that of the studied disciplines (i.e., political and social sciences, economics, educational sciences, law, mathematics, life sciences, history and German studies) each highlights different skills that all together form information literacy. For example, it could be confirmed that all disciplines correspond to every performance indicator of the Association of Research Libraries standards, e.g., "evaluate information and its sources critically" or "use information effectively", although to a different degree. The differences range from the type of sources that are deemed appropriate for research, e.g., bibliographies in German studies and working papers in economics, to search and filter strategies, such as legal fields in law and eras in history.

André Greiner-Petter, Moritz Schubotz, Howard Cohl, and Bela Gipp from Universität Konstanz, Germany, write about "Semantic Preserving Bijective Mappings for Expressions involving Special Functions between Computer Algebra Systems (CAS) and Document Preparation Systems (DPS)". The goal of their contribution is to automate translation processes of mathematical representations between DPS and CAS. Based on rule-based translations, the authors created mappings of mathematical formulas between CAS and DPS. Maple and Mathematica were used as CAS, and LaTeX as DPS. The translation rules relied on a collection of special macros that provide links from mathematical symbols to their explanation in the NIST Digital Library of Mathematical Functions (DLMF). As a result, 396 mappings were created, and 58.8 per cent of DLMF formulae were

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translated without errors between Maple and DLMF. As a whole, results indicate that the applied approach may be used to improve and alleviate manual translation.

The special issue closes with an article written by Christine Meschede from Heinrich-Heine-Universität Düsseldorf, Germany. She is interested in the "Information dissemination related to the sustainable development goals (SDGs) on German local governmental websites". She performs a content analysis of local government websites of the 15 largest German cities. The study investigates which of these cities provide information concerning their commitment to the SDGs. Also, the kind of thematic information published is revealed. Finally, the role of partnerships and citizen participation concerning the SDGs is explored. Findings show that roughly half of the cities officially commit to SDGs on their websites. Some cities provide a specific SDG subpage; others only reference to the SDGs in reports on related topics. The most important topics connected to the SDGs are education, climate protection, fair trade, energy and mobility. The role of partnerships is highlighted by two-thirds of the cities, and half of them stress the importance of citizen participation. Overall the study indicates that there is already some awareness on the SDGs in as so far the website based communication of a large fraction of the most populous German cities is concerned. Still, there is a gap on information dissemination, at least by some cities that already signed the SDG resolution but fail to provide corresponding information on their websites.

Overall, the papers provided in this Special Issue reflect the broad range and diversity of research foci in the German-speaking Information Science community. We find similar patterns of topical clusters for every location that were also shown by Dorsch et al. (2017) for Graz and Düsseldorf. Moreover, it becomes apparent that it is often the methodological approaches that distinguish the Information Science centres in DACH. We see strong empirical research in Hamburg, Berlin and Regensburg. Hamburg is known for research on search engines and evaluation of information retrieval system, whereas Berlin focusses on human-centred research on information behaviour. Regensburg adds methods from computer science to Information Science research similar to Konstanz which actively builds on (big) data analysis. Düsseldorf is pioneering research on informational cities and develops and improves methods to study their maturity via qualitative approaches, which Graz also uses to study information literacy and information science education.

Like a shop window we hope that this Special Issue will draw attention to Information Science research in DACH – although not comprehensive, but rather spotlighting - and that, in the future, will spark discussion, exchange and networking within DACH but also with members from the Library and Information Science community from all over the world. We hope you enjoy reading our colleagues' work as much as we did when preparing this collection of DACH-research in Information Science.

Joachim Griesbaum

Department of Information Science, University of Hildesheim, Hildesheim, Germany

Dirk Lewandowski

Department of Information, Faculty of Design, Media and Information, University of Hamburg, Hamburg, Germany,

and

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Isabella Peters  
ZBW, Kiel, Germany

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